

# Chapter Four



# Chapter 4 - Environmental Consequences

## 4.1 Introduction

Chapter 4 analyzes the environmental impacts of implementing each Alternative described in Chapter 2. The affected environment described in Chapter 3 comprises the baseline used for projecting impacts. Management that could affect resources or resource uses has been analyzed, and the conclusions drawn from that analysis are described for the resource consequence section.

Resource Management Plans (RMPs) are designed to provide broad guidance and are not intended to be site or project specific. Current planning guidance allows implementation-level decisions to be made in a RMP when suitable. The impacts discussed in this chapter are general, described at a landscape or regional level. RMPs are implemented through site-specific projects and activity plans; these steps often require a separate site-specific National Environmental Policy Act (NEPA) analysis.

Many management actions are common to all Alternatives or to several Alternatives. Similarly, the impacts of implementing a given set of management actions might be common to a range of Alternatives or even to several seemingly disparate resources and uses. When a proposed activity is not addressed in a specific section, no impact is expected.

## 4.2 Analytical Assumptions

The following general assumptions and guidelines were used in the analysis of environmental consequences. Other assumptions specific to a particular resource are presented under that resource.

- Funding and personnel would be sufficient to implement any of the Alternatives as described for Chapter 2.
- The laws, regulations, and policies that direct Bureau of Land Management's (BLM) work would be applied consistently and as suitable across all Alternatives.
- All Alternatives would maintain vegetation resources and meet the need for water, nutrients, and energy cycling.
- The approved RMP would remain in effect for 15 to 20 years. The first year that the RMP would be in effect would be 2008. For items that were analyzed over time, the analysis was carried out to 2028.
- County populations for 2008 and 2028 would be as reported in the projections used in this RMP. Population projections for Maricopa and Yavapai Counties for 2005 were calculated by extrapolation from the year 2000 Census and the official Arizona Department of Economic Security annual population estimate for 2003. For the year 2028, this RMP uses the Maricopa Association of Governments (MAGs) interim projections by Municipal Planning Area (MPA) in Maricopa County. For the year 2028, a projection was developed for this RMP for Yavapai County from the known deviation between the 1997 population projection series for future years, the year 2000 Census (an actual county population that was 110 percent of the projected population), and the Arizona Department of Economic Security (DES) population estimate for 2003 for Yavapai County and its

incorporated places (an estimated county population that was 112 percent of the projected population).

- Short-term impacts are those expected to occur during and within one to five years of implementing the activity. Long-term impacts are those that would occur after the first five years of implementation.
- Recreational use in the planning areas would continue to increase. A visitor-use study prepared by Arizona State University West (Andereck and others 2002), lists the general themes of recreation. The study was based on meetings with focus groups for various types of recreation and on surveys of recreation users in the planning areas.
- A total of 70 percent of visitors to BLM's lands in the planning areas reside in Maricopa and Yavapai Counties. The analysis assumed that the 70 percent share would remain constant throughout the life of the plan.
- Appendix C lists the laws and regulations with which all activities must comply and that might limit the range of management actions.

### **4.3 Types of Effects to be Addressed**

This chapter describes the direct, indirect, and cumulative impacts of implementing *Alternative A*--the No-Action Alternative--and each of the four other Alternatives.

The impacts of the planning decisions on the visitor's experience would depend on the expectations and values of the individual visitor. A particular action could benefit some users and adversely affect others. The degree of impact would also vary relative to user sensitivity. Sensitivity would vary among user types and might also differ between new users and traditional users of a particular resource.

The impact analysis presents effects that might enhance or improve a resource as well as those that might degrade a resource. Instead of analyzing every minor interaction and cause-effect relationship, the impact analyses are confined to actions that have direct, immediate, and significant effects on the planning areas. Cumulative impacts, discussed at the end of the chapter, are effects that the Alternatives could have in relation to other past, current, and reasonably foreseeable future actions in and adjacent to the planning areas.

### **4.4 Incomplete or Unavailable Information**

Federal regulations (43 CFR 1502.22) mandate that agencies evaluating reasonably foreseeable significant adverse effects on the human environment, in an Environmental Impact Statement (EIS), must discuss incomplete or unavailable information if that information is essential to a reasoned choice among Alternatives. This EIS is based on the best available data for each resource.

### **4.5 Critical Elements that will not be Addressed**

There would be no known adverse impacts on certain critical elements of the human environment. These elements include prime or unique farmlands, floodplains, and hazardous or solid waste. This plan has not addressed these critical elements because they are not present in the planning areas or would not be affected by the management activities under the Alternatives. These critical elements would be considered, as suitable, in site-specific project design and implementation processes. Each of these excluded elements is discussed below.

**Prime and Unique Farmlands:** There are no prime or unique farmlands or farmlands of statewide or local importance on public lands in the planning areas. None of the actions in the Alternatives analyzed in detail would disturb farmlands. Therefore, impacts on prime and unique farmlands are not analyzed further.

**Floodplains:** Although floodplains exist in the planning areas, no projects or activities resulting in permanent fills or diversions in, or placement of permanent facilities, on floodplains of major rivers are projected to occur under any of the proposed Alternatives. Therefore, impacts on floodplains are not analyzed further.

**Hazardous and Solid Waste:** No hazardous, toxic, or unapproved solid waste sites are known to occur on public lands in the planning areas. None of the actions, activities, and uses projected to occur with implementing the plan Alternatives would require the handling, storage, or release of significant amounts of these wastes. Therefore, impacts on or from hazardous and solid wastes are not analyzed in detail.

**Indian Trust Assets:** Indian trust assets are lands, natural resources, money, or other tangible assets held by the Federal Government in trust or restricted against alienation for Indian tribes and individual Indians. BLM has determined that the actions described for this land use plan would not affect Indian trust assets.

## 4.6 Impacts on Special Designations

This analysis covers the suitable Wild and Scenic River (WSR) segments of the Agua Fria River in Agua Fria National Monument, five existing wilderness areas, the Harquahala Mountain Summit Road Back Country Byway, proposed back country byways, and existing and proposed Areas of Critical Environmental Concern (ACEC).

The five existing wilderness areas were studied and found to have sufficient values of naturalness, solitude, and primitive and unconfined recreation opportunities to be designated by Congress. The values are somewhat diminished at the edge of the areas because of complex boundaries where different land uses occasionally affect core wilderness values.

A 1996 Colorado study found that scenic byway designation led to an increase in traffic on eight of 21 new byways. This analysis assumes that proposed byways would increase traffic on the proposed routes because the routes accentuate cultural and scenic resources in the national monument and near the Wickenburg area.

### 4.6.1 From Special Designations

#### *Alternative A (No Action)*

*Alternative A* would create no new Special Designations. No impacts are expected to proposed suitable WSR segments, ACECs, the five wilderness areas, or the Harquahala Mountain Summit Road Back Country Byway. Perry Mesa and Larry Canyon ACECs in Agua Fria National Monument would be maintained. No impacts are expected because the ACEC resources of relevance and importance are protected by the Monument Proclamation (Appendix A).

#### *Alternative B*

Designating Bloody Basin Road as a back country byway could affect the segments of the Agua Fria River suitable for WSR designation by increasing traffic and visitor access near the river crossing. More traffic and visitor use could diminish the scenic and habitat values and alter the recreation experience in the corridor. Since the road would be maintained to BLM type three standard, which would require high-clearance vehicles to traverse it, the increase in visitation is expected to be small. Byway visitors would have their recreational experience enhanced by

interpretation of Agua Fria National Monument's resources along the route.

Intensified traffic and recreation could affect the residents of the Horseshoe Ranch because of increased visitation, trespass, dust, and road maintenance needs. In turn, more visitors and traffic could impede pronghorn movement and migration.

Establishing the Constellation Mine Road Back Country Byway would increase the number of visitors along the road as well as to Hassayampa River Canyon Wilderness. Vehicular traffic would intensify along the byway, adversely affecting residents and ranchers residing in the area. Increased traffic, dust, road maintenance needs, and visitor levels would be expected. The increase in visitors could degrade the Hassayampa River Canyon wilderness experience for some visitors by reducing solitude opportunities. Conversely, byway visitors would have their recreation experience enhanced by interpretative signs placed along the byway describing resource and cultural values, including the area's ranching and mining history.

No impacts to the Harquahala Mountain Summit Road Back Country Byway are expected.

#### ***Alternative C***

Impacts from designating back country byways would be similar to those described for *Alternative B*.

Finding tributary segments as eligible for designation as part of the Agua Fria WSR proposal would not affect the now protected and suitable WSR corridor in Agua Fria National Monument. Interim management protection prescriptions would be extended to other river tributary segments. This action would prevent impairment of any outstandingly remarkable values on another 6,600 acres of WSR corridor. The total area in existing and proposed corridors would be 13,100 acres or more than double the size of the existing proposed WSR corridor.

Designating four ACECs for protecting Gila chub habitat would not affect suitable or proposed WSR segments. Management actions proposed for the ACECs could be accomplished without affecting proposed WSR segments.

The Harquahala Mountain Outstanding Natural Area (ONA) ACEC maintains undeveloped lands, offers dispersed and resource-dependent recreational experiences, enhances natural quiet and dark sky conditions, and safeguards wildlife habitats and connectivity. Reduced dust from limited vehicle travel designations could maintain air quality, improving vistas from adjoining wildernesses and the Harquahala Mountain Summit Back Country Byway.

#### ***Alternative D***

Designating the Agua Fria Riparian Corridor ACEC would not affect segments of the Agua Fria River suitable for WSR status. Under current WSR interim management, vehicle routes and developments might be restricted to protect outstandingly remarkable values, including riparian habitat and wildlife. Acquiring land along Indian Creek and removing the Perry Mesa and Larry Canyon ACECs would not affect the proposed ACEC or the Purpose and Significance of Agua Fria National Monument. Managing areas for wilderness characteristics would add an additional layer of protection for the monument objects within the Agua Fria National Monument.

Impacts on designated wilderness from establishing Baldy Mountain ONA ACEC would be similar to those described for Harquahala Mountain ACEC in *Alternative C*.

#### ***Alternative E (Proposed Alternative)***

No impacts to the Harquahala Mountain Summit Road Back Country Byway are expected.

Acquiring land along Indian Creek and removing the Perry Mesa and Larry Canyon ACECs would have no resource impacts on

segments suitable for wild and scenic river status.

Impacts on designated wilderness from establishing the Harquahala Mountain ACEC would be similar to those described for *Alternative C*.

The determination that Agua Fria River tributaries are eligible for consideration as additions to the National Wild and Scenic Rivers System provides an additional impetus for protection of wildlife, cultural, and scenic values along these eight streams. The protection of outstandingly remarkable river values is consistent with protective management actions identified for the corresponding monument values, with the additional provision that the streams would be maintained in free-flowing condition without major impoundments or diversions of water.

## 4.6.2 From Lands and Realty Management

### *Alternatives A (No Action), B, C, D and E (Proposed Alternative)*

In Agua Fria National Monument disposing of land is not an option, and acquiring private lands (inholdings) would be consistent with management effectiveness and the national monument's Purpose and Significance. Disposal of lands would not affect any existing wilderness area, ACEC, or back country byway.

Acquiring lands within wilderness areas would benefit wilderness management by consolidating management of all lands within their boundaries. This outcome would prevent future development of non-Federal lands and retain wilderness values.

The Agua Fria WSR Corridor was found suitable for designation with the existing utility corridor and utilities in place. New utilities proposed for the corridor would be subject to approval for protecting the resources of the Agua Fria National Monument and the interim

management guidelines of the WSR corridor. Facilities approved for construction under these criteria would not affect the existing WSR corridor.

Acquiring lands in the suitable segments of the WSR corridor in the national monument could benefit the segments by potentially adding more lands to the interim nonimpairment status. Such acquisitions would prevent the following:

- development on private lands, such as resumed mining on the Richinbar site,
- building new structures and range improvements, and
- installing communication towers and technological supports.

Such activities could increase ground disturbance and noise and add new structures visible from the WSR corridor. These developments could also diminish scenic values, including night skies, and disturb riparian habitat and wildlife populations on public land.

Allowing continued development of small utility distribution systems could degrade existing wilderness if development was proposed for inholdings or on property near wilderness boundaries. Developments could affect wilderness character by adding noticeable human-made elements to the landscape. Increased presence of people and activity could lead to loss of solitude in some wilderness areas and lessen the recreation experience.

Retaining an existing multi-use utility corridor extending from Yarnell along the southwest portion of Hassayampa River Canyon Wilderness could degrade the wilderness. Projects added to the corridor could alter the natural and visual character of the area and diminish the wilderness experience for some visitors. Retaining other utility corridors should not affect other wilderness areas because the wilderness values were found to exist with the corridors in place and the potential for utility development was known.

### 4.6.3 From Management of Soil, Air, and Water Resources

#### *Alternatives A (No Action), B, C, D, and E (Proposed Alternative)*

Impacts to the WSR in Agua Fria National Monument should be prevented by (1) general guidance to maintain or improve resource conditions and (2) management to protect national monument resources. Obtaining legal entitlement of water resources could benefit the WSR segments of the Agua Fria River by securing water availability to maintain the remarkable values that led to designation. Some of these values are described in the national monument's purpose and significance statements.

Requirements to maintain compliance with local and regional dust standards could improve air quality in some ACECs and wilderness areas, and enhance vistas from wilderness and back country byways.

No impacts are expected from soil and air resource management as described for the Lower Gila North Management Framework Plan (MFP) (BLM 1983). However, ensuring the legal availability of water and maintaining adequate flows of springs in the Harquahala Mountains would protect the wilderness area by protecting special spring and riparian features, sustaining diverse wildlife habitat, and maintaining habitat quality near springs.

Inventorying and filing for water rights in the Harquahala Mountains, Big Horn Mountains, Hummingbird Springs, Hassayampa River Canyon, and Hells Canyon Wilderness Areas would protect the areas by preserving the wilderness values of water sources.

### 4.6.4 From Biological Resource Management

#### *Alternative A (No Action)*

Managing existing biological resources could affect the Agua Fria WSR Corridor. Opportunities to enhance wildlife habitat, species diversity, and riparian health exist in the national monument. Prescribed burning, tree planting along the river and its tributaries, and other actions to restore natural ecological conditions would enhance the values that make the river segments eligible for Wild or Scenic designation.

Transplanting populations of Gila chub would benefit the Larry Canyon and Perry Mesa ACECs by ensuring persistence of the species.

#### *Alternative B*

Impacts under *Alternative B* would be the same as described for *Alternative A* for Agua Fria National Monument except that Larry Canyon ACEC would be eliminated.

The Harquahala Mountains Wildlife Habitat Area (WHA) could affect Harquahala Mountains Wilderness by strengthening wildlife populations and maintaining more natural conditions next to the wilderness. New wildlife waters installed in wilderness areas could decrease naturalness by introducing more human developments in the wilderness. The wildlife waters would not be noticeable because they would be installed for consistency with Visual Resource Management (VRM) Class I objectives.

#### *Alternative C*

Impacts under *Alternative C* would be the same as described for *Alternative B* for Agua Fria National Monument. Managing pronghorn movement corridors could enhance the proposed suitable segments of the WSR in the Agua Fria River. Other controls on vehicle routes and recreation site development where wildlife

corridors cross the river would help retain the outstandingly remarkable values that led to the areas' suitability.

The Harquahala/Belmont/Big Horn wildlife corridor and the Belmont/Big Horn WHA would benefit Hummingbird Springs, Big Horn Mountains, and Harquahala Mountains Wilderness Areas by retaining natural open space and wildlife populations next to the wilderness and allowing wildlife movement between the wilderness areas. Protected wildlife movement areas would help sustain natural populations in the wilderness areas by providing extended habitat and maintaining the genetic diversity to assure long-term viability as individual animals move from one area to another. Healthy wildlife populations in and around the wilderness areas would increase opportunities for wildlife viewing and hunting and retain the natural character of open space. The impact of new wildlife waters installed in wilderness would be the same as for *Alternative B*.

#### ***Alternative D***

Impacts from wildlife management in Agua Fria National Monument would be similar to those described for *Alternative C*.

In the Bradshaw-Harquahala Planning Area biological resources are mainly managed through ACEC designations in locations that could affect wilderness areas. These impacts are discussed in Section 4.6.1.

#### ***Alternative E (Proposed Alternative)***

The Harquahala Mountains ACEC and the movement corridors would protect wildlife habitat and help maintain natural conditions, open space, and wildlife habitat/populations on public lands. Protecting and enhancing wildlife populations contributes to the naturalness of the area and to supplemental values that enhance visitor experiences, such as increased opportunities for wildlife viewing or hunting.

Impacts of new wildlife waters installed in wilderness would be the same as for *Alternative B*.

### **4.6.5 From Cultural Resource Management**

#### ***Alternative A (No Action)***

There are no impacts expected.

#### ***Alternative B***

Under *Alternative B* the historic Teskey homestead near the Agua Fria River would be allocated to public use and developed for public education and visitation. Visitors might disturb wildlife or leave trash in the area. Conversely, the presence of site visitors could help to deter illegal trash dumping. Developing an interpretive site is consistent with the recommended scenic status of this river segment since the Teskey site is not visible from the river. According to BLM's Manual 8351, recreational facilities are compatible with areas that are suitable for WSR status if such facilities are unobtrusive and do not adversely affect the natural character of a WSR area.

The Badger Springs petroglyph site, next to the proposed wild segment of the Agua Fria River, would also be interpreted for public visitation. The high level of visitation in this area would enhance the effectiveness of educational exhibits. Increased awareness of the site could make it more vulnerable to vandalism, which is why BLM has completed a detailed documentation of the site. On-site facilities would be limited to a small number of unobtrusive interpretive signs. More substantial recreational facilities would be located away from the river. The increase in visitors to the site and impacts are expected to be insignificant because Badger Springs Wash is already a popular area that serves as the most accessible and easy route for hiking in the river canyon.

Conducting Class III surveys along 12 miles of the Agua Fria River would provide useful

information necessary to identify and protect cultural resources that comprise one of the outstanding values of WSR suitability.

In conducting surveys and scientific research in cultural priority areas in the Harquahala Mountains and Hassayampa River Canyon Wilderness Areas, these crews could temporarily diminish wilderness values, such as solitude. Most of these activities are expected to take place outside of wilderness areas to assess zones where cultural resources are more accessible and at greater risk of damage.

Sites developed for public use could affect the Harquahala Mountains and Hassayampa River Canyon Wilderness Areas through increased visitation and activity, leading to a diminished sense of solitude for some visitors.

#### ***Alternative C***

Impacts would be similar to those described for *Alternative B*; except that the area surrounding the Badger Springs petroglyph site would be developed with fewer facilities, in accordance with the moderate public use level.

#### ***Alternative D***

Potential impacts would be limited to Harquahala Mountains Wilderness and would be the same as described for *Alternative B*. The Wickenburg/Vulture Special Cultural Resource Management Area (SCRMA) would not be developed for public use under *Alternative D*.

#### ***Alternative E (Proposed Alternative)***

Potential impacts would be limited to Harquahala Mountains Wilderness Area and would be the same as described for *Alternative B*.

### **4.6.6 From Paleontological Resource Management**

#### ***Alternatives A (No Action), B, C, D, and E (Proposed Alternative)***

There are no impacts expected.

### **4.6.7 From Recreation Management**

#### ***Alternative A (No Action)***

Current recreation uses would continue. Greater levels of visitation and motorized recreation use could lessen the values of suitable WSR segments of the Agua Fria River through increased noise, litter, and vehicular travel at several crossings. Existing vehicle routes in the national monument would remain open except for those in the WSR corridor. Increasing levels of recreation use and motorized activity on the boundaries of the five designated wilderness areas could lessen, to varying degrees, the quality of wilderness-based recreation and solitude opportunities in the interior and along wilderness boundaries. Existing ACECs would be maintained, and no impacts from recreation activities are expected.

#### ***Alternative B***

The Back Country RMZ in Agua Fria National Monument would help preserve the values of the wild segment and the southern scenic segment of the Agua Fria River. A recreation setting of mainly semi-primitive non-motorized, in conjunction with VRM Class II objectives, would maintain the natural character and visual quality making the areas eligible for designation. Only dispersed camping is permitted in the Back Country RMZ, and this activity would not degrade the WSR segments.

The Front Country RMZ in the monument could affect the northern scenic segment of the Agua Fria River. Roaded natural and semi-primitive motorized recreation settings could lead to more

vehicular travel in areas near the scenic corridor and diminish the recreation experience for some users in the corridor. Developing campgrounds would lead to concentrations of visitors. If the river is easily accessible from the sites, the increase in recreation use could change the character of the corridor in certain areas by adding to noise levels and litter. Dispersed camping would continue but is not expected to significantly affect the area. Restricting target shooting near high-use areas would affect the WSR segments by enhancing the recreation experience for other users. Visitors could still target shoot in the remaining areas within the corridor, which might degrade WSR values by damaging cultural resources such as petroglyphs.

Hieroglyphic Mountains Special Recreation Management Area (SRMA) could concentrate off-highway vehicle (OHV) use, increase traffic, and increase noise at the southwest edge of the wilderness. This would diminish the sense of solitude and natural quiet for visitors in the wilderness. Greater fugitive dust could potentially enter Hells Canyon Wilderness, obscuring vistas.

No Special Recreation Permit (SRP)-related impacts are expected on wilderness areas, ACECs, or back country byways.

#### ***Alternative C***

Impacts to Agua Fria National Monument would be similar to those described for *Alternative B*.

Impacts on Hells Canyon Wilderness from the Hieroglyphic Mountains SRMA would be similar to those described for *Alternative B*.

No SRP-related impacts to wilderness areas, ACECs, or back country byways are expected.

#### ***Alternative D***

Impacts to Agua Fria National Monument would be similar to those described for *Alternative B*.

Managing the Hieroglyphic Mountains SRMA to phase out motorized use over a 10 to 20 year period could enhance management within the Hells Canyon wilderness. Removing the sights and sounds of OHV activities over time could reduce the degradation of wilderness values of solitude and naturalness and improve the primitive recreation experiences of visitors to wilderness users. Impacts to the Hells Canyon wilderness from motorized activities would be similar to those described under *Alternative B* until motorized use is phased out.

Managing the allocation to maintain wilderness characteristics would be compatible with managing the proposed Belmont-Big Horn Mountain ACEC. Maintaining natural conditions and providing opportunities for primitive recreation would not influence the resources within the proposed ACEC. The ACEC would contain 25,760 acres of the allocation to maintain wilderness characteristics.

No SRP-related impacts to wilderness areas, ACECs, or back country byways are expected.

#### ***Alternative E (Proposed Alternative)***

Impacts to Agua Fria National Monument would be similar to those described for *Alternative B*, except the setting would be quieter, many visitors would feel safer, and visual quality would be improved through the reduction of items used as targets and spent shells.

The Hieroglyphic Mountains SRMA would also be similar to *Alternative B*.

No SRP-related impacts on wilderness areas, ACECs, or back country byways are expected.

### **4.6.8 From Visual Resource Management**

#### ***Alternative A (No Action)***

In Agua Fria National Monument, no impacts are expected to WSR suitable segments.

Within the Bradshaw-Harquahala Planning Area, proposed projects near wilderness areas could lessen the quality of the recreation setting and viewshed by allowing human intrusions into visual landscapes. Wilderness would remain VRM Class I areas and experience no visual change in their boundaries.

### ***Alternative B***

In the monument, managing the Front Country RMZ to VRM Class III objectives could degrade the WSR segments by allowing projects to more visually intrude into the landscape next to the river segments and by diminishing the scenic values that led to the determination of eligibility.

*Alternative B* is not expected to affect the visual resources of wilderness areas, existing or proposed back country byways, or the Tule Creek ACEC.

### ***Alternative C***

Impacts in Agua Fria National Monument would be similar to those under *Alternative B* except that they would mainly be limited to the northern WSR segment because the Back Country RMZ would be expanded and managed to VRM Class II objectives. Managing the back country byway to VRM Class II would prevent substantial visual intrusions in the byway's viewshed.

### ***Alternative D***

Impacts in Agua Fria National Monument would be similar to those under *Alternative C*.

Managing Harquahala Mountain ONA ACEC to VRM Class I objectives would benefit Harquahala Mountains Wilderness by raising the VRM class of 298,310 acres surrounding the area to the same class as the wilderness area, thus maintaining a large natural appearing landscape from within the wilderness area. Managing the ACECs to Class I objectives would benefit the Sheep Mountain Research Natural Area (RNA) and Black Butte ONA by

minimizing visual intrusions into the natural setting of both areas. No future change or impairment to the viewshed in these areas would be expected.

### ***Alternative E (Proposed Alternative)***

Impacts to Agua Fria National Monument would be similar to those under *Alternative C* on the proposed WSR segments.

Impacts to wilderness areas, which would remain VRM Class I in the Bradshaw-Harquahala Planning Area, would be the same as for *Alternative A*. No visual impacts to wilderness areas, existing back country byway, or to Tule Creek ACEC are expected.

Managing Harquahala Mountain and Black Butte ACECs to VRM Class II objectives would benefit the adjacent Harquahala Mountains, Big Horn Mountains, and Hummingbird Springs Wilderness Areas by reducing the possibility of visual intrusions into the landscape.

## **4.6.9 From Rangeland Management**

### ***Alternative A (No Action)***

Applying the *Arizona Standards for Rangeland Health* (see Section 2.7.1.1) and *Guidelines for Grazing Administration* (see Section 2.7.1.9) would reduce impacts and improve characteristics for which Special Designations, like wilderness, were designated. Land health standards would improve upland soils and vegetation to minimize erosion and other ground disturbance produced by inadequate vegetation cover. Additionally, the standards would improve riparian areas and stream functions, which would enhance the habitat and help sustain the landscape's natural character.

Reaches of the Agua Fria River were determined to have WSR values despite grazing in the corridor. Continued grazing should not degrade values, and applying Land Health

Standards should maintain or improve habitat characteristics.

This Alternative is not expected to affect wilderness areas, ACECs, or back country byways.

### ***Alternative B***

Impacts of applying the Land Health Standards and Rangeland Management guidelines would be the same as for *Alternative A*.

In the uplands of Special Area Designations, *Alternative B* would have impacts as described in the impacts of applying Land Health Standards above. Restricting grazing of riparian areas to winter would have impacts on the Agua Fria River WSR corridor and the riparian corridor in the Hassayampa River Canyon Wilderness. Wildlife habitat would likely be improved, and wildlife and livestock would compete less for resources during the winter. Improving vegetation and forage conditions would also benefit wilderness areas by improving natural and natural-appearing ecological conditions, enhancing wilderness values and improving visitor's experience.

### ***Alternative C***

Impacts of applying the Land Health Standards and Rangeland Management guidelines would be the same as for *Alternative A*.

Impacts to the riparian corridors would be similar to those described for *Alternative B*, except that the year-round restriction of grazing should eliminate all competition between wildlife and livestock for resources in the WSR and riparian corridors. Habitat should be further improved, enhancing the wildlife and scenic values of the suitable WSR segments of the Agua Fria River and in Hassayampa River Canyon Wilderness.

### ***Alternative D***

Because *Alternative D* would eliminate grazing, impacts would be similar to those described for *Alternative C*.

### ***Alternative E (Proposed Alternative)***

Impacts would be the same as described for *Alternative B*.

## **4.6.10 From Minerals Management**

### ***Alternative A (No Action)***

Minerals management under *Alternative A* is not expected to affect Agua Fria National Monument as the monument is closed to all forms of mineral entry, leasing, and sales except for casual use and valid existing rights on existing claims.

Mining near wilderness areas, in ACECs, and along the back country byway could reduce solitude in some areas; increase noise, dust, and traffic; and detract from the visual setting. The potential for leasable and locatable minerals is very low, and areas with locatable potential are not near wilderness areas. Areas of potential saleable minerals (e.g. sand and gravel) are near rivers and washes and are not near wilderness areas. Decorative rock and other saleable mineral operations exist in the Bradshaw-Harquahala Planning Area; however, did not affect the findings of wilderness values. Future requests for similar development near wilderness areas could have impacts as described, but potential areas for such operations are unknown.

### ***Alternative B***

As in *Alternative A*, no impacts are expected on Agua Fria National Monument.

Closing Tule Creek ACEC to all mineral development would benefit the biological and cultural resources that are relevant and important to ACEC designation by eliminating the

potential for disturbing and damaging these resources.

Impacts of mineral development on wilderness areas, back country byways, and ACECs would be the same as described for *Alternative A*.

### ***Alternative C***

No impacts are expected on Agua Fria National Monument.

Closing Tule Creek ACEC and Sheep Mountain RNA to all mineral development would have impacts similar to those described for *Alternative B*.

### ***Alternative D***

No impacts are expected on Agua Fria National Monument.

Impacts from managing Tule Creek ACEC would be similar to those described for *Alternative B*.

Closing Baldy Mountain ONA ACEC to all forms of mineral entry would benefit Hells Canyon Wilderness by reducing the potential area susceptible to ground disturbance and maintaining primitive open space. The potential for disturbance from leasable and locatable mineral development would be eliminated and the natural open space and resources of the ONA ACEC would be maintained.

### ***Alternative E (Proposed Alternative)***

Impacts would be the similar to those under *Alternative B*.

## **4.6.11 From Fire Management**

### ***Alternative A (No Action)***

Under the No-Action Alternative, fire would be managed throughout the planning area according

to the *Arizona Statewide Land Use Plan Amendment for Fire, Fuels and Air Quality Management, September 2003*.

Agua Fria National Monument grasslands are a fire-adapted ecosystem with a 0–35-year fire return frequency. As fire continues to be used as a natural process to restore ecosystem health, the national monument's grasslands would continue to be subject to prescribed burning. The burning would affect the WSR corridor through vegetation mortality and blackening of the landscape in grasslands that extend into the corridor. Prescribed burning would reduce the visual values in the corridor over the short term, until vegetation regenerates. Air quality and visibility would also decline during the burn period, and the decline could temporarily diminish the visual setting and character of the corridor.

As stated in the Statewide LUP Amendment for Fire, Fuels and Air Quality Management, fire management would try to avoid altering the natural character of Special Area Designations. Should a prescribed fire escape containment, however, more damage to riparian vegetation could occur in the WSR corridor. The damage could further degrade the visual character and habitat in the corridor and diminish the remarkable values that led to WSR eligibility.

Use of prescribed fire could affect the WSR corridor by initially increasing runoff and erosion along the Agua Fria River in the national monument. This outcome could temporarily decrease water clarity, increase sedimentation, and diminish the corridor's visual character.

Over the long term, use of fire as a natural process in the national monument should lead to increased ecosystem health and enhanced habitat that would maintain the remarkable visual and habitat values of the corridor that led to WSR eligibility.

Fire suppression could degrade wilderness areas by using mechanized equipment and aircraft. Impacts would include the temporary increase in noise that would diminish opportunities for

solitude in other areas of the affected wilderness area. Use of mechanized equipment would leave visible ground disturbance that could remain for long periods. Retardant use could leave visible residue on the landscape for several years. The same impacts could alter the setting and character of the landscape near the Harquahala Mountain Summit Road Scenic Byway and temporarily diminish the scenic quality of the byway travel experience.

#### ***Alternatives B, C, D, and E (Proposed Alternative)***

Impacts from fire management would be similar to *Alternative A*, including temporary impacts at the northwest and eastern end of Hassayampa River Canyon Wilderness. Visitors would be restricted from parts of the wilderness during prescribed burns. The fire damage would detract from the visual setting for users until the vegetation recovers.

### **4.6.12 From Wild Horse and Burro Management**

#### ***Alternative A (No Action)***

Current conditions would be maintained. Sufficient wilderness values were found to designate the Hummingbird Springs, Harquahala Mountains, Big Horn Mountains, and Hells Canyon Wilderness Areas, with burros present in the existing Herd Areas (HAs) that encompass parts of these areas. While management in the *Lower Gila North Management Framework Plan* (BLM 1983) called for the herd level in the Harquahala HA to be zero, the action was not completed. The current impacts of vegetation damage, soil and vegetation trampling in gathering areas, and trailing (or creating multiple new paths across the landscape) would continue to diminish the natural setting in localized parts of the wilderness areas, especially near water sources and in canyons. Natural landscape settings would continue to exist in most portions of the wilderness areas.

#### ***Alternative B***

The impacts of retaining the current burro herd level would be the same as under *Alternative A* for all wilderness areas.

#### ***Alternatives C, D, and E (Proposed Alternative)***

Removing burros from the Harquahala HA would eliminate impacts to the Harquahala Mountains, Hummingbird Springs, and Big Horn Mountains Wilderness Areas. Trailing and vegetation impacts now occurring in Hells Canyon Wilderness would continue.

### **4.6.13 From Management of Travel Management**

#### ***Alternative A (No Action)***

No impacts are expected from current management of travel management on existing ACECs, the five wilderness areas, or the Harquahala Mountain Summit Road Back Country Byway.

Under current WSR interim management, vehicle routes and developments are currently restricted to protect outstandingly remarkable values, including riparian habitat and wildlife. Therefore, no impacts are anticipated on the proposed suitable WSR segments within the Agua Fria National Monument

#### ***Alternatives B and C***

The effects from travel management route designations associated with establishing the Hieroglyphic Mountains Special Recreation Management Area (SRMA) could concentrate off-highway vehicle (OHV) use, increase traffic, and increase noise at the southwest edge of the Hells Canyon wilderness. These effects could diminish the sense of solitude and natural quiet for wilderness visitors. Greater levels of fugitive dust could potentially enter Hells Canyon Wilderness, obscuring vistas.

Impacts on suitable WSR segments would be the same as for *Alternative A*.

#### ***Alternative D***

Managing the Hieroglyphic Mountains SRMA to facilitate phasing out and restricting motorized recreation and motorized trails over a 10 to 20 year period could enhance the non-motorized recreation settings and opportunities within the Hells Canyon wilderness. The sights and sounds of motorized activities and fugitive dust entering the wilderness from vehicle travel would be lessened or eliminated when SRMA motorized routes are closed or use is restricted. In the interim time period (less than 20 years), impacts to the Hells Canyon wilderness from motorized activities would be similar to those described under *Alternative B*.

Impacts on suitable WSR segments would be the same as for *Alternative A*.

#### ***Alternative E (Proposed Alternative)***

Impacts on Special Designations from management of travel management would be similar to those described for *Alternatives B* and *C*.

### **4.6.14 From Management of Wilderness Characteristics**

#### ***Alternatives B, C, D, and E (Proposed Alternative)***

The management of certain lands to maintain wilderness characteristics would have no direct effects on existing Special Area Designations. The social, physical, and managerial conditions and settings desired on lands managed for wilderness characteristics are compatible with public lands currently managed as the Agua Fria National Monument, Areas of Critical Environmental Concern, Back Country Byways, and Wilderness Areas. Indirect benefits from management of wilderness characteristics could indirectly influence lands with Special Area Designations

as the allocation maintains undeveloped settings, offers dispersed non-motorized recreation experiences, enhances natural quiet and dark sky conditions, potentially reduces fugitive dust emissions, safeguards intact scenery and landscape vistas, and secures more intact wildlife habitats.

## **4.7 Impacts on Lands and Realty Management**

This analysis addresses both the entire current inventory of BLM's surface lands in the planning areas and lands in the planning areas considered for acquisition because of their resources. These lands include 967,000 surface acres, with 896,100 acres of BLM-managed land in the Bradshaw-Harquahala Planning Area and 70,900 acres of BLM's land in Agua Fria National Monument. Interspersed in the Federal lands are parcels that might be available for acquisition from a willing seller. For the Bradshaw-Harquahala area, demands on Federal land management in and around the Phoenix metropolitan area resulting from rapid urbanization would be fulfilled by the following:

- land tenure management prescriptions, (including disposal and acquisition),
- Recreation and Public Purposes (R&PP) leases or patents,
- right-of-way authorizations, and
- land use permit management prescriptions.

Each of the large tracts of BLM-managed land is next to large tracts of State land. Because the future legislative framework governing State land transactions is uncertain (including the potential for the exchange of land between the Arizona State Land Department (ASLD) and the Federal Government, State land is assumed for this analysis to be ineligible for development.

The impact analysis employed land use modeling completed for BLM for the planning

area to show the distribution of residential growth between the years 2000 and 2025 (Appendix M). The land use model is consistent with the undeveloped land base shown in the general and comprehensive plans of each city or town and both counties.

The model was run four times, once each for the four Alternatives for BLM-managed land available for disposal. The model assumes that all BLM's land eligible for disposal would change from Federal to private ownership during the planning period 2005 to 2025, and then would undergo residential development. Other than BLM-managed land, the model assumes that the amount of suitable vacant land available for residential growth for Maricopa and Yavapai Counties would be the same under all of the Alternatives.

The model uses one set of assumptions about such factors as follows:

- persons per household,
- lot sizes, and
- the tendency for new housing to be attracted to areas next to areas that already have housing.

The model assumes that the availability of BLM-managed land for development would not induce growth countywide or increase the total population projected for the two counties in 2025. Both counties are already undergoing rapid growth, yet both counties already have a vacant residential land capacity that would meet the need for growth beyond 2025. Therefore, the availability of BLM-managed land for development would affect the phasing of land development on the vacant residential land, rather than the development projected for 2025.

For Agua Fria National Monument the land tenure management prescriptions, (acquisition only) right-of-way authorizations, and land use permit management prescriptions would fulfill the protective purposes of the national monument.

The broad categories of land uses requiring right-of-way grants are the following:

- electrical generation,
- transmission, and distribution systems,
- oil and gas related systems,
- telecommunication transmission and reception systems,
- transportation systems, and
- water-related systems.

The common land uses requiring permits are commercial photography, apiaries, geological and hydrological testing, and some military activities. The recipients of R&PP leases or patents are State and local governments and qualified non-profit organizations.

This analysis also addresses the impacts on designated right-of-way corridors on BLM-managed land in the planning areas.

The resolution of mining claims has a bearing on the sequence of land disposal. When someone expresses an interest in acquiring land that BLM has proposed for disposal, under the Federal Land Transaction Facilitation Act (FLTFA) the land is temporarily closed to the filing of mining claims. Typically, the prospective new owner purchases any claims and relinquishes them to BLM, at which point the mining claim is resolved. Generally, BLM prefers to dispose of the surface and subsurface mineral rights to the same new owner, and the above-described relinquishing of mining claims typically results in such disposal of surface and subsurface.

Occasionally, BLM keeps the subsurface in Federal ownership when it is deemed to be in the public interest for BLM to continue to control the potential for future mining.

Issuing rights-of-way where there are active mining claims is routine and covered by legislation and regulation. The right-of-way purchaser or permittee is informed of the rights of the mining claimant. Mining might intermittently or temporarily obstruct the right-of-way.

## 4.7.1 From Special Designations

### *Alternative A (No Action)*

Wilderness areas would remain closed to rights-of-way and land use authorizations. BLM would try to acquire non-Federal wilderness in-holdings when there are willing sellers or the potential for a land exchange. Acquiring in-holdings would block up Federal ownership in sensitive resource areas.

### *Alternative B*

Special Designations generally constrain lands and realty activities in the following ways:

- limiting the lands open to exchange or disposal in any zone,
- reducing the demand for the number and type of realty use authorizations,
- restricting the ability to build or relocate roads for legal access, and
- eliminating options of authorization or conveyance of land to resolve a trespass.

Special Designations might require mitigating or relocating an activity. For example, mitigation for conflicts is permissible to achieve no net loss in amount or quality of desert tortoise habitat while accommodating requests for rights-of-way, easements, withdrawals, or other land tenure actions. At the most, the activity might be prohibited altogether.

None of the proposed Special Designations are located in areas slated for development between 2005 and 2025 in Maricopa, Yavapai, or La Paz Counties. None of the Special Designations are in a location that would otherwise be a part of the most direct route for workers to commute to work. In addition, the Special Designations are generally a part of the open space designated in the general plans of the counties and municipalities. Therefore, the Special Designations would not preclude developing a typical urban transportation network in the planning area.

Tule Creek ACEC (640 acres) is proposed for designation in the Bradshaw-Harquahala Planning Area, and stipulations consistent with its protection would be written into any future land use authorizations in the ACEC. The locations could be affected, or the terms of use of access easements and rights-of-way could be restricted to protect Tule Creek.

The effects of wilderness areas would be the same as in *Alternative A*.

### *Alternative C*

Lands adjoining Harquahala Mountains ACEC would be of higher priority for acquisition than other lands because of their biological and cultural values. Therefore, these lands might be acquired instead of other lands.

Black Mesa ACEC would be established to protect significant cultural resources. To the west of Interstate 17, the utility corridor width of two miles would allow for flexibility in planning and designing transmission facilities to avoid impacts to archaeological sites. The presence of the interstate highway provides some protection by limiting public access to these sites. In coordination with the Arizona Department of Transportation (ADOT), BLM would implement measures to mitigate the effects to archaeological sites of widening and maintaining the highway.

The effects of wilderness areas would be the same as *Alternative A*.

The impacts from Tule Creek on lands actions would be the same as those under *Alternative B*.

### *Alternative D*

Designating the Agua Fria Riparian Corridor ACEC in Agua Fria National Monument would constrain the location of rights-of-way in the Black Canyon corridor. In the Bradshaw-Harquahala Planning Area acquiring private and State in-holdings and adjacent lands (provided the seller is willing) to protect biological resources in the Belmont-Big Horn Mountains

would give these lands a higher priority area for acquisition than in-holdings without similarly high biological values. As such, BLM might acquire these lands instead of the other lands.

As in *Alternative B*, lands adjoining Harquahala Mountains ONA would also be of higher priority for acquisition than other lands because of biological and cultural values.

The impacts on lands and realty management of designating Tule Creek ACEC would also be the same as under *Alternative B*.

The effects of wilderness areas would be the same as in *Alternative A*.

No new rights-of-way would be permitted in the Baldy Mountain ONA, so private interests needing vehicular or utility access to private lands could have to use a more circuitous and potentially more expensive route.

#### ***Alternative E (Proposed Alternative)***

Impacts are similar to those described under *Alternative B*.

## **4.7.2 From Lands and Realty Management**

### ***Alternative A (No Action)***

In Agua Fria National Monument public land ownership would not change. These retained lands would be managed according to the guidelines set forth in the proclamation designating the monument (Appendix A).

BLM could issue no leases or patents in the monument to local governments or non-profit organizations under the R&PP Act.

Since no communication sites would be designated within the monument, industry would rely on existing sites, which might not meet suitable industry needs. Industry would also rely on current transportation corridors,

which might not be adequate to meet future demand needs.

Land ownership in the Bradshaw-Harquahala Planning Area would remain unchanged from existing management practices.

Lands suitable for R&PP use would be issued on a case-by-case basis to local governments and non-profit organizations under the R&PP Act.

*Alternative A* would continue Lands and Realty management as it is now occurring. As a result, no impacts would be expected.

### ***Alternative B***

Impacts in Agua Fria National Monument would be similar to *Alternative A*, except that the existing corridor would be narrowed so that the eastern boundary of the utility corridor would follow the easternmost boundaries of any existing rights-of-way in the corridor. The corridor boundary in the Bradshaw-Harquahala Planning Area would compensate for the monument boundary narrowing by widening the corridor 1 mile to the west of Interstate 17. Future utility uses would then be forced to locate in undisturbed areas, resulting in possible increased costs for industry.

The total acreage of public land ownership in the Bradshaw-Harquahala Planning Area would depend on whether all lands recommended for acquisition are acquired. The lands consolidated in the five Management Units (MUs) would improve management efficiency and would likely reduce management costs.

Impacts of land leases and patents for R&PP would be the same as *Alternative A*.

Impacts of major rights-of-way and communication sites would be similar to *Alternative A*, except no new communication sites could be designated, and these facilities could not proliferate. This situation would allow for the orderly development of these facilities in designated sites, eliminating user conflicts. As technology continues to advance, BLM might

have to review its decisions to determine if its plan is meeting industry needs. Multiple new utility corridors, including all State route highway systems (including the proposed Wickenburg Bypass), would be designated as corridors across public lands. Designating corridors would prevent the proliferation of major utility systems across public lands.

Land use authorizations would be precluded or restricted on lands in the MUs, decreasing the location flexibility for rights-of-way and increasing construction costs for utility rights-of-way.

### ***Alternative C***

The impacts of public land ownership and R&PPs in the national monument would be the same as *Alternative A*.

BLM would issue no leases or patents for land within the monument to local governments or non-profit organizations under the R&PP Act.

Rights-of-way and communication sites in the monument would be similar to *Alternative B*, except that the existing corridor would be eliminated from the monument. The corridor boundary in the Bradshaw-Harquahala Planning Area would be adjusted to make up for the loss of the corridor in the monument boundary by being widened 2 miles to the west of Interstate 17. Future utility uses would then be forced to locate in undisturbed areas, possibly increasing costs for industry.

Public land ownership in the Bradshaw-Harquahala Planning Area would be similar to *Alternative B*, except that the lands would be consolidated into six MUs

Impacts of land leases and patents for R&PP use would be the same as *Alternative A*.

Land use authorizations (including rights-of-way, communication site leases, and utility corridors) would be the same as *Alternative B*.

### ***Alternative D***

The impacts of public land ownership and R&PPs in the national monument would be the same as *Alternative A*.

Impacts of new rights-of-way within the monument would be similar to *Alternative B*, except that the corridor in the Bradshaw-Harquahala Planning Area would be extended, not widened so that it would be continuous north and south on BLM's lands. Any future need to locate utilities in the corridor would not be met, creating a need to locate elsewhere and increasing industry costs. This limitation could also restrict any future attempts to widen Interstate 17 as potential growth warrants.

Public land ownership in the Bradshaw-Harquahala Planning Area would be similar to *Alternative B*, except that the lands would be consolidated into seven MUs.

Impacts of land leases and patents for R&PP use would be the same as *Alternative A*.

Land use authorizations (including rights-of-way, communication site leases, and utility corridors) would be similar to *Alternative B*, except that no new electric or gas corridors would be designated. As the potential demand for electricity and gas increases, the supply would not be sufficient. Costs might increase because of a lack of resources.

### ***Alternative E (Proposed Alternative)***

The impacts of public land ownership and R&PPs in the national monument would be the same as *Alternative A*.

Impacts of new rights-of-way within the monument would be the same as *Alternative B*.

Public land ownership in the Bradshaw-Harquahala Planning Area would be the same as *Alternative C*.

Impacts of land leases and patents for R&PP use would be the same as *Alternative A*.

Land use authorizations (including rights-of-way, communication site leases, and utility corridors) would be similar to that described for *Alternative B*; however, the Black Canyon MU corridor represents an improved location to long term management of major rights-of-way. The corridor allows for further development of utility projects to meet the demand of the large and rapidly growing Phoenix Greater Metropolitan Area, while confining those utility projects to an area where environmental impacts can be minimized.

### **4.7.3 From Management of Soil, Air, and Water Resources**

#### *Alternatives A (No Action), B, C, D, and E (Proposed Alternative)*

In all Alternatives, efforts to minimize impacts to soils, water, and air would result in increased project costs and may result in project redesign or a shifted location. All permitted activities within air quality nonattainment areas would be required to meet county standards and incorporate county stipulations into their project proposal. For qualifying projects, meeting air quality standards may increase project costs.

### **4.7.4 From Biological Resource Management**

#### *Alternatives A (No Action), B, C, D and E (Proposed Alternative)*

Acquisition of lands to enhance BLM's management of habitat critical to threatened or endangered species as well as habitat for other sensitive species is given a high priority and would result in acquisition of those areas in preference to other areas. Biological resource management would otherwise not affect lands and realty management in either planning area.

### **4.7.5 From Cultural Resource Management**

#### *Alternatives A (No Action), B, C, D, and E (Proposed Alternative)*

The potential discovery of cultural and historical sites across public lands could cause BLM to restrict land use authorizations. Land use authorizations might have to be relocated/rerouted, or a treatment plan might have to be developed to include mitigation measures, such as scientific data recovery. Such measures could prove to be expensive, resulting in projects that are uneconomical to complete.

### **4.7.6 From Paleontological Resource Management**

#### *Alternatives A (No Action), B, C, D, and E (Proposed Alternative)*

Since no known areas with paleontological resources occur within the planning areas, no impact is expected.

Should paleontological resources be discovered, BLM could restrict land use authorizations. Land use authorizations might have to be relocated/rerouted, or a treatment plan might have to be developed to include mitigation measures, such as scientific data recovery. Such measures could prove to be expensive, resulting in projects that are uneconomical to complete.

### **4.7.7 From Recreation Management**

#### *Alternatives A (No Action), B, C, D, and E (Proposed Alternative)*

Recreation management would not affect lands and realty management under any of the Alternatives.

### **4.7.8 From Visual Resource Management**

*Alternatives A (No Action), B, C, D, and E (Proposed Alternative)*

VRM would only slightly affect lands and realty management under any of the Alternatives. In VRM Class I and II areas, rights-of-way would be buried, relocated as needed, or otherwise designated to be compatible with their surroundings to ensure scenic integrity. BLM would not approve land use authorizations that are inconsistent with VRM Class I and Class II, thus creating the need to select a more suitable location. Such a situation could prove to be costly to certain project proposals.

### **4.7.9 From Rangeland Management**

*Alternatives A (No Action), B, C, D, and E (Proposed Alternative)*

Rangeland management would not have any expected impacts on lands and realty management under any of the Alternatives

### **4.7.10 From Minerals Management**

*Alternatives A (No Action), B, C, D, and E (Proposed Alternative)*

Minerals management would not have any expected impacts on lands and realty management under any of the Alternatives.

### **4.7.11 From Fire Management**

*Alternatives A (No Action), B, C, D, and E (Proposed Alternative)*

Fire management would not have any expected impacts on lands and realty management under any of the Alternatives.

### **4.7.12 From Wild Horse and Burro Management**

*Alternatives A (No Action), B, C, D, and E (Proposed Alternative)*

Wild horse and burro management would not have any expected impacts on lands and realty management under any of the Alternatives.

### **4.7.13 From Management of Travel Management**

*Alternative A (No Action), B, C, D and E (Proposed Alternative)*

There are no impacts expected in this area.

### **4.7.14 From Management of Wilderness Characteristics**

*Alternative A (No Action)*

Currently, there are no areas specifically managed for wilderness characteristics; therefore, there are no expected impacts.

*Alternatives B, C, D and E (Proposed Alternative)*

In any proposed Alternative, the allocations to maintain wilderness characteristics would be closed to rights-of-way and inconsistent land use authorizations. Future utilities and private requestors for access would be required to find other alternative routes through these areas. Land use authorizations in these areas would only be slightly affected.

## 4.8 Impacts on Soil Resources

### 4.8.1 From Special Designations

#### *Alternative A (No Action)*

Under current management of Agua Fria National Monument, soil resources in the Perry Mesa ACEC (9,580 acres) would likely be protected from increased erosion and soil loss; and from decreased soil moisture and productivity by limiting motor vehicle use. However, current management would not affect soil resources there because of the inaccessibility of the Larry Canyon ACEC to both livestock and motor vehicles. Similar to Larry Canyon ACEC, most of the suitable WSR corridors (6,030 acres) are in narrow, inaccessible canyons where there are few conflicts with the nonimpairment provisions of current interim management. Some places in the northern reaches of the Agua Fria River are accessible by vehicles. Restrictions on vehicular use of interim management should maintain or improve soil productivity and reduce soil loss. All of the Special Management Areas (SMAs) in the national monument are in areas of moderate potential soil erodibility with some small areas of severe and extremely severe potential soil erodibility.

Existing management of Congressionally Designated Wilderness (96,820 acres) would maintain current soil productivity by imposing management restrictions on activities.

#### *Alternative B*

In Agua Fria National Monument, interim management of the eligible WSR corridor under *Alternative B*, would be the same as described for *Alternative A*. Removing the ACEC designation in Larry Canyon and on Perry Mesa would not affect the soil because the same activities limited by the ACEC designation

would be limited under the national monument designation. Removal of these ACECs would not affect soils.

In the Bradshaw-Harquahala Planning Area closing the fenced area of the Tule Creek ACEC to motorized vehicles and grazing could benefit soil resources by reducing soil disturbance and compaction. Therefore, this area is rated to have slight potential soil erodibility. Reduced soil disturbance would result in slightly reduced erosion and increased soil infiltration and productivity.

#### *Alternative C*

In Agua Fria National Monument, the four designated ACECs are all in areas with moderate to very severe potential soil erodibility. Management actions for these ACECs would only negligibly affect soil resources beyond protections afforded by the National Monument Proclamation (Appendix A). Interim management of the eligible WSR corridor would be the same as described for *Alternative A*.

In the Bradshaw-Harquahala Planning Area, the protective measures of designating six ACECs, totaling 55,710 acres would reduce soil erosion and improve soil moisture and productivity. These areas are rated to have slight potential soil erodibility.

#### *Alternative D*

Impacts from the ACECs and suitable WSR corridors in Agua Fria National Monument would be the same as those described for *Alternative C*. In the Bradshaw-Harquahala Planning Area eight ACECs, totaling 192,800 acres are proposed; impacts to soil resources would be similar to those under *Alternative C*.

#### *Alternative E (Proposed Alternative)*

Impacts from the Special Designations in Agua Fria National Monument would be the same as those described for *Alternative C*. In the Bradshaw-Harquahala Planning Area four ACECs, totaling 89,970 acres are proposed;

impacts to soil resources would be similar to those under *Alternative C*.

## 4.8.2 From Lands and Realty Management

### *Alternative A (No Action)*

Activities subject to valid existing rights in the national monument might continue, and applications, proposals, and future use requests that were pending when the national monument was created are subject to the terms of the Monument Proclamation (Appendix A). These activities could degrade soil resources if construction-related erosion, soil disturbance, or compaction occurs. These disturbances are temporary; therefore, long-term changes to soil resources would not be probable.

Impacts to soil resources from utility and transportation corridors, and communication sites are not expected under the current management of Agua Fria National Monument.

In the Bradshaw-Harquahala Planning Area disposal and consequential development of lands could result in long-term reductions in soil productivity. Acquiring lands would not be expected to affect soil resources.

Building small utility distribution systems could affect soil resources if construction-related erosion, soil disturbance, or compaction occurs. These disturbances are temporary; therefore, long-term changes to soil resources might not be probable.

Building major utility lines in existing corridors could affect soil resources, mainly from development, service roads, and increased traffic. Additionally, road building could degrade soil resources by erosion, soil disturbance, or compaction.

Development of utilities within utility corridors could disturb soils by creating increased erosion and reduced productivity mainly from construction activities, service roads,

and increased traffic. Mitigations could include (but not be limited to) avoidance of soils with high erosion potential, avoidance of steep slopes, construction of water control features, maintenance of as much vegetation as possible, and reclamation to suitable vegetation in a reasonable time.

### *Alternatives B, C, D, and E (Proposed Alternative)*

In Agua Fria National Monument no impacts are expected from land tenure adjustments, utility and transportation corridors, or communication sites.

In the Bradshaw-Harquahala Planning Area impacts to soil resources from utility and transportation corridors and communication sites would be similar to those discussed for *Alternative A*. Impacts to soil resources from utility and transportation corridors, and telecommunication sites would also be similar to those discussed for *Alternative A*.

## 4.8.3 From Management of Soil, Air, and Water Resources

### *Alternative A (No Action)*

Impacts to soil resources in Agua Fria National Monument are expected from the following:

- maintaining and improving soil cover and productivity through erosion preventative measures and land treatments;
- implementing activity plans to maintain or increase ground cover that would improve infiltration, permeability, soil moisture storage, and soil stability; and
- implementing watershed improvement projects to increase ground cover and reduce erosion.

Under the current management of the Bradshaw-Harquahala Planning Area no impacts are expected on soil resources.

#### ***Alternatives B, C, D, and E (Proposed Alternative)***

Impacts to soil resources are expected to be similar to those in *Alternative A*.

### **4.8.4 From Biological Resource Management**

#### ***Alternative A (No Action)***

In Agua Fria National Monument improvements to soil resources are expected from the following:

- improving the Agua Fria River riparian corridor by mitigating past impacts and implementing management actions to protect soils,
- reducing soil erosion by planting cottonwood and willow along the Agua Fria River and its tributaries, and
- discontinuing the use of vegetation chaining and other vegetation manipulation methods that substantially disturb the surface.

In the Bradshaw-Harquahala Planning Area impacts to soil resources are expected from the following:

- developing projects, including springs, seeps, and other features affecting water;
- maintaining or enhancing spring/riparian habitats in the planning unit. Sites would be determined in the Habitat Management Plan (HMP) to meet the plan's goals; and
- reducing competition for cover, water, and space among big game, livestock, and burros by reducing livestock aggregations and removing all burros at waters in the Big Horn, Granite Wash, and Harquahala Mountains.

Soil resources might slightly improve from all of these activities.

#### ***Alternatives B, C, D, and E (Proposed Alternative)***

Impacts would be similar to those described in *Alternative A*.

### **4.8.5 From Cultural Resource Management**

#### ***Alternatives A (No Action), B, C, D, and E (Proposed Alternative)***

There are no impacts expected to soil resources from cultural resource activities under any alternative.

### **4.8.6 From Paleontological Resource Management**

#### ***Alternatives A (No Action), B, C, D, and E (Proposed Alternative)***

There are no impacts expected to soil resources from managing paleontological resources under any alternative.

### **4.8.7 From Recreation Management**

#### ***Alternative A (No Action)***

Under the current management of Agua Fria National Monument, areas of concentrated recreation could result in the loss or reduction of vegetation cover, compaction of soils, and streambank instability in riparian areas, thus decreasing soil moisture and productivity.

OHV use designations vary between the east and west parts of the Bradshaw-Harquahala Planning Area. In the area covered by the Phoenix RMP (BLM 1988a), vehicle travel is limited to existing roads and trails except for areas closed

or restricted to designated roads and trails. West of Highway 93, unlimited cross-country OHV use is allowed except in wilderness and other designated areas.

Increasing visitor use and vehicle travel in the area addressed by the Phoenix RMP would intensify soil erosion due to increasing numbers of OHV users and poorly engineered or non-engineered trails and routes. Despite users being confined to existing routes, erosion could increase on OHV trails ascending steep terrain and crossing unstable soils on hillsides. Overall, impacts from OHV use on soils are expected to be less than in other parts of the Bradshaw-Harquahala Planning Area as users are now restricted to using existing routes.

West of Highway 93, increased soil erosion is expected from increased visitation, multiplying numbers of routes, and greater use of OHVs on steep slopes. Bank washes would be broken down and made unstable in wash “play” areas. Soil damage and erosion could result from surface disruption, soil compaction, and damage to soil-holding plants. Furthermore, soils could be permanently damaged on steep slopes and across loosely graveled gentle slopes. Vehicle tracks on the lands here, especially desert pavement surfaces and hillsides, could last for 60 years or perhaps centuries, from evidence of Native American artwork and tread marks from World War II desert training exercises.

Under the current management of the areas west of Highway 93 and north of Wickenburg, areas of concentrated recreation and OHV use could result in the loss of or reduced vegetation cover, soil compaction, and streambank instability in riparian and wash areas, thus reducing soil moisture and soil productivity.

Moreover, the lack of OHV-related management facilities and amenities would contribute to increasing damage to soils across the Bradshaw-Harquahala Planning Area. Vegetation and infiltration could decrease, wash bank and riparian area stability would decline throughout the area, and increased amounts of soil would be exposed to erosion and compaction.

All new routes would be built in ways intended to minimize soil disturbance, erosion, and compaction.

Cross-country non-motorized travel by foot, horse or mountain bike could lead to the creation of permanent trails, sometimes called “social” trails that braid across the landscape. These user-created and non-engineered trails are subject to hardening or erosion and may cross and impact fragile or unstable desert soils. Most social trailing is a result of intense public use near residential properties, trailheads, target shooting areas, dispersed campsites, campgrounds, and motorized staging areas. Cross-country use by OHVs has similar, but more severe impacts.

The impact from cross-country non-motorized travel in heavy use areas includes increased hardening of the soils from repeated trampling and reduced vegetation. Ribbons of trails may develop from users choosing different paths to walk. Cryptogamic (black crusty soil) soils in some desert locales and desert pavement areas in others are easily damaged. These soils show signs of footprints or hoof prints for many years. Loss of these surface protections can lead to increased soil erosion, especially on slopes and where these trails allow water to run for long stretches. Erosion can lead to more loss of plant life and reduced soil productivity.

### *Alternative B*

In Agua Fria National Monument 57,900 acres of Front Country, 12,700 acres of Back Country, and 300 acres of Passage RMZs would be established, and recreation uses and opportunities in the zones would be managed for protecting natural resources. Impacts to soil resources, including increased surface disturbance and erosion, might occur in the Front Country and Passage RMZ as recreation use increases. However, impacts are not expected in the Back Country RMZ.

In the Bradshaw-Harquahala Planning Area route, closures in Tule Creek ACEC and allocations to maintain wilderness characteristics within the Castle Hot Springs and Harquahala

Management Units, would slightly reduce soil disturbance, erosion, and compaction by OHV use. Some of these routes are in soil mapping units with moderate potential soil erodibility, but most are in slight potential erodibility.

Soil erosion from improper events and OHV use would be lessened by implementing vehicle route designations throughout the Bradshaw-Harquahala Planning Area, along with well-planned, sited, and signed special recreation management areas (SRMAs) addressing intensive recreation. Included would be both motorized and non-motorized uses in the Table Mesa, the Hieroglyphic Mountains, Stanton, Wickenburg, San Domingo Wash, and Vulture Mine SRMAs. Facilities and outreach/education would lessen improper OHV activities, further decreasing soil erosion, disruption, and compaction. Soil loss or damage by non-motorized cross-country travel would be the same as described under *Alternative A*.

#### *Alternative C*

Impacts on the national monument would be similar to those discussed for *Alternative B* and would occur on moderate to very severe soil erodibility areas on 42,000 acres of Front Country RMZ and 700 acres of Passage RMZ.

In the Bradshaw-Harquahala Planning Area impacts from recreation management would be similar to those discussed for *Alternative B*. Reducing vehicle travel routes and use in Harquahala Mountains ONA, and the allocations to maintain wilderness characteristics within the Black Canyon MU, the Hassayampa MU, and the Harquahala MU, would reduce recreation and OHV-related erosion, compaction, and surface disruption of soils. Some of these routes are in soil mapping units with moderate potential erodibility areas, but most are in slight potential erodibility.

Implementing well-planned, sited, and managed SRMAs addressing intensive recreation, including both motorized and non-motorized use, and vehicle route designation throughout the planning area would lessen soil erosion from

improper events and intensive OHV use. Associated facilities and outreach/education efforts would lessen improper OHV activities, further decreasing soil damage. Soil loss or damage by non-motorized cross-country travel would be the same as described under *Alternative A*.

#### *Alternative D*

Impacts on the national monument would be similar to those discussed for *Alternative C* and would occur on moderate to very severe soil erodibility areas on 1,530 acres of the Front Country RMZ and 990 acres of the Passage RMZ.

Phasing out OHV use of the Hieroglyphic Mountains SRMA would eventually reduce the potential for soil disturbance, compaction, and erosion caused by motorized activities on 16,510 acres. The overall management of the Castle Hot Springs Management Unit (MU) as a regional recreation management area would reduce soils impacts in the southern portion of the MU by phasing out motorized uses. As routes are reclaimed or are reduced in width for non-motorized use, cover vegetation would increase, increasing infiltration and reducing the amount of soil exposed to erosion and compaction.

The specified management of special recreation management areas (SRMAs) and restricting vehicle use to designated routes would further reduce soil impacts in all other parts of the planning area. Increased BLM signing, OHV route development and connectivity, public education, and better managed motorized and non-motorized recreation under *Alternative D* would lessen motorized impacts to soils over the long term. As routes are designated, reclaimed, or reduced in width for non-motorized use, cover vegetation would increase, increasing infiltration and reducing the amount of soil exposed to erosion and compaction. Soil loss or damage by nodes of intense non-motorized cross-country travel would be the same as described under *Alternative A*.

### ***Alternative E (Proposed Alternative)***

In this Alternative, 57,650 acres would be allocated to Back Country, 11,900 to Front Country, and 1,350 acres to Passage RMZs. Impacts on the national monument would be similar to those discussed for *Alternative C* and *D*, except that 52 miles of route would be closed. The net reduction of routes would be 69 miles. These route closures would likely reduce soil disturbance, erosion, and compaction by OHV use. All of the routes that would be closed or opened are located in moderate to very severe potential soil erodibility areas.

The overall management of the planning areas, along with the allocation of recreational vehicle use to designated routes only, would reduce impacts to soils in all parts of the planning area. Increased BLM signing, route development, route connectivity, and better managed motorized and non-motorized recreation would lessen potential impacts to soils over the short and long term. As routes are designated, reclaimed, or reduced in width for non-motorized use, cover vegetation would increase, increasing infiltration and lessening the amount of soil exposed to erosion and compaction. Soil loss or damage by localized areas with intense cross-country travel would be the same as described under *Alternative A*.

### **4.8.7.1 From Special Recreation Permit Program**

#### ***Alternative A (No Action)***

The predominant impacts to soils from the SRP program are soil compaction and accelerated erosion from concentrating activities in certain areas. Broken soil crusts and decreased vegetation cover exposes more soil to potential erosion and reduce infiltration. Most SRPs are issued for activities, such as jeep tours, horse events, and guided big game hunts, which occur on existing routes or disturbed areas and create minimal soil impacts. It is standard operating procedure to conduct environmental analysis before any SRP is authorized. Consequently,

any permitted activities that could cause adverse impacts to soils are mitigated to minimize those impacts and rehabilitation is required when necessary.

Within the national monument, few SRPs are currently issued; for instances, those permitted have been for commercial tour groups and for hunting guides. These permits use areas where similar activities have been taking place for many years and have been determined to have little or no impact.

In the Bradshaw-Harquahala Planning Area, the permitted recreation activities that cause the most disturbances to soils are the three motorized, competitive races that are held annually. Currently, the soil impacts from these races are closely monitored and the soils are rehabilitated as close to pre-race conditions as possible. However, under *Alternative A*, an unlimited number of competitive races could be authorized between October 15 and March 31, and in areas currently not used for such activities. Thus, without any set limitations on the number of races and the areas in which they can occur, this increased vehicle activity would inevitably lead to unacceptable cumulative soil impacts, perhaps most notably in previously undisturbed areas.

Limited staffing would make it difficult to adequately manage and mitigate the effects from such use including increased soil compaction and vegetation disturbance in camping and staging areas. Moreover, depressions, holes, rills, and deep ruts would become more visible and larger gullies would form due to poor drainage during heavy rains. Routes used for the racing activities would be impacted from the racing vehicles churning up the soils on the routes, and breaking soil crusts due to vehicle passing, accidents or course cutting. More soil berms would be created at curves and corners which would lead to increased wind and water erosion. Areas with finer soils would be especially affected and difficult to rehabilitate. Even with close monitoring and rehabilitation efforts, due to the arid desert conditions, once

soil crusts are disturbed and barren soil is exposed they can take a long time to recover.

### ***Alternative B***

In the Agua Fria National Monument, BLM would issue up to 12 special recreation permits per year. This is a 400 percent increase over the current situation and could lead to additional soil disturbance in new areas as permittees seek new locations for activities to avoid crowding. However, due to the Monument Proclamation requiring the protection of monument objects, permit requests would be scrutinized and permitted activities would be closely monitored. Therefore, soil impacts are expected to be slight.

For the Bradshaw-Harquahala Planning Area, impacts to soil resources from SRPs other than the competitive races would be similar to those discussed in *Alternative A*, except that the number of permits would be expected to increase. However, due to continuing implementation of mitigation measures, the impacts to soils from most of the permitted activities would be expected to increase only slightly.

For competitive races, the number of races each year would be limited to 14 and additional limits would be established for the Hieroglyphic Mountains, Vulture Mountains, Stanton, San Domingo, and Table Mesa SRMAs. Races would be prohibited in the Wickenburg SRMA and in the ERMAs. However, the allowable number of races is still a substantial increase from current conditions and therefore soil impacts would be much higher. It is anticipated that these impacts could be difficult to mitigate, manage, and rehabilitate to acceptable levels if the upper end of the allowed number of races is reached.

### ***Alternative C***

For the Agua Fria National Monument, impacts to soils from SRPs would be less than those discussed for *Alternative B* as only six permits per year could be issued. While still a 200 percent increase over current conditions, this

would lead to a slight, if any, increase in soil disturbance.

In the Bradshaw-Harquahala Planning Area impacts to soils from SRPs other than races would be the same as those described for *Alternative B*.

For competitive races, the number would be limited to six per year and no races would be allowed in the Table Mesa SRMA in addition to the SRMA limits identified in *Alternative B*. Further, set limits for Hieroglyphic Mountains and Vulture Mountains SRMA would keep the number of races near current levels thereby keeping soil impacts at existing conditions. Other SRMAs that would allow races include Stanton and San Domingo. Only one new race would be allowed in the Stanton and San Domingo SRMAs making management of the activities more feasible in keeping soil impacts to a minimum.

### ***Alternative D***

Under *Alternative D*, BLM would not issue SRPs for the national monument; therefore, eliminating any potential impacts to soils.

In the Bradshaw-Harquahala Planning Area impacts to soils from SRPs, other than competitive races, would be the same as those described for *Alternative B*.

No competitive races would be allowed. This would eliminate any continued impacts to soils from this activity, and soils would be allowed to recover from previous races.

### ***Alternative E (Proposed Alternative)***

Impacts in the national monument are expected to be similar to those described in *Alternative A*.

In the Bradshaw-Harquahala Planning Area, no permit levels would be established for SRPs other than competitive races. Permit numbers would be expected to rise over current conditions for both planning areas and soil

impacts would be similar to those discussed in *Alternative B*.

Competitive races would be limited to eight per year which is slightly higher than current conditions. Impacts would be similar to those addressed in *Alternative C*, except that the number of races could increase to four per year in the Vulture Mountains SRMA. However, the soil types in this SRMA are more resilient so impacts would be expected to be slight.

#### **4.8.8 From Visual Resource Management**

##### ***Alternative A (No Action), B, C, D, and E (Proposed Alternative)***

There are no impacts expected to soils from management for Visual Resources.

#### **4.8.9 From Rangeland Management**

##### ***Alternative A (No Action)***

In both planning areas, implementing the guidelines adopted in *Arizona Standards for Rangeland Health and Guidelines for Grazing Administration* (Land Health Standards) would increase ground cover, which would provide for infiltration, permeability, soil moisture storage, and soil stability suitable for the ecological sites in the MUs. Implementation would also maintain or promote enough vegetation to maintain, improve, or restore riparian-wetland functions of energy dissipation, sediment capture, groundwater recharge, and streambank stability, thus promoting stream channel morphology (e.g. gradient, width/depth ratio, channel roughness, and sinuosity) and functions suitable for climate and landform.

##### ***Alternative B***

Expected impacts to soil resources from rangeland/grazing management in uplands of the Agua Fria National Monument would be similar

to those described for *Alternative A*. However, limiting grazing in riparian areas to the winter would encourage more rapid recovery of riparian vegetation and reduce impacts to soils from grazing.

In the Bradshaw-Harquahala Planning grazing in riparian areas would also be limited to the winter. Winter-only grazing in riparian areas would encourage more rapid recovery of riparian vegetation and reduce impacts to soils from grazing.

##### ***Alternative C***

In both planning areas impacts to soils from grazing in uplands would be similar to those discussed for *Alternative B*. Some reduction in upland grazing could occur. Grazing in riparian areas would be eliminated, increasing soil cover and reducing streambank damage from grazing under *Alternative B*. For grazing allotments that lack adequate fencing, the entire pasture would be closed to grazing. *Alternative C* would substantially reduce upland grazing as well as the use of riparian areas. This adjustment could be substantial in pastures or allotments that cannot be fenced in riparian areas from the upland areas. In these cases, the whole pasture could be closed from grazing.

##### ***Alternative D***

In both planning areas soils would benefit from closing livestock grazing allotments, canceling livestock authorizations for the duration of the plan, and installing fencing to control livestock use of unfenced public lands.

*Alternative D* would result in the greatest improvement of the current impacts from livestock grazing on soil. Soil disturbance, soil compaction, and erosion would be lower than under any of the other Alternatives.

##### ***Alternative E (Proposed Alternative)***

Impacts for both areas would be similar to those described for *Alternative B*.

For the Agua Fria National Monument impacts would be similar to those described in Alternative B.

In the Bradshaw-Harquahala Planning expected impacts to soil resources from rangeland/grazing management in uplands would be similar to those described for *Alternative A*. Grazing management changes would be implemented as needed to produce riparian areas that are making progress toward proper functioning condition. Management actions could include, but are not limited to, winter-only grazing in riparian areas. This would encourage recovery of riparian vegetation and reduce impacts to soils from grazing.

#### **4.8.10 From Minerals Management**

##### ***Alternative A (No Action)***

In the Agua Fria National Monument, minerals management is not expected to affect soil resources. Existing mining claims are limited to casual use and valid existing rights. Impacts to soils, such as erosion and vegetation disturbance, would be limited to small areas under casual use.

Under the current management of the Bradshaw-Harquahala Planning Area, mining that involves building access roads, is likely to disturb soils. Road building would increase soil erosion, disturbance, and compaction.

Should exploration or development of locatable, saleable, and/or leasable minerals be pursued, special stipulations would be included in the mining plan of operations after the results of site-specific EAs for each action are known. Impacts cannot be projected before preparing such assessments, which would include methods, mitigation, and rehabilitation plans to meet the conditions required to protect soil. Therefore, such measures could minimize effects on soils.

##### ***Locatable Minerals***

Mining itself might disturb soils and potentially result in accelerated erosion and loss of soil productivity. These effects to soils could be mitigated under 43 CFR 3715 and 43 CFR 3809, the regulations that implement the Federal Land Policy and Management Acts (FLPMA) mandate to prevent unnecessary or undue degradation from the surface disturbance of mining under the Mining Law of 1872.

##### ***Saleable Minerals***

Extracting mineral materials would result in loss of soils and vegetation cover in mining areas and could lead to increased soil erosion.

##### ***Leasable Minerals***

Mining that could occur in areas remaining open to leasable minerals development could degrade soils through compaction and increased erosion. From the RFD scenario described for the section of Chapter 4, Impacts on Minerals and Energy Resources, the likely scope of leasable mineral development is small. Therefore, impacts to soil are also likely to be small.

##### ***Alternative B***

Impacts of minerals management on soil would be similar to those discussed for *Alternative A*.

##### ***Alternative C***

Impacts to soils in Agua Fria National Monument would be similar to those discussed for *Alternative A*.

In the Bradshaw-Harquahala Planning Area impacts to soil resources from minerals management would be similar to those discussed for *Alternative A*, but the closure of many areas to mineral entry, mineral material disposal, and mineral leasing under *Alternative C* would reduce potential soil disturbance from mining.

**Alternative D**

In Agua Fria National Monument impacts to soil from minerals management would be similar to those discussed for *Alternative A*.

In the Bradshaw-Harquahala Planning Area impacts to soil resources would be similar to those discussed for *Alternative A*, but the closure of many areas to mineral entry, mineral material disposal, and mineral leasing under *Alternative D* would even further reduce potential soil disturbance from mining.

**Alternative E (Proposed Alternative)**

In both planning areas soil impacts from mining are expected to be similar to those under *Alternative A*.

### 4.8.11 From Fire Management

**Alternative A (No Action)**

Where prescribed burning is conducted in Agua Fria National Monument, the use of heavy equipment and mechanical thinning of trees could affect soils, increasing the potential for soil erosion. Soil moisture and productivity could be reduced in the short term, but increased in the long term. Prescribed burning would offer the following benefits:

- increasing vegetation diversity,
- moving vegetation communities in target areas toward a natural desert grassland community, and
- reducing the risk of catastrophic fires.

These benefits would result in more vegetation cover that would reduce soil erosion.

Full suppression in interior chaparral or desert grassland communities, which are Fire-adapted vegetation types, would limit the natural beneficial affects of fire, encouraging vegetation type conversions towards higher proportions of woody species. As a result, herbaceous cover on

the soil surface would likely decline with related soil effects, including decreased infiltration and increased runoff and erosion. The use of heavy equipment during suppression could also increase soil disturbance and potentially increase erosion.

Under the current management of both planning areas, full suppression of wildfires is needed to maintain healthy Sonoran Desert communities, which are highly sensitive to fire with potentially devastating loss of native plants including species such as; saguaro cactus, palo verde and ironwood trees.

**Alternatives B, C, D, and E (Proposed Alternative)**

For fire adapted ecosystems an appropriate management response would be implemented to achieve the Desired Future Condition for the area. This response would provide for a variety of strategies and tactics for the incident commander and fire resources on site. These strategies could have a wide spectrum of actions that could include a range of alternatives from full suppression to no action including fire-use.

When lightning fires occur, a fire-use strategy could be implemented resulting in larger acreage that is burned. This increased acreage would result in short term increases in soil loss and depending on rainfall and re-vegetation of the burn area a large increase in soil loss and sediment deposit could occur. The long term recovery of natural fire adapted vegetation communities that respond rapidly to post fire conditions should make this a very short period.

Management actions of full suppression would continue in Sonoran Desert vegetation communities and in Wildland-Urban Interface (WUI) areas. In these areas, full wildfire suppression would have impacts similar to those described for *Alternative A*.

## 4.8.12 From Wild Horse and Burro Management

### *Alternatives A (No Action), B, C, D, and E (Proposed Alternative)*

No wild horses or burros inhabit Agua Fria National Monument.

Under the current and alternative management of the Bradshaw-Harquahala Planning Area maintaining herd numbers at current levels in the Lake Pleasant Herd Management Area (HMA) would minimize impacts to soil from wild burros. In the Harquahala HA, removal of nuisance burros and burros from sensitive habitats would improve soil stability and productivity in the Harquahala MU.

## 4.8.13 From Management of Travel Management

### *Alternative A (No Action)*

Increasing visitor use and vehicle travel in the area addressed by the Phoenix RMP would intensify soil erosion due to increasing numbers of OHV users and poorly engineered or non-engineered trails and routes. Despite users being confined to existing routes, erosion could increase on OHV trails ascending steep terrain and crossing unstable soils on hillsides. Overall, impacts from OHV use on soils are expected to be less than in other parts of the Bradshaw-Harquahala Planning Area as users are now restricted to using existing routes.

West of Highway 93, increased soil erosion is expected from increased visitation, multiplying numbers of routes, and greater use of OHVs on steep slopes. Bank washes would be broken down and made unstable in wash “play” areas. Soil damage and erosion could result from surface disruption, soil compaction, and damage to soil-holding plants. Soils could be permanently damaged on steep slopes and across loosely graveled gentle slopes. Vehicle tracks on the lands here, especially desert pavement

surfaces and hillsides, could last for 60 years or more— as evidenced with Native American artwork and tread marks from World War II desert training exercises.

Under the current management of the areas west of Highway 93 and north of Wickenburg, areas of concentrated recreation and OHV use could result in the loss of or reduced vegetation cover, soil compaction, and streambank instability in riparian and wash areas, thus reducing soil moisture and soil productivity.

The lack of OHV-related management facilities and amenities would contribute to increasing damage to soils across the Bradshaw-Harquahala Planning Area. Vegetation and infiltration could decrease, wash bank and riparian area stability would decline throughout the area and increased amounts of soil would be exposed to erosion and compaction. All new routes would be built in ways intended to minimize soil disturbance, erosion, and compaction.

### *Alternative B*

In Agua Fria National Monument, impacts to soil resources, including increased surface disturbance and erosion, might occur in the Front Country and Passage Zones due to increased transportation and public visitation. In the monument, 37 miles of route would be closed and five miles of route would be built. The net reduction of 33 route miles would likely reduce soil disturbance, erosion, and compaction by OHV use. All of the routes that would be closed or opened are located in moderate to very severe potential soil erodibility areas.

In the Bradshaw-Harquahala Planning Area route closures in Tule Creek ACEC and allocations to maintain wilderness characteristics within the Castle Hot Springs and Harquahala Management Units would slightly reduce soil disturbance, erosion, and compaction by OHV use. Some of these routes are in soil mapping units with moderate potential soil erodibility, but most are in slight potential erodibility areas.

*Alternative C*

Impacts on the national monument would be similar to those discussed for *Alternative B*. In the monument, 48 miles of route would be closed and six miles of new route would be built. Moreover, this net reduction of 43 miles of route would marginally protect more soil resources than *Alternative B*.

Reducing vehicle travel routes and use in Harquahala Mountains ONA, and the allocations to maintain wilderness characteristics within the Black Canyon MU, the Hassayampa MU, and the Harquahala MU, would reduce recreation and OHV-related erosion, compaction, and surface disruption of soils. Some of these routes are in soil mapping units with moderate potential soil erodibility, but most are in slight potential erodibility areas.

*Alternative D*

Impacts on the national monument would be similar to those discussed in *Alternative C*. In the monument, 123 miles of route would be closed and no new routes would be built. Consequently, this alternative would provide the most protection to soil resources due to route closures.

Soil erosion resulting from vehicular travel would be curtailed by eliminating or mitigating recreation vehicle use in the allocations to maintain wilderness characteristics within the Black Canyon MU, the Hassayampa MU, and the Harquahala MU.

Restricting vehicle use to designated routes would further reduce soil impacts in all other parts of the planning area. As routes are designated, reclaimed, or reduced in width for non-motorized use, cover vegetation would increase, increasing infiltration and reducing the amount of soil exposed to erosion and compaction.

*Alternative E (Proposed Alternative)*

Impacts on the national monument would be similar to those discussed for *Alternative C* and *D*, except that 70 miles of route would be closed. This reduction in route mileage would reduce soil disturbance more than *Alternatives B* and *C*, but less than *Alternative D*.

Soil erosion caused by vehicular travel would be curtailed by eliminating vehicle use in Tule Creek ACEC, and by reducing vehicle routes and cross-country travel in allocations to maintain wilderness characteristics and the Harquahala Mountains and Black Butte ACECs. Curtailing or reducing vehicle use in the above areas would benefit soil resources by eventually reducing the potential for soil disturbance, compaction, and erosion caused by motorized activities.

#### **4.8.14 From Management of Wilderness Characteristics**

*Alternative A (No Action)*

There are no impacts expected.

*Alternative B*

For the management of wilderness characteristics 56,040 acres would be allocated. Soil disturbances, compaction, and erosion caused by human induced activities would be reduced in these areas.

*Alternative C*

Impacts would be the same as *Alternative B* except that 107,843 acres would be allocated for the management of wilderness characteristics. Protection from soil disturbing activities would be greatest under this alternative.

**Alternative D**

Impacts would be same as *Alternative B* and *Alternative C* except that 140,235 acres would be allocated for the management of wilderness characteristics. This would include 37,571 acres within the Agua Fria National Monument.

**Alternative E (Proposed Alternative)**

Impacts would be the same as *Alternative B* except that 88,179 acres would be allocated for the management of wilderness characteristics. As a result of this allocation, soil protection would be more than *Alternatives A* and *B*, but less than *Alternatives C* and *D*.

## 4.9 Impacts on Air Quality

*Air Quality Impacts from OHVs*

Most of the air emissions generated in both planning areas are generated by OHVs. OHV

use is an important recreation activity for residents of Maricopa and Yavapai Counties. On a countywide basis, OHVs generate fugitive dust and tailpipe emissions.

Table 4-1 shows estimated current countywide emission rates for fugitive dust and nitrogen oxides (NO<sub>x</sub>) generated by countywide OHV use in the two counties. Table 4-1 also compares the OHV emission rates to the regional emissions generated inside the densely populated Phoenix nonattainment areas. Although no estimates were made to apportion OHV use in both planning areas, only a fraction of the countywide use listed in Table 4-1 is likely to affect the planning areas. Countywide emissions generated by OHVs are only a small fraction of the overall regional emissions, and most of the countywide OHV use occurs in remote rural areas. To the extent that OHVs cause elevated air pollutant concentrations immediately near the routes on which they operate, OHV use in remote rural areas is unlikely to contribute to any meaningful regional air quality impacts that would affect the

**Table 4-1. Estimated Emissions from Countywide OHV Use**

County	Annual OHV Trips	PM <sub>10</sub> Emissions		Nitrogen Oxides (NO <sub>x</sub> ) Emissions	
		Emission Factor (lbs/trip)	Annual Countywide Emissions (tons/yr)	Emission Factor (lbs/trip)	Annual Countywide Emissions (tons/yr)
Maricopa	2,087,000 <sup>(1)</sup>	4 <sup>(3)</sup>	4,200	0.14 <sup>(4)</sup>	146
Yavapai	1,195,000 <sup>(2)</sup>	4 <sup>(3)</sup>	2,400	0.14 <sup>(4)</sup>	84
Total Emissions From All Sources In Phoenix Nonattainment Areas		Total Phoenix PM <sub>10</sub> Emissions (tons) (Year 2001)	79,500 <sup>(5)</sup>	Total Phoenix NO <sub>x</sub> Emissions (tons) (Year 1999)	81,000 <sup>(6)</sup>
<u>Example calculation (NO<sub>x</sub> emissions within Maricopa County)</u>					
NO <sub>x</sub> emission factor = 0.14 lbs per 25-mile OHV trip					
Maricopa County OHV usage = 2,087,000 trips/year					
Annual OHV NO <sub>x</sub> emissions = (2,087,000 trips/year) x (0.14 lbs/trip) / (2000 lbs/ton) = 146 tons per year of NO <sub>x</sub>					
Data Sources:					
(1) Arizona State Parks, 2003					
(2) Arizona State Parks, 2003					
(3) Emission factor from Imperial Sand Dunes Recreation Area EIS (BLM 2003), assuming 25 miles per OHV trip					
(4) NO <sub>x</sub> emission factor from Imperial Sand Dunes Recreation Area EIS (BLM 2003)					
(5) Maricopa Association of Governments (MAG) 2000					
(6) MAG 2002					

Phoenix nonattainment area.

Note that the current countywide OHV emission rates shown in Table 4-1 might increase in the future. The population of both Maricopa and Yavapai Counties are forecast to increase dramatically, and historical per-capita OHV use has increased faster than the rate of population growth. Thus, future emissions of fugitive dust would likely be higher than the current rates listed in Table 4-1. As a consequence, stricter measures may be warranted for the Phoenix area, and it is possible that OHV use might be among the new sources regulated to control dust emissions. Recently enacted Federal emission limits for OHVs will lead to reductions in tailpipe emissions from individual OHVs.

#### *General Conformity Regulatory Requirements*

During plan implementation, the General Conformity rule requires an applicability determination by the BLM for all emissions generated within nonattainment or maintenance areas, that are reasonably foreseeable, and that BLM can practicably control due to a continuing program responsibility. In order to quantify the contribution of off-road fugitive dust and other dust-generating activities, the BLM plans to prepare an emissions inventory as part of developing an Air Quality General Conformity analysis and determination. It will comply with applicable County and State air quality rules that are currently going through rule changes. Therefore, the conformity analysis and determination may be completed after the Records of Decision are signed, but before additional off-road vehicle activities are authorized in non-attainment areas. No activities that may contribute to or inhibit the County from reaching attainment will be authorized, except for those actions that may be typically excluded by regulation (such as at 40 CFR 93.158) until the conformity determination process is completed.

Land disposal is a type of action that is exempt from the General Conformity rule (regardless of projected population increases), so long as the applicable Federal agency has no practicable

control, nor continuing program responsibility, over the land subsequent to its transfer.

Table 4-2 lists the Year 2025 population and air pollutant emissions that would be generated by land disposal parcels in the ozone and PM<sub>10</sub> nonattainment areas. The table assumes that each parcel would be developed to a residential density based on that parcel's Regional Analysis Zone (RAZ) designation. For perspective, the table compares emissions from the land disposal parcels with the overall emissions from the entire nonattainment area. Note that in the majority of cases of land disposal, involving land sales or exchanges, the BLM would retain no practicable control, nor continuing program responsibility, over these lands subsequent to their transfer out of Federal ownership.

#### *Air Quality Issues of Utility Corridors*

Each of the Alternatives specifies a different set of utility access corridors, related mainly to the width of each corridor. At this time none of the utilities have filed permits to build new pipelines or transmissions lines through any of the available corridors. If new utilities were permitted in the future and were built in the narrower corridor, then building and maintaining the new utility would generate temporary, localized fugitive dust impacts immediately nearby. In those cases, EAs or, as suitable, Environmental Impact Statements (EISs) would be required for each new utility. The EA or EIS for each action would specify required fugitive dust controls. Any construction in nonattainment areas would have to comply with county dust control requirements. Typical dust control measures include the following:

- watering unpaved roads and staging areas,
- prohibiting work during high winds,
- covering or watering temporary stockpiles,
- washing trucks entering public streets from construction zones,
- sweeping paved areas, including public streets, and
- promptly revegetating disturbed areas.

## 4.9.1 From Special Designations

### *Alternative A (No Action)*

Under its current management, two areas in Agua Fria National Monument have Special Designations: Larry Canyon ACEC (80 acres) and Perry Mesa ACEC (9,580 acres). Larry Canyon ACEC would continue to be closed to motorized vehicles under *Alternative A*. Motorized vehicles in Perry Mesa ACEC are limited to designated roads and trails. Since Larry Canyon ACEC is inaccessible to vehicles, fugitive dust and emissions do not occur there. Restricting motorized vehicles to designated roads and trails in Perry Mesa ACEC would allow the continued generation of fugitive dust and tailpipe emissions.

Emissions from OHV use at the RCA and two MRMAs, would likely increase as a result of regional population growth and increased regional OHV use. OHV emissions might cause localized, temporary air quality impacts along the roads and trails, but would be likely to contribute little to regional air quality impacts when compared to the much larger emissions generated by the densely populated Phoenix metropolitan area.

Under the current management of the Bradshaw-Harquahala Planning Area BLM would continue to prohibit OHV use in five wilderness areas (96,820 acres) and encourage OHV use on one back country byway (Harquahala Mountain Summit Road).

Increased visitor use travel along the 10.5 mile Harquahala Mountain Summit Road Back Country Byway would increase fugitive dust in the immediate area of Blue Tank Wash and the Harquahala Mountains Wilderness, but this increase is not considered of more than local significance. Motorized vehicles are prohibited in wilderness areas and so designation of wilderness areas would not contribute to air emissions.

### *Alternative B*

Site-specific recreation prescriptions in ACECs, RNAs and SRMAs would likely shift OHV users away from these areas to sites where OHV recreation is allowed and intensify vehicle travel and OHV use in the remaining accessible areas long designated routes. The result would be (1) reduced localized air quality impacts in the new restricted areas and (2) increased temporary and localized, degraded air quality in the remaining OHV areas.

### *Alternative C*

The existing Harquahala Mountain Summit Road Back Country Byway, designating the Constellation Mine Road and Bloody Basin Roads as back country byways and later use of these roadways could attract more regional OHV users, drawing them away from other OHV areas. This shift in location is not expected to increase regional OHV use or regional fugitive dust emissions. The shift would concentrate more emissions onto each byway, thereby increasing localized air quality impacts.

In the Bradshaw-Harquahala Planning Area, BLM's designation of seven ACECs would further shift OHV use and possible air quality impacts.

Reducing vehicle travel routes and use in Harquahala Mountains ONA would reduce fugitive dust emissions in the immediate area of these land use designations.

### *Alternative D*

Impacts from designating either of the two new ACECs would be similar to *Alternative B*. The relative shift in air quality impacts between newly restricted areas and the remaining accessible areas would be greatest under *Alternative D* because it would apply new restrictions on the most land.

Air quality effects and fugitive dust emissions from vehicular travel and OHV use would be

curtailed by eliminating or mitigating recreation vehicle use in the Sheep Mountain RNA.

### ***Alternative E (Proposed Alternative)***

Site-Specific prescriptions and restrictions applied on ACECs along with cultural and wildlife management prescriptions would shift the locations of increases in OHV use and resulting fugitive dust and emissions. These actions would probably not affect the total future amounts of either OHV use or fugitive dust emissions throughout Agua Fria National Monument or the Bradshaw-Harquahala Planning Area.

## **4.9.2 From Lands and Realty Management**

### ***Alternative A (No Action)***

Most of the air quality issues from Lands and Realty Management are related to population growth and emissions involving land disposal, as described previously in Section 4.9. From these sections one can conclude that BLM's actions are exempt from the General Conformity requirements and that land disposal actions would not delay the region's compliance with the air quality standards.

New residential development on previously rural BLM's land would have a minor effect on air quality immediately downwind from each new development. The ambient concentrations near each residential development would be less than allowable State and Federal limits. MAG's air quality modeling shows that regional air quality would continue to improve even after accounting for future population growth.

Impacts on air quality would occur in two distinct phases and intensities. The first construction (or reconstruction) phase would contribute to elevated levels of criteria pollutants and fugitive dust, but generally over a limited area and only for short periods. Long-term impacts would result from continuing maintenance operations but generally at a much

lower level of production of pollutants. All utility construction proposals would be subject to air quality restrictions (e.g. fugitive dust best management practices), procedures, and stipulations defined in site-specific environmental analysis of the project.

### ***Air Quality Issues of Utility Corridors***

Existing utility rights-of-way in the monument would be modified, removed, or maintained in accordance with BLM's agreements with utility providers for as long as the demand exists for the utility. Within the Bradshaw-Harquahala Planning Area, all major utilities would be routed through designated corridors. If new utilities were permitted in the future, construction activities associated with development of utilities could degrade air quality by contributing pollutants to the air and increasing the emission of fugitive dust. Removal of vegetation and exposure of the soil surface to wind erosion can also contribute to air quality degradation. Mitigation measures could include (but are not limited to) application of water or other dust abatement during construction activities, maintenance of as much vegetation as possible, and reclamation to suitable vegetation in a reasonable time. Implementing available dust-control Best Management Practices (BMPs) would ensure that any air quality impacts would be temporary and would be limited to the immediate area of the construction.

### ***Air Quality Impacts Caused by Ongoing Maintenance***

Under the current management of both planning areas, ongoing maintenance and improvement of facilities and roadways would require continued use of construction equipment. This use would continue and could generate fugitive dust and tailpipe emissions by earthmoving and the use of heavy equipment. Each construction or maintenance action would cause a temporary, localized increase in ambient pollutant concentrations for the duration of the activity.

**Alternative B**

*Alternative B* would narrow the existing utility corridor in Agua Fria National Monument. This change is not expected to alter existing utility maintenance in the corridor and new utility construction could be permitted, subject to air quality procedures and stipulations defined in site-specific environmental analysis of the project. Thus, narrowing the existing utility corridor is not expected to affect air quality, but it would shift the location of future air quality emissions into a smaller area.

In the Bradshaw-Harquahala Planning Area new utility corridors would be designated for future expected demands. These designations would respond to the demand for the intensification of the power grid and would be consistent with the utility regulations of the Arizona Corporation Commission. Designating new utility corridors and widening the Black Canyon corridor for utility development might result in new pipelines or transmission lines being built through the area. Any such construction would likely generate fugitive dust and tailpipe emissions through earthmoving and the use of heavy equipment.

Impacts from ongoing maintenance and improvement of facilities and roadways would be the same as *Alternative A*.

**Alternative C**

Under *Alternative C* the Black Canyon utility corridor would be eliminated from Agua Fria National Monument. This action would maintain current emissions of criteria pollutants and fugitive dust. Though the utility corridor would be eliminated, BLM would continue to authorize existing utilities. Air quality impacts from ongoing maintenance would be the same as *Alternative A*.

In the Bradshaw-Harquahala Planning Area impacts would be the same as *Alternative B*.

Right-of-way applications in corridors would precipitate site-specific environmental analysis that would address air quality and actions to minimize impacts. Any construction in nonattainment areas would be subject to comply with county air quality rules.

**Alternative D**

Impacts in Agua Fria National Monument would be similar to those described for *Alternative C*.

In the Bradshaw-Harquahala Planning Area no new electric and gas corridors would be designated. The portion of the Black Canyon Multi-Use corridor would be extended so that it would be continuous north and south on BLM's land. If utilities elect to use this corridor in the future, they would generate criteria pollutants and fugitive dust through earthmoving and the use of heavy equipment. All utility construction in the planning area would be subject to air quality restrictions, procedures, and stipulations defined in site-specific environmental analysis for the project.

**Alternative E (Proposed Alternative)**

Impacts under *Alternative E* would be similar to those described for *Alternative C*.

### **4.9.3 From Management of Soil, Air, and Water Resources**

**Alternatives A (No Action), B, C, D, and E (Proposed Alternative)**

Under the current management of both planning areas, soil, water, and air management would promote soils and ground cover and implement preventive erosion measures. This approach would reduce localized emissions of naturally occurring windblown fugitive dust.

Increased unpaved surface management in PM<sub>10</sub> Non-attainment areas will reduce fugitive dust and PM<sub>10</sub> emissions.

## 4.9.4 From Biological Resource Management

### *Alternative A (No Action)*

In the Agua Fria National Monument, continued measures to protect biological resources, including the use of prescribed fire and mechanical vegetation treatment, may result in small amounts of temporary, localized emissions as discussed in Section 4.9.11.

In the Bradshaw-Harquahala Planning Area, continued measures to protect ground cover, biological areas, and habitats would minimize emissions of criteria pollutants and windblown fugitive dust. Implementation of Land Health Standards is expected to result in progressive increases in ground cover, which would result in reduced production of windblown fugitive dust not related to roads. In addition, measures designed to improve wildlife habitat would limit disturbance from building construction, land clearing, removal of downed wood, or woodcutting, which would also reduce emissions of criteria pollutants.

### *Alternative B*

Impacts would be similar to those under *Alternative A*.

### *Alternative C*

In Agua Fria National Monument two new Wildlife Habitat Areas would be allocated for enhancing pronghorn habitat. Four new ACECs would be designated for managing biological resources. This action would limit vehicle routes and prohibit new recreational site developments in pronghorn movement corridors, improving air quality in the newly designated areas. However, emissions might increase in the remaining areas where OHV use and recreational site developments are allowed.

The use of prescribed fire to improve habitat for pronghorn would have the same impacts as those discussed for *Alternative A*.

In the Bradshaw-Harquahala Planning Area BLM would designate seven ACECs. This would increase the acreage under strict management for motorized recreation and result in fewer cultural resource areas devoted to intensive public use. Localized air quality impacts would be reduced in the newly restricted areas while increasing the temporary, localized air quality impacts at the remaining OHV and public use areas.

### *Alternative D*

In Agua Fria National Monument two wildlife habitat areas and one ACEC would be designated for managing biological resources. Motor vehicle routes that fragment pronghorn habitat and cross known pronghorn movement corridors would be closed, limited, or mitigated.

*Alternative D* would redesignate the most land subject to OHV restrictions. The impacts of this action would be similar to *Alternative C*, except that the relative shift in air quality impacts between newly restricted areas and the remaining accessible areas would be greatest under *Alternative D*.

All fences in the national monument would be removed. Removing fences would generate small amounts of localized, temporary emissions of criteria pollutants and fugitive dust.

The use of prescribed fire would have the same impacts as those discussed for *Alternative A*.

In the Bradshaw-Harquahala Planning Area impacts would be similar to those under *Alternative A*.

### *Alternative E (Proposed Alternative)*

Air quality impacts under *Alternative E* would be similar to those under *Alternative C*.

## 4.9.5 From Cultural Resource Management

### *Alternative A (No Action)*

There no impacts on air quality expected from existing Cultural Resource Management (CRM) in either planning area.

### *Alternative B*

Developing access, interpretive facilities, and interpretive media at selected sites would result in more vehicle trips as visitors in both planning areas. Five sites in the Agua Fria National Monument would be developed for high public use standards, which allows for the building of parking areas. Eight areas in the Bradshaw-Harquahala Planning Area would be managed as Special Recreation Management Areas (SCRMA) with sites developed for public visitation. The result would be increased emissions of criteria pollutants and fugitive dust.

### *Alternative C*

In Agua Fria National Monument impacts would be similar to those discussed for *Alternative B*. However, impacts would be of lower magnitude because only one site would be developed to High Public Use standards and nine sites would be developed to Moderate Public Use standards.

In the Bradshaw-Harquahala Planning Area impacts would be similar to those discussed for *Alternative B*, except the impacts would be of lower magnitude because only four areas would be managed as SCRMA.

### *Alternative D*

In Agua Fria National Monument only the Pueblo la Plata site complex would be developed for public visitation. Air quality impacts from vehicle traffic would be limited to Bloody Basin Road and the Pueblo la Plata area. Therefore, the levels of airborne pollutants under

*Alternative D* would be lower than under *Alternatives B* or *C*.

In the Bradshaw-Harquahala Planning Area levels of pollutants generated by site visits would be lower than under *Alternatives B* or *C* because only two areas would be managed as SCRMA with sites developed for public visitation.

### *Alternative E (Proposed Alternative)*

In Agua Fria National Monument two sites would be developed for public visitation under High Public Use Actions, and six sites would be developed in accordance with Moderate Public Use Actions. The projected impacts on air quality would be lower than expected under *Alternative B* and greater than expected under *Alternatives C* and *D*.

In the Bradshaw-Harquahala Planning Area, six areas would be managed as SCRMA with sites developed for public visitation. The projected impacts on air quality would likely be lower than expected under *Alternative B* and greater than expected under *Alternatives C* and *D*.

## 4.9.6 From Paleontological Resource Management

### *Alternatives A (No Action), B, C, D, and E (Proposed Alternative)*

There are no impacts to air quality expected as a result of paleontological resource management in either planning area.

## 4.9.7 From Recreation Management

Each of the Alternatives would impose new restrictions on motorized recreation in portions of the planning areas. These restrictions would shift OHV users away from the newly restricted areas but might increase OHV uses in the remaining areas. Adverse air quality impacts would be reduced in the newly restricted areas,

but there could be temporary, localized increases in emissions in the remaining areas accessible to OHVs.

### ***Alternative A (No Action)***

Prohibiting cross-country OHV use in Agua Fria National Monument would reduce levels of criteria pollutants and fugitive dust. In the Bradshaw-Harquahala Planning Area OHV travel would generate increased emissions of criteria pollutants and fugitive dust.

The current recreation uses (hiking, target shooting, viewing prehistoric sites, and dispersed camping with a 14-day limit) could generate emissions of criteria pollutants and fugitive dust from OHV travel, as well as emissions and smoke from campfires and stoves. Over time, as these uses continue to increase, so would the emission of criteria pollutants associated with them. Under *Alternative A*, an unlimited number of competitive races could be authorized between October 15 and March 31, and in areas currently not used for such activities. This increased activity would potentially increase the amount of fugitive dust. However, all proposed races would be required to comply with county air quality standards thereby significantly reducing the potential for any noticeable increase of airborne emissions.

Areas open to camping would generate criteria pollutants and fugitive dust from OHV travel, as well as small amounts of emissions and smoke from campfires and stoves. The use of roadways and trails by motor vehicles would result in tailpipe emissions and fugitive dust from vehicular travel. Building and maintaining recreation-related roadways, trails, and facilities would generate temporary and short-lived emissions of criteria pollutants and fugitive dust from heavy equipment and earthmoving.

Cross-country non motorized travel by foot, horse or mountain bike can lead to the creation of permanent trails, sometimes called “social” trails that braid across the landscape. These user-created and non-engineered trails are subject to

hardening or erosion and may cross and impact fragile desert soils. Cryptogamic (black crusty soil) soils in some desert locales and desert pavement areas in others are easily damaged and may then easily become air borne under high wind conditions if the damage is severe enough. Horses and mountain bikes can create small amounts of fugitive dust.

### ***Alternative B***

In Agua Fria National Monument, the emphasis in the Back Country RMZ would be on managing and maintaining the character of the natural landscape. In the Front Country RMZ, more focus could be placed on recreation and interpretation. OHV use in the portions of the national monument accessible to OHVs would generate emissions of criteria pollutants and fugitive dust.

Site-specific recreation prescriptions in ACECs, ONAs, RNAs, SRMAs, allocations to maintain wilderness characteristics, RMZs, and other allocations would likely shift OHV users away from these areas to areas where OHV recreation is allowed and intensify vehicle travel and OHV use in the remaining accessible areas along designated routes. The result would be (1) reduced localized air quality impacts in the newly restricted areas and (2) increased temporary and localized, degraded air quality in the remaining OHV areas.

Thus, new and displaced OHV users would increase criteria pollutants and fugitive dust concentrations in and immediately near designated routes. The number of competitive races would be limited to 14 (significantly higher than current conditions). However emissions of particulate matter are not expected to be considerable due to mitigation measures placed on these races to comply with county air quality standards. In addition, countywide OHV emissions are only a small fraction of the total emissions generated by the Phoenix metropolitan area. They are unlikely to contribute any regional air quality impacts that would affect the metropolitan area or any sensitive areas downwind of Phoenix.

Emissions of criteria pollutants and fugitive dust in the planning areas would be reduced in some areas by route closures or restrictions. In the Bradshaw-Harquahala Planning Area net dirt roads would be reduced by 82 miles, and there would be 24 fewer miles of dirt road in Agua Fria National Monument. These route closures would likely reduce fugitive dust emissions in the immediate area along the routes. Regionally, these closures would not decrease vehicle use or emissions and fugitive dust.

Building and maintaining roadways, trails, and recreation facilities would generate temporary and short-lived emissions of criteria pollutants and fugitive dust from heavy equipment and earthmoving. BLM's development activities would comply with local and county dust control ordinances to limit emissions and fugitive dust. Impacts on air quality resources from cross-country travel by non-motorized visitors are considered to be similar to those described under *Alternative A*.

#### *Alternative C*

In Agua Fria National Monument impacts from recreation on air quality would be similar to *Alternative B*, except that more vehicle routes would be closed or limited to motorized vehicles.

In the Bradshaw-Harquahala Planning Area, impacts of OHV use would be similar to *Alternative B*, except BLM would designate seven ACECs, further shifting OHV use and possible air quality impacts. Impacts on air quality resources from cross-country travel by non-motorized visitors are considered to be similar to those described under *Alternative A*.

*Alternative C* would implement well planned, sited, and managed SRMAs and address intensive recreation and OHV use and vehicle route designations at Table Mesa, the Hieroglyphic Mountains, Stanton, Wickenburg, San Domingo Wash, and Vulture Mine locales. The SRMAs would reduce air quality effects and fugitive dust emitted by improper activity, scheduled OHV events, and intensive OHV use.

The number of competitive races would be limited to six per year which is slightly higher than current conditions. Air quality emissions from these activities would remain the same or lessen over time due to management actions.

#### *Alternative D*

Vehicular access would be limited under *Alternative D*, and a Back Country RMZ would be established throughout most of Agua Fria National Monument to preserve natural landscapes. Most Cultural Resource Management areas would be designated for limited public use. No other areas for intensive public use would be developed to replace the areas that would become restricted. Larger areas would be managed for more primitive recreation. This approach is not expected to reduce overall regional emissions, but it would (1) shift air quality impacts away from newly restricted areas and (2) intensify localized air quality impacts in the remaining areas where OHV recreation remains accessible. The relative shift in air quality impacts between newly restricted areas and the remaining accessible areas would be greatest under *Alternative D* because it would apply new restrictions on the most land. Localized air quality impacts from non-motorized visitors would be similar to those described under *Alternative A*.

In Agua Fria National Monument BLM would issue no Special Recreation Permits. The decrease in visitors to the area from reduced recreation would lead to fewer vehicle trips, which would decrease emissions of criteria pollutants. Camping would generate criteria pollutants and fugitive dust from OHV travel, as well as small amounts of emissions and smoke from campfires and stoves. Building and maintaining roadways, trails, and facilities would generate emissions of criteria pollutants and fugitive dust from heavy equipment and earthmoving.

In the Bradshaw-Harquahala Planning Area, new restrictions on OHV use would be enacted

on more land under *Alternative D* than under any of the other Alternatives.

In the Bradshaw-Harquahala Planning Area 723 miles of routes would be closed. The route closures would reduce air quality emissions and fugitive dust. Phasing out the use of the Hieroglyphic Mountains SRMA for OHV use would improve air quality and lessen dust emissions by eventually reducing and ending motorized activities on 16,510 acres.

*Alternative D* would implement well-planned, sited, and managed SRMAs addressing intensive recreation and OHV use and vehicle route designation at Table Mesa, the Hieroglyphic Mountains, Stanton, Wickenburg, San Domingo Wash, and the Vulture Mine areas. The result would be reduced air quality effects and fugitive dust emitted by improper activity, scheduled OHV events, and intensive OHV use. Under this alternative, no competitive races would be allowed. Therefore, air quality emissions from these activities would be expected to be reduced over time due to management actions.

#### ***Alternative E (Proposed Action)***

Impacts of site-specific prescriptions and restrictions within the Agua Fria National Monument and the Bradshaw-Harquahala Planning Area would be similar to *Alternative C*.

The impacts of SRMAs would be similar to *Alternative C*.

The number of competitive races in this alternative would be limited to eight. Air quality effects and fugitive dust emissions would be negligible due to mitigation measures placed on these races to comply with county air quality standards. Therefore, air quality emissions from these activities would remain the same or be reduced over time due to management actions.

Localized impacts on air quality resources from cross-country travel by non-motorized visitors are considered to be similar to those described under *Alternative A*. The BLM would implement dust control measures to ensure

compliance with new rules being developed by Maricopa County. Such measures could include prohibiting OHV use in the non-attainment area on days the Arizona Department of Environmental Quality forecasts high pollution levels in its dust forecasts. Other measures could include the use of dust suppressants and the use of gates or other barriers to exclude use on high pollution days.

### **4.9.8 From Visual Resource Management**

#### ***Alternative A (No Action)***

No policy standards are now directed toward visual resources.

#### ***Alternatives B, C, D, and E (Proposed Alternative)***

The managing of areas under Class I, II, and III standards could contribute to restrictions on some kinds of land development and use. The overall regional levels of construction-related pollutants and fugitive dust would be reduced if projects are modified or prohibited to satisfy VRM objectives.

### **4.9.9 From Rangeland Management**

#### ***Alternative A (No Action)***

Under current grazing management, proper grazing practices should maintain adequate vegetation cover to keep windblown dust levels to near natural conditions. In areas of livestock concentration (such as around waters, salt grounds, and corrals) vegetation cover would be greatly reduced, thereby increasing potential windblown dust emissions. The affect of this windblown dust is generally localized near the source. Implementing the *Standards for Rangeland Health* (Land Health Standards) and the *Guidelines for Grazing Management* (Rangeland Management) would allow regular evaluation of grazing practices and remediation

of problems that might lead to reduced air quality.

#### ***Alternatives B***

Air quality impacts of *Alternative B* would be similar to those described for *Alternative A*, except that winter-only grazing of riparian areas would lead to higher vegetation densities in those areas. These higher densities would slightly reduce the potential for windblown dust.

#### ***Alternative C***

Impacts of *Alternative C* would be similar to those under *Alternative B*, except that higher vegetation densities in riparian areas would be achieved more quickly with no grazing than with winter-only grazing.

#### ***Alternative D***

In both planning areas existing livestock grazing allotments would be closed and any current livestock authorizations would be cancelled for the duration of the plan. This approach would decrease the amount of fugitive dust generated by livestock removing forage and ground litter. In addition, places livestock concentrate would slowly revegetate, reducing dust emissions even more.

#### ***Alternative E (Proposed Alternative)***

For the Agua Fria National Monument impacts would be the same as those described for *Alternative B*.

In the Bradshaw-Harquahala Planning expected impacts from riparian areas that are improving with increased vegetation would reduce the potential for windblown particulates. This impact would be so small that it could be discounted at a factor in the total particulate levels within the airshed of the planning area.

## **4.9.10 From Minerals Management**

### ***Alternative A (No Action)***

There are no impacts expected in Agua Fria National Monument.

In the Bradshaw-Harquahala Planning Area locatable, saleable, and leasable mineral development could create short-term and periodic increased emissions of criteria pollutants and fugitive dust from construction, vehicular traffic, and other activities. Federal mineral rights on scattered lands that are outside the planning area and designated open to location, entry, and patenting could create short-term and periodic increased emissions of criteria pollutants and fugitive dust from construction, vehicular traffic, and other activities. In areas that would remain open to mineral exploration and development, continued mining would result in long-term increases in emissions. However, these increases would likely be localized and are subject to Federal and State emission regulations designed to mitigate impacts to air quality. For facilities in nonattainment areas, such regulations could result in off-sets or other facility-specific mitigation that would reduce air quality impacts.

Each of the Alternatives specifies a different set of areas where mining would or would not be allowed. From the Reasonable Foreseeable Development Scenarios described for Section 4.17, one can estimate the following mineral development:

- two oil and gas exploratory wells, which could disturb as much as 20 acres;
- 60 to 100 small locatable mines and 1 or two large mines, which could disturb 1400 to 2400 acres;
- as many as 20 saleable mineral pits, which could disturb as much as 800 acres, over the next 20 years.

Air quality impacts from such mining would be mainly fugitive dust from equipment at the mine

site, in addition to dust and exhaust from haul trucks. Any mining in the PM<sub>10</sub> nonattainment area would have to comply with Maricopa County dust abatement and air quality rules. The impact of these operations would be mainly local (within 1/2 mile of the mine and haul road) and would contribute to the PM<sub>10</sub> particulate count in the nonattainment area.

#### ***Alternatives B and C***

In the Bradshaw-Harquahala Planning Area impacts would be the same as those discussed for *Alternative A*.

#### ***Alternative D***

In the Bradshaw-Harquahala Planning Area reconveyed lands would be closed per public land order. *Alternative D* would also reduce the amount of land open to location, entry, and patent of locatable, saleable, and leasable minerals. This action would reduce emissions of criteria pollutants and fugitive dust.

#### ***Alternative E (Proposed Alternative)***

Impacts of *Alternative E* would be similar to those described for *Alternative A*.

### **4.9.11 From Fire Management**

#### ***Alternative A (No Action)***

The use of prescribed fire and mechanical vegetation treatment in the Agua Fria National Monument would result in short-term, localized episodes of smoke and reduced visibility. Burning prescriptions account for smoke and contain smoke management plans. These plans require burning conditions that encourage rapid smoke dispersal and discourage smoke drift into either highly populated areas or ADEQ Class I or II airsheds. ADEQ would continue to require that BLM obtain prescribed burning approvals before each event to ensure that prescribed burns are conducted only during favorable weather to reduce air quality impacts. In this way, air

quality impacts from prescribed burning are minimized.

When wildfires strike wilderness areas, suppression strategies are selected on a case-by-case basis in considering fire control opportunities, environmental impacts, and risks to public health and safety. Smoke might degrade local and regional air quality during these wildfires. The degree of smoke production and air quality impact depends on the suppression approach employed and the weather at the time of the fire.

Wildfires both on and off the national monument would also increase levels of smoke and reduce visibility during the fire. Weather conditions might cause high smoke columns and smoke drift into both high population areas and over ADEQ Class I and II airsheds. In most years, these events are of short duration (1 week or less) but might persist for longer periods. Multiple fire incidents, either simultaneously or sequentially, could increase the effects from smoke, or could increase the duration of the smoke impact. Typically, the fire season is from April through July. The use of heavy equipment and the mechanical thinning of trees would generate small amounts of temporary, localized emissions of fugitive dust and tailpipe exhaust.

#### ***Alternatives B, C, D, and E (Proposed Alternative)***

Air quality impacts would be the same as described for *Alternative A*, except that naturally occurring wildfires could be managed to meet resource objectives in fire adapted ecosystems if conditions are favorable. Smoke management would be a consideration in making the decision to manage a wildfire, similar to the process applied for prescribed fires. The opportunity for smoke drift into populated areas and/or Class I or II airsheds would be increased over that described for *Alternative A*.

### 4.9.12 From Wild Horse and Burro Management

#### *Alternatives A (No Action), B, C, D, and E (Proposed Alternative)*

There are no impacts expected.

### 4.9.13 From Management of Travel Management

#### *Alternative A (No Action)*

Prohibiting cross-country OHV would reduce levels of criteria pollutants and fugitive dust. In the Bradshaw-Harquahala Planning Area OHV travel would generate increased emissions of criteria pollutants and fugitive dust.

Any potential opening of new routes would increase fugitive dust during construction as well as increase emissions created by vehicles once the route is opened.

#### *Alternative B*

The net amount of roads closed or opened in the Agua Fria National Monument could have impacts on emissions and fugitive dust. In Agua Fria National Monument 134 miles of route would be left open and 32 net miles of route would be closed. Route closures could reduce fugitive dust created by construction as well as reduce emission of vehicles that used the route.

In the Bradshaw-Harquahala Planning Area net number of dirt roads would be reduced by 82 miles, and there would be 24 fewer miles of dirt road in Agua Fria National Monument. These route closures would likely reduce fugitive dust emissions in the immediate area along the routes. Regionally, these closures would not decrease vehicle use or emissions and fugitive dust. Route closures would concentrate more vehicles on remaining roads and thereby increase localized air quality impacts and fugitive dust levels.

Building and maintaining roadways, trails, and recreation facilities would generate temporary and short-lived emissions of criteria pollutants and fugitive dust from heavy equipment and earthmoving. BLM development activities would comply with local and county dust control ordinances to limit emissions and fugitive dust.

#### *Alternative C*

In Agua Fria National Monument, impacts on air quality would be similar to *Alternative B*, except that more vehicle routes would be closed or limited to motorized vehicles (48 miles).

In the Bradshaw-Harquahala Planning Area, impacts of OHV use would be similar to *Alternative B* except BLM would designate seven ACECs, further shifting OHV use and possible air quality impacts.

#### *Alternative D*

In Agua Fria National Monument, negative impacts to air quality would be the least due to the highest amount of route closures over other Alternatives (123 miles).

In the Bradshaw-Harquahala Planning Area 1,645 miles of routes would be closed. The route closures would reduce opportunities for air quality emissions and fugitive dust.

#### *Alternative E (Proposed Alternative)*

In the Agua Fria National Monument, impacts would be the same as *Alternative B*, except that more net route miles would be closed (52 miles).

Impacts in the Bradshaw Harquahala Planning Area would be similar to those described under *Alternative B*, except that routes would be designated through the route evaluation/designation process.

#### 4.9.14 From Management of Wilderness Characteristics

##### *Alternative A (No Action)*

There are no impacts expected.

##### *Alternative B*

Under this Alternative, 56,040 acres would be allocated to the management of wilderness characteristics. Allocations to manage wilderness characteristics, which would limit or restrict vehicle use, could intensify vehicle travel to remaining and nearby accessible areas. Wilderness character management could also limit, restrict or prohibit other surfacing disturbing activities. These actions could improve air quality within areas managed for wilderness characteristics. On-the-other-hand, these actions could result in temporary and localized degradation of air quality in other areas subject to increased vehicle use from displaced OHV users and surface disturbance from authorized activities.

##### *Alternative C*

Lands allocated to the management of wilderness characteristics under Alternative C (107,843 acres) would limit, restrict or prohibit surfacing disturbing activities and further constrain vehicle use across a larger area than described under Alternative B. Otherwise, impacts would be the same as described in *Alternative B*.

##### *Alternative D*

Impacts would be the same as described in *Alternative C*, except that there would be 140,235 acres allocated for management of wilderness characteristics, including 37,571 acres within the Agua Fria National Monument.

##### *Alternative E (Proposed Alternative)*

Impacts would be the same as described in *Alternative B* except that more area would be

allocated to the management of wilderness characteristics (88,179 acres). This alternative would afford less protection than *Alternatives C* and *D*.

## 4.10 Impacts on Water Resources

Impacts to water resources include effects on watershed resources such as soils, groundwater, vegetation cover, and surface water quality and quantity. These factors contribute to the riparian functional condition. Riparian system proper functioning condition, as defined in BLM's Riparian-Wetland initiative, is also included. The functioning condition of riparian-wetland areas is a result of interaction among geology, soil, water, and vegetation. Riparian-wetland areas are in proper functioning condition under the following conditions:

- Adequate vegetation, landform, or large woody debris is present to dissipate stream energy from high water flows, thereby reducing erosion and improving water quality.
- Sediments are filtered, bed-load is captured, and floodplains develop.
- Flood water retention and groundwater recharge are improved, root masses that stabilize streambanks against cutting action develop; and diverse ponding and channel characteristics are created to provide the habitat and the water depth, duration, and temperature needed for fish production, waterfowl breeding, and other uses.
- Greater biodiversity is supported.

This analysis focuses on management actions that could change the hydrologic functions of the planning areas. The functions of most concern are soil compaction and vegetation removal, which lead to increased runoff, erosion, and later sediment deposition downslope or into a stream. Please review Section 4.8 for the discussion of impacts on soils.

Soil compaction along roads that traverse slopes can create an impermeable barrier to downslope subsurface water flow. This barrier can convert subsurface runoff to surface runoff. They can then route surface runoff to stream channels, and increase peak flows and sediment delivery to streams (Megan and Kidd 1972). Therefore, watersheds with higher road densities, especially roads close to streams, have a higher probability of increased peak flows and sediment yield.

### 4.10.1 From Special Designations

#### *Alternative A (No Action)*

Under the current management of Agua Fria National Monument, Perry Mesa ACEC is likely to continue to experience minor degradation of water quality. The degradation occurs from disturbances created by vehicle and OHVs entering stream channels near road crossings and the effects of delivery of sediment from

roadways into stream channels.

The national monument's suitable Wild and Scenic River (WSR) segments would continue to be managed for nonimpairment to WSR values. Management actions to preserve these values would limit or preclude development or vehicular activities that would disturb soil and vegetation. Moreover, no new disturbance and the recovery of existing disturbance would likely reduce erosion and sedimentation, improving the river's hydrologic functions.

Current management of the Bradshaw-Harquahala Planning Area has designated five wilderness areas: Hells Canyon (9,900 acres), Hassayampa River Canyon (11,840 acres), Harquahala Mountains (22,880 acres), Hummingbird Springs (31,200 acres), and Big Horn Mountains (21,000 acres). Under current management in these wilderness areas, erosion and sedimentation of streams would be reduced, and hydrologic function of the areas is likely to improve because of restrictions on motorized

ACEC	Alternative A (Current)	Alternative B	Alternative C	Alternative D	Alternative E (Proposed)
<b>Agua Fria National Monument</b>					
Agua Fria Riparian Corridor				13,070	
Indian Creek			330		
Larry Canyon	80		50		
Lousy Canyon			80		
Perry Mesa	9,580				
Silver Creek			350		
Subtotal:	9,660		810	13,070	
<b>Bradshaw-Harquahala Planning Area</b>					
Baldy Mountain ONA				9,080	
Belmont-Big Horn Mountain				77,730	
Black Mesa			5,540	5,540	
Black Butte Raptor Area /ONA			800	14,480	8,260
Harquahala Mountain /ONA			41,670	74,940	74,950
Sheep Mountain RNA			4,270	4,270	
Tule Creek		640	640	640	640
Vulture Mountain Raptor Area			2,790	6,120	6,120
Subtotal:		640	55,710	192,800	89,970
<b>Total Acres:</b>	<b>9,660</b>	<b>640</b>	<b>56,520</b>	<b>205,870</b>	<b>89,970</b>

vehicles. Managing other uses to minimize disturbance would also improve hydrologic function.

### ***Alternative B***

Under *Alternative B* the impacts of Special Area Designations on water resources in the national monument would be the same as those described for *Alternative A*.

In the Bradshaw-Harquahala Planning Area managing Tule Creek ACEC would include its closure from mineral development (withdrawal from mineral entry). Withdrawal would eliminate the potential for disturbance to streambanks, soils, and ground cover from mining equipment/vehicle use and other related activities. In the lands closed to vehicles, former routes would revegetate, improving hydrologic function.

### ***Alternative C***

Designation of four ACECs in Agua Fria National Monument (Silver Creek, Indian Creek, Larry Creek, and Lousy Canyon) would impact water resources by closing the areas to grazing and vehicles. This would encourage revegetation of disturbed areas and would improve hydrologic function.

In the Bradshaw-Harquahala Planning Area six ACECs are proposed under *Alternative C* (Table 4-3).

The following management actions would improve hydrologic function by encouraging revegetation of disturbed areas and reducing erosion and downstream sedimentation:

- mineral entry withdrawal,
- changes or elimination of livestock grazing, and
- closure or mitigation of motorized vehicle routes.

### ***Alternative D***

In Agua Fria National Monument, the designation of the Agua Fria River Riparian Corridor ACEC, which would include the ACECs proposed by *Alternative C*, would have impacts similar to *Alternative C*. Management actions include closing, limiting, or mitigating vehicle routes and planned land acquisitions along Indian Creek. These actions would reduce OHV impacts to native vegetation, streambanks, and water quality. This ACEC is unlikely; however, to result in any measure of protection for water resources beyond that provided by the proclamation (Appendix A).

In the Bradshaw-Harquahala Planning Area, impacts under *Alternative D* would be similar to those described for *Alternative C*, but *Alternative D* would close more areas to mineral entry.

### ***Alternative E (Proposed Alternative)***

*Alternative E* proposes to evaluate eight eligible tributaries of the Agua Fria River in Agua Fria National Monument for suitability as additions to the National Wild and Scenic Rivers System. Impacts to water resources would be similar to those described for *Alternative A*, with extra emphasis on protecting the free-flowing character and outstanding wildlife, cultural, and scenic values along these eight streams until such time as they are designated as Wild and Scenic rivers or Congress rejects designation. It is expected that protective actions would maintain or improve water quality.

In the Bradshaw-Harquahala Planning Area management prescriptions for four ACECs (89,970 acres) would result in impacts similar to those described for *Alternative C*.

## 4.10.2 From Lands and Realty Management

### *Alternative A (No Action)*

Under the current management of Agua Fria National Monument, lands and realty management is subject to valid existing rights granted before the national monument's designation. Activities might continue if they are not precluded by the proclamation (Appendix A) and do not conflict with the established purpose.

In Agua Fria National Monument, actions for managing valid existing rights could lower water quality under the following conditions:

- construction-related delivery of pollutants and sediment occurs near surface drainages, or
- areas of groundwater recharge or natural processes of wetland or riparian function (e.g. runoff rate, soil erosion rate, water infiltration rate) are compromised.

Disturbances would be temporary, so hydrologic function would probably not change in the long-term.

In the Bradshaw-Harquahala Planning Area, impacts from disposal of as much as 54,370 acres outside MUs, include the potential loss of vegetation from developing those lands and possible increased erosion and sediment yield. Eventual development of the disposal lands in the Upper Agua Fria River watershed could also increase sediment yield in the upstream tributaries of the Agua Fria River and lower the water quality in Agua Fria National Monument. An increase in development could include an increase in the number of wells and increased groundwater use, which could lower groundwater levels and decrease contributions of groundwater to surface flows in the monument.

Acquiring privately owned and State-held lands in the Black Canyon and Lake Pleasant RCAs would create two large blocks of federally

managed lands. These acquisitions would consolidate management and help develop healthy native plant communities in the upland and the riparian communities. This outcome, in turn, might affect water resources by increasing ground cover and potentially reducing sediment yield.

Similarly, acquiring lands in the Cordes Junction, Bumble Bee/Williams Mesa MRMAs, and the four-mile reach of State land along the Hassayampa River would help BLM institute the land health standards that would protect and potentially improve the vegetation and might reduce sediment yield.

Building and maintaining facilities in planned transportation/utility corridors and at communication sites could degrade water quality as construction and operation create ground disturbance that could lead to increased soil erosion and result in increased stream turbidity. Construction could also disturb riparian vegetation and change the proper functioning condition over limited areas of construction. Mitigation actions to minimize water quality degradation would be the same as for minimizing soil loss.

### *Alternative B*

The Black Canyon utility corridor would be maintained but narrowed. This narrowing would affect water resources by reducing potential impacts from building and operating utilities in the corridor. Controls on development would minimize runoff into streams and route disturbance in such a way as to minimize impacts to water resources.

In the Bradshaw-Harquahala Planning Area impacts from disposal of land would be similar to *Alternative A*, except as much as 58,400 acres are available for disposal.

Building and maintaining planned transportation/utility corridors and communication sites would have impacts similar to those described for *Alternative A*.

***Alternative C***

Impacts on water resources in the Agua Fria National Monument would potentially be lower from the elimination of the Black Canyon utility corridor which would prohibit more utility right-of-way allocations. Impacts from operating and maintaining current facilities with prior existing rights would be similar to *Alternative A*.

The impacts of disposing of 49,100 acres of BLM-managed Federal lands would be similar to those for the disposal of lands under *Alternative B*.

Building and maintaining planned transportation/utility corridors and communication sites would have impacts similar to those described for *Alternative A*.

***Alternative D***

Impacts in Agua Fria National Monument would be the same as those described for *Alternative C*.

The impacts on water resources from acquiring private or State lands would be similar to those described for *Alternative B*.

Building and maintaining planned transportation/utility corridors and communication sites would have impacts similar to those described for *Alternative A*.

***Alternative E (Proposed Alternative)***

Impacts in both planning areas would be similar to *Alternative B*.

### **4.10.3 From Management of Soil, Air, and Water Resources**

***Alternative A (No Action)***

In Agua Fria National Monument water resources are generally expected to improve through applying erosion prevention measures

such as (1) limits on grazing access along streams and (2) control of OHV use in the river corridor. Management would focus on maintaining and improving riparian vegetation cover, which would reduce streambank erosion and sediment yield and generally contribute to the proper functioning condition of riparian areas. In the Bradshaw-Harquahala Planning Area water resources would benefit from incorporating salinity control measures (such as runoff controls and drainage routing) into erosion prevention strategies and rehabilitation treatments. Water resources would also benefit from implementing strategies for assuring spring flows. These actions would increase riparian and upland vegetation cover, which would reduce erosion and sediment yield.

***Alternatives B, C, D, and E (Proposed Alternative)***

In both planning areas, management prescriptions for soil, air, and water resources would protect water quality to meet Federal and State standards for designated uses. Moreover, all land tenure decisions (such as land sales or exchanges) would be reviewed for their impacts to water resources (including protection of instream flows).

The alternatives progress in their protection of soils, air, and water resources with *Alternative A* being the least protective and *Alternative D* being the most protective. Therefore, *Alternative E* is similar to the protections of *Alternative C*.

### **4.10.4 From Biological Resource Management**

***Alternative A (No Action), B, C, D, and E (Proposed Alternative)***

In Agua Fria National Monument impacts to water resources are expected from designating the Agua Fria River riparian corridor, which includes management actions, such as planting cottonwood and willow along the Agua Fria River and its tributaries. These changes in

riparian vegetation would improve functional condition of the riparian zone.

In the Bradshaw-Harquahala Planning Area impacts to water resources are expected from acquiring water rights to maintain or enhance spring/riparian habitats in the planning unit, which would improve the hydrologic functioning condition of those systems. Additionally, removing all burros at water sources in the Big Horn, Granite Wash, and Harquahala Mountains would reduce soil disturbance and potential soil erosion near those locations, and would promote growth of riparian vegetation at springs, seeps, and streams throughout the planning areas.

Management prescriptions for biological resources would benefit water resources by conserving, enhancing, and restoring water bodies and by increasing native grasses on upland sites and streambanks. These grasses would protect soil, increase infiltration, and reduce sediment yield. BLM would monitor water quality to ensure compliance with Federal and State standards.

#### **4.10.5 From Cultural Resource Management**

*Alternatives A (No Action), B, C, D, and E (Proposed Alternative)*

There are no impacts expected.

#### **4.10.6 From Paleontological Resource Management**

*Alternatives A (No Action), B, C, D, and E (Proposed Alternative)*

There are no impacts expected.

#### **4.10.7 From Recreation Management**

*Alternative A (No Action)*

Under the current management of both planning areas, sites with concentrated recreation could lose vegetation cover (both in riparian and upland vegetation communities) and undergo soil compaction. In riparian areas streambank stability could decrease. Decreased streambank stability could increase soil erosion, sediment yield, and sediment deposition.

Special Recreation Permits (SRPs) would have conditions and stipulations in place to prevent damage to active or seasonal water courses. Authorized SRPs would not greatly affect current watershed conditions.

Under the current management of the Bradshaw-Harquahala Planning Area unlimited cross-country OHV use on the public lands west of Highway 93 could increase soil erosion, sediment yield, damage to banks of drainages, and sediment deposition. Limiting vehicles to existing routes would maintain current conditions.

Also, in the Bradshaw-Harquahala Planning Area, impacts to water resources from recreation management are expected from the increased water use by visitors and the proliferation of unplanned and unmanaged recreational trails and facilities. Increased water use includes the need to secure legal entitlement to water for recreation and domestic uses (e.g. equestrian trails, campgrounds) and possibly drilling wells or developing spring sources to provide water for visitors.

Impacts from recreation management include the following:

- soil compaction from visitor use and OHV traffic,
- erosion due to vegetation loss,
- increased sediment yield due to concentrated use in and near water,

- decreased water quality by leaking OHV engine oil, and
- degradation of air quality by OHV engine emissions.

### ***Alternative B***

In the Front Country (57,900 acres) and Passage (300 acres) RMZs within Agua Fria National Monument sediment would continue to move from roadways into stream channels in certain areas open to OHV use. OHVs crossing streams would continue to increase turbidity in stream channels. OHVs crossing streams could degrade water quality by leaking engine oil. In *Alternative B* there would be 134 miles of open motorized route.

In the Bradshaw-Harquahala Planning Area, allocating eight SRMAs and two areas to maintain wilderness characteristics for management of recreation use could reduce soil erosion and sediment yield into drainages due to (1) building new facilities, such as parking lots and staging areas, and (2) maintaining a diverse network of motorized vehicle routes. These actions would harden some of the heavily used areas and would require motorized vehicles to stay on designated trails. Some activities that degrade water resources, as described in *Alternative A*, would continue.

### ***Alternative C***

In the Agua Fria National Monument, impacts would be similar to those described for *Alternative B*; except the Front Country RMZ would be reduced to 42,000 acres and the Passage RMZ would be reduced to 700 acres. Open motorized routes would also be reduced to 123 miles.

Impacts under *Alternative C* are expected to be similar to those described for *Alternative B*, but to a lesser degree due to (1) an increase in closed miles of motorized routes (Appendix N) and (2) the addition of more-restrictive motorized and non-motorized recreation prescriptions in nine SRMAs, six areas allocated to maintain

wilderness characteristics, three ONA ACECs, one RNA ACEC, and nine other ACECs.

### ***Alternative D***

In the Agua Fria National Monument, impacts would be similar to those described for *Alternative C*; except the Front Country RMZ would be reduced to 1,530 acres and the Passage RMZ would be 990 acres. Open motorized routes would also be reduced to a total of 48 miles.

In the Bradshaw-Harquahala Planning Area impacts are expected to be similar to those described for *Alternative C*, but to a significantly lesser degree. *Alternative D* proposes a greater net closure of motorized travel routes and the addition of more-restrictive motorized and non-motorized recreation travel prescriptions in nine SRMAs.

### ***Alternative E (Proposed Alternative)***

In the national monument, impacts would be similar to *Alternative B*, while there would be moderately restrictive limitations on vehicular access and visitor use in a Back Country Zone of 57,650 acres. Riparian and upland vegetation would benefit from decreased access, resulting in improved functional condition of riparian zones. As a result, improvements would occur in streams from increased riparian zone health and streambank stabilization, enhancing stream morphology.

Impacts in the Bradshaw-Harquahala Planning Area are expected to be similar to those described for *Alternative C*. As modeled in Appendix N, the net closure of motorized travel routes would be similar to those in *Alternative B*. Application of motorized and non-motorized recreation travel prescriptions would occur in three large SRMAs and six Recreation Management Zones (RMZs).

## 4.10.8 From Visual Resource Management

### *Alternative A (No Action)*

There are no impacts expected.

### *Alternatives B, C, D, and E (Proposed Alternative)*

Applying VRM Class I, II, and III standards and objectives to all new projects and land use authorizations could result in restrictions on some kinds of land development and use in the national monument and in all management units. Streams and drainages would experience decreased delivery of sediment due to limitations on construction projects and OHV use.

## 4.10.9 From Rangeland Management

### *Alternative A (No Action)*

Except for the Larry Canyon ACEC, livestock grazing would continue under the terms of existing permits and leases. Impacts to water resources would include trampling and reduced vegetation, resulting in increased soil erosion in riparian areas (see Section 4.8). Livestock grazing in riparian areas can also reduce streambank stability by reducing vegetation cover. This can lead to increased sediment yield, sediment deposition in streams, and possible changes in stream morphology, which reduces the functional condition of the riparian system.

In the Bradshaw-Harquahala Planning Area, applying rangeland health standards to livestock grazing would decrease soil disturbance, compaction, and erosion. Water resources would benefit from reduced sediment yield and deposition in streams, as well as from enhanced overall riparian functional condition. In both planning areas the guidelines adopted in Arizona Guidelines for Grazing Administration (see

Rangeland Management) would benefit water resources by:

- maintaining or promoting ground cover that would provide for infiltration, permeability, soil moisture storage, and soil stability suitable for the ecological sites in management units; and
- maintaining or promoting sufficient vegetation to maintain sediment capture, groundwater recharge, and streambank stability, thus promoting stream channel morphology (e.g. gradient, width/depth ratio, channel roughness, and sinuosity) and functions suitable to climate and landform.

With the implementing of these guidelines, hydrologic function would improve with decreases in soil erosion, sediment yield, and sediment deposition in streams.

### *Alternative B*

In both planning areas, impacts to water resources from rangeland/grazing management in uplands would be similar to those described for *Alternative A* except that grazing in riparian areas would be limited to winter, which would further reduce impacts to riparian hydrologic functions. This practice would reduce impacts to riparian vegetation and provide enhanced stabilization of stream morphology and decreased stream erosion.

### *Alternative C*

In both planning areas, impacts to water resources from grazing in uplands would be similar to those described for *Alternative A*, except that upland grazing would be greatly reduced and grazing in riparian areas would be eliminated. This would further reducing impacts to hydrologic functions and significantly improve riparian vegetation and stream morphology.

*Alternative D*

In both planning areas water resources would benefit from the following:

- closing existing livestock grazing allotments,
- canceling all current livestock authorizations for the duration of the plan, and
- building fencing to control livestock use of the unfenced public lands.

Of all the alternatives, *Alternative D* would cause the greatest improvement in water resources and riparian zone vegetation. Soil disturbance, sediment yield, and sediment deposition in streams would be lower than under any other alternative.

*Alternative E (Proposed Alternative)*

For the national monument, impacts would be the same as those under *Alternative B*, under which livestock would only graze in riparian areas during winter. Vehicular access would also be limited in the Back Country RMZ, which would benefit both riparian and upland vegetation to some extent by lessening damage to riparian areas, thus improving the overall functional condition of hydrologic processes in the riparian zones. Decreased erosion and sediment loading in streams would result.

For the Harquahala-Bradshaw Planning Area, impacts would be similar to *Alternative A*. management actions would focus on improving proper functioning condition; although, no specific restrictions are prescribed at this time. Restrictions such as seasonal grazing limitations could be implemented if monitoring finds deteriorating functional conditions.

## 4.10.10 From Minerals Management

*Alternative A (No Action)*

For the national monument all Federal minerals would be withdrawn from all forms of mineral entry, including exploration. Thus, no impacts to water resources are expected from new mining claims. Valid existing mining claims might be developed, which could degrade water resources. These claims are gold placer claims. They could affect water resources if they are developed, because stream gravels are processed by suction dredge and washed and screened to concentrate the gold particles. Impacts from placer mining could include the following:

- increasing sediment and turbidity in the stream,
- disrupting the streambed,
- changing stream morphology, and
- altering streamflow patterns and possibly riparian areas.

In the Bradshaw-Harquahala Planning Area, should exploration or development of mineral resources be pursued, special stipulations would be incorporated into the operating plan after the results of site-specific environmental assessments for each action are known. Impacts cannot be projected before preparing such assessments, which would include methods, mitigation, and rehabilitation plans to meet the required conditions established in aquifer protection permits, Section 404 permits, and other permits for protecting water quality. Adverse effects to water resources from minerals management would then be minimized.

*Locatable Minerals*

The planning area would generally be left open to mineral location and development. Exploration for and development of locatable minerals are likely to somewhat degrade water resources and could result in increased soil erosion, sediment yield, and sediment deposition in streams, and changes in stream

morphology. BLM would continue to administer mining in the Bradshaw-Harquahala Planning Area on a case-by-case basis and comply with regulations to prevent unnecessary and undue degradation of the environment (43 CFR 3715 and 43 CFR 3809).

#### *Saleable Minerals*

BLM-administered mineral estate serves as a major source of aggregate. Removing aggregate from floodplains could impair floodplain hydrologic function by destabilizing streambanks and contributing to increased erosion and sedimentation. Increased soil erosion, sediment yield, and sediment deposition in streams could also result.

#### *Leasable Minerals*

Areas open to leasable mineral development under current management could become a potential source of water quality degradation, if they are mined.

#### ***Alternative B***

Impacts to Agua Fria National Monument would be the same as for *Alternative A*.

In the Bradshaw-Harquahala Planning Area, potential impacts on water resources are related to the amount of land open to mineral development (see Table 4-4). All Federal lands would be open to mineral entry except for areas legislatively withdrawn and other specially segregated areas. Impacts for this Alternative would be similar to *Alternative A*.

#### ***Alternative C***

Impacts to Agua Fria National Monument would be the same as for *Alternative A*.

As in *Alternative B*, potential impacts in the Bradshaw-Harquahala Planning Area are related to the amount of land open to mineral development. Under this Alternative, the impacts would be substantially lower than those

under *Alternative B* because more land would be removed from mineral development.

#### ***Alternative D***

Impacts to Agua Fria National Monument would be the same as for *Alternative A*.

Impacts in the Bradshaw-Harquahala Planning Area would be lowest under this Alternative since the most amount of land would be removed from mineral development.

#### ***Alternative E (Proposed Alternative)***

Impacts to Agua Fria National Monument would be the same as for *Alternative A*.

In the Bradshaw-Harquahala Planning Area under *Alternative E*, impacts would be similar to those under *Alternative A*, except that riparian areas in the Black Canyon corridor would be closed to mineral material disposal, which would keep activity that could reduce water quality from occurring in those areas.

For the Bradshaw-Harquahala Planning Area impacts to mining would be the same as those under *Alternative B*.

### **4.10.11 From Fire Management**

#### ***Alternative A (No Action)***

Where prescribed burning is conducted in the planning areas the use of heavy equipment could disturb soil cover, thereby increasing soil erosion and stream sedimentation. The benefits of prescribed burning would greatly outweigh the potential harm from the use of heavy equipment.

Prescribed burning would allow fire to create a natural mosaic and establish vegetation communities of uneven age classes. Species diversity would be maintained, desirable perennial grasses would increase, and brush

would decrease. This would increase ground cover, which results in increased infiltration and reduced runoff, erosion, and sedimentation. Because fire-related disturbances are temporary, long-term impacts to water resources would be unlikely.

For both planning areas, fire suppression will use the appropriate management response based on assessments of case-specific conditions. The effectiveness of the resultant strategies will determine the amount of acreage that is burned. Depending on the severity and extent of the fire and the suppression tactics implemented, there could be impacts on soil repellency to water that could affect the potential for successful revegetation of an area.

Typically there is a mosaic effect within the burn area, short term impacts from the increase in bare ground will include a substantial increase in runoff, and corresponding sediment loads carried by these increased flows. Long term impacts could include altered channel morphology from greater peak flood events. The planning areas have substantial rock and gravels that slow flow that moderate the effects from the large runoff events.

#### ***Alternatives B, C, D, and E (Proposed Alternative)***

In both planning areas, fire use, including natural starts, prescribed burning and mechanical treatments, would have impacts similar to those described in *Alternative A* for the Agua Fria National Monument.

### **4.10.12 From Wild Horse and Burro Management**

#### ***Alternatives A (No Action), B, C, D, and E (Proposed Alternative)***

No wild horses or burros are present in Agua Fria National Monument, so no impacts would occur.

In the Bradshaw-Harquahala Planning Area removing burros that damage sensitive areas, such as Browns Canyon, would allow those areas to recover from intense use, leading to improved vegetation conditions on streambanks and improved hydrologic function.

### **4.10.13 From Management of Travel Management**

#### ***Alternative A (No Action)***

Proliferation of unplanned and unmanaged routes could continue to degrade stream bank stability and water resources.

Under the current management of the Bradshaw-Harquahala Planning Area unlimited cross-country OHV use on the public lands west of Highway 93 could increase soil erosion, sediment yield, damage to banks of drainages, and sediment deposition. Limiting vehicles to existing routes would maintain current conditions.

#### ***Alternative B***

In Agua Fria National Monument, sediment would continue to move from roadways into stream channels in certain areas open to OHV use. OHVs crossing streams would continue to increase turbidity in stream channels. OHVs crossing streams could degrade water quality by leaking engine oil.

Closing routes would reduce the above described impacts. Riparian and upland vegetation would benefit from decreased access, resulting in improved functional condition of riparian zones.

In the Bradshaw-Harquahala Planning Area, maintaining a diverse network of motorized vehicle routes would harden some of the heavily used areas and would require motorized vehicles to stay on designated trails.

***Alternative C***

Impacts under *Alternative C* are expected to be similar to those described for *Alternative B*, but to a lesser degree due to an increase in closed miles of motorized routes.

***Alternative D***

Impacts are expected to be similar to those described for *Alternative C*, but to a significantly lesser degree. *Alternative D* proposes a greater net closure of motorized travel routes.

***Alternative E (Proposed Alternative)***

In the national monument, impacts would be similar to those under *Alternative C* and *D* because of moderately restrictive limitations on vehicular access and visitor use.

Impacts in the Bradshaw-Harquahala Planning Area are expected to be similar to those described for *Alternative C*.

#### **4.10.14 From Management of Wilderness Characteristics**

***Alternative A (No Action)***

Currently no areas are allocated for the management of wilderness characteristics. As a result, no impacts are expected.

***Alternative B***

In the Agua Fria National Monument no impacts are expected.

In the Bradshaw-Harquahala Planning Area, 56,040 acres would be allocated for the management of wilderness characteristics. These management areas could reduce soil erosion and sediment yield into drainages caused by human activity.

***Alternative C***

Impacts would be the same as *Alternative B*, except that a larger area would be allocated for management of wilderness characteristics (107,843 acres).

***Alternative D***

Impacts would be the same as *Alternative B* except that 140,235 acres would be allocated for management of wilderness characteristics. This allocation would include 37,571 acres within the Agua Fria National Monument.

***Alternative E (Proposed Alternative)***

Impacts would be the same as *Alternative B* except that 88,179 acres would be allocated for management of wilderness characteristics.

## **4.11 Impacts on Biological Resources**

**Data Summary/Analytical Assumptions**

All activities undertaken or authorized by the BLM are subject to standard policy and guidance for the implementation of the Endangered Species Act and the National Environmental Policy Act. These policies and procedures should be fundamental considerations when evaluating the impacts of management actions and decisions on listed species.

### **4.11.1 From Special Designations**

The designation of special areas like ACECs and wild and scenic rivers generally benefit most wildlife species and their habitats by limiting or restricting activities and uses that can degrade habitat. While these types of designations can restrict some kinds of conflicting uses, they may also restrict some types of wildlife management activities and can result in increased visitor use

depending on the specific management prescriptions for an area. The increased visitor use can disturb some species and can degrade habitat quality in high-use areas. Other types of designations like back country byways can result in increased visitor use and have little or no direct benefit to biological resources but can provide the opportunity for public information and education about biological issues.

#### ***Alternative A (No Action)***

According to the current management guidance for Agua Fria National Monument, designating Larry Canyon and Perry Mesa ACECs are decisions that would remain in place following the implementing of this RMP. The 80-acre Larry Canyon ACEC was designated to protect pristine riparian habitat. As a result, motor vehicles and mineral entry are prohibited. However, Larry Canyon ACEC is located entirely within a steep canyon inaccessible to cattle and without any vehicle routes. Because the National Monument Proclamation withdrew the area from mineral entry, retaining the ACEC designation provides no measure of protection not otherwise provided by the proclamation (Appendix A).

Perry Mesa ACEC would provide the same level of protection from OHV impacts as provided by the proclamation.

In the suitable WSR segments of the Agua Fria River and eight tributaries, wildlife habitat would benefit from actions taken to protect values that define suitability for designation. Vehicle restrictions would reduce streambank erosion, water quality degradation, and adverse impacts to riparian vegetation and wildlife habitat.

Retaining the Harquahala Mountain Summit Scenic Road, which is an unpaved OHV route, would harm wildlife. Vehicle traffic along the route would occasionally disturb bighorn sheep and occasionally kill desert tortoises.

Management actions in designated wilderness areas (Hells Canyon, Hassayampa River

Canyon, Harquahala Mountains, Hummingbird Springs, and Big Horn Mountains) would protect vegetation and wildlife habitat by continuing to restrict OHV use of these areas.

#### ***Alternative B***

As in *Alternative A*, in Agua Fria National Monument continued management of the areas suitable for Wild and Scenic River corridors would protect sensitive riparian habitat. Designating Bloody Basin Road as a back country byway would likely increase recreation use of the area, thereby increasing ground disturbance from vehicular use and periodic maintenance. Wildlife deaths might occur as vehicular use increases. Bloody Basin Road crosses both arms of the pronghorn antelope movement corridor, near the Horseshoe Ranch and west of Badger Springs Wash, connecting habitat in Agua Fria National Monument to habitat in the Prescott and Tonto National Forests. Increased recreational use of the Bloody Basin Road Back Country Byway might impede pronghorn movement in the corridor and potentially alter behavior, including breeding.

In the Bradshaw-Harquahala Planning Area, designating Tule Creek ACEC would protect 1.3 miles of riparian habitat for the endangered Gila topminnow and other riparian and aquatic species by focusing conservation management on the area's regionally important deciduous riparian vegetation. Closing the stream channel to vehicle use and livestock grazing and withdrawing this area from mineral entry would do the following:

- protect streambanks,
- reduce soil erosion, and
- limit riparian habitat damage from mining equipment/vehicle use and other mining.

The management actions would benefit 640 acres of Category II desert tortoise habitat by providing more protection and management emphasis to the area.

Designating the Constellation Mine Road as a Back Country byway could increase recreational use of the roadway and could increase human disturbance of wildlife populations and vehicle-related wildlife mortality.

Impacts from wilderness management would be the same as described for Alternative A.

### *Alternative C*

Four new ACECs would be created in the national monument to protect 810 acres of rare riparian deciduous forest and habitat that supports the Gila chub, yellow-billed cuckoo, and several other priority species. Limiting vehicular travel in the Silver Creek (350 acres), Indian Creek (330 acres), Larry Creek (50 acres), and Lousy Canyon (80 acres) ACECs would have little effect on wildlife because only Silver Creek has any vehicular access which is only a single ford. As in *Alternative A*, these ACECs are unlikely to result in any measure of wildlife habitat protection beyond that currently provided by the Monument Proclamation (Appendix A), the Endangered Species Act (ESA), and Land Health Standards.

In the Bradshaw-Harquahala Planning Area six ACECs are proposed for designation under *Alternative C*: Harquahala Mountains (41,670 acres), Vulture Mountains (2,790 acres), Black Butte Raptor (800 acres), Sheep Mountain RNA (4,270 acres), Black Mesa (5,540 acres), and Tule Creek (640 acres).

The management actions for designating the Harquahala Mountain ACEC would (1) increase

forage for bighorn sheep by reducing livestock competition during lambing season and (2) protect unique vegetation communities. Banning new vehicle routes would reduce impacts to vegetation and the likelihood of habitat fragmentation. Spring sources would be protected from livestock impacts, increasing riparian vegetation, wildlife cover, and forage. Management actions would better protect desert tortoise habitat from conflicting human activities. Some temporary impacts to vegetation and wildlife habitat might occur during fence building to exclude livestock from springs.

Management actions related to designating the Vulture Mountains and Black Butte ACECs would benefit nesting raptors by reducing the potential for human harassment within 1/2 mile of nest sites during the nesting season and providing added protection against disturbance of adjacent foraging areas. The actions would also provide more protection for desert tortoise habitat from conflicting human activities.

Management actions related to designating the Sheep Mountain RNA ACEC would benefit wildlife, including desert tortoises, by reducing human harassment and providing some protection of habitat from ground disturbances, including mining.

Impacts related to designating Tule Creek ACEC would be similar to those described for *Alternative B*. Impacts related to designating Constellation Mine Road as a back country byway would be similar to those described for *Alternative B*. Designating Black Mesa ACEC,

<b>Desert Tortoise Habitat</b>	<b>Alt. A</b>	<b>Alt. B</b>	<b>Alt. C</b>	<b>Alt. D</b>	<b>Alt. E</b>
<i>ACEC (Total Acres)</i>	9,660	640	56,520	205,870	89,970
Category I (ac)	0	0	60,420	114,500	51,570
Category II (ac)	0	640	15,310	106,030	19,040
Category III (ac)	0	0	2,050	15,510	7,750
Riparian (mi)	15.50	1.30	10.40	49.50	1.70
<i>WHA (Total Acres)</i>	0	64,220	196,510	57,530	179,640
Category I (ac)	0	60,420	6,520	0	3,610
Category II (ac)	0	1,710	129,590	2,850	129,340
Category III (ac)	0	2,050	7,840	3,630	4,040
Riparian (mi)	0	0.40	14.70	5.00	14.70

while not specifically for biological resources, would provide management emphasis and some degree of habitat protection from mining disturbances. Wilderness management would have the same impacts as described for *Alternative A*.

The designation of these ten total ACECs in the planning areas would add additional protection to 60,420 acres of Category I desert tortoise habitat, 15,310 acres of Category II habitat and 2,050 acres of Category III habitat as well as emphasize protection of 10.4 miles of riparian habitat. See Table 4-5 for comparisons of tortoise and riparian habitats protected in ACECs and Wildlife Habitat Areas (WHAs) by alternative.

#### ***Alternative D***

In Agua Fria National Monument the Agua Fria River Riparian Corridor ACEC (13,070 acres) would include the ACECs proposed by *Alternative C* but would also incorporate much more riparian habitat. Management actions include closing, limiting, or mitigating vehicle routes and prioritizing land acquisitions along Indian Creek. These actions would benefit wildlife species and habitat, including the Gila chub, yellow-billed cuckoo, and several other priority species in a few areas. OHV impacts to native vegetation, streambanks, and water quality would be reduced. However, this ACEC is unlikely to result in any measure of wildlife habitat protection beyond that provided by the Monument Proclamation (Appendix A), the Endangered Species Act, and Land Health Standards.

In the Bradshaw-Harquahala Planning Area eight ACECs are proposed for designation under *Alternative D*: the Baldy Mountain ONA (9,080 acres), Sheep Mountain RNA (4,270 acres), Vulture Mountains (6,120 acres), Harquahala Mountains ONA (74,940 acres), Belmont-Big Horn Mountains (77,730 acres), Black Butte Raptor ONA (2,580 acres), Black Mesa (5,540 acres), and Tule Creek (640 acres).

Management actions and impacts related to designating Sheep Mountain RNA ACEC would be similar to those described for *Alternative C*, but would also include removing all fencing, which would allow unimpaired movement of wildlife with large home ranges.

Fencing would be removed because grazing would be eliminated on BLM's lands.

The Vulture Mountains ACEC would expand the ACEC from 2,790 acres to 6,120 acres, protecting raptor nest sites from disturbances and raptor foraging habitat within 1 mile of the cliffs. Closure of the area to mineral entry, would protect nesting raptors and desert tortoise habitat from a wider range of potential threats over a larger area than *Alternative C*.

Black Butte Raptor ONA ACEC would be expanded to 14,480 acres to protect a larger area. The impacts would include the closure of the area to mineral entry, protecting nesting raptors and desert tortoise habitat from a wider range of potential threats over a larger area than *Alternative C*.

Management actions in Harquahala Mountains ACEC would be similar to those described for *Alternative C* but would include prohibiting the building of new livestock fences and removing all fencing, which would facilitate wildlife movement throughout the area. Closing the ACEC to all forms of mineral entry would result in minimal human intrusion and less ground disturbance from mining. These management actions would benefit the resident bighorn sheep population, desert tortoises, and other wildlife by reducing mining impacts to vegetation.

Designating Belmont-Big Horn Mountains ACEC would benefit wildlife populations and habitat by doing the following:

- reducing or limiting vegetation disturbance and harassment from some activities,
- potentially acquiring important habitat, and

- eliminating fences that hinder deer and bighorn sheep movement.

Management actions would add management emphasis and protection to desert tortoise habitat.

Designating Baldy Mountain ACEC would benefit wildlife, including desert tortoises, by reducing human harassment and providing some protection of habitat from ground disturbances, including mining.

Impacts of designating Tule Creek ACEC would be similar to those described for *Alternative B* but would include protecting more area from vehicle disturbances, which affect upland wildlife, including desert tortoises.

Impacts from wilderness management would be the same as described for *Alternative A*.

The designation of these nine ACECs would add additional protection to 66,940 acres of Category I desert tortoise habitat, 167,710 acres of Category II habitat and 6,000 acres of Category III habitat as well as emphasize protection of 49.5 miles of riparian habitat. See Table 4-5 for comparisons of tortoise and riparian habitats protected in ACECs and WHAs by Alternative.

#### ***Alternative E (Proposed Alternative)***

In Agua Fria National Monument impacts of designating Bloody Basin Road as a Back Country byway would not occur therefore it would not have the impacts described in *Alternative B*.

In the Bradshaw-Harquahala Planning Area four ACECs are proposed for designation: Harquahala Mountains ACEC (74,950 acres), Vulture Mountains ACEC (6,120 acres), Black Butte ACEC (8,260 acres), and Tule Creek ACEC (640 acres).

Impacts of designating Tule Creek ACEC would be similar to those described for *Alternative B*.

Management actions for designating the Vulture Mountains ACEC would benefit nesting raptors by reducing the potential for human harassment within 1 mile of nest sites during the nesting season and by providing added protection against disturbance of adjacent foraging areas. The actions would better protect desert tortoise habitat from conflicting human activities.

Designating and managing the Harquahala Mountains ACEC would reduce motor vehicle disturbances to bighorn sheep, desert tortoises, and other wildlife. It would also set a high priority on restoring and maintaining vegetation diversity, spring sources, and healthy wildlife populations. Limiting the building of new roads and fences would facilitate wildlife movement throughout the area. Allocating the area as VRM Class II may affect wildlife management activities (see Section 4.11.8 From Visual Resource Management). Developing visitor facilities might alter wildlife movement through and around those facilities.

Management actions for designating the Black Butte ACEC would benefit nesting raptors (1) by reducing the potential for human harassment within 1 mile of nest sites during the nesting season and (2) by providing added protection against disturbance of adjacent foraging areas. The actions would better protect desert tortoise habitat from conflicting human activities. Allocating the area as VRM Class II may affect wildlife management activities (see Section 4.11.8 From Visual Resource Management).

The designation of these four ACECs would add additional protection to 74,490 acres of Category I desert tortoise habitat, 19,040 acres of Category II habitat and 7,780 acres of Category III habitat as well as emphasize protection of 1.7 miles of riparian habitat. See Table 4-5 for comparisons of tortoise and riparian habitats protected in ACECs and WHAs by Alternative.

Impacts from wilderness management would be the same as described for *Alternative A*.

### 4.11.2 From Lands and Realty Management

Lands and realty authorizations and activities, with the exception of land acquisitions, can be detrimental to biological resources and can result in a loss of habitat quantity or quality. The effects of these types of activities and actions are described in more detail in the following section.

Building more utilities, transportation corridors, and communications sites can disturb vegetation in the facility footprint and could encourage the establishment of invasive weeds in or next to the disturbed areas. The designation of transportation and utility corridors and communication sites can allow these types of facilities to be placed in locations where the adverse impacts to biological resources are minimized or reduced.

Linear features normally authorized by right-of-way can have the following affects:

- fragment habitat,
- prevent wildlife movement,
- result in loss of habitat
- result in wildlife collisions,
- increase human presence and harassment,
- displace individual animals,
- degrade habitat quality, and
- facilitate long-term human population growth.

Land disposals remove lands from Federal ownership and administration thus removing protections afforded by some Federal environmental regulations including NEPA and Section 7 of the ESA. Land acquisitions have the opposite effects.

#### *Alternative A (No Action)*

In Agua Fria National Monument, continued use of the existing utility right-of-way is expected to temporarily harm vegetation because of ground disturbance during operation and maintenance.

These activities can also encourage the establishment of invasive weeds in or next to the disturbed areas.

Acquiring privately owned and State-held lands in the Black Canyon and the Lake Pleasant RCAs would create two large blocks of federally managed lands. These blocks would consolidate management and help develop healthy native plant communities in upland and riparian communities. Healthy native plant communities, in turn, would benefit wildlife, including special status species; such as desert tortoise, by providing adequate forage, cover, and breeding habitat.

Similarly, acquiring lands in the Cordes Junction, Bumble Bee, and Williams Mesa MRMAs and the four-mile reach of State land along the Hassayampa River would help BLM institute the Land Health Standards that would protect and restore wildlife habitat in these areas.

Building and operating facilities in the Meade-Phoenix and Parker-Liberty transportation corridors, the Central Arizona Project corridor, the future gas line corridor, and the El Paso Natural Gas Company's No. 1104 corridor could create barriers to wildlife movement and disturb Category I, II, and III tortoise habitat.

Decisions contained in the recently finalized amendment to the Lower Gila North MFP allow for disposal of lands containing threatened or endangered species habitat if other public uses outweigh the value of the federal lands as endangered species habitat. While there is currently no endangered species habitat in the area covered by these decisions, should a species occurring in the area be listed in the future, disposal would likely adversely affect the species.

Acquiring high resource value lands in the MFP area would allow consolidation and federal protection of priority species and priority habitats.

Mitigation actions could include (but would not be limited to) avoidance of sensitive habitat, remediation of disturbance to habitat, or compensation for lost habitat.

### ***Alternative B***

In Agua Fria National Monument narrowing the Black Canyon utility corridor would reduce potential impacts to vegetation and wildlife habitat during the building and operating of utilities.

Impacts from disposing of up to 58,400 acres of land outside the MUs would include the potential loss of vegetation and wildlife habitat on those lands.

Acquiring lands meeting the criteria described for Management Common to All Action Alternatives would benefit vegetation and wildlife by consolidating management under Federal ownership and reducing the potential for habitat disturbance from non-Federal projects.

Building and maintaining facilities in planned transportation and utility corridors and communication sites would have similar impacts to those described for *Alternative A*. The Black Canyon Corridor would be expanded one mile west of its current western boundary to accommodate future utilities outside the national monument. There are no current plans by industry to construct additional utility lines through that corridor within the life of this plan. Proposals for utility development would be confined to the expanded corridor and impacts would be addressed in an Environmental Assessment or Environmental Impact Analysis conducted when a project is proposed.

### ***Alternative C***

Eliminating the Black Canyon utility corridor would prohibit more utility rights-of-way in Agua Fria National Monument. No other utility impacts to vegetation or wildlife habitat are expected beyond operating and maintaining the existing facilities with prior existing rights.

In the Bradshaw-Harquahala Planning Area, the impacts on biological resources from acquiring non-Federal lands and disposing of up to 49,100 acres of BLM-managed Federal land would be similar to those described for *Alternative B*.

Building and maintaining planned transportation and utility corridors and communication sites would have similar impacts to those described for *Alternative A*. The Black Canyon Corridor would be expanded two miles west of its current western boundary to accommodate future utilities outside the national monument. There are no current plans by industry to construct additional utility lines through that corridor within the life of this plan. Proposals for utility development would be confined to the expanded corridor and impacts would be addressed in an Environmental Assessment or Environmental Impact Analysis conducted when a project is proposed.

### ***Alternative D***

In Agua Fria National Monument, eliminating the Black Canyon utility corridor would have impacts similar to those described for *Alternative C*.

In the Bradshaw-Harquahala Planning Area, building and maintaining facilities in planned transportation and utility corridors and at communication sites would have impacts similar to those described for *Alternative A*. The portion of the Black Canyon corridor west of Interstate 17 would remain the same as it is currently, but the corridor would be expanded south to include BLM's land past Black Canyon City and across Table Mesa. This would create a couple of very narrow places in the corridor which may make it impractical for future utility development, or which would limit placement of facilities, increasing the possibility of having power line towers impacting sensitive resources.

The impacts on biological resources from acquiring private or State lands would be similar to those described for *Alternative B*.

**Alternative E (Proposed Alternative)**

In Agua Fria National Monument, narrowing the Black Canyon utility corridor would have impacts similar to those described for *Alternative B*.

In the Bradshaw-Harquahala Planning Area the impacts on biological resources from acquiring non-Federal lands and disposing of up to 38,755 acres of BLM-managed lands would be similar to those described for *Alternative B* except fewer acres are available for potential disposal.

In the Bradshaw-Harquahala Planning Area, building and maintaining facilities in planned transportation and utility corridors and at communication sites would have impacts similar to those described for *Alternative A*, but the portion of the Black Canyon corridor west of Interstate 17 would be expanded westward one mile from the Bumblebee area south, and one miles from Bumblebee north. The impacts of the corridor expansion would be similar to those describe in *Alternative B*.

The impacts on biological resources from acquiring private or State lands would be similar to those described for *Alternative B*.

### **4.11.3 From Management of Soil, Air, and Water Resources**

Soil, air, and water resource management activities are all designed to restore or maintain resource conditions which also enhance the conservation of species and habitats. These activities may allow some level of loss or degradation associated with multiple use, but overall BLM would strive to achieve the long-term conservation of the resources.

*Alternatives A (No Action), B, C, D, and E (Proposed Alternative)*

Implementing activity plans to maintain or improve watershed conditions, soil cover, and

water flows would benefit biological resources by maintaining or improving riparian vegetation quality, species diversity, and water quality in select drainages.

### **4.11.4 From Biological Resource Management**

Biological resource management allocations, objectives and management actions are all designed to enhance the conservation of species and/or habitats. These activities may allow some level of habitat loss or degradation associated with multiple use, but BLM would strive to achieve the long-term conservation of biological resources with emphasis on priority species and priority habitats.

#### **Alternative A (No Action)**

In Agua Fria National Monument, proposed landscape improvements, such as cottonwood and willow plantings along the Agua Fria River and its tributaries, would increase the density and quality of the riparian plant communities and improve the quality of wildlife habitat.

Firewood collection within the monument would be prohibited where it affects wildlife habitat, so no impact to biological resources is expected.

Continued stocking of federally listed sensitive native fish such as the Gila chub, Gila topminnow, and desert pupfish, into suitable habitat in the Agua Fria watershed could increase the population size, geographic distribution, and overall viability of these native fishes.

Modifying livestock fencing would facilitate pronghorn antelope movement between lambing and foraging areas.

Protecting Arrastre Creek, Antelope Creek, Weaver Creek, and the Harquahala Mountains would maintain vegetation and wildlife habitat.

Cooperating with the Arizona Game and Fish Department (AGFD) to acquire water rights in

addition to reducing competition for water among big game species, livestock, and burros would ensure the legal availability of water and maintenance of flows in seeps and springs throughout the Bradshaw-Harquahala Planning Area. This water would maintain aquatic and wetlands vegetation and wildlife.

The use of native plant species when restoring or rehabilitating disturbed or degraded rangelands would reestablish native rangeland plant communities and improve forage and habitat quality for wildlife.

Protecting significant cliff areas in the Big Horn and Vulture Mountains and the Black Butte area would benefit raptors, including golden eagles, by reducing human harassment during their nesting season. Limits on the use of the area by wild burros and restrictions on other rights-of-way would protect raptor foraging areas from degradation and disturbance.

Protecting bighorn sheep lambing areas in the Harquahala Mountains from habitat disturbance and disposal would increase forage quality and quantity and reproductive success in sheep populations.

Decisions contained in the recently finalized amendment to the Lower Gila North MFP include measures that reduce competition between bighorn sheep and domestic livestock for available resources, reduce the possibility of disease transmission between domestic sheep and bighorn sheep and allow bighorn sheep population transplants and augmentations to facilitate establishment and maintenance of healthy bighorn sheep populations.

The prescribed protection from some construction activities in sensitive botanical areas in the vicinity of Arrastre Creek, Antelope Creek, Weaver Creek and the Harquahala Mountains would have little beneficial effect to the botanical resources given that the land health standards incorporated by previous plan amendment and wilderness designation of the Harquahala Mountains afford essentially the

same level of protection provided by the decisions.

Supplemental plantings of cottonwood and willow trees around springs and along riparian areas would supplement natural regeneration and expedite achieving desired plant community objectives.

Evaluating spring developments for impacts to endemic snails would contribute to the conservation of the natural biologic function of these ecosystem components.

The decision to monitor water quality at identified problem areas and improve conditions to meet established standards would have little effect to the biological resources given that the land health standards incorporated by previous plan amendment affords essentially the same level of protection provided by the decision.

Coordination and cooperation with the Arizona Game and Fish Department on the development of wildlife water catchments would benefit many wildlife species by making year-long water sources available and assist the Department in achieving desired population objectives.

Coordinating with livestock grazing allottees on the development of range management projects like fences and livestock waters would ensure that potential adverse impacts to wildlife habitat are avoided, fences do not hinder wildlife movement and livestock waters are safely accessible to wildlife populations year-long.

Livestock grazing management decisions to monitor browse species; construct monitoring exclosures and to develop an allotment management plan for the Harquahala Mountains, would have little effect to the biological resources given that the land health standards incorporated by previous plan amendment afford essentially the same level of protection provided by the decisions.

Implementation of desert tortoise management guidance would conserve and protect desert tortoises and their habitat.

The decision to develop fire management plans for the Bradshaw-Harquahala planning area would have little effect to the biological resources given that the Statewide Fire and Fuels plan amendment affords essentially the same prescription as the decision.

### ***Alternative B***

Most of the management prescriptions for biological resources apply to all action Alternatives; therefore, with the exception of allocated wildlife habitat areas and other special areas that influence habitat management, there is little difference between Alternatives. All of the actions discussed below are designed to maintain or improve the condition of priority wildlife populations and priority habitats.

Applying the Land Health Standards to all BLM-authorized activities would benefit biological resources by:

- reducing soil erosion,
- restoring and maintaining the functional condition of riparian habitats,
- ensuring that progress is made toward desired plant communities in both riparian and upland areas, and
- reducing the presence of invasive species.

Implementing these standards would place a high priority on the habitat needs of special status species where wildlife and other land uses conflict.

Reintroducing, transplanting, and supplemental stocking of wildlife, including game, nongame, and endangered species, would enhance biological resources by (1) restoring or maintaining wildlife populations, distributions, and genetic diversity and (2) contributing to the conservation and recovery of listed species.

Implementing desert tortoise management standards and actions would conserve and protect tortoise populations and habitat. Habitat protection for tortoises would affect other wildlife species that use the same habitat, such as rosy boa, chuckwalla, Gila monster, mule deer, and desert bighorn sheep.

Management direction provided by Desired Future Condition (DFC) objectives would benefit biological resources. The objectives would protect and conserve priority habitats and priority species, implement approved recovery plans, and contribute toward the conservation and recovery of listed threatened or endangered species.

Considering the impacts of permitted activities on priority wildlife species and priority habitats in determining conformance with the management direction provided by the DFC objectives would ensure maintenance of habitat quantity and quality, minimize or avoid "take" of migratory birds, and generally conserve biological resources.

Management direction provided by DFC objectives would benefit biological resources by establishing habitat standards whereby habitat quality would be protected for many riparian and upland species. These objectives would be considered part of Standard Three of the Land Health Standards and be implemented using BLM's discretion.

Management actions designed to protect springs and seeps would affect biological resources by protecting from overexploitation these important habitat features and their value to biological resources and natural processes.

Management actions to maintain wildlife water availability would ensure that water-dependant wildlife would continue to have access to existing water sources and new water sources could be built where needed to maintain, restore, or enhance populations. These actions would affect the distribution and abundance of some wildlife during some seasons. Research is

ongoing to look at impacts of artificial wildlife waters.

Implementing standards for artificial water design, water quality monitoring, and water rights protection would benefit biological resources by protecting aquatic wildlife habitat quality and quantity as well as wildlife access to water.

Prohibiting domestic sheep and goat grazing within nine miles of occupied desert bighorn sheep habitat would significantly reduce the likelihood of disease transmission to the wild sheep populations.

Guidance on exotic species management would benefit biological resources by protecting native wildlife and plants by emphasizing the restoring and maintenance of native species.

Management actions to evaluate and mitigate impacts to sensitive wildlife habitat would benefit biological resources by giving wildlife habitat a priority over motorized recreation when conflicts are found.

Land tenure guidance would affect biological resources by ensuring that endangered species conservation or recovery values are retained on Federal lands.

Management actions to continue to manage wildlife habitat cooperatively and in partnership with the AGFD and other entities would benefit biological resources by focusing management emphasis and resources on high-priority issues and avoiding costly redundancy.

The Agua Fria National Monument Proclamation (Appendix A) describes wildlife and habitats, emphasizing their management. This emphasis places a high priority on biological resources when conflicts arise between wildlife management and other land uses.

Collection of dead and down firewood for campfire use in the monument would remove small amounts of dead woody material used by

some wildlife species. In upland areas the woody material selected for firewood is from species (mesquite and catclaw) targeted for reduction in plans to enhance the diversity and health of the native desert grasslands. Impacts to biological resources are expected to be negligible. Collection of firewood in riparian areas could reduce habitat for wildlife dependent on dead and down woody material. Though the impact of wood collection is expected to be low, provisions to temporarily or permanently close areas to wood collection to prevent resource damage should avoid any adverse effects to wildlife habitat.

In the Bradshaw-Harquahala Planning Area, impacts to biological resources from firewood and vegetation collection would be essentially the same as those described for the national monument, except that noncommercial collection of some wood and cacti skeletons is allowed. Restricting commercial collection would protect stands of ironwood and mesquite that provide valuable habitat for many birds and other wildlife. In addition to closing, limiting, or mitigating motorized vehicle routes in the Harquahala Mountains Wildlife Habitat Area (64,220 acres), prohibiting the building of rangeland improvements in Browns Canyon and the Inner Basin would benefit biological resources by reducing impacts to Sonoran desert scrub, chaparral vegetation, and priority wildlife habitat, including habitat for mule deer, bighorn sheep, and desert tortoise.

The designation of the Harquahala Mountain WHA would add additional protection to 60,420 acres of Category I desert tortoise habitat, 1,710 acres of Category II habitat and 2,050 acres of Category III habitat as well as 0.4 miles of riparian habitat in Browns Canyon by emphasizing wildlife habitat management in this area. See Table 4-5 for comparisons of tortoise and riparian habitats protected in ACECs and WHAs by alternative.

*Alternative C*

Impacts to biological resources would be similar to those described for *Alternative B*, except as described below.

The allocation in Agua Fria National Monument of the Pronghorn Fawning Habitat WHA (16,810 acres) and the Pronghorn Movement Corridor WHA (22,520 acres) would do the following:

- limit or mitigate vehicular access to achieve DFCs,
- prohibit developing new recreational facilities,
- require in all fences meet BLM standards, and
- emphasize management of wildlife habitat, thereby reducing pronghorn habitat fragmentation and movement restrictions

In these managed areas, prescribed burns would improve pronghorn forage quality and reduce the abundance and spread of invasive species.

Allocating the Belmont/Big Horn Mountains WHA (140,790 acres) and Date Creek Mountains WHA (2,850 acres) would require the closure, limitation, or mitigation of motorized vehicle routes to reduce impacts to wildlife populations and habitat fragmentation. In the Belmont/Big Horn Mountains, this allocation would also protect bighorn sheep and desert tortoise populations from habitat fragmentation and allow unrestricted movement and greater use of this habitat, maintaining genetic diversity and population health of bighorn sheep. Other management actions for these areas include (1) acquiring State and private lands and (2) prohibiting the building of new fences. These actions would protect and maintain Sonoran desertscrub vegetation communities by restricting land disturbance.

Allocating the Upper Agua Fria River Basin Habitat Corridor WHA (9,907 acres) would benefit biological resources (1) by eliminating conflicts with vehicle routes that degrade

wildlife habitat value and (2) by allowing pronghorn and mule deer to move between BLM-managed lands and national forest lands by eliminating the building of new fences.

The designation of the WHAs would add additional protection to 6,520 acres of Category I desert tortoise habitat, 129,590 acres of Category II habitat and 7,840 acres of Category III habitat as well as 14.7 miles of riparian habitat by emphasizing wildlife habitat management in these areas. See Table 4-5 for comparisons of tortoise and riparian habitats protected in ACECs and WHAs by alternative.

*Alternative D*

Impacts to biological resources would be similar to those described for *Alternative B*, except as described below.

In Agua Fria National Monument impacts of allocating the Pronghorn Movement Corridor and the Pronghorn Fawning Habitat WHAs would be similar to those described for *Alternative C*, except that all fences would be removed in the absence of livestock grazing and substantial obstacles to movement would be eliminated.

Impacts of allocating Date Creek Mountains WHA would be similar to those described for *Alternative C*, except that all existing fences would be removed and mineral material and vegetation sales would be prohibited. These management actions would allow big game to move throughout the areas and would eliminate potential tortoise habitat destruction from mineral material sales.

Impacts of allocating the Upper Agua Fria River Basin Habitat Corridor WHA (21,443 acres) would be similar to those described for *Alternative C*, except that the management would be applied to a larger area and all fences would be removed, facilitating big game movement.

The designation of the WHAs would add additional protection to 2,850 acres of Category

II habitat and 3,630 acres of Category III habitat as well as five miles of riparian habitat by emphasizing wildlife habitat management in these areas. See Table 4-5 for comparisons of tortoise and riparian habitats protected in ACECs and WHAs by alternative.

#### ***Alternative E (Proposed Alternative)***

Impacts to biological resources would be similar to those described for *Alternative B* except as described below.

Impacts of allocating the Pronghorn Movement Corridor WHA and the Pronghorn Fawning Habitat WHA would be similar to those described for *Alternative C*. *Alternative E* would prevent impacts to pronghorn during the fawning season from human activity resulting from special recreation use permits.

Within the Agua Fria National Monument, impacts of allocating the Belmont/Big Horn Mountains WHA would be similar to those described for *Alternative C* for allocating Belmont/Big Horn Mountains WHA and the Harquahala/Belmont/Big Horn Wildlife Corridor WHA.

The designation of the WHAs would add additional protection to 3,610 acres of Category I desert tortoise habitat, 129,340 acres of Category II habitat and 4,040 acres of Category III habitat as well as 14.7 miles of riparian habitat by emphasizing wildlife habitat management in these areas. See Table 4-5 for comparisons of tortoise and riparian habitats protected in ACECs and WHAs by alternative.

In the national monument, eight tributaries of the Agua Fria River are determined as eligible for analysis as potential additions to the national Wild and Scenic Rivers System. BLM policy requires protection of the outstandingly remarkable wildlife habitat values along these stream segments.

### **4.11.5 From Cultural Resource Management**

Cultural resource management activities that protect sensitive sites can also protect biological resources that occur in the same area. Activities that encourage greatly increased visitor use or prescribe facility development can result in species or habitat disturbance that could degrade habitat conditions for some species.

#### ***Alternative A (No Action)***

Management actions for cultural resources that prohibit surface disturbance near known archaeological sites would protect vegetation and wildlife habitat in those areas.

#### ***Alternative B***

In Agua Fria National Monument, biological resources could be degraded by implementing high public use at five sites. If these site developments include visitor facilities with gravel parking areas, restrooms, and picnic facilities; vegetation loss and increased human activity could alter wildlife use of the area and lead to habitat loss and fragmentation. Any potential impacts to pronghorn or other biological resources in the national monument would be tempered by the requirement that management actions be consistent with the National Monument Proclamation (Appendix A). A portion of Black Mesa, along with the Badger Springs Wash area, is located in a pronghorn migration corridor. Public use of the sites could disturb the movements of the pronghorn. Impacts of developing four cultural sites to moderate public use, including such improvements as hardened trails and signs, would be lower than developing them to High Public Use. No impacts are expected from Low Public Use developments.

In the Bradshaw-Harquahala Planning Area there could be site-specific conflicts with biological resources, at locations developed for public use in eight or fewer SCRMA'S. The resources affected, and the nature and extent of

impacts, would depend on the site location, size, and surrounding habitat. Impacts would be reduced by the decision to manage desert tortoise habitat for no net loss in amount or quality.

#### *Alternative C*

In Agua Fria National Monument biological resources could be degraded by implementing high public use at one sites, Potential impacts would be similar to those described for *Alternative B* but limited to one area. Impacts from developing the eight Moderate Public Use sites described would be similar to those described for *Alternative B* but at more sites. Overall, development of public use sites is expected to have lower impacts than in *Alternative B*.

In the Bradshaw-Harquahala Planning Area, impacts would be similar to those described for *Alternative B*, but in fewer locations.

#### *Alternative D*

No sites would be allocated to High Public Use, and impacts from developing one Moderate Public Use site would be limited to that single area. There would be no conflicts with pronghorn migration corridors.

In the Bradshaw-Harquahala Planning Area, impacts would be similar to those described for *Alternative B*, but in fewer locations than in *Alternative C*.

#### *Alternative E (Proposed Alternative)*

In Agua Fria National Monument biological resources could be affected by implementing high public use at two sites and, to a lesser extent, moderate public use at up to six sites. The construction of visitor facilities, such as parking lots, trails or ramadas, could disturb small areas of habitat. Higher numbers of visitors could alter wildlife use of an area, contributing to habitat loss or fragmentation. Project planning will address the mitigation of potential adverse effects of site-specific

interpretive uses on biological resources. No sites will be developed for interpretive use in low public use areas, excluding at least 85% of the monument from impacts associated with higher visitation and development at public use sites.

In the Bradshaw-Harquahala Planning Area impacts would be similar to those described for *Alternative B*, but the impacts would be more limited in potential locations because two SCRMA's would be excluded from public use allocations.

### **4.11.6 From Paleontological Resource Management**

Paleontological resource management activities that protect sensitive sites can also protect biological resources that occur in the same area.

*Alternatives A (No Action), B, C, D, and E (Proposed Alternative)*

There are no impacts to biological resources expected under any Alternative.

### **4.11.7 From Recreation Management**

Recreation management activities can impact biological resources in various ways depending on the type of allocation or management action and location. Most types of recreational activities cause some level of disturbance to wildlife populations or vegetative communities. The development of recreational facilities like parking or staging areas, trailheads and hiking trails can destroy or degrade habitat within the footprint of the facility and also degrade the habitat quality of the surrounding area by encouraging human disturbance of wildlife populations and plant communities.

Management prescriptions that limit or restrict various types of activities can reduce adverse impacts to populations and habitat. Facility development can direct human activities to

previously disturbed areas or areas less sensitive or less susceptible to degradation from recreational activities.

### ***Alternative A (No Action)***

In the Agua Fria National Monument recreation uses would be allowed to the extent that they are consistent with the primary purpose of the monument to protect the objects identified in the proclamation.

In the Bradshaw-Harquahala Planning Area, current levels of recreation management would inadequately protect biological resources. Informal concentrated recreational use areas would continue to develop and grow causing increasing levels of habitat loss and disturbance. The location and use of these areas would continue to be unplanned and may conflict with sensitive biological resources, priority species or priority habitats, including riparian areas and desert tortoise habitat.

In both planning areas, cross-country travel by both motorized and non-motorized users could lead to the creation of permanent trails, sometimes called “social” or “user” trails that braid across the landscape. Plants are trampled, damaged or destroyed during the creation of these routes. These user-created and non-engineered trails are subject to hardening or erosion and may cross and impact fragile plant habitats. Cryptogamic (black crusty soil) soils in some desert locales and desert pavement areas in others are easily damaged. Erosion can lead to loss of plant life.

### ***Alternative B***

In Agua Fria National Monument the allocation of 57,900 acres of Front Country and 300 acres of Passage RMZs would emphasize public recreation use. This use could encourage ground disturbance in and near recreation use areas and access roads, degrading vegetation and wildlife habitat. Additionally, both campgrounds proposed by *Alternative B* would be in pronghorn movement corridors. Human activity in these campgrounds could affect pronghorn

behavior, reducing the value of fawning areas on Black Mesa and modifying pronghorn movement in the Bloody Basin Road area.

Allocating 12,700 acres of Back Country RMZ would emphasize natural primitive landscapes, resulting in limited access and less ground disturbance to vegetation and wildlife habitat.

In the Bradshaw-Harquahala Planning Area seasonally restricting motorized speed or timed events in Category I and II desert tortoise habitat would avoid impacts to desert tortoises from these types of activities.

Limiting designation of rock crawling areas to areas where biological values do not exist or could be mitigated would protect biological resources.

In the Table Mesa SRMA 20 acres allotted for OHV staging areas would destroy any remaining vegetation in these areas. In the Hieroglyphic Mountains SRMA, 30 acres allotted for OHV staging areas would destroy any remaining vegetation in these areas. In the Wickenburg SRMA, allotting 20 acres for OHV staging areas would destroy any remaining vegetation in these areas. In the San Domingo SRMA, allotting 10 acres for OHV staging areas would destroy any remaining vegetation in these areas.

Impacts on vegetation from cross-country travel by motorized and non-motorized users could cause impacts similar to those described under *Alternative A*.

Decisions contained in the recently finalized amendment to the Lower Gila North MFP provide protection for desert tortoise by restricting where Long-term Visitor Areas could be located and require resource protection as a concurrent objective of developing some types of recreational facilities.

Management of the Vulture Mountains as a Special Recreation Management Area emphasizing motorized and non-motorized recreational activities would likely degrade the wildlife habitat values in the area including that

for desert tortoise and nesting raptors by increasing visitor use and human disturbance to the area.

### *Alternative C*

Impacts to biological resources in Agua Fria National Monument would be similar to those under *Alternative B* except that visitor use impacts on the Front Country RMZ could affect 42,000 acres. The developed campground in the Badger Springs area would be in a narrow portion of the pronghorn movement corridor, where human activity could affect pronghorn behavior, reducing the value of fawning areas on Black Mesa.

Impacts to biological resources in the Back Country RMZ would be similar to those described for *Alternative B*, except that the Back Country RMZ would be expanded to 28,200 acres.

Impacts to biological resources from allocating a Passage RMZ would be similar to those described for *Alternative B*, except that the Passage RMZ would occupy just 700 acres.

Within the Bradshaw-Harquahala, impacts from staging areas and route designations would be similar to those described for *Alternative B*, except the size of the disturbance and vegetation loss would be less.

Impacts on vegetation from cross-country travel by motorized and non-motorized users could cause impacts similar to those described under *Alternative A*.

### *Alternative D*

Impacts to biological resources in Agua Fria National Monument would be similar to those under *Alternative B*, except that visitor use impacts of the Front Country RMZ would affect 1,530 acres. The national monument would have no developed campgrounds, decreasing possible impacts to pronghorn behavior in the pronghorn movement corridor.

Impacts to biological resources in the Back Country RMZ would be similar to those described for *Alternative B* except that the Back Country RMZ would be expanded to 68,380 acres.

Impacts to biological resources from allocating a Passage RMZ would be similar to those described for *Alternative B*, except that the Passage RMZ would consist of 990 acres.

Within the Bradshaw-Harquahala, impacts from staging areas and route designations would be similar to those described for *Alternative C*, except that the size of the disturbance and vegetation loss would be greater, especially in Castle Hot Springs SRMA.

Shifting uses in the Hieroglyphic Mountains SRMA from motorized to non-motorized over the life of the plan would reduce habitat fragmentation and disturbance and the displacing of wildlife.

Impacts on vegetation from cross-country travel by motorized and non-motorized users could cause impacts similar to those described under *Alternative A*, but would be less pronounced under this alternative due to vehicle use and entry prescriptions.

### ***Alternative E (Proposed Alternative)***

Impacts to biological resources in Agua Fria National Monument would be similar to those under *Alternative B*, except that visitor use impacts of the Front Country RMZ would affect 11,900 acres. As in *Alternative D*, the national monument would have no developed campgrounds.

Impacts to biological resources in the Back Country RMZ would be similar to those described for *Alternative B* except that the Back Country RMZ would be 57,650 acres. Impacts to biological resources from allocating a Passage RMZ under *Alternative E* would be similar to those described for *Alternative B* except that the Passage RMZ would consist of 1,350 acres.

Within the Bradshaw-Harquahala, impacts from staging areas and route designations would be similar to those described for *Alternative A*.

Impacts on vegetation from cross-country travel by motorized and non-motorized users could cause impacts similar to those described under *Alternative B*.

### **4.11.8 From Visual Resource Management**

The designation and management to maintain VRM objectives can limit or restrict some types of activities in some locations. Limiting or precluding the development of facilities that would otherwise destroy or degrade wildlife habitat can benefit wildlife populations. Class I and II designations may limit or preclude active wildlife management, like the development of artificial water sources, if mitigation is not possible, which can benefit some wildlife populations.

#### ***Alternative A (No Action)***

In the Lower Gila North MFP (BLM 1983) area, impacts to biological resources from designating areas as VRM Class I would influence the design and location of wildlife management developments, including water facilities, by requiring that the level of change from the characteristic landscape be very low and not attract attention from key observation points. Some types of habitat developments may be precluded at some locations depending on design and site characteristics. This allocation may also limit or preclude some types of developments that could destroy habitat or adversely affect wildlife populations. VRM Class I for the entire planning area is allocated only within designated wilderness areas and equals 96,820 acres. The Phoenix RMP (BLM 1988a) area has no VRM classification except where designated wilderness is VRM Class I.

In the absence of VRM allocations, implementation actions use VRM Class III standards. VRM Class III would allow wildlife

related developments to attract the attention but not dominate the view of the casual observer. Though efforts would be made to minimize the visual impacts of wildlife related developments, few limitations would be likely imposed on placement or design.

#### ***Alternative B***

Impacts to biological resources would be similar to those under *Alternative A*, except that the area in VRM Class I would be 96,820 acres and VRM Class II would be allocated to 486,800 acres.

Similar to the VRM Class I description in *Alternative A*, VRM Class II would influence the design and location of wildlife management developments, except that they should not attract the attention of the casual observer from key observation points.

#### ***Alternative C***

Impacts to biological resources would be similar to those under *Alternative B*, except that the area in VRM Class I would increase to 109,570 acres and the area in VRM Class II would increase to 507,610 acres.

#### ***Alternative D***

Impacts to biological resources would be similar to those under *Alternative B*, except that the area in VRM Class I would decrease to 298,310 acres and the area in VRM Class II would decrease to 340,880 acres.

#### ***Alternative E (Proposed Alternative)***

Impacts would be similar to those described for *Alternative A*, except that the area in VRM Class I would increase to 96,820 acres and the area in VRM Class II would increase to 488,250 acres.

### 4.11.9 From Rangeland Management

Livestock grazing can degrade vegetative communities in both upland and riparian areas by selectively grazing or browsing more palatable plants. Livestock can degrade water quality in springs and streams through trampling, defecation and facilitating silt runoff from overgrazed watersheds. Grazing can degrade wildlife and fish habitat by removing forage and cover, and altering stream morphology. Grazing can also facilitate the introduction and establishment of exotic plants by creating disturbed areas and depositing seeds from other locations. Livestock management facilities can limit wildlife movement (fences), alter natural behavior through the establishment of numerous temporary water sources that wildlife become dependent upon and degrade habitat by creating livestock concentration areas.

Rangeland management can reduce or mitigate the above potential adverse effects to biological resources by setting ecological standards or objectives and Desired Future Conditions that address the needs of the plant communities and wildlife populations then prescribing and enforcing management actions to achieve them. Active rangeland management can regulate the authorized use to avoid the degradation of biological resources. Livestock facilities can be designed to avoid or minimize adverse effects to habitat and animal behavior.

Permanent livestock waters can provide an important habitat component for many species in areas where roads have fragmented habitat and eliminated access to historic water sources.

#### *Alternative A (No Action)*

Adhering to the *Rangeland Health Standards* would benefit biological resources by doing the following:

- reducing soil erosion,
- restoring and maintaining the functional condition of riparian habitats, and

- ensuring that progress is made toward desired plant communities in both riparian and upland areas, including reducing the presence of invasive species.

Implementing these standards would prioritize the habitat needs of special status species, where wildlife and other land uses conflict. Implementing changes in grazing practices and management systems as a result of the *Rangeland Health Standards* would also increase vegetation density and cover, which provide forage and cover for wildlife.

Prohibiting livestock grazing in Larry Canyon ACEC in Agua Fria National Monument would have little effect on biological resources because the sensitive riparian habitat in the ACEC is inaccessible to cattle.

Modifying all fences to facilitate big game movement would benefit biological resources by allowing unimpeded movement of pronghorn and other game between seasonal use areas.

Developing new range water sources might benefit biological resources by making usable some habitat that would not otherwise be suitable because of a lack of water. Some wildlife might expand or increase as a result of the increased water availability. However, the presence of range waters might alter the behavior of some wildlife species, populations, or individuals. Wildlife might become dependent on these water sources and be adversely affected if the water source is not maintained. While designed to be wildlife friendly, range water sources can result in mortality to some small mammals and birds, which can become trapped in troughs and storage tanks not designed or maintained to BLM's standards.

Range waters might also be a potential source of disease transmission to some game species. These waters tend to concentrate livestock use and result in over-utilization of vegetation and soil alterations in the area of influence, generally within a half mile of the water source.

Habitat alteration resulting from concentrated use can reduce forage availability for some wildlife, including desert tortoise and mule deer.

### ***Alternative B***

Impacts from adhering to the *Rangeland Health Standards* would be the same as in *Alternative A*.

Implementing ephemeral allotment designations when warranted would eliminate year-long livestock use of perennial shrubs and trees in Sonoran desertscrub vegetation communities, where precipitation and vegetation production are low. The absence of perennial use would likely increase native grass production, shrub and tree cover, and habitat complexity essential for many small mammals and birds.

Allowing the consideration of allotment retirement when lands are devoted to other public purposes could increase plant species diversity and wildlife habitat complexity in areas of implementation.

In Agua Fria National Monument limiting livestock grazing in riparian areas to winter only (November 1 to March 1), implemented through the allotment evaluation process, would do the following:

- ensure recruitment and survival of cottonwood, willow, ash, and sycamore trees;
- reduce livestock loafing along creek bottoms, which degrades streambanks and alters channel morphology, thereby increasing the channel width-depth ratio and creating a deeper channel with more pools;
- allow the accumulation of vegetation in the herbaceous layer that protects the natural function of streams.

These effects would increase the diversity and abundance of plant species and the complexity of the wildlife habitat, benefiting a number of

wildlife species, including endangered fishes and migratory birds.

In the Bradshaw-Harquahala Planning Area, implementing riparian management through the allotment evaluation process would have effects on biological resources similar to those described for Agua Fria National Monument, except that impacts would occur more slowly and management techniques could vary.

In both planning areas, impacts from water developments and fences would be the same as those described in *Alternative A*.

### ***Alternative C***

In Agua Fria National Monument impacts to biological resources from closing all riparian pastures to livestock grazing would be similar to those described for *Alternative B* for the winter season of use, except that the vegetation and stream channel response would likely be more pronounced and occur more quickly due to the lack of vegetation utilization and trampling. Upland areas in riparian pastures would likely respond to the absence of livestock grazing by increasing vegetation ground cover and litter. Wildlife forage would increase because livestock would remove no annual production. Individual plants would not be hedged. Most plants would produce more seeds and accumulate decadent material and litter in the absence of livestock utilization. This accumulation of vegetation material would increase wildlife habitat diversity and abundance, which in turn would result in increases in populations of wildlife depending upon vegetation cover.

In the Bradshaw-Harquahala Planning Area impacts to biological resources would be similar to those described for Agua Fria National Monument.

Closing the Harquahala Mountains ONA ACEC to livestock grazing during bighorn sheep lambing season (January 1 – April 1) would increase wildlife forage quality and availability and eliminate competition between bighorn

sheep and livestock for forage during the critical lambing season. These benefits should increase lamb fitness and survival.

Prohibiting the developing of facilities that would increase livestock use in Browns Canyon and the Inner Basin would eliminate concentrated livestock use from sensitive riparian and upland habitat areas.

Impacts from water developments and fences would be the same as those described in *Alternative A*.

#### ***Alternative D***

The affects of removing all livestock from Federal lands in both planning areas would be similar to those described for riparian and upland areas under *Alternative C*. However, *Alternative D* would affect a much larger area.

Eliminating all range improvements that serve no purpose in the absence of livestock grazing would remove many fences and corrals that hinder natural movement of pronghorn, mule deer, and bighorn sheep.

Impacts from water developments would be greatly reduced due to the limitations and restrictions on grazing. Facilities that are not needed for other management purposes or are creating negative impacts would be removed.

#### ***Alternative E (Proposed Alternative)***

*Alternative E* would have impacts similar to those described for *Alternative B*.

### **4.11.10 From Minerals Management**

Minerals exploration and extraction can destroy or degrade wildlife habitat by removing vegetation and altering the landscape. Minerals extraction activities include the development and use of haul roads that can fragment habitat. Minerals extraction activities can destroy habitat for sensitive species like the desert tortoise,

chuckwalla and rosy boa by removing rocks that provide burrows and coversites. Mining activities within streams and washes can degrade or destroy habitat on site and also downstream by altering the hydrology of the area. Mining activities can leave behind disturbed areas that facilitate the establishment of exotic plant species and pits that can entrap some wildlife species.

Active minerals management can ensure that biological resource concerns are addressed during the development of mining plans of operation. Discretionary activities and facilities can be modified to the extent allowable by law in order to protect sensitive biological resource.

Abandoned mine shafts and adits are an important source of roost sites for many bat species and can be used by various other wildlife species including javelina, barn owls and various reptiles.

#### ***Alternative A (No Action)***

Agua Fria National Monument is closed to new mineral entry. This closure removes the threat of vegetation clearing, habitat loss, and exotic plant introduction that could occur as a result of mining.

In the Bradshaw-Harquahala Planning Area minerals actions would be evaluated on a case-by-case basis and impacts to biological resources would be mitigated and avoided to the extent allowable by regulation. Some residual loss of desert tortoise habitat is likely as a result of mining conducted under the 3809 regulations. This unmitigated loss is expected to be relatively small.

#### ***Alternative B***

In Agua Fria National Monument impacts to biological resources would be similar to those described for *Alternative A*.

Closing Tule Creek ACEC to mineral entry, mineral leasing, geothermal leasing, and mineral material disposal would reduce ground

disturbances and impacts to vegetation and wildlife habitat, including habitat for the endangered Gila topminnow and desert tortoise.

Closing the Hassayampa “Box” area to mineral entry would reduce ground disturbance and impacts to vegetation and wildlife habitat, including priority riparian habitat.

Opening reconveyed lands to mineral entry could result in mining and mineral material sales in areas now closed. Mining could disturb priority habitats, including riparian areas and desert tortoise habitat, and could degrade the value of these habitats to wildlife.

### ***Alternative C***

In Agua Fria National Monument impacts to biological resources from minerals management would be similar to those described for *Alternative A*.

Impacts to biological resources in Tule Creek ACEC from minerals management would be similar to those described for *Alternative B*.

Closing Sheep Mountain RNA ACEC to mineral entry would reduce the potential for ground disturbance and mining-related impacts to vegetation and wildlife habitat, including desert tortoise habitat.

Closing the Harquahala Mountains ONA ACEC to mineral entry would reduce the potential for ground disturbance and mining-related impacts to vegetation, spring sources, and wildlife habitat, including desert tortoise and bighorn sheep habitat.

Opening reconveyed lands with high mineral potential to mineral entry could result in mining and mineral material sales in areas now closed to those activities. Mining could disturb priority habitat, including that of desert tortoises. Priority riparian habitat on reconveyed lands would be protected from mining disturbances.

### ***Alternative D***

In Agua Fria National Monument impacts to biological resources from minerals management would be similar to those described for *Alternative A*.

Keeping reconveyed lands closed to mineral entry would protect from mining disturbances priority wildlife habitats, including riparian areas and desert tortoise habitat.

Impacts to biological resources in Tule Creek ACEC from minerals management would be similar to those described for *Alternative B*.

Impacts to biological resources from closing the Harquahala Mountains ONA ACEC, Baldy Mountain ONA ACEC, and Sheep Mountain RNA ACEC to mineral entry would be similar to those described for *Alternative C*.

Impacts to biological resources from closing the Belmont-Big Horn ACEC to mineral material disposal and leasing would be similar to those described for *Alternative B* for the lands allocated to maintain wilderness characteristics.

### ***Alternative E (Proposed Alternative)***

In Agua Fria National Monument impacts to biological resources from minerals management would be similar to those described for *Alternative A*.

Impacts to biological resources in Tule Creek ACEC from minerals management would be similar to those described for *Alternative B*.

Impacts to biological resources from management of reconveyed lands would be similar to those described for *Alternative C*.

In other areas, impacts would be similar to *Alternative A*.

### 4.11.11 From Fire Management

Fire management can suppress wildfires that destroy habitat in non-fire adapted vegetative communities like Sonoran Desertscrub and suppress catastrophic wildfires that can destroy habitat in fire adapted communities like chaparral. By managing wildfires and choosing the appropriate management response, suppression actions take into consideration both negative and positive resource impacts due to fire.

The use of prescribed fire in fire adapted vegetative communities can restore natural vegetative communities and natural fire return intervals to which the wildlife and plant communities are adapted to historically. Prescribed fires can be designed to avoid adverse impacts associated with catastrophic wildfires and optimize the beneficial effects to the vegetation by controlling fire intensity and timing.

#### *Alternative A (No Action)*

The use of prescribed fire in Agua Fria National Monument would particularly affect pronghorn habitats by doing the following:

- removing old, woody vegetation,
- promoting the growth of healthy new plants for forage,
- eliminating shrubs that allow predators to ambush pronghorn,
- increasing the quality of fawn hiding cover, and
- helping control or potentially eliminate invasive species and restore the natural fire cycle.

Full wildland fire suppression of naturally set fires in the national monument could interrupt the natural fire cycle required for proper successional development of plant communities. Suppression of natural fires can promote the growth of invasive or exotic species and allow a buildup of the existing fuel load.

Full suppression of all fires in the Bradshaw-Harquahala Planning Area would have the same impacts to fire-adapted communities (grassland and chaparral) as those shown above.

Full suppression of fires in Sonoran desertscrub habitat in the Bradshaw-Harquahala Planning Area would affect vegetation and wildlife by decreasing mortality to species not adapted to fire.

#### *Alternatives B, C, D, and E (No Action)*

Vegetation and wildlife (particularly pronghorn antelope) would benefit from prescribed burning and mechanical treatment of the vegetation in the planning areas. Impacts would include a temporary reduction in the availability of forage. Over the long term these treatments would do the following:

- eliminate invasive species,
- reduce the fuel load, and
- improve and maintain the species diversity of perennial grasses and forbs.

The treatments would also reduce the population size of invasive species in fire-adapted environments throughout the planning areas, reducing competition between invasive species and native vegetation for available space, nutrients, and water.

Allowing natural fire starts to burn when conditions are suitable would allow the natural fire cycle to occur in fire-adapted grassland and chaparral plant communities. These fires would create a natural mosaic of vegetation of different successional stages as well as improve forage and reduce hazardous fuels.

Full suppression of fires in Sonoran desertscrub habitat in the Bradshaw-Harquahala Planning Area would have the same impacts as described in *Alternative A*.

### 4.11.12 From Wild Horse and Burro Management

Maintaining and managing burro populations can have adverse impacts to vegetation and wildlife habitat. Burro use can remove forage and cover for some wildlife species and degrade habitat quality, especially along riparian areas, through utilization of vegetation and bank trampling. Burros can compete with game species for available forage and water.

Active management of burro herds can ensure burro numbers are maintained at levels that do not degrade habitat nor adversely impact plant communities.

#### *Alternative A (No Action)*

No impacts are expected in Agua Fria National Monument.

In the Harquahala Herd Area (HA), concentrated burro use of sensitive habitats, especially in Browns Canyon in the Harquahala Mountains, would continue to cause degradation of those habitats and increase competition between wildlife species and burros for limited forage and water resources.

Maintaining the burro herd within the 80,800-acre Lake Pleasant Herd Management Area (HMA) at the Appropriate Management Level (AML) determined in the Lake Pleasant Herd Management Plan would minimize competition between burros, wildlife, and livestock.

#### *Alternative B*

Impacts are the same as in *Alternative A*.

#### *Alternatives C and D*

By eliminating the burro population in the Harquahala HA, sensitive habitats where burros now concentrate would begin to recover and burros would not compete with mule deer and bighorn sheep for forage, water, or other habitat.

Impacts in the Lake Pleasant HMA are the same as in *Alternative A*.

#### *Alternative E (Proposed Alternative)*

Removing nuisance burros and burros impairing sensitive habitats would result in impacts similar to those described for *Alternatives C* and *D*.

The effects of eliminating the burro population in the Harquahala HA would be the same as *Alternatives C* and *D*.

Impacts in the Lake Pleasant HMA are the same as in *Alternative A*.

### 4.11.13 From Management of Travel Management

Roads and vehicle ways can degrade habitat quality for many wildlife species, destroy habitat when roads are created, cause habitat fragmentation, disrupt natural animal behavior, result in direct mortality to individual animals, alter natural flow of streams and washes, pollute downstream water sources, encourage the spread of invasive plant species and increase human disturbance to wildlife populations.

The mere presence of a road has little or no impact to wildlife populations. It is the frequency of road use and the associated human and vehicle presence that impacts wildlife populations.

In general, more improved roads receive more use and the wider the road, the more improved the road, the more disruptive the road is to wildlife populations. Road densities can also affect wildlife populations and habitat quality. Generally, the higher the road density, the more impact there is to wildlife but the frequency of road use has more influence than road density.

For example, an area with 4 miles of roads which are infrequently used may have minimal impact to wildlife populations while the same size area with 2 miles of roads that receive heavy use may cause wildlife populations to

avoid the roads and habitat fragmentation may occur.

Managing transportation and access by closing roads that are unneeded, prohibiting off-road travel and controlling traffic volume by regulating the width or level of improvement can reduce the adverse impacts of roads to wildlife populations, vegetation and wildlife habitat.

#### ***Alternative A (No Action)***

In Agua Fria National Monument, biological resources would benefit from prohibiting cross-country OHV use, which would prevent the destruction of vegetation and priority wildlife habitats and habitats for priority species.

Decisions contained in the recently finalized amendment to the Lower Gila North MFP eliminate cross country travel, limit vehicle use to existing and/or designated roads and vehicle routes, prohibit creation of unauthorized routes and allow for vehicle use of designated routes only when needed for resource protection. These measures would provide some protection to priority species and priority habitats but is reactive and management measures would lag behind resource degradation.

Prohibiting cross-country OHV use in the management area covered by the Phoenix Resource Management Plan (BLM 1988a) would provide some protection for sensitive desert tortoise habitat but plan language makes enforcement difficult due to the lack of route designation or signing. Vehicle use of routes that degrade the value of sensitive riparian and tortoise habitat would likely continue and increase.

Route proliferation would likely continue as a result of not designating open routes. Habitat loss and fragmentation would likely continue to increase with time. Human disturbance to wildlife populations in more remote areas would likely increase as more vehicle routes are established in these areas.

#### ***Alternative B***

Designating 134 miles of road as open and closing 37 miles in the Agua Fria National Monument would reduce the likelihood of habitat fragmentation and human disturbance to priority habitat and priority species, including riparian and pronghorn habitats. Closed roads would reclaim and restore habitat.

Most of the roads on the Agua Fria National Monument receive infrequent use and do not appear to constitute barriers to wildlife movement.

In the Bradshaw-Harquahala Planning Area, designating vehicle routes and closing undesignated routes and cross-country travel would benefit biological resources by reducing human disturbance associated with vehicle activity, reduce the potential for habitat fragmentation and allow closed routes to reclaim and provide habitat values.

#### ***Alternative C***

Impacts in Agua Fria National Monument would be similar to those described for *Alternative B* except that only 123 miles of roads would remain open, and 48 miles would be closed reducing potential adverse impacts to wildlife.

Impacts in the Bradshaw-Harquahala Planning Area would be similar to those described in *Alternative B*.

#### ***Alternative D***

Impacts in Agua Fria National Monument would be similar to those described for *Alternative B*, except that only 48 miles of roads would remain open, and 123 miles of roads would be closed potential adverse impacts to wildlife would be much reduced.

Impacts in the Bradshaw-Harquahala Planning Area would be similar to those described in *Alternative B*.

***Alternative E (Proposed Alternative)***

Impacts in Agua Fria National Monument would be similar to those described for *Alternative B* except that only 94 miles of roads would be open.

Impacts in the Bradshaw-Harquahala Planning Area would be less than *Alternative C* but more than *Alternative D*.

#### **4.11.14 From Management of Wilderness Characteristics**

The allocation and management of areas to maintain wilderness characteristics can reduce adverse impacts associated with roads, vehicles and other human activities to biological resources by restricting access and the types of activities permitted.

These types of allocations may also add restrictions to some types of management activities which require mechanized access but are beneficial to wildlife and wildlife habitat. Construction of some types of wildlife water facilities in some locations may be incompatible with wilderness characteristics objectives or associated VRM objectives and require modification or mitigation.

Allocations to maintain wilderness characteristics would recognize wildlife populations and habitat as important aspects of naturalness and actively manage them. Such management would minimize impacts to wildlife.

***Alternative A (No Action)***

There would be no impacts to biological resources because there are no areas managed for wilderness characteristics in this Alternative.

***Alternative B***

Allocating 56,040 acres to maintain wilderness characteristics in the Harquahala Management Unit, along with restrictions to roads and vehicles, would reduce disturbances to priority wildlife habitats.

Closing lands allocated to maintain wilderness characteristics to mineral material disposal would reduce ground disturbance and impacts to vegetation and wildlife habitat.

No allocations to maintain wilderness characteristics were made in the Agua Fria National Monument under this alternative.

***Alternative C***

Impacts would be similar to *Alternative B*, except that allocating 107,843 acres to maintain wilderness characteristics in 3 management units, along with restrictions to roads and vehicles and minerals would further reduce disturbances to priority wildlife habitats.

***Alternative D***

Impacts would be similar to *Alternative C*, in the Bradshaw-Harquahala Planning Area except 140,235 acres would be allocated to maintain wilderness characteristics. These areas would be less subject to impacts associated with mineral disposal activities

Allocating areas to maintain wilderness characteristics in the Agua Fria National Monument and associated restrictions to roads and vehicles would have little affect on biological resources as vehicle and road restrictions are required to protect the monument resources and included in all alternatives.

***Alternative E (Proposed Alternative)***

In the Bradshaw-Harquahala Planning Area, impacts would be similar to *Alternative B*, except 89,870 acres would be allocated to maintain wilderness characteristics and these areas would not be closed to mineral material

disposal making them subject to impacts associated with this activity.

In the Agua Fria National Monument, impacts would be similar to *Alternative B*.

## 4.12 Impacts on Cultural Resources

The impact analysis addresses the following management priorities and uses for cultural resources:

- resource protection
- scientific research, and
- public education and interpretation.

Protecting significant cultural resources is an overarching goal of all of the Alternatives, as well as a directive that is accorded special emphasis in Agua Fria National Monument. In addition, because the significance of an archaeological or historical site may be closely related to its scientific research potential, the consequences of implementing the Alternatives on current and future research opportunities need to be determined. Finally, even though no stipulations were made in the Agua Fria National Monument Proclamation (Appendix A) for public use, some degree of onsite public education and interpretation is considered desirable, though not to the detriment of the cultural resources that Agua Fria National Monument was created to protect. In the Bradshaw-Harquahala Planning Area, demand is also increasing for opportunities for cultural heritage tourism.

The Alternatives discussed in Chapter 2 differ mainly in the proposed number of sites and SCRMA's that would be allocated to public use. Generally, the greater the public use is expected to be, the greater the potential for cultural resource damage. However, increased use also provides greater opportunities for public education and promotion of responsible stewardship.

### 4.12.1 From Special Designations

#### *Alternative A (No Action)*

Cultural resource inventories, such as those described in Section 3.6, would continue throughout the planning areas in each Alternative. These studies are nonintrusive and have no noticeable affect on the locations in which they are conducted.

Cultural resources represent one of the outstanding values for which the Agua Fria River was recommended as suitable for wild and scenic river designation. BLM guidance mandates the protection of these values. Actions implemented to protect wildlife habitat and scenic values, which are also regarded as outstanding, are also likely help to preserve the integrity of cultural resources in the river corridor. For example, the closure of Badger Springs Wash to vehicles has helped to protect the integrity of the Badger Springs petroglyph site.

Within designated Wilderness Areas, prohibitions of motorized and mechanized use, as well as restrictions on development would continue to preserve cultural resources in their current condition.

#### *Alternative B*

No impacts are expected from removing the Perry Mesa and Larry Canyon ACEC designations because the Monument Proclamation (Appendix A) provides a higher level of protection for cultural resources across a more extensive landscape.

An increased number of users resulting from Back Country byway designations would likely affect cultural resources along Bloody Basin and Constellation Mine Roads. Potential impacts include the possibility of increased vandalism and accelerated erosion at roadside sites. Increases in traffic could create a need for more frequent maintenance or stabilization to preserve

the historical masonry features of Constellation Road. Other effects include greater opportunities for public education and cultural heritage tourism.

Designating Tule Creek ACEC would help protect cultural resources by restricting motorized access and eliminating grazing from fenced areas. These actions would limit surface disturbances that could damage archaeological features.

### ***Alternative C***

Impacts from designating Bloody Basin and Constellation Mine Roads as Back Country byways would be similar to those discussed for *Alternative B*.

Among the special designation areas described for *Alternative C*, the Black Mesa, Tule Creek, Black Butte, and Harquahala Mountains ACECs are known to contain significant cultural resources. These and other proposed ACEC designations would include restrictions on transportation routes, rights-of-way, livestock grazing, and minerals actions. Such restrictions would help protect cultural resources by limiting public access and ground-disturbing activities. The management prescriptions for the Black Butte ACEC allow for restricting activities that might threaten the integrity of the Vulture obsidian source, an important cultural resource.

### ***Alternative D***

Because *Alternative D* proposes no Back Country byways, no impacts to cultural resources are expected.

ACEC designations would have similar impacts to those discussed for *Alternative C*. Designating more ACECs would further restrict motorized access and other land uses, thereby better protecting cultural resources.

### ***Alternative E (Proposed Alternative)***

No back country byways are proposed; therefore, no impacts to cultural resources are

expected in the national monument or the remainder of the planning area

ACEC designations would have impacts similar to those discussed for *Alternative C*. Rather than being designated as an ACEC, the Black Mesa area would be nominated to the National Register of Historic Places as the Black Mesa Rim Archaeological District. Cultural resources would be protected by management actions identified as common to all Alternatives for the Black Mesa/Bumble Bee SCRMA in Section 2.7.3.6. These actions include road closures, fencing to exclude livestock from sites, signing, and frequent monitoring. This area would also be excluded from public use. A National Register listing would underscore the cultural importance of the area in support of BLM's efforts to protect it through a partnership with the Arizona Site Stewards and other organizations. The Black Mesa Rim Archaeological District would be next to, as well as complementary to the Perry Mesa National Register District.

## **4.12.2 From Lands and Realty Management**

### ***Alternative A (No Action)***

Land acquisitions could bring into federal ownership significant archaeological sites in and around Agua Fria National Monument, thereby enhancing values that the national monument was created to protect. In the monument and the rest of the planning area, added protection afforded to acquire cultural resources under federal management, such as applying the Archaeological Resources Protection Act (ARPA), would also help ensure that sites are protected and available for future scientific or public uses. Land acquisitions could also secure places of traditional cultural importance that could be managed to protect traditional uses or heritage values.

Installing new above-ground utilities in the existing right-of-way corridor would degrade the physical integrity and visual setting of Agua Fria

National Monument's natural and cultural landscape.

The disposal of 54,370 acres of BLM-managed lands in the Bradshaw-Harquahala Planning Area could potentially place some cultural sites at risk, if disposal contributes to urban sprawl and increased recreational use that could impact sites on public land near the disposal parcels. In addition, the lands selected for disposal could contain cultural resources that would be transferred out of federal protection. However, before parcels are disposed of, cultural survey is conducted and the significance of cultural resources found can be a reason to halt the disposal. The BLM would identify and evaluate cultural resources that would be affected by transfer out of federal ownership. Treatment plans would be developed and implemented to mitigate any adverse effects through monitoring, protective stipulations or scientific data recovery. In the case of land leased under the Recreation & Public Purposes Act, the BLM would continue to regularly monitor the condition of the sites and the lease holder's compliance with the required protective stipulations.

### ***Alternative B***

Non-Federal land acquisitions in and next to Agua Fria National Monument would have similar impacts to those discussed for *Alternative A*.

Restrictions on new utility or transportation corridors or telecommunication site areas in Agua Fria National Monument would eliminate any ground disturbance or visual intrusions that could damage the physical integrity or visual setting of cultural resources.

Acquiring or disposing of lands in the Bradshaw-Harquahala Planning Area would have similar impacts to those discussed for *Alternative A*, except 58,400 acres would be available for disposal.

Widening the Black Canyon utility corridor, and creating new electric and gas corridors in the

Bradshaw-Harquahala Planning Area could impact cultural resources that previously were not in the path of utility lines. Construction activities and access requirements might threaten disturbance of archaeological sites along new right-of-way corridors or access roads. Installing above-ground utilities might detract from the visual integrity of site settings.

Widening the Black Canyon utility corridor, and creating new electric and gas corridors in the Bradshaw-Harquahala Planning Area could disturb cultural resources in designated areas. Construction activities and access requirements might threaten disturbance of archaeological sites in new right-of-way corridors or along new access roads. Installing above-ground utilities might detract from the visual integrity of site settings.

On the other hand, establishing specific corridors encourages project applicants to place utility lines in certain confined areas, which helps to confine cultural resource impacts. In these corridors, cultural resource surveys would be conducted to identify sites along proposed utility lines and ancillary facilities. BLM would work with applicants to develop route and project design alternatives that emphasize avoidance of impacts to cultural resources. Treatment plans would specify avoidance requirements or other actions, such as scientific data recovery or aerial installation of power lines, to mitigate adverse impacts should avoidance be infeasible.

### ***Alternative C***

Non-Federal land acquisitions in and next to Agua Fria National Monument would have similar impacts to those discussed for *Alternative A*.

Eliminating the Black Canyon utility corridor from Agua Fria National Monument would reduce the likelihood that cultural resources would be affected by ground disturbance or visual intrusions from future utility development.

Widening the Black Canyon utility corridor to the west and creating new electric and gas corridors in the Bradshaw-Harquahala Planning Area could have impacts to cultural resources similar to those discussed for *Alternative B*.

Impacts of land disposal and acquisition in the Bradshaw-Harquahala Planning Area would be similar to *Alternative A*, except the disposal of 600 acres, as identified under method one, is not likely to significantly affect cultural resources. The disposal of 49,100 acres, as delineated through method two, could potentially place cultural sites at risk as in *Alternative A*.

#### ***Alternative D***

Non-Federal land acquisitions in and next to Agua Fria National Monument would have similar impacts to those discussed for *Alternative A*.

Eliminating the Black Canyon utility corridor from Agua Fria National Monument would have impacts similar to those discussed for *Alternative C*.

Acquiring State and Federal lands in the Bradshaw-Harquahala Planning Area would likely increase the level of protection for cultural resources on those lands, similar to *Alternative C*. Under this *Alternative*, no lands would be available for disposal and so no impacts would be expected.

#### ***Alternative E (Proposed Alternative)***

Non-Federal land acquisitions in and next to Agua Fria National Monument would have similar impacts to those discussed for *Alternative A*.

Projected impacts to cultural resources in Agua Fria National Monument would be similar to those described for *Alternative C*.

Projected impacts to cultural resources in the Bradshaw-Harquahala Planning Area would be similar to those described for *Alternative B*.

Adjustments were made to the Black Canyon Utility corridor boundaries to exclude known sensitive cultural resources which reduce potential opportunities for utilities to threaten significant cultural sites. Any project-related impacts to specific sites would be addressed through mitigation measures developed during site specific environmental analysis, which could range from redesigning a utility project to avoid sensitive areas, to scientific data recovery.

Impacts from land acquisitions and disposals in the Bradshaw-Harquahala area would be similar to those described for *Alternative A*, except that 38,755 acres would be available for disposal. SCRMA's, which contain the most sensitive concentrations of cultural resources within the planning area, would be excluded from disposal.

### **4.12.3 From Management of Soil, Air, and Water Resources**

#### ***Alternatives A (No Action), B, C, D, and E (Proposed Alternative)***

Where BLM implements measures that improve soil stability and vegetation cover, cultural resources would be better protected from soil erosion.

### **4.12.4 From Biological Resource Management**

#### ***Alternative A (No Action)***

Modifying existing fences in Agua Fria National Monument to allow wildlife movement would have little effect on cultural resources. New fences could disturb sites or detract from the visual setting of the primitive landscape.

Restricting public access in sensitive wildlife habitats would likely help protect cultural resources in those areas (e.g. Harquahala Mountains, Vulture Mountains).

***Alternative B***

There are no impacts expected from removing Larry Canyon ACEC (designated mainly to protect biological resources) because the Monument Proclamation (Appendix A) provides a higher level of protection for cultural resources across a more extensive landscape.

In general, actions implemented to protect wildlife habitats would support the protection of cultural resources by restricting ground-disturbing activities. Building new water sources could disturb surface artifacts and features, as well as subsurface archaeological deposits. Surveys would be conducted to find and avoid archaeological sites or mitigate disturbance to them from new water sources.

Ensuring connectivity of habitats for wildlife, through such actions as seasonal restrictions on travel and other activities in wildlife migration corridors, could limit access to cultural resources and restrict opportunities for archaeological research and cultural heritage tourism.

***Alternatives C, D, and E (Proposed Alternative)***

Limiting vehicle routes in pronghorn corridors would restrict access to cultural resources, which would protect sites from human intrusions. This could limit opportunities for scientific research, site monitoring, and interpretive development when vehicles are needed to transport supplies and equipment.

Impacts of modifying fences in Agua Fria National Monument would be similar to *Alternative A*.

Closing or limiting vehicle routes in sensitive wildlife habitats in the Bradshaw-Harquahala Planning Area should help protect cultural resources by restricting public access that could contribute to intentional or inadvertent damage. Each Alternative varies the number of vehicle routes limited or closed, as described in Appendix N. Generally, the more routes closed

or limited would result in more protection of cultural resources.

**4.12.5 From Cultural Resource Management*****Alternative A (No Action)***

Restrictions on surface disturbances in Agua Fria National Monument following current interim guidelines would help protect cultural resources but could limit archaeological research opportunities, as well as the compiling of related information useful for public education and interpretive development.

BLM would continue to implement actions to monitor, document, and protect significant cultural resources in both planning areas. Existing management guidance for the Bradshaw-Harquahala Planning Area emphasizes compliance with Section 106 of the National Historic Preservation Act (NHPA) as described in Section 2.7.1.5. Proposed authorizations or actions that may impact cultural resources would be required to implement treatment plans for avoiding or mitigating adverse effects. Such actions are generally funded by the project applicants or by the BLM's programs that initiate them, rather than by the cultural heritage program. Impacts from management of cultural resources would be minimal.

***Alternatives B, C, D, and E—Actions Common to Alternatives***

Under all action Alternatives, there are proactive management actions carried out in accordance with Section 110 of the NHPA, which mandates identifying and protecting archaeological, historical, and cultural values, whether or not they might be affected by proposed undertakings. Inventory, protection, documentation, and monitoring projects would be described for annual work and strategic plans. This proactive approach would result in an increase in the knowledge collected from and about cultural resources in the area. Long term

preservation of cultural resources and the information they can contribute depends on knowing what kinds of sites there are and where they are located. In addition, the proactive approach contained in the Alternatives would improve public enjoyment of the cultural resources in the planning areas, leading to improved recreational experiences and a heightened awareness of the sensitivity of these resources.

In the Bradshaw-Harquahala Planning Area proactive management actions would be directed mainly toward eight sites in Special Cultural Resource Management Areas. These areas contain particularly important sites that are most at risk of damage from human activities or natural processes. However, this management focus would not exclude implementing necessary protective actions at sites outside the Special Cultural Resource Management Areas.

Archaeological inventories (surveys), a proposed ethno-historic study of Native American values in Agua Fria National Monument, and ongoing tribal consultations would identify significant resources and provide information critical for implementing protection and monitoring. This information would also support allocations of sites to use categories, allowing for traditional uses, access needs, or protective measures that might be important to tribes.

Physical and administrative measures implemented to protect cultural resources would help to stop, limit, or repair damage from vandalism, erosion, and other disturbances. Signs placed to inform the public about prohibitions under the ARPA and other laws would help protect threatened sites by providing relevant information and an alert that the sites are being monitored. If vandals damage a signed site, they would be less likely to claim ignorance of the prohibitions on illegal activities and to use this argument in legal defense of their actions. Signs would be installed so as not to draw undue attention to sites.

Threats to cultural resources would be reduced by frequent and systematic monitoring of sites

by BLM's staff and volunteers; in addition, to restricting information about the locations of archaeological sites that are not allocated for public use.

In the Bradshaw-Harquahala Planning Area greater emphasis would be placed on regular monitoring of compliance, with stipulations developed to protect cultural resources in R&PP Act leases and patents.

Archaeological and historical research projects would be consistent with scientific use allocations. Scientific research would contribute significantly to local and regional knowledge of human prehistory and history. Research would also allow for training students and volunteers who need to enhance their field and analytical skills. Research would offer opportunities for developing new techniques in rock art recording and other areas. The information gained through research projects would be useful, not only for scientists and students, but also for public education and interpretive planning.

Noninvasive methods of research and site documentation, such as surveying, mapping, photography, and remote sensing, would have little effect on cultural resources beyond a temporary increase in foot traffic and footprints. Collecting samples of artifacts from the site surface would affect site integrity by removing a small portion of the site. At sites that receive a relatively high number of visitors, well-documented collections would preserve rare or important artifacts (i.e. painted pottery or projectile points) that are particularly vulnerable to loss through casual collection.

Scientific excavations would disturb cultural deposits and could disturb buried human remains and associated items. Excavations could provide important data as no other means could. To limit undue disturbances, the highest priority for research projects would be assigned to sites threatened by vandalism or other types of disturbance, as well as sites determined to be suitable for interpretive development. BLM would require proper research designs and permits. In Agua Fria National Monument

research plans would be required to ensure that most architectural features and cultural deposits would remain intact at habitation sites with multiple rooms.

Scientific research would be limited to noninvasive methods at sites allocated to "conservation for future use" in the Agua Fria National Monument backcountry, south of Perry Tank Canyon. These remote sites would be protected from surface disturbances resulting from investigations.

Scientific uses (research) could conflict with traditional uses (cultural heritage values). Many Native Americans might object to research at sites that are not threatened by imminent damage. In approving research designs, BLM would seek to avoid the disturbance or removal of Native American human remains and associated items and would include stipulations to that effect. Tribes would be allowed to participate in research projects, which would benefit from their cultural perspectives. Other benefits could include enhanced knowledge of tribal history and the opportunity to include Native American perspectives in interpretive planning.

Public education, whether through onsite interpretive development or offsite programs, would increase public understanding of the multiple values and irreplaceable nature of cultural resources. Benefits would be derived through public enjoyment and enhanced knowledge, as well as greater support for the protection and responsible stewardship of these resources. Such efforts would fulfill public education mandates under the NHPA and the ARPA.

Establishing partnerships with universities, museums, nonprofit archaeological and historic preservation organizations, government agencies, tribes, and community groups would enhance opportunities for cost sharing and public participation in monitoring, protection, research, and education.

Under all Alternatives for both planning areas, specific sites would be allocated to public use to allow visitors to enjoy, appreciate, and learn about cultural resources. Interpretive efforts would be coordinated with the recreation program staff and, where suitable, with cultural heritage tourism programs managed by local communities and Government agencies. Efforts would be made to develop public use opportunities at accessible sites near such recreational facilities as public parks, back country byways, and hiking trails.

Public use of archaeological sites entails potential problems as well as benefits. Prehistoric and historic sites hold great fascination for many people, and there is a high public demand for opportunities to visit and learn about these sites. Cultural heritage tourism is one of the fastest growing sectors of Arizona's tourism industry, which is the second largest industry in the State. Opportunities to visit cultural sites allow people to enjoy these resources and to learn about prehistoric people, archaeology, history, Native American cultures, cultural values, scientific methods, and the interrelationships between people and the natural environments in which they lived. Agua Fria National Monument offers particularly compelling opportunities to view ancient sites in an undisturbed setting that strongly evokes a feeling of traveling back in time. Public use also provides an excellent opportunity to convey a sense of common heritage with the shared responsibility of stewardship.

Public use and interpretive development of cultural resources also can economically benefit local communities. For Arizona's BLM as a whole, the magnitude of this economic contribution can roughly be estimated by multiplying the overall daily spending average for cultural heritage tourists of \$118 per day by the number of visitor days recorded in BLM's Recreation Management Information System (RMIS). RMIS contains visitor use data for 31 cultural heritage sites and areas administered by BLM in Arizona. In Fiscal Year 1999, site records show a total of 9,616 visitor days. Multiplying the total visitor days by the average daily spending rate results in an estimated

annual economic contribution of \$1,134,688. Cultural heritage tourism at BLM's sites in both planning areas could contribute several hundred thousand dollars annually to the economies of Maricopa and Yavapai Counties.

Sites that are developed and publicized for public use are undoubtedly exposed to visitor-caused damage from surface disturbance and erosion, destabilization of standing walls, other damage to structures and features, trash dumping, multiple trailing, and theft of artifacts. Additionally, visitors tend to alter the spatial distributions of artifacts by picking them up and depositing them into piles. Rock art could be damaged by climbing, which dislodges boulders; touching or applying foreign substances, such as chalk; painted or pecked graffiti; or theft. The presence of responsible visitors would likely discourage major incidents of vandalism or theft by others, but it would be difficult to halt the cumulative effects of small-scale removal of a few artifacts at a time.

BLM would use site-selection criteria and protective measures to mitigate the impacts of public use. Most sites that are allocated to public use would be accessible sites that are already well known and visited by the public. Without BLM's authorization many of these sites have been publicized in newspapers, magazines, books, and websites. Remote, undisturbed sites would not be allocated to public use. Sites considered for public use would be evaluated as to the feasibility of treating or stabilizing selected areas to withstand visitation, for example, by building foot trails to confine and direct traffic through sites.

Site mapping and documentation would be implemented to obtain scientific data and the information needed to develop protective measures and an interpretive plan. For example, architectural mapping and rock art documentation would preserve information that could be lost through damage. Documentation would also provide a baseline condition assessment for monitoring and managing changes resulting from visitor use over time. All public use sites would be systematically

monitored to evaluate any changes resulting from visitation. Ongoing damage could lead to use restrictions, new protective measures, or suspension of the site's public use status.

Not all public use sites would be open to commercial tours. Applications for special recreation permits would be evaluated on a case-by-case basis. Commercial tour operators would be required to adhere to site-specific stipulations, for example, that could restrict access to certain areas or limit the sizes of tour groups. They would be required to help monitor damage to the sites. In developing stipulations for commercial tours, BLM would consider adopting measures implemented by Coconino National Forest to manage tour operators to archaeological sites in the Sedona area.

Sizes of tour groups, whether led by commercial operators, nonprofit organizations, or BLM, would be limited to 25 people at a time on a single site. Larger groups are difficult to monitor and manage and thus pose a greater threat of damage.

Requiring that holders of special recreation permits provide site visitors with educational information on archaeological site preservation would help disseminate information on the nature and values of cultural resources and the need to preserve them.

### ***Alternative B***

Under *Alternative B*, five sites in the national monument would be allocated to public use within a High use SCRMA, and four sites would be allocated to public use within a Moderate use SCRMA. Levels of public use are described in the Cultural Resources section. Except for the Pueblo la Plata group of sites, which is accessible from Bloody Basin Road on Perry Mesa, the four other sites in the High use area are in the Badger Springs and Black Mesa areas that are relatively accessible from Interstate 17.

There are inherent conflicts of the proposed public use of the Badger Springs and Richinbar pueblos on Black Mesa, the Rollie site, and to a

lesser extent, the Badger Springs petroglyph site. Although their accessibility would enhance their value as interpretive sites, there is now no access to the mesa top sites from the Interstate 17. A locked gate restricts access to the few jeep trails on the mesa, and it is dangerous to exit and enter the busy highway from that point.

With the largest number of sites allocated to High public use, *Alternative B* entails the greatest potential for damage to cultural resources from interpretive development and public visitation. Conversely, opportunities for public education and enjoyment of cultural sites would also be more numerous under *Alternative B*.

In the Bradshaw-Harquahala Planning Area, sites could be selected for public use in all eight of the Special Cultural Resource Management Areas (Appendix F). As in the monument, *Alternative B* entails the greatest potential for damage to sites from public use, as well as the greatest potential benefit of public education and the recreational opportunities and economic returns of cultural heritage tourism.

#### *Alternative C*

In Agua Fria National Monument, only the Pueblo la Plata group of sites would be allocated to a High public use SCRMA and eight sites would be allocated to a moderate public use SCRMA. *Alternative C* would switch four sites from High use prescriptions to less-intensive management actions. Although they would be developed at a less-intensive level, there are inherent conflicts in the proposed public use of the Badger Springs and Richinbar pueblos on Black Mesa, the Rollie site, and to a lesser extent, the Badger Springs petroglyph site as stated in *Alternative B*.

With fewer sites allocated to High public use, *Alternative C* entails less potential for damage to cultural resources from interpretive development and public visitation. Conversely, opportunities for public education and enjoyment of cultural sites would be more restricted due to more

primitive facilities and fewer tours under this *Alternative*.

In the Bradshaw-Harquahala Planning Area, sites that are described for the plan, as well as sites that meet the guidelines for public use allocations, could be selected for public use in four of the Special Cultural Resource Management Areas (Appendix F) (Black Canyon corridor, Lake Pleasant/Agua Fria, Wickenburg/Vulture, and Harquahala Mountains). The other four Special Cultural Resource Management Areas would be excluded from public use allocations. *Alternative C* entails a moderate potential for damage to sites from public use, as well as a moderate potential benefit in public education and the recreational opportunities and economic returns of cultural heritage tourism.

#### *Alternative D*

*Alternative D* would allocate no sites in Agua Fria National Monument to High public use and only the Pueblo la Plata site group to Moderate public use and associated management actions. All areas outside the Pueblo la Plata group of sites would be characterized by Low public use, with no interpretive development or commercial tours.

With only one site area allocated to public use, *Alternative D* entails the least potential for damage to cultural resources from interpretive development and public visitation. Conversely, opportunities for public education and enjoyment of cultural sites would be the most limited.

In the Bradshaw-Harquahala area, sites described for the plan and sites that meet the guidelines for public use allocations would be identified for public use in two of the Special Cultural Resource Management Areas (Black Canyon corridor and Harquahala Mountains). The other six Special Cultural Resource Management Areas would be excluded from public use allocations. *Alternative D* entails the least potential for damage to sites from public use, as well as the least potential benefit for

public education and the recreational opportunities and economic returns of cultural heritage tourism.

#### ***Alternative E (Proposed Alternative)***

In the Agua Fria National Monument two accessible sites would be allocated to a High public use SCRMA under High use prescriptions:

- the Pueblo la Plata group on Perry Mesa, and
- the Teskey homestead site near Cordes Lakes.

All sites are within the Front Country RMZ and are also accessible from well-established roads. Six sites would be allocated to a Moderate public use SCRMA under management actions defined for this level of use. The Badger Springs and Richinbar pueblos would be excluded from public use with no interpretive development. A site at the southern end of Black Mesa, accessible by hiking trails, would be added to those allocated to Moderate public use.

At least 60,000 acres (85 percent of Agua Fria National Monument) would be excluded from public use allocations. In these remote areas, visitors could encounter and observe archaeological sites under conditions of solitude in pristine settings. In the public use SCRMA's, interpretive uses would be site-specific and confined to the eight site areas and their Passage RMZs.

*Alternative E* balances the potential for damage and the availability of opportunities for public education and enjoyment of cultural sites. Interpretive plans with monitoring and protection measures would be implemented to mitigate adverse impacts from visitation. This Alternative satisfies the public's desire to visit Agua Fria National Monument's archaeological sites, by including sites allocated to High and Moderate public use levels on both Perry Mesa and Black Mesa. Opportunities would be open to those who wish to take advantage of tours of

more developed facilities at accessible sites, as well as those who would like to hike to less accessible sites that have fewer visitors but offer interesting interpretive information.

In the Bradshaw-Harquahala Planning Area, sites that are described for the plan and those that meet the guidelines for public use allocations would be selected for public use in six of the eight Special Cultural Resource Management Areas. The Black Mesa/Bumble Bee and Harcuvar Mountains Special Cultural Resource Management Areas would be excluded from public use allocations to protect fragile and significant sites from damage. In the other six Special Cultural Resource Management Areas, selected prehistoric and historic sites would be managed for interpretive development, educational uses, and public visitation.

*Alternative E* entails a moderate potential for damage to sites from public use, as well as a relatively high potential benefit for public education and the recreational opportunities and economic returns of cultural heritage tourism.

### **4.12.6 From Paleontological Resource Management**

#### ***Alternatives A (No Action), B, C, D, and E (Proposed Alternative)***

There are no impacts expected.

### **4.12.7 From Recreation Management**

#### ***Alternative A (No Action)***

Limiting the use of motorized vehicles to designated routes would help protect cultural resources, while continued use of roads leading to large archaeological sites might increase the potential for vandalism and damage.

Continued protection and interpretation of the historic Harquahala Peak Observatory would enhance opportunities for public education and cultural heritage tourism.

No limits would be established for the number of permitted commercial guided tours and special events; however, SRPs would include stipulations designed to protect cultural resources and archaeological sites allowed for such use. However, the potential for damage to cultural resources could continue as public awareness and subsequent casual use of these areas is increased.

Cross-country non-motorized travel by foot, horse or mountain bike could lead to the creation of permanent trails, sometimes called “social” trails that braid across the landscape. These user-created and non-engineered trails may cross and impact fragile and undocumented cultural resources. These cultural features could be inadvertently damaged by trampling to a degree that their scientific and education values or impaired or lost. This use is most likely to happen in areas close to population centers, trailheads, or motorized routes. To date, this has been a minor concern to archaeologists due to greater impacts from vandalism and motorized vehicles.

#### ***Alternative B***

Prohibiting the placing of geocaches on archaeological sites would help protect sites in Agua Fria National Monument and in the Bradshaw-Harquahala Planning Area.

Restricting campfires and camping near archaeological sites would reduce damage from the following:

- disturbing the ground’s surface,
- collecting wood components from prehistoric or historic structures,
- dismantling features to create fire rings, and
- contaminating archaeological deposits.

Where camping is not confined to previously disturbed areas, such activities could disturb subtle features that are near sites or places not easily recognized as archaeological sites.

SRPs would include stipulations developed to monitor and protect archaeological sites that have been allocated to public use. In addition to an overall limit of 25 people per tour group visiting a site at any one time, these provisions would help protect cultural resources from the disturbance of increased visitation.

Impacts on cultural resources from cross-country travel by non-motorized visitors are considered to be similar to those described under *Alternative A*.

Public outreach and environmental education programs would help protect cultural resources by making the public more aware of their values, fragile nature, and need for protection. Conversely, the message of responsible recreation and resource stewardship would benefit cultural resources by discouraging activities that damage both cultural and natural resources.

BLM would consider converting some reclaimed routes to hiking trails. Limiting vehicle traffic to and on fragile sites would help protect the surface of these sites and could deter illegal pothunting by increasing the difficulty of hauling equipment and illegally-collected items to and from sites.

*Alternative B* would allocate a relatively large area of Agua Fria National Monument (57,900 acres) to the Front Country RMZ. Among the Alternatives, it would allow for the most extensive network of travel routes and a higher number of special recreation permits. Additionally, it would allow for potentially higher numbers of visitors with a larger number of trails and other recreational facilities. Relatively high levels of visitor traffic could increase the potential for cultural resources damage. Impacts to archaeological sites from recreation could include the following:

- surface disturbance,
- artifact theft and breakage,
- artifact piling,
- wall destabilization,
- rock art graffiti, and

- casual digging.

Conversely, the relatively large Front Country RMZ would also allow for more interpretation, which could enhance the public's understanding and stewardship of cultural resources. Limiting access and recreational facilities in the Back Country RMZ would result in fewer visitors with a lower level of impacts on cultural resources.

Impacts in the Bradshaw-Harquahala Planning Area would be the same as those described for the monument.

Casual, unmonitored activities would likely be the greatest threat, as visitors travel further into remote areas that have previously received few visitors. BLM would be better able to manage the impacts of special events because these events would not be placed in zones of high cultural resource density. Locations for proposed courses and staging areas would be evaluated through cultural resource inventories, and, if approved, courses would be designed to avoid or mitigate damage to archaeological sites. Ultimately, special events could contribute to an increase in public awareness and casual use of these areas.

*Alternative B* would provide the most extensive opportunities for cooperative efforts in site interpretation and cultural heritage tourism projects. Potential partners could include many agencies, parks, and communities in the Phoenix, Black Canyon City, Prescott, Dewey, Yarnell, Wickenburg, and Lake Pleasant areas. Such partnerships could promote the following:

- expanded recreational opportunities,
- enhanced public education and understanding of cultural resources, and
- increased revenues from cultural heritage tourism.

#### *Alternative C*

*Alternative C* would allocate a smaller proportion of Agua Fria National Monument (42,000 acres) to the Front Country RMZ with

an expected reduction in levels of recreational facilities and visitation. Impacts to archaeological sites from visitor use are expected to be less extensive in the areas allocated to the Back Country RMZ than in the areas allocated to the Front Country RMZ. Site visitation and educational opportunities from the interpretive development of archaeological sites would also decline.

In the Bradshaw-Harquahala Planning Area reductions in travel routes are expected to contribute to lower levels of unintentional and intentional damage to cultural resources. Opportunities for cultural heritage tourism partnerships would slightly decrease. However, communities and agencies in the Phoenix, Lake Pleasant, Black Canyon City, and Wickenburg areas could still take advantage of interpretive opportunities, particularly those developed in conjunction with parks and recreational trails.

Impacts on cultural resources from cross-country travel by non-motorized visitors are considered to be similar to those described under *Alternative A*.

#### *Alternative D*

*Alternative D* would allocate a small area of Agua Fria National Monument (1,530 acres) to the Front Country RMZ and result in a decline in levels of visitation to interpreted sites and recreational facilities, which would be limited to the Pueblo la Plata area and zones near major roads. *Alternative D* would also close the largest number of routes and would allow only limited motorized use in the extensive Back Country RMZ.

Emphasizing primitive recreation would reduce the levels of damage to archaeological sites from interpretive development, vehicle use, and public visitation. Conversely, this would limit the regular monitoring of archaeological sites in remote areas, which could leave some sites more vulnerable to vandalism. *Alternative D* would also restrict campground development and target shooting, which would help protect sites. There would be fewer opportunities for public

education through site interpretation. Restrictions on access for permitted scientific studies would limit the scientific use of sites and the gathering of information useful for research and site management.

*Alternative D* would place more emphasis on non-motorized recreation in the Bradshaw-Harquahala Planning Area. Additional travel routes would be closed further reducing potential damage to cultural resources. As in Agua Fria National Monument, an emphasis on primitive recreation would reduce the levels of damage to archaeological sites. Site visitation, educational opportunities, and community partnerships for cultural heritage tourism would decline. Cooperative efforts between the cultural heritage and recreation programs would focus on the existing interpretive facilities on Harquahala Peak and the Black Canyon recreational trail.

Impacts on cultural resources from cross-country travel by non-motorized visitors are considered to be similar to those described under *Alternative A*.

#### ***Alternative E (Proposed Alternative)***

*Alternative E* would allocate 11,900 acres of Agua Fria National Monument to the Front Country RMZ. Developed interpretive and recreational facilities would focus on a small number of areas, such as Badger Springs and Pueblo la Plata. The relatively large area allocated to the Back Country RMZ, along with a number of route closures, would contribute to protecting cultural resources, while still allowing for unobtrusive interpretive uses and access for scientific research and monitoring. Restrictions on camping and target shooting would also help protect cultural resources.

In the Bradshaw-Harquahala Planning Area *Alternative E* would involve an intermediate level of recreational facilities, and route closures. Impacts to cultural resources would be similar to those described for *Alternative C*. Recreational activities would continue to threaten damage to cultural resources,

particularly in areas most accessible from urban zones and major roads. *Alternative E* emphasizes developing community partnerships to enhance interpretive opportunities, environmental education, and the promotion of responsible stewardship. Such activities would enhance the long-term effectiveness of public education, stewardship, and cultural resource protection by enlisting citizens as partners in these efforts. Impacts on cultural resources from cross-country travel by non-motorized visitors are considered to be similar to those described under *Alternative A*.

### **4.12.8 From Visual Resource Management**

#### ***Alternative A (No Action)***

No VRM classes have been established under this *Alternative*, which could result in the steady degradation of visual landscapes that contribute to both prehistoric and historic cultural sites.

#### ***Alternatives B, C, D, and E (Proposed Alternative)***

Impacts to cultural resources from implementing management actions in accordance with VRM classes would be dependent on the presence of sites and the extent to which the surrounding landscape would be modified. VRM classes and actions could affect qualities that contribute to the eligibility of cultural resource sites for nomination to the National Register of Historic Places. These qualities include integrity of setting (which refers to an undisturbed physical environment surrounding a site), and integrity of feeling (which refers to a site's expression of the aesthetic or historic sense of a particular period of time). Long-term alterations of a site's setting could detract from its status as National Register-eligible and could limit its potential use for public education. For example, integrity of setting and feeling are important aspects of archaeological sites in Agua Fria National Monument. As a result, a large portion of the area can be regarded as a cultural landscape preserved through time, which would be

protected under the proposed VRM classes defined for *Alternative E*.

### 4.12.9 From Rangeland Management

#### *Alternative A (No Action)*

Grazing impacts in Agua Fria National Monument can be considered from a historical perspective. The greatest livestock damage to archaeological sites most likely occurred before the implementing of the Taylor Grazing Act (TGA) in the 1930s. From about 1915 to 1926, the Coburn Brothers Cattle Company operated the Horseshoe Ranch and ran at least 12,000 head of cattle on Perry Mesa and in Tonto National Forest (Cordes 2002:22). The Horseshoe Ranch today maintains fewer than 400 cattle, which are dispersed over the mesas during much of the year.

Continued livestock grazing could affect cultural resources in both planning areas. Cattle trampling can crush, break, and relocate surface artifacts. Standing walls can collapse or become destabilized as a result of cattle rubbing up against them and cattle trails can accelerate site erosion. The continued presence of cattle in Agua Fria National Monument might also detract from the primitive experience for visitors.

Soil erosion caused by the loss of stabilizing vegetation or the trampling of streambanks in riparian areas could damage sites. Damage is expected to be greatest in sensitive sites where livestock tend to concentrate, such as at corrals, water sources, and the livestock trails that lead to them. Fewer impacts are expected from dispersed use.

In both planning areas, implementing the guidelines adopted in Arizona Standards for Rangeland Health and Guidelines for Grazing Administration (Land Health Standards) would maintain or improve ground cover and soil stability and reduce destructive impacts to cultural resources from soil erosion.

Installing and maintaining fences, cattle guards, cattle tanks, and other range management facilities might damage the physical or visual integrity of cultural resources. The proposed locations of new facilities would be surveyed in advance to determine archaeological site impacts and to avoid or mitigate them.

#### *Alternative B*

In Agua Fria National Monument impacts to cultural resources from rangeland and grazing management in upland areas would be similar to those described for *Alternative A*. Grazing in riparian areas would be limited to winter, which would reduce the incidence of impacts to archaeological sites in those areas.

Continued grazing in the Front Country RMZ would likely increase the potential for conflict between public use of the monument and grazing use, especially near archaeological sites (e.g. Pueblo la Plata) that are slated to be developed for public interpretation. To mitigate such conflicts, cattle could be excluded from areas on and near interpretive sites.

In the Bradshaw-Harquahala Planning Area impacts would also be similar to those described for *Alternative A*. Seasonal use of riparian areas would be limited to the winter, where practical. This could reduce impacts to cultural resources from soil erosion resulting from grazing.

Grazing could be limited if needed to protect natural or cultural resources. Such limits could include seasonal restrictions or excluding grazing in affected areas. Allotment boundaries could be adjusted to preclude grazing on lands devoted to a public purpose, such as an interpretive site. This provision would reduce conflicts between visitor use and the presence of cattle. BLM could also exclude livestock through fencing or other measures from sites that are suffering a loss of physical integrity from grazing and that need to be protected from further impacts. Installing and maintaining fences, cattle guards, cattle tanks, and other range management facilities would have the same impacts as those described for *Alternative*

A, as would implementing the guidelines adopted in *Arizona Standards for Rangeland Health and Guidelines for Grazing Administration* (Land Health Standards).

#### ***Alternative C***

In both planning areas reductions in upland grazing and the removal of livestock from riparian habitats would reduce damage to cultural resources in nearby areas. Other impacts are expected to be similar to those discussed for *Alternative B*.

#### ***Alternative D***

Eliminating grazing on public lands in Agua Fria National Monument and in the Bradshaw-Harquahala Planning Area would eliminate grazing-related damage to cultural resources. In Agua Fria National Monument this action would remove the potential for conflict between the interpretive use of Pueblo la Plata and ranching, as well as enhance the overall primitive experience for visitors.

#### ***Alternative E (Proposed Alternative)***

In both planning areas, grazing impacts would be similar to those described for *Alternative B*.

### **4.12.10 From Minerals Management**

#### ***Alternative A (No Action)***

Any surface disturbance resulting from minerals actions could degrade cultural resources. All authorized mineral-related activities beyond casual use require a survey to determine if cultural resources are present. Hence, in all cases impacts are mitigated. During the surveys some cultural resources might be overlooked because they are buried and not visible on the surface. Therefore, in these cases mineral development might expose them and cause inadvertent damage.

The monument's proclamation (Appendix A) prohibits new mining claims, mineral material sales, and leasing of mineral or geothermal resources, as well as protects cultural resources from any mining disturbances. Two active mining claims, held by prospecting clubs for casual mining use, existed before the national monument designation. Because only casual use is allowed without a formal determination of valid existing rights, should the claimant decide to develop these claims beyond such use, a mining plan of operation would be required for BLM's review. This process involves lengthy and complicated validity studies to determine if a mineral discovery warrants development. Should the claim be found valid, the claimant is still required to comply with laws regulating mining and not create any undue and unnecessary degradation of the environment.

In the Bradshaw-Harquahala Planning Area developing leasable, saleable, and locatable minerals can damage cultural resources through surface and subsurface disturbance or removal of archaeological deposits. Furthermore, there is the potential for the removal, whether intentional or not, of boulders containing petroglyphs or other rock art. The visual impacts of mining can degrade the visual setting and related aspects of integrity of archaeological sites.

Archaeological surveys are completed to find and evaluate cultural resources that could be affected by proposed mining. BLM has the discretion to deny approval of proposed mineral material sales that would damage cultural resources. Approved mining plans contain provisions to avoid or mitigate damage to cultural resources, if such resources would be affected. Since it is often difficult to implement avoidance, scientific data recovery is typically implemented as a mitigation measure. However, casual mining in areas smaller than 5 acres typically does not require mining plans. As such, it is difficult to monitor and mitigate the effects of casual mining on cultural resources or the effects of related activities such as camping.

***Alternative B***

Minerals management would not affect cultural resources under any Alternatives in Agua Fria National Monument because of prohibitions against mining.

In the Bradshaw-Harquahala Planning Area cultural resources would be protected by closing areas to mineral leasing, mineral material sales, and mineral entry. Where cultural resources are present, such closures would reduce damage to their physical and visual integrity. ACECs, lands allocated to maintain wilderness characteristics, and lands that are reconveyed to the Federal Government could be closed.

*Alternative B* would close the fewest number of areas to mining-related activities. The potential impacts of mineral development on cultural resources would be greatest under this Alternative.

***Alternative C***

Impacts would be less than *Alternative B*, because *Alternative C* includes a number of ACECs and lands allocated to maintain wilderness characteristics that have provisions for restricting mining.

***Alternative D***

Impacts would be similar to *Alternative C*, except *Alternative D* also restricts activities on lands that are reconveyed to the Federal Government. Therefore, the potential impacts of mineral development on cultural resources would be the least under *Alternative D*.

***Alternative E (Proposed Alternative)***

In the Agua Fria National Monument, the impacts of minerals management would be as described for *Alternative A*.

In the Bradshaw-Harquahala Planning Area the impacts of minerals management on cultural resources would be similar to those described for *Alternative B*.

Tule Creek ACEC would be withdrawn from mineral entry, closed to leasing and mineral material disposals. In the Black Canyon MU, riparian areas on reconveyed lands would be closed to mineral material sales, which could include sand and gravel mining. These restrictions would help protect cultural resources in Tule Creek ACEC and in riparian zones of the Black Canyon area.

## **4.12.11 From Fire Management**

***Alternative A (No Action)***

Wildfires and prescribed burns can affect cultural resources through direct exposure to fire and disturbances from the methods used to suppress and manage fires, as well as natural fuels. Flammable structures and features, such as wooden buildings and mining headframes, are particularly vulnerable to damage and destruction by fire. Damage to historical structures is a particular management concern for sites in the Bradshaw and Weaver Mountains.

The prehistoric residents of Agua Fria National Monument were likely to be well acquainted with fire as a natural process in this fire-adapted grassland ecosystem. The remains of their villages have likely been burned many times over the past centuries. Evidence reveals that the relatively low intensity of the grassland fires has spared major damage to archaeological sites. The Baby Canyon Ruin in Agua Fria National Monument and the Squaw Creek Ruin in the Tonto National Forest have been burned over in the past decade. Neither site has suffered damage to walls, artifacts, or rock art. The loss of vegetation from fire could increase the potential for soil erosion in susceptible areas, although this problem has not been observed at these two sites.

Prescribed burns would temporarily affect the visual setting of cultural resources for visitors to Agua Fria National Monument. In some cases, prescribed burns have benefited scientific

studies by exposing previously obscure archaeological features in the national monument, such as agricultural terraces (North 2002).

Fire suppression and fuels management techniques could cause surface disturbance to cultural resources. Surface disturbance could result from staging activities, vehicle tracks, the use of earth-moving equipment, or applying mechanical treatments to manage vegetation. The use of heavy equipment and mechanical thinning of trees also could temporarily disturb soils and increase the potential for erosion.

***Alternatives B, C, D, and E (Proposed Alternative)***

Archaeological surveys in both planning areas, including inventories of 10 percent of areas above 3,500 feet in elevation in the Bradshaw-Harquahala Planning Area would help to find sensitive cultural resources that need to be avoided by fire and fuels management, or that require special attention during wildfire suppression.

BLM would implement measures to protect cultural resources, such as the use of minimum impact suppression tactics to reduce damage to archaeological sites as well as to natural resources. Other protection measures could include the following:

- using foam or retardant to protect historic structures;
- removing fuels around vulnerable sites;
- creating fire breaks that would protect sites while avoiding damage to them; and
- covering rock art in fire retardant fabric.

The impacts of fire management under these Alternatives would be similar to those discussed for *Alternative A*.

## **4.12.12 From Wild Horse and Burro Management**

***Alternatives A (No Action), B, C, D, and E (Proposed Alternative)***

There are no impacts to cultural resources expected.

## **4.12.13 From Management of Travel Management**

***Alternative A (No Action)***

Continued restrictions that limit the use of motorized vehicles to designated routes in Agua Fria National Monument would help protect cultural resources.

Continued use of existing roads leading to large archaeological sites in Agua Fria National Monument might increase the potential for vandalism and damage to these sites as more people visit the monument.

***Alternative B***

All Alternatives include closures of selected routes that lead directly to archaeological sites that have been damaged or are threatened by vandalism. In many cases, there is no other obvious purpose for these routes. Where such routes are being reclaimed by natural processes, as at Pueblo Pato in Agua Fria National Monument, or where they exist at other sites that have been allocated to public use, BLM would consider converting them to hiking trails.

Limiting vehicle traffic to and on fragile sites would help protect the surface of the sites and could deter illegal digging and collecting activities by complicating the task of hauling equipment and collected items to and from sites.

*Alternative B* would allow for a more extensive network of transportation routes, which could increase the potential for cultural resources damage. Direct impacts could include disturbance to surface features such as walls,

soils, and artifacts from vehicle traffic resulting in damage, breakage, or displacement. A more extensive road network would facilitate public access to a larger number of archaeological sites, increasing their vulnerability to vandalism and artifact theft.

Conversely, increased access would also allow for more interpretation, which could enhance the public's understanding and stewardship of cultural resources. Limiting access in the Back Country RMZ would result in fewer visitors with a lower level of impacts on cultural resources.

A more extensive network of transportation routes would also be supported in the Bradshaw-Harquahala Planning Area. In general, relatively higher levels of public access would pose greater threats to the integrity of cultural resources, as described above for Agua Fria National Monument.

### ***Alternative C***

*Alternative C* would allocate fewer transportation routes than would be available for travel under *Alternative B*. More limited public access would be expected to reduce the impacts to archaeological sites from vehicle and visitor traffic in both planning areas.

Impacts would be similar to *Alternative B*, except *Alternative C* would allocate fewer transportation routes. More limited public access would be expected to reduce the impacts to archaeological sites from vehicle and visitor traffic in both planning areas.

### ***Alternative D***

*Alternative D* would close the largest number of transportation routes in both planning areas. In the monument, only limited motorized use would be allowed in the extensive Back Country zone. While this would reduce the levels of damage to archaeological sites from interpretive development, vehicle use, and public visitation, fewer areas would be available for site visitation and cultural heritage tourism projects.

Restricted access would also limit the regular monitoring of archaeological sites in remote areas, which could make some sites more vulnerable to vandalism. Restrictions on access for permitted scientific studies would limit the scientific use of sites and the gathering of information useful for research and resource management.

### ***Alternative E (Proposed Alternative)***

Impacts from travel management would be similar to those described under *Alternative C* for Agua Fria National Monument. The number of route closures under this *Alternative* would contribute to protecting cultural resources, while still allowing for unobtrusive interpretive uses and access for scientific research and monitoring.

The following table describes the distances, at ¼ mile intervals, between the nearest open routes and the 12 most vulnerable sites/site clusters, under existing baseline conditions and as designated in the Final RMP. The specific names and locations of the sites are available for review by qualified researchers at the Phoenix District.

Increased distances between open routes and vulnerable sites, especially across rocky surfaces and rugged terrain, are expected to enhance site protection, by reducing access and visibility. In regard to the 12 most vulnerable site areas, the route designations would increase the accessible distances to 7 sites, by designating current routes as “closed” or for “administrative use only.” The proposed route system also would maintain the current closures of two routes that once led directly to sites, but now restrict vehicle traffic. Under the current transportation system, there are 7 vulnerable sites that are less than ½ mile, and 5 sites that are further than ½ mile, from an open route. Under the proposed transportation system, there are 3 sites that would be less than ½ mile, and 9 sites that would be further than ½ mile, from an open route.

Prior to the late 1990's, roads led directly to 7 of the 12 most vulnerable sites/site areas. Under

the proposed transportation system, direct route access will be cut off to all but one of these sites. This particular site on Black Mesa, which has been identified for possible interpretive development, will be closely monitored to detect any vandalism; a nearby, redundant route to the site will be closed.

For these 12 particularly vulnerable sites, restricted access to 9 sites would result from maintaining existing closures or changing the closest, currently open routes to “closed” or “administrative use only.” At the other 3 sites, proposed route closures would reduce the number and density of open roads in the surrounding areas. The elimination of redundant routes and overall route densities would reduce impacts to sites from vandalism and soil erosion.

In general, and in terms of cumulative impacts from vandalism and erosion, cultural resources would be protected by the elimination of redundant routes and overall route densities; the closure of at least 9 routes leading to canyon rims; and the closure of several routes near the river and creeks. Mitigation measures, which could include additional route closures, would be implemented if new surveys or monitoring observations revealed cases of damage associated with open routes.

In the Bradshaw-Harquahala Planning Area *Alternative E* would involve an intermediate level of route closures. Impacts to cultural resources would likely be similar to those described for *Alternative C*.

#### **4.12.14 From Management of Wilderness Characteristics**

##### ***Alternative A (No Action)***

Under current resource management plans, no areas have been specifically identified for management of wilderness characteristics. Therefore, there are no associated impacts on cultural resources.

##### ***Alternatives B, C, D, and E (Proposed Alternative)***

Management of wilderness characteristics would maintain natural landscapes and remoteness, with an emphasis on primitive and non-motorized recreation. Limits on public access and motorized travel would reduce damage to remote archaeological sites from vehicle traffic and visitor use. Maintenance of wilderness characteristics would also help to preserve the visual integrity and natural settings of archaeological sites and cultural landscapes. On-the-other-hand, cultural research requiring motorized access and mechanized equipment could be hampered or foregone if such research activities are not authorized.

## **4.13 Impacts on Paleontological Resources**

Impacts to paleontological resources include effects on resources such as petrified wood and other fossils. Paleontological resources are a nonrenewable resource that provides scientific value and clues to geologic history. Although only a minimal amount of paleontological research has been conducted in the region, 11 paleontological sites are known to occur near the planning areas. None of the known paleontological sites are on BLM-managed land in either of the planning areas.

The geology of the planning areas is not conducive to paleontological resources. The potential for paleontological resources does; however, exist, and could be affected by surface disturbance. However, the potential for such impacts is very low. Many of the known sites in surrounding areas consist of remains of extinct mammoths that were unearthed during development projects. As applies to cultural resources, BLM authorizations for surface-disturbing activities would require that, in the event of a discovery, the BLM would be notified

and the work would be stopped until the BLM could evaluate the discovery and the need for scientific data recovery. Likewise, the BLM would complete a scientific evaluation of any paleontological resources discovered during cultural resource surveys.

### 4.13.1 From Special Designations

#### *Alternative A (No Action)*

In Agua Fria National Monument, no significant paleontological resources are known to exist. As such, impacts to paleontological resources from Special Designations are expected to be minimal. In areas of the monument where paleontological resources may be discovered, management for reduced public use would diminish potential impacts to these resources.

Paleontological resources in existing wilderness areas in the Bradshaw-Harquahala Planning Area would continue to be at low risk of inadvertent damage. Since these areas are closed to roads and are rarely visited, the impacts to paleontological resources are expected to be minimal.

#### *Alternatives B, C, D, and E (Proposed Alternative)*

Impacts to paleontological resources in Agua Fria National Monument are expected to be the same as described for *Alternative A*.

In the Bradshaw-Harquahala Planning Area, fencing Tule Creek ACEC would prevent damage to paleontological resources caused by OHV traffic and livestock. Paleontological resources in other Special Area Designations would be protected more than under *Alternative A* as restrictions to surface-disturbing activities are implemented.

### 4.13.2 From Lands and Realty Management

#### *Alternatives A (No Action), B, C, D, and E (Proposed Alternative)*

Activities allowed under valid existing rights in Agua Fria National Monument could affect paleontological resources if resources are discovered near land clearing and construction.

Under the current management of the Bradshaw-Harquahala Planning Area paleontological resources could be affected if land clearing and construction disturb the soil near paleontological sites. Additionally, construction in existing corridors and at telecommunication sites could inadvertently damage paleontological sites. Building of new utility lines could disturb paleontological resources by developing service roads and by other digging.

Building or maintaining utility and transportation corridors and telecommunication sites in Agua Fria National Monument is not expected to affect paleontological resources.

### 4.13.3 From Management of Soil, Air, and Water Resources

#### *Alternatives A (No Action), B, C, D, and E (Proposed Alternative)*

In Agua Fria National Monument, current management prescriptions to improve soil stability, increase vegetation cover, and reduce erosion might help preserve potential paleontological sites.

Under the current management of the Bradshaw-Harquahala Planning Area no impacts to paleontological resources are expected from management of soil, water, and air resources.

### 4.13.4 From Biological Resource Management

#### *Alternatives A (No Action), B, C, D, and E (Proposed Alternative)*

Throughout the planning area, no impacts to paleontological resources are expected from biological resource management.

### 4.13.5 From Cultural Resource Management

#### *Alternatives A (No Action), B, C, D, and E (Proposed Alternative)*

Actions taken to protect cultural resources in Agua Fria National Monument would likely help preserve paleontological sites as well. Unknown paleontological resources could be unearthed or otherwise disturbed by ground disturbance in developing public access to cultural sites.

In the Bradshaw-Harquahala Planning Area no impacts are expected to paleontological resources from CRM.

### 4.13.6 From Paleontological Resource Management

#### *Alternatives A (No Action), B, C, D, and E (Proposed Alternative)*

There are no impacts expected.

Under *Alternative E* management actions, BLM would classify areas according to their potential to contain vertebrate fossils or noteworthy occurrences of invertebrate or plant fossils. The classification process would result in a sensitivity map that would enable BLM to direct protection measures or research projects toward the most significant or threatened areas. The sensitivity map would also help BLM screen

proposed actions to determine potential effects on paleontological resources.

### 4.13.7 From Recreation Management

#### *Alternative A (No Action)*

Under the current management of both planning areas, concentrated recreation in certain areas could inadvertently damage paleontological resources. Illegal OHV use of four-wheel-drive vehicles, all-terrain vehicles, and motorcycles might damage paleontological resources on or near the surface. Paleontological resources might be destroyed as vehicles drive over them. Some people might also use these types of vehicles to drive to remote areas, where they could illegally collect paleontological resources. Limiting OHV travel and posting directional signing reduces the likelihood of inadvertent damage to paleontological resources. Yet the presence of roads open to the public can inadvertently encourage travel to remote areas.

Recreation management common to all Alternatives could damage paleontological resources through ground disturbance resulting from developing recreational facilities. In the event of discoveries, impacts would be mitigated through avoidance, redesign, or scientific data recovery.

In general, however, few impacts are expected as the geological character of the planning areas is not conducive to the widespread presence of significant paleontological resources.

#### *Alternative B*

Impacts would be the same as described in *Alternative A*. Relative to *Alternative B*, a further reduction in miles of routes could reduce the potential impacts of motorized recreation to paleontological resources in both planning areas.

Impacts would be similar to those described under *Alternative A*. However, a reduction in

miles of routes could reduce the potential impacts of motorized recreation to paleontological resources in both planning areas.

#### *Alternative C*

Impacts to would be the same as described in *Alternative B*, except to a lesser degree due to the reduced amount of Front Country and Passage RMZs (42,700 acres).

In the Bradshaw-Harquahala Planning Area impacts would be similar to *Alternative B*, except the closure of more routes (382 miles would provide increased protection to paleontological over the previous alternative.

#### *Alternative D*

Impacts would be the same as described in *Alternative A*. Relative to *Alternative C*, a further reduction in miles of routes could reduce the potential impacts of motorized recreation to paleontological resources in both planning areas.

#### *Alternative E (Proposed Alternative)*

Impacts to Agua Fria National Monument would be similar to previous Alternatives, but with fewer closed routes than *Alternative D*, and fewer routes open to travel than *Alternatives B and C*.

Impacts to Agua Fria National Monument would In the Bradshaw-Harquahala Planning Area impacts would be less than *Alternative B*, but more than *Alternatives C and D*.

### **4.13.8 From Visual Resource Management**

#### *Alternatives A (No Action), B, C, D, and E (Proposed Alternative)*

There are no impacts expected.

### **4.13.9 From Rangeland Management**

#### *Alternative A (No Action)*

Under the current management of Agua Fria National Monument, grazing might affect paleontological resources by reducing vegetation and increasing erosion, leading to potential exposure and degradation of fossils.

Under the current management of the Bradshaw-Harquahala Planning Area, despite improved rangeland management practices from implementing the Arizona Standards for Rangeland Health and Guidelines for Grazing Administration (Land Health Standards), continued grazing might decrease vegetation growth, increase soil erosion rates, and disturb paleontological sites.

The Land Health Standards seek to maintain or promote ground cover that would provide for infiltration, permeability, soil moisture storage, and soil stability, thereby reducing the following:

- erosion rates,
- potential for exposure, and
- the degradation of paleontological sites.

#### *Alternatives B and C*

Impacts would be similar to those under *Alternative A*.

#### *Alternative D*

Elimination of grazing, as in *Alternative D*, could increase soil stabilization by increasing vegetation cover, reducing loss of paleontological resources to soil erosion.

#### *Alternative E (Proposed Alternative)*

Impacts would be similar to those under *Alternative A*.

### **4.13.10 From Minerals Management**

#### *Alternatives A (No Action), B, C, D, and E (Proposed Alternative)*

Under the current management of Agua Fria National Monument minerals management is not expected to affect paleontological resources. In the Bradshaw-Harquahala Planning Area, any mining might disturb such resources, but if fossils are found during cultural resources surveys or mining, BLM stipulations would require that the work cease until the BLM can evaluate the find. Potential damage, if reported, would be mitigated as suitable and practical, through avoidance or scientific data recovery.

### **4.13.11 From Fire Management**

#### *Alternative A (No Action)*

Where prescribed burning is conducted in Agua Fria National Monument, the use of heavy equipment and mechanical thinning of trees could temporarily promote an increase in soil disturbance and affect potential paleontological sites.

#### *Alternatives B, C, D, and E (Proposed Alternative)*

In both planning areas, fire-related activities that disturb the surface, such as the use of heavy equipment to build fuel breaks, could inadvertently affect paleontological resources.

### **4.13.12 From Wild Horse and Burro Management**

#### *Alternatives A (No Action), B, C, D, and E (Proposed Alternative)*

There are no impacts expected under any Alternative.

### **4.13.13 From Management of Travel Management**

#### *Alternative A (No Action)*

In the Agua Fria National Monument, areas open to vehicular access could continue to cause inadvertent damage to paleontological resources.

In the Bradshaw-Harquahala Planning Area unmanaged or illegal vehicle use could destroy or degrade potential paleontological resources. Under the current management of the Bradshaw-Harquahala Planning Area, limiting OHV travel and posting directional signing reduces the likelihood of inadvertent damage to paleontological resources.

#### *Alternatives B, C, D and E (Proposed Alternative)*

Impacts in the monument would be similar to *Alternative A*, except more restrictions on routes may help preserve potential sites.

In the Bradshaw-Harquahala Planning Area limiting vehicular travel to existing routes could help preserve paleontological resources by reducing the opportunity for inadvertent disturbance through OHV travel. Further restrictions on routes as dictated by each alternative could further reduce potential damage.

### **4.13.14 From Management of Wilderness Characteristics**

#### *Alternative A (No Action)*

Currently no areas are allocated for the management of wilderness characteristics. As a result, no impacts are expected.

#### *Alternatives B, C, D and E (Proposed Alternative)*

In areas allocated to maintain wilderness characteristics, impacts to potential paleontological resources would be reduced due to restrictions on vehicular access and the desire to retain primitive and natural characteristics.

## 4.14 Impacts on Recreation

This section compares the impacts of the Alternatives on outdoor recreation through changes in the recreation opportunities, settings, and access. Changes in the settings would result in a corresponding change in the opportunity to achieve a desired recreation experience in the proposed setting.

The escalating population of the Phoenix metropolitan area, coupled with the growth of other communities in the region would continue to increase recreation use of public lands. Visits to public lands are expected to grow at an annual percentage at least equal to the population growth of the region whether or not BLM provides more opportunities, facilities, or management presence.

One of the key issues affecting recreation activities is the fast growth of recreational OHV use area. The projected increase of more than two million people in Maricopa and Yavapai Counties is expected to substantially increase recreation use, especially OHV use, in the planning areas.

Agua Fria National Monument was not created for purposes of recreation, and recreation should be considered a secondary use that is permitted as long as the monument Purpose and Significance are protected.

Cultural resources in the monument would be managed according to three levels of public use for different recreation experiences (different levels described in detail in the Cultural Resources section).

Specific areas and sites for each level are described for the Alternatives.

### 4.14.1 From Special Designations

#### *Alternative A (No Action)*

Existing recreation opportunities and experiences in the suitable WSR corridors and wilderness areas would be retained. Increasing motorized and non-motorized recreation on public lands surrounding existing wilderness could contribute to increased wilderness visitation. Potentially growing numbers of non-motorized users could impair solitude opportunities and contribute to trailing and campsite use impacts along the edge and in the interior of the wilderness areas.

#### *Alternative B*

Designating Bloody Basin Road as a back country byway could affect the recreation setting along the byway by increasing traffic and interaction among visitors. Opportunities for more primitive recreational experiences in the suitable WSR corridor near the river crossing could be diminished. The interpretive elements of the byway would increase visitor awareness, appreciation, and enjoyment of the national monument's natural and cultural resources.

Designating a back country byway along Constellation Mine Road would have impacts similar to the same designation on Bloody Basin Road, although the Constellation Mine Road does not cross suitable wild and scenic river. The Constellation Mine Back Country Byway crosses an area of high OHV use with many miles of trails. Conflicts with OHV users could increase because of the increased traffic on the byway. Conflicts between byway users and large OHV groups could diminish the scenic drive experience. Moreover, there could be an increased potential for accidents at OHV trails and byway intersections because drivers might not expect multiple trail crossings in the area. The interpretive components would increase

visitor awareness, appreciation, and enjoyment of the mining history of the Wickenburg area.

Designating Tule Creek ACEC would reduce opportunities for vehicular recreation by closing the fenced area to motor vehicles. The total route closure would amount to 1.1 miles. The route closure would reduce conflicts among user types and enhance the opportunity for non-motorized activities in a more natural setting. Eliminating grazing would also help retain a more natural setting for recreation and reduce conflicts with livestock. Interpretive elements would increase appreciation of the natural and cultural resources under protection in the ACEC.

In wilderness areas, establishing criteria to manage larger group activities would protect wilderness values, most notably enhancing opportunities for solitude sought by wilderness visitors. Future opportunities for commercial and vending operations in wilderness areas would be forgone as these permits would be prohibited.

#### ***Alternative C***

Designating the back country byways would have impacts similar to those under *Alternative B*.

ACEC designation would have little to no impacts within Agua Fria National Monument due to the coverage of the National Monument Proclamation.

The effects from ACEC designations on recreation within Agua Fria National Monument are described in the National Monument Proclamation. Route closures could limit access for some visitors in the Silver Creek area and diminish vehicular recreation opportunities. To protect the resources in the Silver Creek area, routes can be closed without ACEC designation and these impacts could be realized anyway.

Designating Tule Creek ACEC would have impacts similar to those under *Alternative B*.

Designating ACECs in the Bradshaw-Harquahala Planning Area, comprising 55,710 acres, would improve opportunities for primitive recreation experiences like hiking, hunting, wildlife observation, camping, and sightseeing in natural settings. Non-motorized trail systems could be enhanced in some areas, and conflicts among different user types would be reduced.

In the Harquahala Mountains ONA the ACEC designation would prevent the future development of recreation sites and decrease opportunities to experience the area in a more developed setting. The lack of facilities for parking, staging, and interpretation would disperse motorized activities.

Impacts to wilderness areas due to group size and permit restrictions would be the same as in *Alternative B*.

#### ***Alternative D***

*Alternative D* proposes no back country byways, and no impacts are expected.

Designating ACECs would have impacts similar to those described for *Alternative C*, except that the ACECs would encompass 354,690.

Impacts to wilderness areas due to group size and permit restrictions would be the same as in *Alternative B*.

#### ***Alternative E (Proposed Alternative)***

Bloody Basin Road and the Constellation Mine Road/Buckhorn Road would not be designated as back country byways.

Designating Tule Creek ACEC would be the same as *Alternative B*.

ACEC designations would create the same impacts as in *Alternative C*.

Outstanding opportunities for backpacking, hiking, camping, hunting, and nature study

would be maintained in the five designated wilderness areas.

Impacts to wilderness areas due to group size and permit restrictions would be the same as in *Alternative B*.

## 4.14.2 From Lands and Realty Management

### *Alternative A (No Action)*

In the Bradshaw Harquahala Planning Area, disposal of lands in the Upper Agua Fria River basin, the Table Mesa area, and Skull Valley north of Highway 89 would reduce or eliminate opportunities for recreation and could affect the Black Canyon Trail. The lands in the Table Mesa area and in Skull Valley generally experience moderate to high OHV use. Those uses could potentially relocate to other areas. The higher concentration of activities in those areas could diminish the recreation experience for some users because of the higher numbers of people encountered. The Upper Agua Fria River basin lands support multiple recreation activities and provide some valuable linkages to Forest Service land to the east and west.

Utility development can affect recreation by increasing or reducing access to areas and primarily through changing the characteristics of the landscape by creating new roads or other facilities. These new facilities can change the types of recreation opportunities and settings an area might provide and the kinds of experiences and benefits recreationists would derive. Possible mitigations could include, but not be limited to: avoiding above ground facilities or long term surface modifications in areas where a primitive or undeveloped setting is desired; modifying the appearance of above ground facilities to blend into the natural landscape; utilize facilities or surface modifications to create other types of recreation experiences to replace the ones that might be lost.

### *Alternative B*

Non-Federal lands in Agua Fria National Monument would be considered for acquisition if they become available from a willing seller. BLM would also consider acquiring adjacent non-Federal lands that enhance Agua Fria National Monument's values, if these lands become available from a willing seller. These two actions would affect recreation opportunities by improving access.

Impacts to the utility corridor in Agua Fria National Monument would be similar to *Alternative A*, except that the corridor would be narrowed.

Impacts in the Bradshaw-Harquahala Planning Area would be similar to those under *Alternative A*, except that lands in the Table Mesa area would be retained and recreation on those lands could continue. Acquiring lands that meet the criteria described for Chapter 2 could enhance opportunities for recreation by increasing connectivity and manageability of public lands. No impacts are expected until specific parcels are selected for acquisition.

### *Alternative C*

Lands-related impacts to Agua Fria National Monument would be similar to those described for *Alternative B*, except that eliminating the utility corridor would remove any potential impacts from future utility proposals.

Due to the two methods that have been developed for determining which lands are potentially suitable for disposal through sale or exchange (2.4.2.1.1) differing impacts are expected under each.

No impacts are expected to result from disposing of lands selected under the first set of disposal criteria because parcels are small and generally in the Phoenix urban area. Because recreation on these parcels should be minimal, relocating the activities should not affect the relocation areas.