

**U.S. Department of the Interior
Bureau of Land Management**

**San Pedro Wildland Urban Interface
Treatment Project**

DOI-BLM-NM-F020-2015-0011-EA

August 2015

U.S. Department of the Interior
Bureau of Land Management
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Acronyms

Animal Unit Months	AUM
Best Management Practices	BMP
Bald & Golden Eagle Protection Act	BGEPA
Bureau of Land Management	BLM
Ecological Site Description	ESD
Environmental Assessment	EA
Environmental Protection Agency	EPA
Federal Land Policy and Management Act	FLPMA
Fire Regime Condition Class	FRCC
Geographic Information System	GIS
Green House Gases	GHG
International Union for Conservation of Nature	IUCN
National Invasive Species Information Management System	NISMS
National Environmental Policy Act	NEPA
Migratory Bird Treaty Act	MBTA
Major Land Resource Area	MLRA
Resource Management Plan	RMP
Taos Field Office	TAFO
Threatened or Endangered	T/E
United States Fish and Wildlife Service	USFWS
United States Geological Survey	USGS
Visual Resource Management	VRM

Planning Area Map

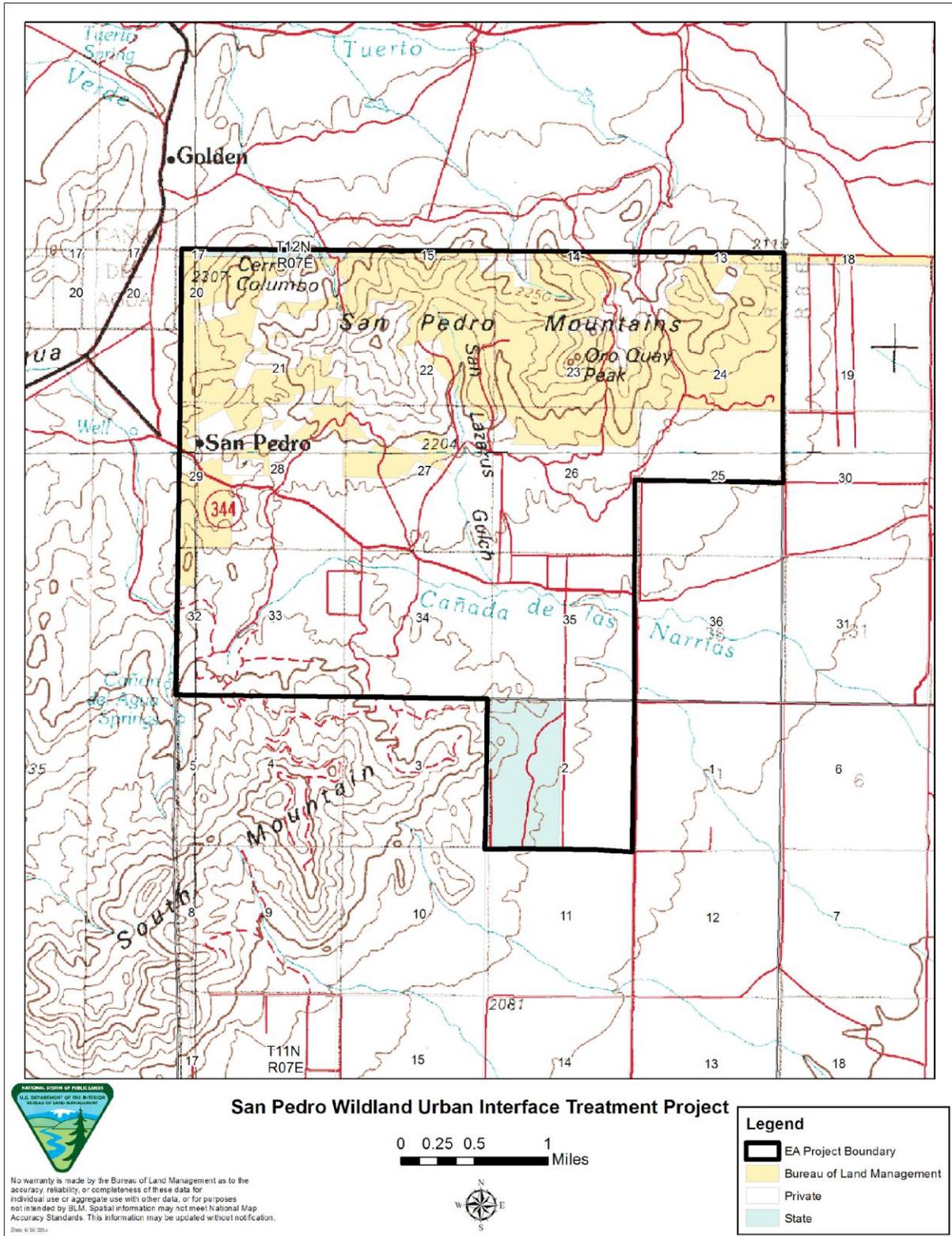


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Chapter 1: Purpose and Need

1.1 Introduction

The BLM Taos Field Office proposes to treat vegetation within the San Pedro Mountains in Santa Fe County, New Mexico in order to restore overall forest health and its herbaceous understory. Restoration efforts would not only allow for other native vegetation such as warm and cool season perennial grasses, forbs, and favorable shrub species to exist and/or recover, but would also aid in reducing the threat of wildfire to adjacent inhabited private lands. The BLM also proposes to eliminate hazards remaining from abandoned mines by closing adits and shafts scattered throughout the project area.

The proposed project is intended to meet the objectives of hazardous fuels reduction, forest restoration, and wildlife habitat enhancement within a 7,716-acre project area. These objectives would be accomplished through the application of mechanical thinning and prescribed fire treatments in order to meet desired conditions. Individual treatment projects would be designed to increase biological diversity by decreasing the density of pinyon pine, juniper as measured by stand density index in areas where densities are determined to be exceeding historic conditions as defined by ecological site descriptions. Site specific monitoring and inventory data would be collected in order to help determine project priorities based on the extent and magnitude of an area's departure from historic conditions. Results would also benefit both wildlife and livestock by not only increasing forage production, but also providing greater edge or transitional habitat and structural diversity throughout the entire area.

In the past, fire played a significant role in maintaining native grasslands and ecosystems where pinyon and juniper trees are found in north and central New Mexico. Fire and other disturbance regimes are important in maintaining pinyon and juniper trees in balance with other species in these ecosystems (Williams et al. 2010). Of the ecosystems where pinyon and juniper trees are the dominant woody vegetation type, the general ecosystem types include persistent pinyon and juniper woodlands, pinyon and juniper savannas, and wooded shrublands (Romme et al. 2009). These general ecosystem types can be delineated by their significant differences in canopy structure, understory characteristics, and historical disturbance regimes. Increased fire suppression and other management practices on these lands for the last century have contributed to an augmented density of pinyon and juniper (Miller et al. 1994). The expansion of woodlands from their traditional fire adapted ecosystems (i.e. rocky, shallow soil sites) on to deeper soil sites. The alteration of these fire adapted ecosystems has also resulted in increased canopy closure and loss of herbaceous ground cover within older growth stands. Loss of herbaceous cover, and conversely exposure of bare soils, can trigger accelerated runoff and erosion resulting in degradation of both the upland watershed and downstream riparian zones (Jacobs et al. 2002).

As indicated above, the Taos Field Office also proposes to conduct mine closures on the abandoned mine workings that can be found throughout the project area. These mines vary in size and depth from shallow pits to excavated shafts, tunnels, and adits that can be several hundred feet deep. These mine workings pose a significant risk hazard to members of the public and also to employees or contracted crews that

may conduct mechanical treatments or prescribed fire treatments in the project area if the decision is made to adopt the Proposed Action.

1.2 Purpose and Need for Action

The purpose of the vegetation treatment project is to meet the goals and objectives of ecological site descriptions and the desired plant communities by reducing high density areas of brush and tree species. The high density of tree species in woodlands and forests within the project area is resulting in the crowding out of desirable perennial or annual native plants and is causing a loss in biodiversity and wildlife habitat and a decrease in ecosystem health.

The vegetation treatment project is needed to maintain and improve native forest and woodland ecosystems, as well as to reduce the overall threat of catastrophic wildland fire within the proposed project area with a concentration on hazardous fuels reduction in the wildland urban interface near the community of San Pedro, NM. The proposed project is specifically needed because current forest conditions are at a higher level of susceptibility to stand replacing fires and add a greater threat of catastrophic wildfire to San Pedro and nearby residential areas. In the Santa Fe County Community Wildfire Protection Plan, CWPP (SWCA 2008), the San Pedro area has been rated as having Very High hazard and risk from wildfire due to terrain and vegetation influences. The CWPP specifically mentions that large areas of closed canopy pinyon-juniper and with moderate understory contribute to the wildfire hazard and risk to the community (SWCA 2008).

The purpose of the mine closure project is to reclaim to the greatest extent possible, existing open pits, shafts, tunnels, and adits within the project area. This action is needed because the various mine features pose a safety hazard to public users and employees and contractors that may enact proposed vegetation treatments.

1.3 Land Use Plan Conformance

The Proposed Action is in conformance with the *2012 Taos Resource Management Plan (RMP)*, as required by the Federal Land Policy and Management Act of 1976 (FLPMA), and is consistent with the *2010 Farmington District Fire Management Plan (FMP)*, updated in 2010.

Vegetation treatment project objectives conform with the Taos RMP decision to manipulate vegetation cover on federal land to enhance native grass species by restoring healthy vegetative woodland and forest communities, as presented under section 2.1.7.2 of the plan.

Mine closure project objectives are also consistent with the Taos RMP decision to ensure that any open mines or mining related hazards on public lands are adequately mitigated to provide for public safety.

1.4 Identification of Issues

In June of 2010, an administrative review was initiated for implementing the San Pedro Wildland Urban Interface (WUI) Treatment Project. The decision to move forward with the design and evaluation of this project was developed collaboratively by the Taos Field Manager and resource staff.

The proposed project was posted online on August 26, 2010, inviting the public to submit comment and concerns related to the scope of this project. A scoping summary of the project was mailed to potential

interested parties, including the San Pedro Neighborhood Association, on October 25, 2010, soliciting comments.

On September 7, 2010, the proposed project was discussed by Taos Field Office resource specialists at the monthly NEPA coordination meeting. Issues discussed included wildlife, consultation requirements on threatened and endangered species, and needs related to archaeological clearance. A series of follow-up meetings were held with BLM resource specialists to further discuss the scope of this analysis.

The safety of BLM personnel and others was identified through internal scoping as a critical concern. This led the BLM to decide in 2011 to defer completion of the analysis of the Proposed Action for this environmental assessment due to this concern stemming from the large number of abandoned mines in the project area. In 2014, the BLM reinitiated analysis of the Proposed Action after significant progress had been made to address the safety concerns in the area, specifically through a proposal evaluated under the San Pedro Safeguard Project Environmental Assessment prepared by the Abandoned Mine Land Program, New Mexico Mining and Minerals Division in Cooperation with USDI Office of Surface Mining and Reclamation and Enforcement (AML 2014). The San Pedro Safeguard Project EA, which covers a portion of the San Pedro Wildland Urban Interface Treatment Project EA, seeks to mitigate abandoned mine safety concerns by backfilling, installing steel grates and gates, installing cable netting, applying polyurethane foam, and/or installing concrete covers. Mine closure activities have also been added by the BLM to the current Proposed Action (described below) to supplement and compliment the activities proposed under the San Pedro Safeguard Project.

Based on public scoping and internal scoping efforts, the following issues are considered relevant to the analysis of the Proposed Action and Alternatives:

1. Air Quality – *How would the Proposed Action and Alternatives affect the quality of air within the project area?*
2. Cultural Resources – *How would the Proposed Action and Alternatives impact the condition and integrity of cultural resources present in the area?*
3. Rangeland Management – *How would the Proposed Action and Alternatives impact range allotment usage?*
4. Soils - *What impact would the Proposed Action and Alternatives have on the integrity and stability of soil within the project area?*
5. Special Status Species and Migratory Birds – *How would the Proposed Action and Alternatives affect special status species, and migratory birds within the project area?*
6. Visual Resources – *How would the character of the viewshed be maintained by the Proposed Action and Alternatives?*
7. Wildlife – *How would big game wildlife habitat be affected by the Proposed Action and Alternatives?*
8. Minerals and Geology – *How would the Proposed Action and Alternatives impact the minerals and geology within the project area?*
9. Vegetation – *How would the Proposed Action and Alternatives affect the vegetation within the project area?*
10. Public Safety – *How would the Proposed Action resolves the threat of catastrophic wildfire? What risks are involved in prescribed fire? How would abandoned mine-related hazards be resolved?*

The following issues raised during public scoping and internal scoping efforts have been dismissed because they have been considered irrelevant and/or unrelated to the analysis of the Proposed Action and Alternatives:

1. Federally Listed Threatened or Endangered wildlife species

The BLM has determined through the scoping process that no federally listed species are likely to occur in the project area. Therefore, the Proposed Action and Alternatives would have no effect on federally listed threatened or endangered wildlife species. There is no designated critical habitat within the project area. This project area is within Santa Fe County. A Threatened and Endangered species list was requested of the U.S. Fish and Wildlife Service (USFWS) for the county on June 26, 2014, and includes the following:

Endangered: Southwestern willow flycatcher (*Empidonax traillii extimus*). There is no Critical Habitat listed for this species within Santa Fe County. This species prefers thick, dense riparian habitat and there is no such habitat within or adjacent to the project area. Therefore, there would be No Affect to the Southwestern willow flycatcher (*Empidonax traillii extimus*).

Threatened: Mexican spotted owl (*Strix occidentalis lucida*). There is designated Critical Habitat approximately 15 miles west of the project area in Bernalillo County in the Sandia Mountains. This species prefers dense, moist, old-growth mixed conifer forests with high species and structural diversity, with significant large downed woody debris in mountain canyons and drainages. Habitat conditions within the project boundary are pinyon-juniper woodlands and much drier, resulting in sub-optimal habitat conditions for this species. There are no known observations or populations of the species within the project area. Therefore, there would be No Affect to Mexican spotted owl (*Strix occidentalis lucida*).

2. ATV Access

Allowing or disallowing public All-Terrain Vehicle (ATV) access into the proposed project area is not a decision that is covered by the analysis for the Proposed Action or Alternatives. This topic is beyond the scope of this analysis and as such will not be addressed in this environmental assessment.

3. Establishing a Permanent Entrance/Exit to the Project Area

The designation of permanent access or egress points and routes into the identified project area is not a decision that is covered by the analysis for the Proposed Action or Alternatives. This topic is beyond the scope of this analysis and as such will not be addressed in this environmental assessment.

4. Charred Odor of the Forest Following Prescribed Fire Treatments

The BLM has found no research showing that the odor of the burnt vegetation following a prescribed fire poses a human health risk or a safety concern. This is also not a lasting or permanent effect. Therefore this topic is beyond the scope of this Environmental Assessment and the analysis for this Proposed Action or Alternatives.

Chapter 2: Description of Alternatives

2.1 Alternative A: Proposed Action

The Proposed Action is to treat vegetation through mechanical thinning, the use of prescribed fire, and/or the implementation of wildland fire managed for multiple objectives within the 7,716 acre project area to reduce stand densities and increase canopy spacing within pinyon pine and juniper woodlands.

Treatments would not occur in areas that support their potential natural community reference state or are not conducive to treatments as determined by an interdisciplinary assessment. Reference states reflect baseline conditions, for example those that occurred prior to increased European settlement and land use of the late 1800s. Any treatments that lie on privately owned lands would need agreements prior to being considered for treatment. Untreated areas would, to the best extent possible, create a mosaic of differing age classes and improve structural diversity across the 7,716 acre project area. Reference states are the areas containing the historic climax plant community, as described in the Ecological Site Descriptions.

The primary objective of fuels treatments on sections 28, and 29 of T12N R07E, is hazardous fuels reduction in the wildland urban interface. BLM land on these sections borders private land and residential structures, and BLM is responsible for protecting private lands from wildfire that start on BLM land. Mechanical thinning would be used to reduce levels of hazardous fuels and prescribed fire would be used to maintain an open understory and low stand density in the thinned areas.

The San Pedro restoration area totals approximately 7,716 acres of which approximately 2,554 are BLM land, 4,800 are Private land and 362 are under the jurisdiction of the NM State Land Office (see Appendix 1). The project area includes sections 13, 14, 15, 16, 17, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 32, 33, 34, and 35 of T12N R07E, and section 2 (NMSLO) of T11N R07E within the San Pedro Mountains region.

The objective is to reduce existing pinyon pine and juniper stand densities through the use of prescribed fire and mechanical thinning, and/or the implementation of wildland fire managed for multiple objectives. It is expected that vegetation treatments would take place each year for the next several years. Treatment areas would be selected based on one or more of the following site characteristics:

- The area is adjacent to or within Wildland Urban Interface areas
- Cooperation with the grazing allotment operator for adequate grazing deferment
- Cooperation with adjacent and interested private landowners
- The area is favorable for prescribed fire, and/or mechanical treatment

The Proposed Action is also to close mine features, including pits, shafts, adits, tunnels that remain from historic mining activities within the New Placers mining district. Features would be safeguarded using several possible methods, including, but not limited to, mechanical or hand backfilling with on-site spoil piles, steel grates and gates, cable net, polyurethane foam applications, and/or concrete covers. Work would be done using heavy machinery and hand tools and may be contracted or done with in-house personnel, depending on available project funding. Prior to commencing any work, those features that might be suitable habitat for bats, either on a short term or long term basis, would be surveyed to determine possible usage by bats. Any features which show evidence of use would be closed using metal “bat gates” or other means that would allow bats to move freely into and out of the feature while keeping people out.

2.1.1 Project Design and Management Actions

The following design features and management action procedures would be incorporated into the project to attain the resource objectives described above. The Proposed Action would include one or more of the following treatment methods: prescribed fire, mechanical vegetation treatments, and mine closures. Appropriate resource management actions would be applied to areas to meet desired conditions.

1. In house archaeological survey determinations would be conducted prior to the initiation of any project to determine whether a cultural survey would be required. Class III (100%) cultural resource inventory and documentation of identified cultural resources would be completed for all proposed surface disturbing treatment areas. All cultural resource sites determined to be eligible or potentially eligible for inclusion in the NRHP would be avoided by all ground disturbing activities associated with the proposed treatments. Cultural resource sites would be marked appropriately for avoidance prior to treatment implementation.
2. A survey of bat and owl occupation and habitat within mining features would be conducted to determine the appropriate closure method to be adopted for each inventoried mine.
3. Rangeland allotments may require resting in treated areas for a minimum of 2 years following treatments from mechanical application and/or prescribed burning. Rangeland resting periods could be modified if range conditions are deemed suitable for livestock grazing as determined by the BLM Rangeland Management Specialist and Wildlife Biologist, to allow regeneration of vegetation.
4. Any project-related activities requiring off road access would use the least conspicuous route, and following project completion, access routes would be rehabilitated, if necessary, or otherwise masked to deter unauthorized off road travel. The proposed project would follow the objectives of all VRM class designations. Vehicles and equipment would follow approved access routes, and only in conditions when and where ruts and other unnecessary impacts can be avoided.

Treatments

Various treatments would be conducted on BLM sections and would include prescribed fire, mechanical thinning treatments, and mine closures to accomplish resource objectives described in this environmental assessment.

Thinning

Thinning would be done by chainsaw and would be conducted by a BLM fuels crew or contract crews who are trained in the use of chainsaws and have been briefed on thinning objectives and designed thinning prescriptions. Thinning would be conducted in areas with high concentrations of pinyon pine, and juniper. Chainsaws would be used to selectively thin pinyon pine and juniper trees in areas not conducive to other means of removal. Fuelwood gathering of down wood on thinned sites may be allowed to assist in excess fuel removal in areas where risks to the public have been mitigated. Green fuelwood areas could also be utilized as a tool to help achieve thinning prescriptions in areas where risks to the public have been mitigated. Green fuelwood areas have been utilized within the Taos Field Office as areas where trees are marked to meet thinning prescriptions and members of the public are permitted to cut those marked trees for personal use or commercial use fuelwood harvest.

Site-specific thinning prescriptions would be developed by the Taos Field Office staff in collaboration with resource specialists for wildlife and would include mitigation measures outlined in the Farmington District Fire Management Plan (2010). The following additional mitigation measures would apply to all thinning treatments within the planning area:

- a. Surface disturbing treatments would avoid sites containing cultural resources and active wildlife habitat zones. Coordination with resource specialists would be required prior to treatment to mitigate impacts to these sensitive areas.
- b. Where appropriate, vegetative material would be piled for burning at a later date. If burning is not an option minimal vegetative material may be left on site for soil stabilization and erosion control measures.
- c. All mechanical treatments may be precluded from areas with slopes over 20% or on incompatible soils as documented in site specific assessments/plans.
- d. Pre- and post-treatment monitoring would be conducted to evaluate effectiveness of treatments.

Prescribed Fire

Prescribed fire would include broadcast burns and pile burns, and would occur at any time of the year as conditions allow and when fuels are dry and able to carry a fire. Prescribed fire offers more opportunity to create a mosaic than do wildfire conditions. Prescribed fires also reduce the potential for future extensive and high intensity wildfires (Miller 2001).

Following thinning activities, pile burning would be used where appropriate to eliminate high concentrations of surface fuels. Pile burning would most likely occur in the late fall and winter. All burn operations would be conducted under the supervision of a certified prescribed fire burn boss.

The following measures would apply to all prescribed burn treatments within the planning area:

- a. Range improvement infrastructure (e.g., pipelines and fences), power lines, and communication lines would all be excluded and/or protected from prescribed fire.
- b. Each project area would be evaluated for deferment of grazing that would be applied if necessary.
- c. Areas treated with prescribed fire may need to be fenced off to exclude livestock grazing in order to promote growth of native vegetation through at least two consecutive growing seasons following treatment. The growing season usually begins in spring (around March 1) and continues until first frost (around October 31).
- d. Burning operations would be conducted with techniques to avoid smoke from impacting traffic on U.S. Highways and NM state roads.
- e. Limit concentrated changes or contrasts to the characteristic landscape by following natural contours, scalloping, and feathering of the treatment edges.

Mine Closures

Mine closures on inactive mines would be conducted throughout the project area. Mine hazards and safety concerns would be mitigated using several methods to include, but not limited to, mechanical or hand

backfilling with onsite material, installation of steel grates or gates, installation of cable netting, or filling polyurethane foam, and/or concrete covers.

The following measures would apply to all mine closure actions within the planning area:

- a. Surface disturbing treatments would avoid sites containing cultural resources and active wildlife habitat zones. Coordination with resource specialists would be required prior to treatment to mitigate impacts to these sensitive areas.
- b. An inventory of mine features would be conducted to develop a project plan and to prioritize mine closure actions.
- c. A survey of bat and owl occupation and habitat within mining features would be conducted to determine the appropriate closure method to be adopted for each inventoried mine.
- d. All claimholders affected by proposed mining closures would be notified by the BLM and be given the opportunity to respond to the BLM to file a notice of operations and establish a reclamation bond for mine entries located within the boundaries of unpatented mining claims.

2.1.2 Inventory and Monitoring

Vegetation inventory data would be collected prior to implementation of the Proposed Action and post treatment. Several methods of qualitative and quantitative assessments would be conducted within the treatment areas. All inventory and monitoring would be done in accordance with the BLM Assessment, Inventory, and Monitoring (AIM) Strategy for Integrated Renewable Resources Management (BLM 2011). These studies would be re-read two years after the treatments have been completed to determine treatment effectiveness and an analysis of the condition of vegetation resources within the project areas.

Class A, B, and C noxious weed surveys will be completed by the fuels crew once they delineate the treatment mosaics. Any infestation will be mapped using National Invasive Species Information Management System (NISIMS).

Cultural inventories would be conducted, if necessary, as determined by the BLM in consultation with affected Tribes and the New Mexico State Historic Preservation Office. Class III cultural resource inventories would be conducted prior to the implementation of any surface disturbing activities. All cultural resource sites deemed eligible or potentially eligible for inclusion on the National Register of Historic Places would be avoided by the Proposed Actions. Cultural resource site monitoring would be stipulated on a project by project and site by site basis. Contractors and subcontractors would be informed that cultural sites are to be avoided by all personnel, personal vehicles and company equipment. They would also be notified that it is illegal to collect, damage, or disturb cultural resources, and that such activities are punishable by criminal and or administrative penalties under the provisions of the Archaeological Resources Protection Act (16 U.S.C. 470aa-mm). If, in its operations, the BLM discovers any previously unidentified historic or prehistoric cultural resources, then work in the vicinity of the discovery would be suspended and the discovery promptly assessed for appropriate mitigation.

If activities occur within the migratory bird breeding season (April through August), a bird survey by a qualified wildlife biologist would be required to ensure there are no nesting birds in targeted areas prior to treatment. If active bird nests are found, coordination with the USFWS is required and a permit must be obtained in order to move or disturb any active nest.

2.2 Alternative B: No Action

Under the No Action Alternative, the BLM would not implement any of the treatments outlined in the Proposed Action, but would continue current management on the site, which includes monitoring forest health and fire suppression tactics. Additional mine closures that have been adopted in separate environmental assessments that fall within the current proposed project area would continue to be conducted.

2.3 Alternatives Considered but Dismissed from Detailed Analysis

After careful consideration, the BLM has dismissed from detailed analysis the following options for the reasons explained.

No Prescribed Fire Alternative: Thinning of the WUI in the San Pedro area would ultimately reduce hazardous fuels and improve overall forest health. For a short duration, however, this activity would increase fire danger due to rearranging the forest structure from live standing trees to cured fuels lying on the ground. The proposed scale of this project, 200- 1000 acres, possesses many obstacles in the path for removal of these fuels. Physical removal of the fuels is not feasible due to costs, steep slopes, and the large number of acres involved. Most of the terrain in this area is only accessible by foot. Leaving the fuel from thinning activities on the ground does not solve the problem of hazardous fuels in the WUI. It would only compound the problem for up to ten years and should only be used in areas outside the WUI.

Instead, pile burning, which is provided for under the Proposed Action, is a very cost effective and efficient way to remove activity fuels created in this type of environment. Typically, 15 to 25 acres can be treated per day through pile burns, as compared to 2-5 acres/day using chipping or site removal. Pile burns would be conducted during time frames of reduced fire danger (i.e. higher humidity and cooler temperatures) and would only be conducted with a signed burn plan that takes into consideration all safety aspects.

Broadcast burning, also included under the Proposed Action, may take place in certain areas of the San Pedro WUI. These burns would be used to maintain previous treatments and improve overall forest health. These burns would not take place until all safety aspects have been considered and addressed. Generally, speaking, thinning would take place to reduce fuel loads and open tree canopies so that a broadcast burn can be conducted under historic conditions.

As indicated, broadcast burns would only be conducted with an approved burn plan that addresses all safety concerns. Factors that address these concerns include the time of year, wind direction, contingency plans and resources, and resources needed to safely conduct burn under a given prescription. All burn plans put life safety first (public and firefighters) and all aspects of the burn plan address this issue.

Other Methods Considered: Alternatives were raised through the public scoping process but were dismissed from detailed analysis because they would not meet the project objectives or would be ineffective due to ecological conditions found within the project area. These treatment methods included not using chainsaws and only using a masticator for thinning. Using a masticator for thinning instead of using chainsaws would not be effective for this project area due to exposed rock and outcroppings that

could disable the masticator. Using chain saws is the preferred treatment method for forest treatments because of effectiveness and the ability to meet hazardous fuels reduction objectives.

Chapter 3: Affected Environment

Resources managed by the Taos Field Office that would be impacted by the Proposed Action are described in this section.

3.1 Air Quality

Any degradation of air quality in portions of the Taos Field Office planning area is the result of pollutants such as nitrogen dioxide, hydrocarbons, carbon monoxide, and particulate matter from motor vehicles, blowing dust, and dirt roads. Automobile exhaust from the more densely populated areas contributes to air pollution. This is especially evident during the winter when temperature inversions prevent the escape and dispersion of polluted air to higher altitudes. These inversions are usually of short duration because of storm fronts and unstable cold air masses moving through the area. Summer inversions last longer. Convective columns can occur at any time of the year when solar radiation stabilizes the air close to the ground and produces air turbulence that can disperse trapped auto emissions.

Wind action on exposed or disturbed soils is a contributing source of air pollution in this area. The soil particles contribute to dust storms of various magnitudes, depending on wind velocity. Early spring winds cause blowing dust, which contributes to air pollution. Extensive preparation for spring planting is the source of much of the blowing dust. The Project area is not located in any special air quality zones regulated by state or local authorities (AML 2014).

Currently, five primary air toxins are being assessed relative to the exposure of humans to smoke from both prescribed fire and wildfires. These toxins are: acrolein, formaldehyde, carbon monoxide, particulates, and benzene. Little is known of the long-term health impacts these toxins have on humans, as they are found in smoke from vegetation. Modeling to predict concentrations of air toxins downwind from a prescribed burn or wildfire does not exist. Due to dilution of these toxins with fresh air, exposure is less harmful the farther away an individual is from the source of the smoke. (USFS 1999)

3.2 Cultural Resources

The project is located within the archaeologically rich San Pedro Mountain area which was part of the Cerrillos Mining District. Cultural resources occur throughout the area. In fact most of the mine features are considered historic cultural resources. The area would be inventoried prior to any reclamation being done, and any resources eligible for nomination to the national register of historic places would be noted. In general the area was used in prehistoric times for mining, and hunting and gathering activities. Historic uses of the area are predominantly concerned with mining activities. In the 1960's, a survey of potential "historic sites or districts" in the United States was conducted by the National Park Service. One of the results was a list of 172 sites in the West designated as "Historic Districts Eligible for Registry of National Historic Landmarks," and the Cerrillos Mining District was one of the sites judged eligible (Ferris 1967; Oakes and Zamora 2012). The area however is not currently listed in the Registry of National Historic Landmarks. The Cerrillos Mining District includes the San Pedro Mountains as well as the Ortiz Mountains and Cerrillos Hills. Pueblo Indians are known to have mined turquoise and possibly lead within the boundaries which eventually became the Cerrillos Mining District before AD 800. The

area was first prospected and its ores assayed in 1581. When European settlers arrived in 1598 it became the first European mining area in what is now the United States (Oakes and Zamora 2012).

3.3 Rangeland Management

There is one active livestock grazing allotment, allotment 847, within the project area. The allotment is comprised of approximately 1,712 acres of BLM land with 132 active cattle animal unit months (AUMs), and has a season of use from March 1 through February 28.

3.4 Soils

The project area falls within the Arizona and New Mexico Mountains Major Land Resource Area (MLRA) 39. This MLRA is characterized by volcanic fields and gently dipping sedimentary rocks eroded into plateaus, valleys, and deep canyons. The dominant soil orders in this MLRA are Inceptisols, Mollisols, Alfisols, and Entisols. Most of the soils in the MLRA have a frigid or mesic soil temperature regime, depending mainly on elevation.

Specific soil types across the project area have a wide range of variability (see Soils Map in Appendix 1). The soil mapping units within the project area consist of Sedillo family very gravelly loam (500), Truehill extremely gravelly loam (501), Cerrillos-Sedillo complex (510), Wandurn-Alchonzo-Rubble land complex (511), Cochiti extremely cobbly loam (512), Pedregal very cobbly loam (513), Pegasus extremely cobbly loam (514), Pastorius very cobbly loam (515), Devargas-Riovista-Riverwash complex (521), Oelop family-Charalito complex (534), Pits, mine (550), Hyer-Witt silt loams (600), Lazarus silt loam (603), Desario-Espadon complex (604), and Lazarus-Manzano silt loams (605) (Soil Survey Staff, 2014).

Numerous areas of bare soil and rock exist near the various mine features. These are the spoil piles of material removed from the pits, shafts, adits, and tunnels. Most of these are still barren due to the sterility of the material; however, in some cases vegetation has started to reclaim the piles. In almost all cases soil near the surface of the piles has eroded away until only a conglomerate “pavement” of bare rock and gravel remains on the surface.

3.5 Special Status Species / Migratory Birds

3.5.1 BLM Sensitive Species

There are six BLM Sensitive Species that could potentially be found within the project area. The description of habitat components and threats to these BLM Sensitive species is listed below for each species:

Spotted bat (*Euderma maculatum*): The range of this species extends from Montana south to central Mexico, including arid parts of Nevada, Wyoming, Colorado, and Utah. Capture sites in New Mexico include the lower Rio Grande Valley near Las Cruces to near the summit of Mt. Taylor, but most records are in or near forested areas, usually of bats captured in nets placed over bodies of water. Spotted bats may summer in forested areas and migrate through lower elevations at other seasons. Historic records suggest that this species was widely distributed but quite rare over its range, although the species may have been locally abundant at certain sites. Recent acoustic surveys have revealed very few of these bats in areas of New Mexico where the species was regular in occurrence. The conservation of diurnal roosts,

rocky cliffs with snug cracks for roosting, and large open foraging sites are important to conservation. Threats to this species include use of pesticides on prey, loss of foraging habitat, and disturbance at roosting sites by recreationists. (BLM NMSO 2011)

This species is a resident of pine forests in June and July and wanders to lower elevations in the late summer & autumn. This species is also found in piñon-juniper woodlands adjacent to sandstone cliffs. This species can often be found over streams or water holes in ponderosa or mixed-coniferous forest and is also found in open semidesert shrublands. The species shows apparent seasonal changes in habitat, from occupying ponderosa pine woodlands in the reproductive season and lower elevations at other times of the year. The long term persistence of this species is threatened by the loss of clean and open water sources, and modification or destruction of roosting and foraging habitat. For hibernating species threats include the disturbance or destruction of hibernacula. (BLM NMSO 2011).

Townsend's big-eared bat (*Corynorhinus townsendii*): This species occurs throughout much of western North America, from British Columbia to Mexico, and eastward to Texas. The species has been found across a wide range of ecosystems from low elevation arid desert situations, as in the Sierra Rica & Tres Hermanas along the Mexican border, to Canadian Zone conditions, as in Embudo Cave in the fir zone of the Sandia Mountains. This species is thought to be in decline in most areas and is listed as an endangered species in Washington; a sensitive species in Oregon; and a Species of Special Concern in Texas, Montana and California. The species has declined due to direct killing by people and roost disturbance. The species is sensitive to disturbance and may abandon roost sites after human interference. In large portions of western range dependence upon abandoned mines has put them at risk. Pesticide spraying also may affect food source for the species. Because they hibernate they are potentially susceptible to White-Nose Syndrome. (BLM NMSO 2011).

This species roosts mostly in caves or mines and at night can roost in abandoned buildings. In summer this species can be found widely across New Mexico and can be found over desert-scrub, desert-mountains, oak-woodland, piñon-juniper, and coniferous forests. The primary threat to the species is related to disturbance and/or the destruction of roost sites, including inadequate surveys of abandoned mines prior to closure, and habitat destruction and/or modification by partial blocking or improper gating of cave/mine roosts. (BLM NMSO 2011).

Gunnison's prairie dog (*Cynomys gunnisoni*): This species is a resident of grassland/shrublands from central Colorado to central Arizona including a small portion of southeastern Utah and much of the northwestern half of New Mexico. The montane and prairie portions of the species' range are separated by mountain ranges that almost completely limit prairie dog movement (USFWS 2008). This species is considered vulnerable globally and imperiled in New Mexico. There has been an extreme reduction in distribution and abundance of this species. Between 1916 and 2008 this species occupied habitat range declined from 97,000 square km to 1,360-2,000 square km (USFWS 2008). This represents a range-wide decline of greater than 95 percent. The current trend for this species considered between declining and stable (+/-10% flux to 30% decline). (BLM NMSO 2011).

Threats to this species include exotic disease including sylvatic plague, and control activities by government, private organizations, and individuals via poisoning and shooting. USFWS concluded that

within the montane habitat in central and south-central Colorado and north-central New Mexico this species is likely to become threatened or endangered within foreseeable future due to plague. This is a keystone species and inhabits grasslands from low valleys to montane meadows. This species is also found to inhabit Great Basin Desert Scrub habitat as well as high mountain valleys and plateaus in New Mexico. (BLM NMSO 2011).

Bald eagle (*Haliaeetus leucocephalus*): Bald Eagles breed in North America from Alaska east to Newfoundland and south to Baja California, the Southwest, Texas, and Florida. In New Mexico, this species migrates and winters from the New Mexico Colorado border south to the Gila, lower Rio Grande, middle Pecos, and Canadian River valleys. The main wintering areas include the San Juan, upper Rio Grande, upper and middle Pecos River, Canadian River, and the San Francisco and Estancia valleys (NMDGF 2013).

Bald Eagle habitat most commonly includes areas located within 4 km of coastal areas, bays, rivers, lakes, or other bodies of water that reflect the general availability of primary food sources, including fish such as catfish, carp, and yellow bass; small mammals such as jackrabbit, cottontail, squirrel, and woodrat; avian species, including waterfowl and shorebirds; and to a lesser extent, various reptiles. Bald Eagles prefer areas with a high water-to-land edge and areas with unimpeded horizontal and vertical views. Wintering habitats require an adequate food supply and open water, such as river rapids, impoundments, dam spillways, lakes, and estuaries (AZGFD 2002).

There is a known raptor migratory path over the project area for eagles and hawks moving along the Sangre de Cristo and Rocky Mountains. Eagles may stop, perch, rest, and/or forage in the project area during migration. Migration for this species occurs between September and March. During the autumn migration birds are returning to wintering grounds; and in the spring the birds migrate to northern summer grounds to breed and nest. Best Management Practices as outlined in the Taos Resource Management Plan (2012) would be followed to limit any impacts to the species due to the proposed action. In addition, activities during the migratory season when an eagle may be present or actions in eagle habitat when the species is not present, would be conducted in accordance with the National Bald Eagle Management Guidelines (USDI-FWS-2007).

Pinyon jay (*Gymnorhinus cyanocephalus*): This species is a permanent resident of foothills and lower mountain slopes of the western and southwestern US. This species is found from central Oregon east to western South Dakota and south to northern Baja California, central New Mexico and western Oklahoma. This species is found in foothills throughout New Mexico wherever large blocks of pinyon-juniper woodland habitat occur. This species listed as Vulnerable by International Union for Conservation of Nature (IUCN) because of evidence for rapid population declines, presumably as a result of the conversion and degradation of piñon-juniper woodland habitat. Due primarily mainly to habitat loss, this species has suffered a population decline of 36.9% per decade since 1966 and 59% per decade between 1993 and 2002. This species has been experiencing downward trends in population numbers in New Mexico and regionally over last several decades. (BLM NMSO 2011).

Behaviors of colonial breeding and colonial nesting and young grouped in "creches" make these populations highly vulnerable to predators and disturbance events. Predation is a major source of mortality for fledglings and juveniles and predation on eggs and nestlings is also high. New Mexico holds about 28% of the overall population (BLM NMSO 2011).

Western burrowing owl (*Athene cunicularia hypugaea*): This species is found across the Americas and Caribbean Islands and is widespread across US Western states. The species breeds in northern New Mexico and is found year-round in southern New Mexico. The species was evaluated as a species of least concern by IUCN because it's extremely large range and does not approach the threshold to be considered vulnerable per IUCN. The population trend for the species appears to be decreasing, however not at a rate to approach being considered vulnerable by IUCN standards. Breeding Bird Survey data from 1980 to 1989 for this species shows a significant decline in several western states including New Mexico. Vehicle collisions are a serious cause of mortality for this species. Severe spring and summer weather os also known to kill both adult and young western burrowing owls in burrows. (BLM NMSO 2011)

Dry and open shortgrass and treeless plains are often associated with burrowing owls. The presence of nest burrows is critical requirement for owls. Habitat destruction, including intensive cultivation of grasslands and prairies has been noted to be the cause of population declines. (BLM NMSO 2011)

3.5.2 Migratory Birds

The Migratory Bird Treaty Act (MBTA) of 1918 (United States Code, Title 16, Chapter 7, Subchapter II) prohibits the “pursuit, hunt, take, capture, kill, attempt to take, capture, or kill, possess, offer for sale, sell, offer to barter, barter, offer to purchase, purchase, deliver for shipment, ship, export, import, cause to be shipped, exported, or imported, deliver for transportation, transport or cause to be transported, carry or cause to be carried, or receive for shipment, transportation, carriage, or export, any migratory bird, any part, nest, or eggs of any such bird, or any product, whether or not manufactured, which consists, or is composed in whole or part, of any such bird or any part, nest, or egg thereof.” The ensuing Executive Order 13186, signed January 10, 2001, “directs executive departments and agencies to take certain actions to further implement the [MBTA].” Such actions include the responsibility that Federal agencies “taking actions that have, or are likely to have, a measurable negative effect on migratory bird populations develop and implement, within 2 years, a Memorandum of Understanding with the Fish and Wildlife Service, that shall promote the conservation of migratory bird populations.”

According to New Mexico Audubon, declining migratory bird species in the region include Burrowing Owl, Scaled Quail (*Callipepla squamata*), Cassin's Sparrow (*Peucaea cassinii*) and the Grasshopper Sparrow (*Ammodramus savannarum perpallidus*). USFWS Birds of Conservation Concern (2008) that are known to occur in the area include Bald Eagle, Ferruginous Hawk (*Buteo regalis*), Golden Eagle, Peregrine Falcon, Prairie Falcon, Burrowing Owl, Pinyon Jay, and Juniper Titmouse (*Baeolophus ridgwayi*). See attached species list for breeding birds observed along the North American Breeding Bird Survey (BBS) La Cienega BBS Route (60009) near the project area.

Raptors

Raptors not otherwise afforded protection by the Endangered Species Act are protected by the Migratory Bird Treaty Act, and in the case of eagles, the Bald and Golden Eagle Protection Act (BGEPA). The BGEPA (16 U.S.C. 668-668c), enacted in 1940 and amended several times since then, prohibits anyone without a permit issued by the Secretary of the Interior from “taking” Bald Eagles, including their parts, nests, or eggs. The Act provides criminal penalties for persons who “take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle ...

[or any golden eagle], alive or dead, or any part, nest, or egg thereof.” The Act defines “take” as “pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb.”

“Disturb” means “to agitate or bother a Bald or Golden Eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior.”

In addition to immediate impacts, this definition also covers impacts that result from human induced alterations initiated around a previously used nest site during a time when eagles are not present if, upon the eagle’s return, such alterations agitate or bother an eagle to a degree that interferes with or interrupts normal breeding, feeding, or sheltering habits and causes injury, death, or nest abandonment.

Raptor and eagle habitat is present within the proposed project area and the project area represents suitable foraging, stopover and migratory habitat for raptors. To avoid any impacts to this habitat or raptor migration, the proposed action should occur outside the raptor migratory season, which generally occurs September through March. Best Management Practices as outlined in the Taos Resource Management Plan (2012) would be followed to limit any impacts to the species due to the proposed action. In addition, activities during the migratory season when an eagle may be present or actions in eagle habitat when the species is not present, would be conducted in accordance with the National Bald Eagle Management Guidelines (USDI-FWS-2007).

3.6 Visual Resources

Visual Resource Management objectives within the project area are Class II and Class III. There are no current management objectives for this area so the inventory classes would serve as interim management objectives.

The San Pedro Mountains are a small complex of hills with two prominent but rounded and weathered peaks of woodlands and shrublands rising above a grassy but wooded savannah. Castle Rock is a small, rocky outcrop on one peak. Vegetation of conifers is fairly dense and quite green but an abundance of grey provides evidence of dead pinyon. Highway, power lines, abandoned mines, and fences are visible throughout the area.

The San Pedro Mountains are used by hikers, horseback riders, gold prospectors, miners, hunters, and viewed by residents and New Mexico Highway 344 travelers. The area is in current and future demand for local open space and recreation use by residents and residential growth and for existing mining patents.

3.7 Wildlife

Prior to conducting field surveys, BLM wildlife biologists reviewed physical and biological information about the project area. Data was obtained from the FWS Southwest Region Ecological Services Field Office and the Taos RMP, along with field observations made during the surveys. This data provided Taos Field Office with information regarding the potential for species to occur within the project area.

The project area is located over a small mountainous range just northeast of the larger Sandia Mountains and south of the Galisteo Basin that lies between the southern extent of the Rocky Mountains. Elevations

ranging from approximately 2100–2400 m (6,800–7,800 feet) above mean sea level (AMSL). The area is just southeast of the town of Golden, NM, and east of Bernalillo, NM.

The project area is commonly used by many species, including elk, mule deer, pronghorn, black bear, mountain lion, coyote, fox, jackrabbit, cottontail rabbit, badgers, prairie dogs, ground and rock squirrels, skunk, raccoon, bats, and rodents. The project is also habitat for a wide variety of amphibian, reptilian and avian fauna.

Intensive wildlife surveys have not occurred on public lands in the project area, however, habitat exists for a diverse collection of species that use pinyon-juniper woodlands and ponderosa pine forest habitat. The location of the San Pedro Mountains between the Sandia range and the southern Sangre de Cristo Mountains, which includes the Pecos Wilderness and Santa Fe National Forest, provides a crucial migratory zone for large-bodied animals, as well as raptors that migrate over the area seasonally. Several large canyons are found within the project area that represent local wildlife corridors of movement and provide specific habitat features for different taxa of species. The prolific mining activity, and resulting habitat for bats, represents a unique wildlife habitat type within the region and project area for these specialized species, two of which are BLM sensitive species, spotted bat and Townsend's big-eared bat (see species accounts in section 3.5.1).

The most common wildlife species seen during surveys was Common Raven (*Corvus corax*). Other wildlife species observed include Red-tailed Hawk (*Buteo jamaicensis*), Pinyon Jay (*Gymnorhinus cyanocephalus*), Stellar's Jay (*Cyanocitta stelleri*), Turkey Vulture (*Cathartes aura*), and Black-billed Magpie (*Pica hudsonia*). Wildlife sign observed includes gopher (*Thomomys* sp.) mounds and the scat of Coyote, Black-tailed Jackrabbit, and Desert Cottontail (*Sylvilagus audubonii*).

Habitat for Species of Greatest Conservation Need (NMDGF 2005) include Mule Deer, mourning dove (*Zenaidura macroura*), Loggerhead Shrike (*Lanius ludovicianus*), Sage Thrasher, Sage Sparrow, Golden Eagle, Olive-Sided Flycatcher (*Contopus cooperi*), Pinyon Jay, White-Tailed Jack Rabbit (*Lepus townsendii*), Gunnison's Prairie Dog, Black Bear (*Ursus americanus*), and Eastern Collard Lizard (*Crotaphytus collaris*).

3.8 Minerals

The project area is located on the slopes of the San Pedro Mountains. The Southern side of the mining district was primarily mined underground and can be described as moderate to steep tree-covered hillsides bisected by deep gullies and canyons. The northern slopes of the mountain was a placer field mined by dredges, open pits and shallow shafts and adits with moderate slopes bisected by shallow gullies. The project area is at the northern end of the Mexican Highland section of the Basin and Range physiographic province. The San Pedro Mountains as a horst structure formed between two faults of the Tijeras system, which is comprised of several faults that extend throughout the porphyry belt (Atkinson 1961: 15, 20). Monzonite, latite, and rhyolite porphyry are the principal igneous rock in the San Pedro Mountain, yielding numerous dikes, sills, faults, and laccoliths (Atkinson 1961: 5-6). Principal ore deposits in the district include copper, gold, lead-silver, zinc and iron. These bodies resulted from hydrothermal deposits that emanated from the igneous intrusions. Copper deposits formed as part of the meta-stomatic process, while other ore bodies such as lead and zinc were deposited as fissure fillings. Gold Deposits generally occur in narrow veins in igneous rock or gravels in placer deposits. Placer deposits were the source of the

majority of the gold produced, with the Golden and Bonanza placer fields on the north side of the project area and the San Lazarus placer field on the southeast edge of the project area (AML 2014)

3.9 Vegetation

The project is located in the Southern Rockies Ecoregion, Omernik's Level III Ecological Regions of North America (USDI nationalatlas.gov) within the Arizona/New Mexico Mountains. This area is distinguished from neighboring mountainous ecoregions by its lower elevations and an associated vegetation indicative of drier, warmer environments, which is also due in part to the region's more southerly location. Forests of spruce, fir, and Douglas fir, which are common in the Southern Rockies are only found in a few high elevation parts of this region. Chaparral is common on the lower elevations, pinyon-juniper and oak woodlands are found on lower and middle elevations, and the higher elevations are mostly covered with open to dense ponderosa pine forests (USDI nationalatlas.gov).

A wide range of vegetative types occur within the project area. (See existing vegetation types, map 4, in Appendix 1.) The project area includes persistent pinyon and juniper woodlands as described by Romme et. al (2009). The tree species density in these ecosystem types ranges from higher density with low understory productivity to low density interspersed pinyon and juniper trees which have expanded outside of their normal range. Pinyon and juniper encroachment into mixed-grass is common throughout the deeper soils of the project area.

Vegetation in the project area is characteristic of the biotic communities discussed in section 3.7. The most common tree species include Pinyon Pine (*Pinus edulis*), One-seed Juniper (*Juniperus monosperma*), Ponderosa Pine (*Pinus ponderosa*), and Rocky Mountain Juniper (*Juniperus scopularum*). Common shrub and subshrub species observed include Basin Big Sagebrush (*Artemisia tridentata*), Rabbitbrush (*Chrysothamnus nauseosus*), Broom Snakeweed (*Gutierrezia sarothrae*), and Fringed Sage (*Artemisia frigida*).

Common grass species include Blue Grama (*Bouteloua gracilis*), Ring Muhly (*Muhlenbergia torreyi*), Indian Ricegrass (*Achnatherum hymenoides*), Sideoats Grama (*Bouteloua curtipendla*), and Sand Dropseed (*Sporobolus cryptandrus*). Cacti species observed include Plains Prickly Pear (*Opuntia polyacantha*), Common Cholla (*Cylindropuntia imbricata*), and Claret Cup Cactus (*Echinocereus triglochidiatus*).

Many of the plant communities within the project area are in some stage of species expansion in which pinyon-juniper forests continue to dominate the vegetation, influencing the ecological processes on the site. For the most part, the composition of understory vegetation has been impacted by the density of pinyon and juniper species. Overall, vegetation in the analysis area has been affected by the suppression and exclusion of wildfire.

Fire Regime Condition Class is a measurement and classification of the degree of departure from natural fire regimes. There are three condition classes that allow for the delineation of degrees of departure from natural fire regimes. A natural fire regime is a general classification of the role fire would play across a landscape in the absence of modern human mechanical intervention, but including the influence of aboriginal burning (Agee 1993, Brown 1995). This departure results in changes to one (or more) of the following ecological components: vegetation characteristics (species composition, structural stages, stand age, canopy closure, and mosaic pattern); fuel composition; fire frequency, severity, and pattern; and

other associated disturbances (e.g. insect and disease mortality, grazing, and drought). There are no wildland vegetation and fuel conditions or wildland fire situations that do not fit within one of the three classes. The three classes are based on low (FRCC 1), moderate (FRCC 2), and high (FRCC 3) departure from the central tendency of the natural (historical) regime (Hann and Bunnell 2001, Hardy et al. 2001, Schmidt et al. 2002). The central tendency is a composite estimate of vegetation characteristics (species composition, structural stages, stand age, canopy closure, and mosaic pattern); fuel composition; fire frequency, severity, and pattern; and other associated natural disturbances. Low departure is considered to be within the natural (historical) range of variability, while moderate and high departures are outside.

The following table identifies that acreage totals for each Fire Regime Condition Class within the proposed project boundary. These numbers were derived by analyzing Fire Regime Condition Class layers from Landfire in using ArcGIS (see FRCC Map 5 in Appendix 1).

FRCC Category	Acreage
FRCC 1	418 Acres
FRCC 2	4,851 Acres
FRCC 3	2,256 Acres

Table 1. Fire Regime Condition Class summary for the project area.

3.10 Noxious Weeds

The New Mexico Noxious Weed Act (1998) stipulates an evolving list of introduced plant species which can prove ecologically and economically detrimental to range and forestlands throughout the state. Such species are to “be targeted as noxious weeds for control or eradication.” The list is divided into four categories, Class A, B, C and Watch List. Class A and B Species have limited distribution throughout the state, where inhibiting proliferation is imperative, and comprehensive management plans should be implemented. Class C Species are widespread throughout the state and are to be managed appropriately at the local level. Lastly, Watch List Species are those which are of concern with potential to become aggressive and warrant up-listing. Until additional data are collected, species occurrence will be documented.

There are several species known to occur throughout the Taos Field Office. Table 2 summarizes those species with potential to colonize the project area (non-aquatic/obligate species).

Common Name	Scientific Name
Class A Species	
Black henbane	<i>Hyoscyamus niger</i>
Canada thistle	<i>Cirsium arvense</i>
Hoary cress	<i>Cardaria spp.</i>
Scotch thistle	<i>Onopardum acanthium</i>
Yellow toadflax	<i>Linaria vulgaris</i>

Class B Species

Chicory	<i>Cichorium intybus</i>
Halogeton	<i>Halogeton glomeratus</i>
Musk thistle	<i>Carduus nutans</i>
Perennial pepperweed	<i>Lepidium latifolium</i>

Class C Species

Bull thistle	<i>Cirsium vulgare</i>
Cheatgrass	<i>Bromus tectorum</i>
Siberian elm	<i>Ulmus pumila</i>

Watch List Species

Spiny cocklebur	<i>Xanthium spinosum</i>
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Table 2. Non-aquatic/obligate noxious weeds known to occur within TAFO.

These species typically occur in disturbed areas, i.e. roadside, fence lines, etc, but have potential to encroach into wildlands.

3.11 Public Safety

With greater than average rainfall in the spring and summer of 2014 perennial grasses and other quick to grow, quick to dry flashy fuels have been observed in the affected environment. Accumulations of substantial heavy fuels, dense forest along with the low frequency of naturally occurring fire events have created potential risk for catastrophic wildfires. Along with fire potential the affected area also has an increased risk for the public's exposure to abandoned mines. Abandoned mines, shafts, adits and pits have the potential to be hazardous to the public, livestock and wildlife.

Chapter 4: Environmental Effects

4.1 Direct and Indirect Effects

This chapter describes the anticipated direct and indirect effects on the resource along with public safety issues if the alternatives are implemented. Direct effects are caused by an action and occur at the same time and place, while indirect effects are caused by an action and occur later in time or farther removed in distance.

4.1.1 Alternative A: Proposed Action

As described in chapter 2, the Proposed Action includes mechanical thinning, prescribed fire, as well as mine closures. The potential impacts from these activities are described below.

4.1.1.1 Air Quality

Impacts on air quality would be temporary, small in scale, and quickly dispersed throughout the area. These factors, combined with standard operating procedures, minimize the significance of potential impacts. Federal, State, and local air quality regulations would not be violated. Treatment with prescribed fire would have an immediate, but short term impact on air quality in the immediate area due to smoke.

4.1.1.2 Cultural Resources

Under the Proposed Action many of the proposed activities could have adverse effects on Cultural Resources. Most obviously, fire can destroy features constructed of wood. Intense, high temperature fires can alter archaeological features such as fire hearths and artifacts. However, these possible impacts to inventoried sites can be reduced or eliminated through protective measures taken during the burning operation, such as foaming or black-lining around existing sites or otherwise avoiding the site.

As discussed in section 2.1, archaeological inventories would be performed before prescribed fire and non-fire fuels treatment projects. The intensity of archaeological inventory would be determined for each proposed project based on the potential for earth disturbing activities, fuel types, projected site types, etc. Inventory methods would help mitigate potential impacts to cultural resources through avoidance and other appropriate measures.

Short-term effects may include an increase in erosion due to the initial loss of vegetation cover. Erosion is a major cause for the loss of archaeological resources. Long-term effects of the proposed project would likely have a positive effect on cultural resources due primarily to forest, grassland and watershed restoration which should reduce long term erosion. Reduction of fuel loads would also reduce or eliminate adverse effects to cultural resources resulting from wildland forest fire.

4.1.1.3 Rangeland Management

Prescribed pile burns and other vegetation restoration projects would result in direct surface and vegetation disturbance. Forest thinning and prescribed fire treatments outside the allotment boundary would have no impact to livestock.

Following treatments from mechanical application and/or prescribed pile burning, and depending on the size and scope of the individual treatment, the treated areas may or may not affect the grazing permit holder. Each treatment area would be determined on a case-by-case basis in consultation with a BLM rangeland management specialist. Measures would be taken to work with the grazing permit holder if it is determined that specific treatments would pose an adverse effect to the permittee.

Areas that would be treated could be rested for up to 2 years, or until range conditions are deemed suitable for limited livestock grazing as determined by BLM staff, to allow for the successful establishment of key vegetation. This post-treatment rest could be considered a negative impact to livestock operators as alternative grazing would need to be located for their livestock.

Livestock could be disturbed during the mine closure reclamation work. Some forage in small locations may be lost as a result of removing spoil piles to backfill the mine features. However, closing shafts and pits would increase safety to the public as well as livestock.

4.1.1.4 Soils

Overall, the removal of encroaching and overstocked pinyon pine, and juniper would be beneficial to the soils and watershed components of these lands. Preventing the long-term decline in ecological condition that accompanies vegetation encroachment would result in better watershed function (hydrologic, nutrient, and energy cycles). Healthy native grass and bunchgrass communities would stabilize soils, improve infiltration and storage, and maintain soil productivity.

Direct and indirect impacts from the actual implementation operations would be minimal. Some physical soil disturbance would occur from vehicle use, but would only affect small localized areas and natural recovery would occur within two to five years of the disturbance. Direct impacts from burning, intense surface heating causing soil sterilization, would be minimal in the project area.

Existing spoil piles of soil and rock would be removed from existing locations and replaced into the mine features. This would setback any natural reclamation that has occurred to this point. In addition, areas of newly bared soil would be exposed which would be subject to wind and water erosion. However, erosion would be minimal due to the small and scattered areas of disturbance.

4.1.1.5 Special Status Species / Migratory Birds

4.1.1.5.1 BLM Sensitive Species

Impacts to bat species depend on the timing of fuelwood treatments. If conducted outside the foraging or hibernation season, all potential impacts would be avoided. Surveys for bat habitat would be conducted prior to treatments to ensure appropriate mitigation and BMPs applied. Therefore, there would be no negative impacts to bats, with a modification of bat habitat that could benefit the species by increasing structural diversity and changing succession stage for increased species richness and biodiversity.

The project area lies directly beneath a migration route for the bald eagle, and it may migrate over the area seasonally. Fugitive dust, smoke, noise and human disturbance during implementation may prevent foraging or resting activities in the localized area necessary to increase bioenergetic loading for the individual to survive migration and find successful prey. If the project avoids the migration season (September through March), there would be no direct negative impacts from the Proposed Action. During the migration season, all guidance pursuant to the Taos RMP would be observed and, therefore, there would be no negative impacts to bald eagles, with a modification of habitat that could benefit the species by increasing structural diversity and changing succession stage for increased species richness and biodiversity.

Habitat modification for the pinyon jay would occur. If activities are conducted outside the breeding bird season (March through September), there would be no direct negative impacts to this species. If the Proposed Action is implemented during the migratory bird breeding season, a qualified wildlife biologist would conduct a nest search of the area to prevent any taking under the Migratory Bird Treaty Act. Indirect impacts from habitat loss and modification would impact individual birds, but would not negatively impact the species as a whole. With qualified surveys of project areas as they are presented would prevent loss of individual species, eggs, nests or parts thereof. Therefore, there would be no negative impacts to the pinyon jay, with a modification of habitat that could benefit the species by increasing structural diversity and changing succession stage for increased species richness and biodiversity.

With no known prairie dog towns or burrowing habitat available in the project area for the burrowing owl, it is unlikely there would be any negative impact of the Proposed Action to the species. However, if habitat does occur and the species is found to be present in the project area, BMPs as listed in the RMP would prevent adverse impacts to this species. Therefore, there would be no negative impacts to the burrowing owl, with a modification of habitat that could benefit the species by increasing structural diversity and changing succession stage for increased species richness and biodiversity.

If prairie dog towns are encountered, BMPs presented in the Taos RMP would apply to mitigation impacts to this species. Therefore, there would be no negative impacts to prairie dogs, with a modification of habitat that could benefit the species by increasing structural diversity and changing succession stage for increased species richness and biodiversity.

4.1.1.5.2 Migratory Birds

Some birds of USFWS Birds of Conservation Concern (2008), specifically raptor species, may be affected by the Proposed Action if conducted during the seasonal period in which raptors move through the area (September to March). Indirect impacts of the Proposed Action include habitat improvement for prey base rodents, insects, reptiles and amphibian species. Stand structure of forest trees and canopy would be modified, having a beneficial or negative impact depending on avian species. Increases in vegetative diversity could positively affect local macro invertebrate populations, resulting in an increase in the avian prey base, indirectly benefiting migratory birds in and adjacent to the project area.

If activities are conducted outside the breeding bird season (September through March), there would be no direct impacts to migratory birds.

If activities occur within the migratory bird breeding season (April through August), a bird survey by a qualified wildlife biologist would be required to ensure there are no nesting birds in targeted areas prior to treatment. If active bird nests are found, coordination with the USFWS is required and a permit must be obtained in order to move or disturb any active nest. If the Proposed Action is implemented during the primary breeding season (April through August) there is the potential to impact reproductive and/or foraging activities, resulting in a negative effect on individual birds, eggs, young, and/or nesting habitat due to trampling, vegetation removal or disturbance from human noise and commotion. The Proposed Action is not determined to have a measurable negative effect at population or species level of migratory birds.

Best Management Practices, as outlined in the Taos RMP would be followed. In addition, activities during the migratory season when eagles may be present, or actions in eagle habitat might occur when the species is not present, would be conducted in a manner according to the National Bald Eagle Management Guidelines (USDI-FWS-2007).

Migratory bird species would occur in the project area. The proposed project has the potential to have an adverse impact on individual birds, eggs, young, and/or the nesting habitat of ground-nesting birds. However, there would be no noticeable impact to migratory bird populations or to species as a whole because the project would occur over time creating a mosaic of habitat modification to decrease stem density while improving stand structure and diversity for a more resilient ecosystem.

Also see section 4.1.1.5.1 above for more details regarding bald eagles and pinyon jay species.

4.1.1.6 Visual Resources

Retaining groups pinyon pine and other scenic vegetation groupings would maintain the scenic quality along any fuel break boundary. Slash piles and thinned areas would result in short term adverse but weak impacts to the line, color, and texture of vegetation. Edges of the treatment area may be visible as well as, greener, brighter, and finer vegetation of grasses. Treatment areas may be visible from NM highway 344.

Greater changes or contrasts to the characteristic landscape would be avoided by following natural contours, scalloping, and feathering of the treatment edges, planting with native grass seed, and burning or scattering slash piles. The project implemented with these mitigating measures would meet the Class II visual resources management inventory objectives.

4.1.1.7 Wildlife

Prescribed fire and thinning activities would accomplish the following habitat management goals: an increased understory production of native grasses and forbs (Brockway et al. 2002), establishment of a higher amount of “edge,” or transition zone between different habitat types, and creation of a mosaic. An increased understory production of native grasses and forbs would also provide increased forage opportunities for deer and small mammals, as well as provide nesting habitat for ground nesting birds, and would support insect populations that many bird species require for food.

The creation of more edge in large unbroken blocks of the pinyon-juniper forests would provide more forage and cover opportunities in close proximity to one another. Edge is an important structural component for many species’ habitats, and benefits deer, elk, and many other mammal and bird species. Creation of a mosaic in the burn areas would provide habitat for cavity-nesting birds and support insect populations which many bird species would use for food.

Short term effects of the proposed management actions on wildlife populations include disturbance from machinery, administrative motor vehicle use, and prescribed fire. These disturbances would likely displace big game and other species from the project area while activities are being implemented.

There would also be short-term impacts to individual birds due to disturbance during the implementation phase of the project; there would be long-term benefits from an increase in diversity of vegetation. There could also be a slight reduction in the quantities of seeds and berries produced in the project area due to reduction of pinyon pine and juniper, decreasing the amount of forage available for birds dependent on those resources.

Impacts to wildlife as a result of mine closure activities would be minimal in the overall project area due to the relatively small sites disturbed and their scattered location. During the actual work, mobile wildlife would likely move out of the area, but would likely return when the work is completed. Habitat would be restored as the disturbed areas are naturally re-vegetated. Facilities showing use by bats and that would be considered necessary habitat would be gated or otherwise closed in a way to allow bats continued use, therefore there would be little or no impact to bats.

4.1.1.8 Minerals

Closing the mine features would reduce or eliminate access to the minerals that might be presently exposed. In addition, exposed rock strata and mineral bearing layers, which could provide information on the mineral character of the area, would be buried. While mine closures would not occur on any active mines, these abandoned mines could be reopened in the future for mineral production. Closing the features would make it more difficult to obtain minerals information about the area.

4.1.1.9 Vegetation

Under the Proposed Action, target species in treated areas would be directly affected. Mechanical thinning would be used to open the understory and create openings and fuel breaks in in dense forests,

stimulating forage production and creating the mosaic of understory vegetation species. Initial decreases in perennial grass production should probably be expected after prescribed fire treatments. However, understory species production should increase within a few years of initial treatment depending on variables such as precipitation and temperature. Mechanical treatments would have limited impacts to non-target vegetation.

4.1.1.10 Noxious Weeds

Activities conducted under the Proposed Action would disturb both soil and vegetation, creating suitable habitat for the establishment of noxious weeds. Furthermore, weed vectors, such as vehicles, heavy equipment and foot traffic could exacerbate weed proliferation. Expansion of cheatgrass (Class C) in particular is likely due to potential use of prescribed fire.

4.1.1.11 Public Safety

Under the proposed action the density of the forest would be reduced along with fuel loads. Potential for catastrophic events would be lessened. Reduced fuel loads near urban interface areas would encourage defensible space in regards to future possibility of naturally occurring fire events. Reclamation of the abandoned mine workings would provide a safer environment for visitors to the affected environment and mitigate the hazard posed to livestock and wildlife. Mine reclamation would increase the ability of wildland fire fighters to focus on firefighting without the hazards associated with abandoned mines.

4.1.2 Alternative B: No Action

There would be no impacts to air quality as a result of the No Action alternative.

4.1.2.1 Air Quality

Taking No Action would preclude nitrogen dioxide, hydrocarbons, carbon monoxide, and particulate matter from motor vehicles caused by Proposed Action project related travel to and from project sites. Many roads within the Taos Field Office are dirt roads that when disturbed by vehicles can cause blowing dust which contributes to air pollution.

4.1.2.2 Cultural Resources

The No Action alternative would have no short-term effects on noncombustible cultural resources. Combustible cultural resources could be at risk under the No Action alternative due to the higher risk for wildfire associated with dense woodlands and woodlands with high little canopy spacing.

Under the No Action alternative reclamation of the mine features would not occur, therefore there would be no damage or destruction of historical sites related to mining.

4.1.2.3 Rangeland Management

The No Action alternative could likely result in the succession of the pinyon/juniper and sagebrush vegetation types, allowing for undisturbed plant communities where herbaceous species are under-represented. Livestock could be affected by changes in forage due to the encroachment of invasive plants outcompeting herbaceous vegetation.

Under the No Action alternative forage species would not be disturbed, thus there be no loss of forage due to mine closure activities. Shafts and pits would remain open and any dangers to livestock would therefore remain.

4.1.2.4 Soils

Under the No Action alternative, there would not be a focused effort to treat the pinyon/juniper plant community. In the absence of vegetation treatments that would increase the vegetative ground cover on the pinyon/juniper uplands, it is likely that the natural forces of plant succession would continue. Under the No Action alternative, over the long term, the increased vegetation density and subsequent loss of understory species would result in accelerated soil erosion, loss of site productivity, decreased watershed function, and reduced nutrient and energy cycling (Wilcox et al. 1996).

Under the No Action alternative existing spoil piles would remain in place. Any rock and gravel pavement developed on these piles would remain and would only very slowly be reclaimed. Because of this developed pavement, erosion from these piles would be minimal. Any large piles with exposed soil would continue to erode.

4.1.2.5 Special Status Species / Migratory Birds

Under the No Action alternative, there would be limited direct and indirect effects to special status species or migratory birds.

The No Action alternative would create long-term changes to the food base for some special status species, as invasive vegetation could out-compete native vegetation, creating monocultures of vegetation. Because of this lack of biodiversity, the macro invertebrates and small mammals could be forced to find different native habitat or may decline due to lack of habitat. These species are part of a food web that could directly or indirectly impact special status species.

The No Action alternative could benefit some special status species, specifically woodland obligates that prefer climax vegetation conditions, while negatively impacting grassland species that are precluded from these habitat conditions. Generally, special status species would find fewer habitat niches within existing conditions and, therefore, the No Action alternative would have a negative impact on these species.

The No Action alternative could benefit some species of migratory birds, specifically sagebrush or woodland obligates that prefer climax vegetation conditions, while negatively impacting grassland species that are precluded from these habitat conditions. Generally, migratory birds would find fewer habitat niches within existing conditions and, therefore, the No Action alternative would have a negative impact on these species.

4.1.2.6 Visual Resources

Under the No Action alternative there would be no direct effects. A gradual transition in vegetation on the landscape to more of an overpopulated high density vegetation community would occur over time, but is unlikely to have an adverse effect on visual resources.

4.1.2.7 Wildlife

The No Action alternative would leave wildlife habitat in the management area in their current conditions, allowing them to degrade over time. Relative to the conditions that the Proposed Action is likely to create, current habitat conditions would exhibit a decreased production of native understory grasses and forbs.

Under this alternative, the management area would also be more susceptible to large stand replacement wildland fires, which could remove the native cover and forage that many wildlife species require.

4.1.2.8 Minerals

The No Action alternative would leave mining features open and rock strata and potential mineral bearing formations would be visible and accessible. Information on the mineralogy of the area could be more readily obtained.

4.1.2.9 Vegetation

With the No Action alternative, pinyon and juniper species present within the project area would continue to exist in high density stands and would likely expand their dominance. This would result in the vegetation moving more toward a monoculture instead of a mosaic of natural vegetation and higher biodiversity. The No Action alternative would likely result in the likely succession of the pinyon and juniper vegetation types towards plant communities where herbaceous species are generally absent or severely under-represented. The basis in making this assertion is that over time the competition for soil moisture, nutrients and sunlight from the over story of pinyon and juniper herbaceous and shrubby browse plant species' ability to compete for these elements (Bates et al. 1998).

4.1.2.10 Noxious Weeds

The No Action alternative would reduce the risk for the spread of noxious weeds throughout the project area.

4.1.2.11 Public Safety

There would be no improvement to public safety. Fire danger would continue to increase. The hazardous state of the abandoned mine workings would continue to weather and worsen as a result of the No Action Alternative.

4.2 Cumulative Effects Analysis

A cumulative impact, as defined in 40 CFR 1508.7, is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable actions regardless of what agency (Federal or non-Federal) or person undertakes such other action.

4.2.1 Cumulative Actions

4.2.1.1 Past, Present and Reasonably Foreseeable Actions

Past Actions that have affected the natural and human resources within the proposed San Pedro Mountains project area include ranching, forest thinning and small farming, development of roads and pipelines, and the historic proliferation of mining.

Present actions within the proposed project area include continued farming, ranching, recreational activities, hunting, fuelwood gathering, mineral mining, gravel production, and road maintenance.

Overall, the cumulative impacts, and more specifically management actions mentioned in the Proposed Action of this project would be positive; this project would reduce overall density levels, reduce fuel loadings and lead to more diverse rangeland and woodland ecosystem. In addition to the proposed forest restoration treatment actions, reasonably foreseeable actions may include additional BLM prescribed burns, other mechanical treatments, as well as exploratory mineral mining development and targeted mine closures in within the project area.

4.2.2 Cumulative Effects

4.2.2.1 Air Quality

Treatments with prescribed fire would have an immediate, but short term impact on air quality in the immediate area due to smoke. Thinning treatments would have an immediate short-term impact on air quality due to chainsaw particulates and exhaust. Other impacts to air quality might come from nearby pollutants due to mining activities, road maintenance, and regular traffic.

4.2.2.2 Cultural Resources

BLM staff archaeologists have been integrated into the assessment process to promote proactive, long-term management and preservation of cultural resources. Proposed activity areas, which have not been intensively inventoried, and at-risk resources would be delineated for minimizing activity impacts with their perimeters. The mine closures, in addition to other mine closure and reclamation activities in the San Pedro Mountains area would have a cumulative loss or alteration of these historic features.

4.2.2.3 Rangeland Management

Cumulative impacts from rangeland restoration treatments to enhance livestock forage, prescribed broadcast burns, and other vegetation restoration projects would result in surface and vegetation disturbance. These treatments in the short term would disturb and remove vegetation and could potentially impact livestock grazing forage within the project area. In the long term, these management actions would assist with maintaining and improving the overall vegetation conditions for a variety of resource objectives including increases of forage of native grasses for livestock grazing.

4.2.2.4 Soils

Cumulative impacts from the actual implementation of operations would be minimal. Some physical soil disturbance would occur from vehicle use, but would only affect small localized areas and natural recovery would occur within two to five years of the disturbance. Direct impacts from burning, intense surface heating causing soil sterilization, would be minimal in the project area.

4.2.2.5 Special Status Species / Migratory Birds

Cumulative impacts to special status species include actions from forest and woodland and rangeland treatments to enhance wildlife habitat. These treatments in the short term would disturb and remove vegetation. In the long term, these management actions would assist with improving biodiversity that could benefit special status species and migratory birds.

While there would be short-term impacts to individual migratory bird species due to disturbance during the implementation phase of the project, there would be long-term benefits from an increase in diversity of vegetation. Cumulative actions could also result in a slight reduction in the quantities of seeds and berries produced in the project area due to reduction of pinyon pine and juniper, decreasing the amount of forage available for birds dependent on those resources, as well as reduce sagebrush obligate and semi-obligate species habitat.

4.2.2.6 Visual Resources

No change in VRM classes would be anticipated by the cumulative actions.

4.2.2.7 Wildlife

Cumulative impacts of the proposed management actions on wildlife populations include disturbance from machinery, administrative motor vehicle use, and prescribed fire. With other mine closure activities ongoing in the area, there would likely be a cumulative disturbance and displacement of species, if activities coincide. There would also be short-term impacts to individual species due to disturbance during the implementation phase of the project; however, there would be long-term benefits from an increase in diversity of vegetation composition and structure.

In general, the cumulative impacts of this forest restoration project on wildlife would be positive; this project would reduce fuel loadings and decrease threats of catastrophic wildfires that bring temporary loss of wildlife habitat until, or if, recovery is accomplished.

4.2.2.8 Minerals

Cumulative impacts of the proposed action on mineral development within the project area include closing the mine features which would reduce or eliminate access to the minerals that might be presently exposed. In addition, exposed rock strata and mineral bearing layers which could provide information on the mineral character of the area would be buried or made inaccessible. While mine closures would not occur on any active mines, these abandoned mines could be reopened in the future for mineral production. Closing the features would make it more difficult to obtain minerals information about the area.

4.2.2.9 Vegetation

Forest and woodland treatments, including prescribed fire, would result in surface and vegetation disturbance. These treatments would, in the short term, disturb and remove vegetation. In the long term, these management actions would assist with maintaining and improving the overall vegetation conditions meeting a variety of resource objectives, including increasing vegetation diversity and abundance, increasing vegetation structural diversity, improving resiliency to wildfire impacts, increasing water infiltration, and decreasing erosion, and reducing hazardous fuels in wildland urban interface areas.

4.2.2.10 Noxious Weeds

Surface disturbance from project actions would increase risk of noxious weed colonization. A pre-treatment survey would be conducted of the area to determine existing populations of noxious weeds, and would be repeated for the duration of the project and at minimum five years after completion. Populations identified would be treated using integrated pest management, under the auspices of the Programmatic Treatment Plan for the Rapid Response to Weeds (BLM 2010). Furthermore, disturbance resulting from the reclamation of adits and other mining structures would be seeded using an approved species composition, to inhibit the establishment of noxious weeds and soil erosion. Long term, such preventative/mitigation measures will reduce localized noxious weeds populations and their spread into adjacent wildlands.

4.2.2.11 Public Safety

Many years of fire suppression and dryer than average regional conditions have led to excessive fuel accumulation. In areas where dwellings are situated near forested environment, the risk of fire is increased. Reducing the fuel loading levels in wildland urban interface areas can assist in firefighters in wildfire suppression. Treatments with prescribed fire could mitigate the inherent risks that come with an urban interface area and that have experienced few or no natural fire events. Mechanical thinning would help create conditions in which a safe and efficient understory burn could be achieved. The cumulative

effect of hazardous fuels reduction treatments would lessen the possibility of a catastrophic wildfire event to impact wildland urban interface areas in the future.

An immediate but low risk exposure to reclamation workers would be necessary to mitigate the hazards of the abandoned mine workings. The cumulative effect of mine closures and reclamation work will create a safer environment for people, wildlife and livestock utilizing the area.

Chapter 5: Consultation and Coordination

The following people or agencies have been consulted for their comments in regards to the proposed action. The comments and suggestions expressed during the consultation have been incorporated into this environmental assessment.

5.1 List of Consultation Participants

Federal and State Agencies

USDA FS – Cibola National Forest, Sandia and Mountainair Ranger Districts

US FWS – U.S. Fish and Wildlife Service Southwest Region

NMDGF – New Mexico Department of Game and Fish

NMSLO – New Mexico State Land Office

Grazing Allotment Operators

Grazing allotment operator for allotment 847 was notified of this proposal.

5.2 Summary of Public Participation

The proposed project was first posted online by the BLM on August 26, 2010, inviting the public to submit comment and concerns related to the scope of this project. A scoping summary of the project was mailed to a variety of potentially interested parties on October 25, 2010 soliciting comments.

(Additional details will be provided following a public review and comment period on this EA.)

5.3 List of Preparers

NAME	TITLE	REVIEWED/TASK
Peter Hoagland	Forester	Lead Preparer
Greg Gustina	Fisheries Hydrologist	Riparian/Watershed
Valerie Williams	Wildlife Biologist	Wildlife/Migratory/TE
Merrill Dicks	Archaeologist	Archaeology
Jacob Young	Rangeland Management Specialist	Reviewed Document
Tami Torres	Outdoor Recreation Planner	Visual Resource Management

Patricio Martinez	GIS Specialist	GIS
Kyle Sahn	Fire Management Specialist	Reviewed Document
Raul Hurtado	Biological Technician (Fire)	Assisted With Preparing
Ricardo Leon	Intern	Assisted With Preparing
Brad Higdon	Planning and Environmental Specialist	Reviewed Document/Content
Jessa Davis	Conservation & Land Management Botanist	Invasive Species/Noxious Weeds Reviewed Document

Chapter 6: References

Agee, J.K. 1993. Fire ecology of Pacific Northwest Forests. Island Press, Wash. DC.

Atkinson, William W., Jr. 1961. Geology of the San Pedro Mountains, Santa Fe County, New Mexico. Bulletin 77. New Mexico Institute of Mining and Technology, Socorro, New Mexico. 5-20.

(AML) New Mexico Mining and Minerals Division Abandoned Mine Land Program, USDI Office of Surface Mining and Reclamation and Enforcement 2014. San Pedro Safeguard Project Environmental Assessment.

(AZGFD) Arizona Game and Fish Department. 2002. *Haliaeetus leucocephalus*. Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix.

Bates, J. D., R. F. Miller, and K. W. Davies. 2006. Restoration of quaking aspen woodlands invaded by western juniper. *Range Ecology and Management* 59:88–97.

Bates, J. D., R. F. Miller, and T. J. Svejcar. 1998. Understory patterns in cut western juniper (*Juniperus occidentalis* spp. *occidentalis* Hook.) woodlands. *Great Basin Naturalist* 58:363–374.

Brockway, D.G.; Gatewood, Richard G.; Paris, Randi B. 2002. Restoring fire as an ecological process in shortgrass prairie ecosystems: initial effects of prescribed burning during the dormant and growing seasons. *Journal of Environmental Management*. 65:135-152.

(BLM) Bureau of Land Management, USDI. 2011 Assessment, Inventory, and Monitoring Strategy of Integrated Renewable Resources Management.

(BLM) Bureau of Land Management, USDI. 2010. Programmatic Treatment Plan for the Rapid Response to Weeds (EA).

(BLM NMSO) Bureau of Land Management, USDI, New Mexico State Office. 2011 BLM - Taos Field Office Sensitive Species Update.

(BLM) Bureau of Land Management, USDI, Taos Field Office. 2010 Farmington District Fire Management Plan

(BLM) Bureau of Land Management, USDI, Taos Field Office. 2008 Farmington District Fire and Fuels Monitoring Protocol.

(BLM) Bureau of Land Management, USDI, Taos Field Office. 2012 Taos Resource Management Plan

(BLM) Bureau of Land Management, USDI. 2007 Record of Decision, Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement (PEIS).

Brown, J.K. 1995. Fire regimes and their relevance to ecosystem management. Pages 171-178

In Proceedings of Society of American Foresters National Convention, Sept. 18-22, 1994,

Anchorage, AK. Society of American Foresters, Wash. DC.

Dick-Peddie, W.A., 1993. New Mexico Vegetation Past Present and Future. With Contributions from W.H. Moir and Richard Spellenberg. University of New Mexico Press, Albuquerque, NM.

Ferris, Robert G. 1967 Prospectors, Cowhands, and Sodbusters. National Survey of Historic Sites and Buildings, Vol 1. Government Printing Office, Washington, D.C.

Folks, James J. 1975. Soil survey of Santa Fe Area, New Mexico: Santa Fe County and Part of Rio Arriba County. USDA Conservation Service, Washington, DC.

Gabian, Vickie L., and Lee E. Lesperance. 1977 New Mexico Climatological Data: Precipitation, Temperature, Evaporation and Wind Monthly and Annual Means. 1850-1975. W. K. Summers and Associates, Socorro.

Hann, W.J., Bunnell, D.L. 2001. Fire and land management planning and implementation across multiple scales. *Int. J. Wildland Fire*. 10:389-403.

Hardy, C.C., Schmidt, K.M., Menakis, J.M., Samson, N.R. 2001. Spatial data for national fire planning and fuel management. *International Journal of Wildland Fire* 10:353-372.

Jacobs, B.F., R.G. Gatewood, and C.D. Allen. 2002. Watershed Restoration in Degraded Piñon-Juniper Woodlands: A Paired Watershed Study 1996-98(9). Final Report to USGS-BRD Research/NPS-Natural Resource Preservation Program: 1-67.

Miller, R.F. and Wigand, P.E. 1994. Holocene changes in semi-arid pinyon-juniper woodlands. *Bioscience*,447(7), 465-474.

Miller, R. F., J. D. Bates, T.J. Svejcar, F. B. Pierson, and L.E. Eddleman. 2001. Biology, Ecology, and Management of Western Juniper. Oregon State University Agricultural Experiment Station Technical Bulletin 152.

New Mexico Department of Agriculture. 2009. New Mexico Noxious Weed List Update. New Mexico State University, Las Cruces, New Mexico.

(NMDGF) New Mexico Department of Game and Fish. 2005. Comprehensive Wildlife Conservation Strategy for New Mexico. New Mexico Department of Game and Fish. Santa Fe, New Mexico. 526 pp + appendices.

(NMDGF) New Mexico Department of Game and Fish. 2013. *Haliaeetus leucocephalus* (Bald Eagle). Biota Information System of New Mexico (BISON) online abstract. Available at www.bison-m.org.

Oakes, Yvonne R. and Dorothy A. Zamora. 2012. Archaeological Survey of the San Pedro Mines and Placer Fields of Golden, Santa Fe County, New Mexico. Museum of New Mexico, Office of Archaeological Studies. Santa Fe, New Mexico.

Romme W. H., C. D. Allen, J. D. Bailey, W. L. Baker, B. T. Bestelmeyer, P. B. Brown, K. S. Eisenhary, M. L. Floyd, D. W. Huffman, B. F. Jacobs, R. F. Miller, E. H. Muldavin, T. W. Swetnam, R. J. Tausch, and P. J. Weisberg. 2009. Historical and Modern Disturbance Regimes, Stand Structures, and Landscape Dynamics in Piñon-Juniper Vegetation of the Western United States. *Rangeland Ecology Management* 62:203-222.

Schmidt, K.M., Menakis, J.P. Hardy, C.C., Hann, W.J., Bunnell, D.L. 2002. Development of coarse-scale spatial data for wildland fire and fuel management. General Technical Report, RMRS-GTR-87, U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fort Collins, CO.

SWCA Environmental Consultants and Wildland Fire Associates. 2008. Santa Fe County, New Mexico Community Wildfire Protection Plan.

Tuan, Yi-Fu, Cyril E. Evard, Jerold G. Widdison, and Iven Bennett. 1973. The Climate of New Mexico. New Mexico State Planning Office, Santa Fe.

(USFWS)U.S. Fish and Wildlife Service. 2007. National Bald Eagle Management Guidelines. Available online at: <http://www.fws.gov/southdakotafieldoffice/NationalBaldEagleManagementGuidelines.pdf>.

(USFS) U.S. Forest Service. Department of Agriculture. 1999. Understanding the Health Hazards of Smoke. Available online at: <http://www.fs.fed.us/t-d/pubs/htmlpubs/htm99512801/>

United States Department of Agriculture, Soil Conservation Service and Forest Service, 1982. Soil Survey of Rio Arriba County and parts of and Taos County, New Mexico.

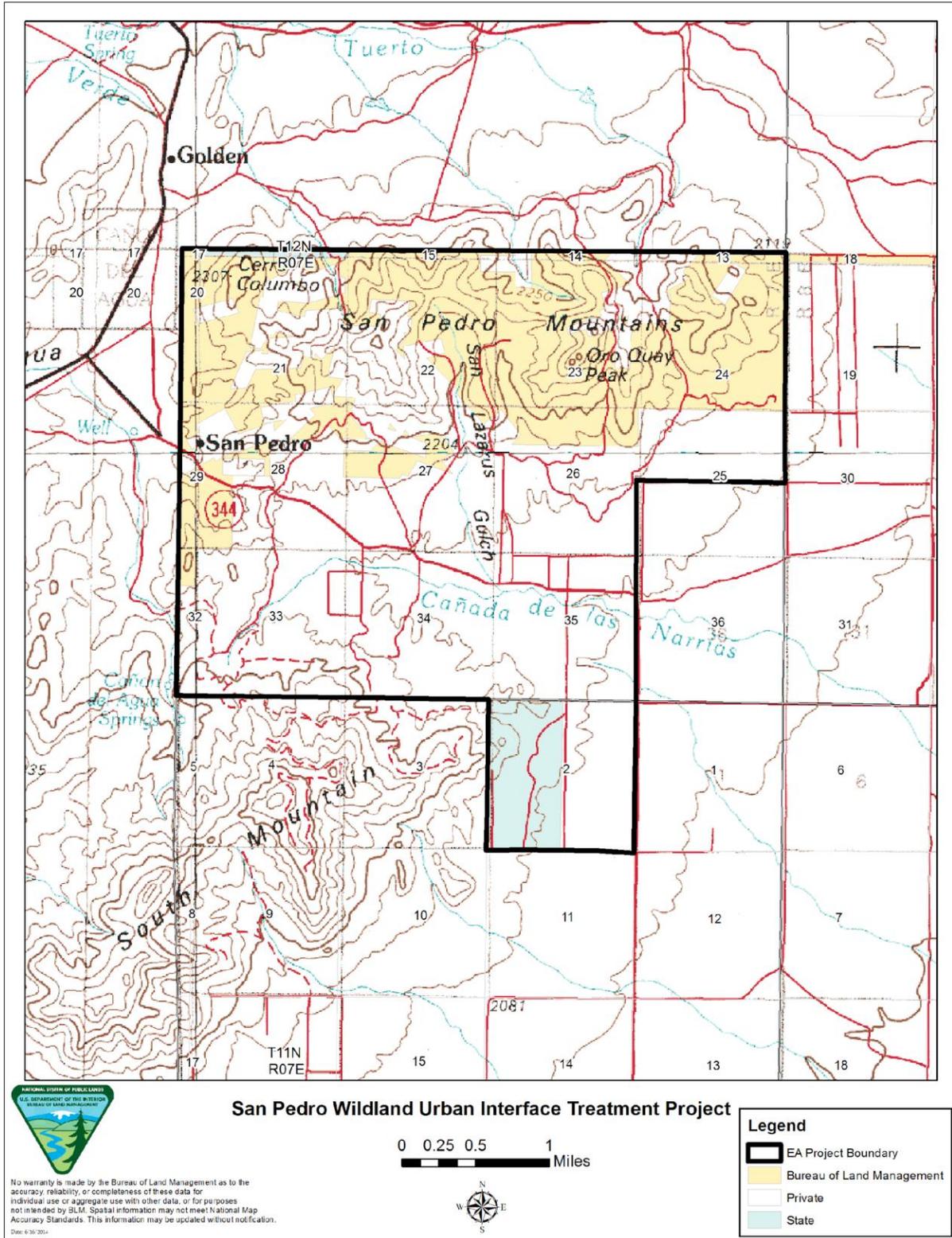
United States Department of Agriculture, Natural Resource Conservation Service. Ecological Site Descriptions Reports. <http://esis.sc.egov.usda.gov/Welcome/pgReportLocation.aspx?type=ESD>

Williams, A. P., C. D. Allen, C. I. Millar, T. W. Swetnam, J. Michaelsen, C. J. Still., and S. W. Leavitt. 2010. Forest Responses to Increasing Aridity and Warmth in the Southwestern United States. *Proceedings of the National Academy of Sciences of the United States of America*: 107:21289-21294

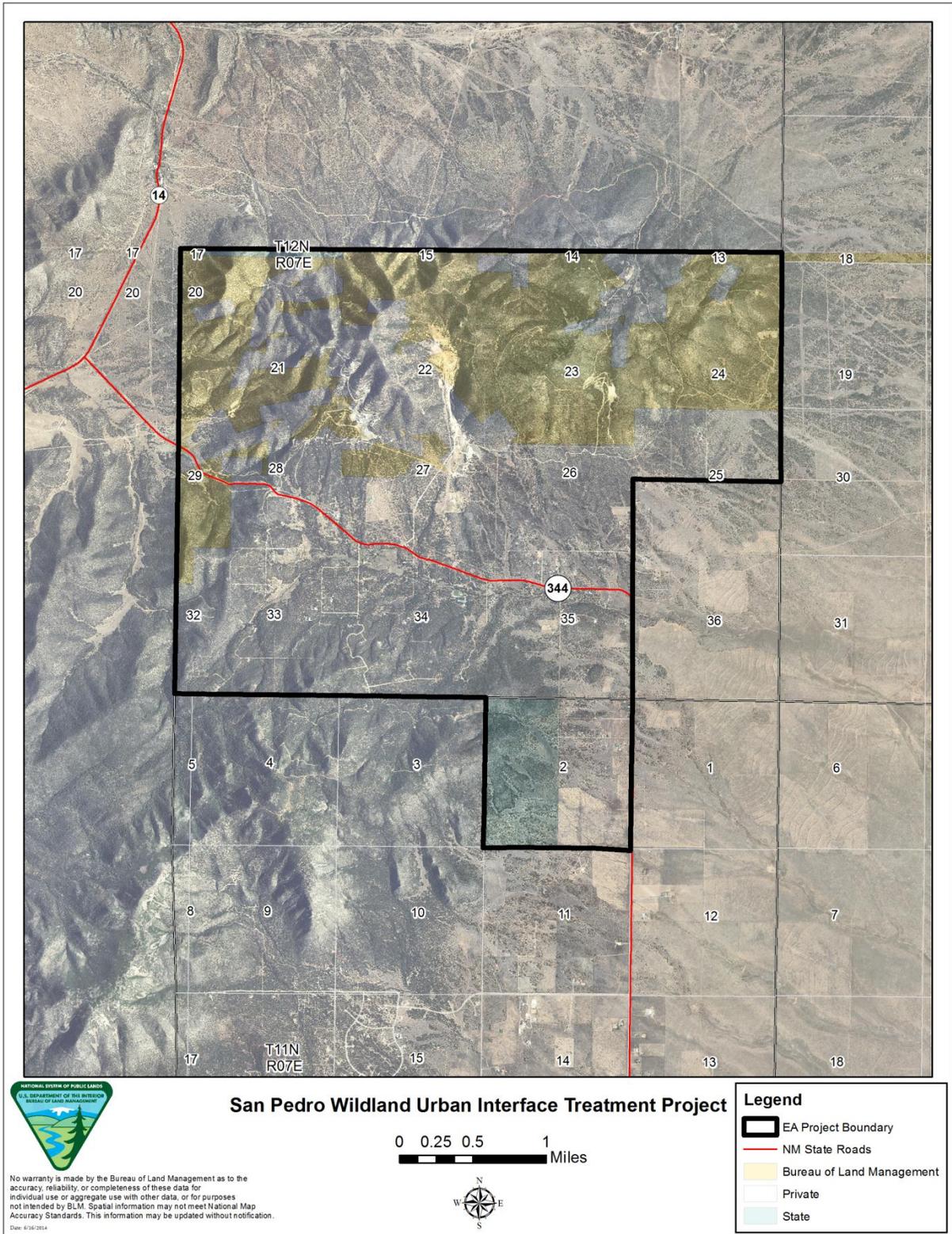
Wilcox, B.P., Pitlick, J., Allen, C.D. and D.W. Davenport. Runoff and erosion from a rapidly eroding pinyon-juniper hillslope. *Advances in Hillslope Processes*, 1. 1996.

Appendix 1: Project Maps

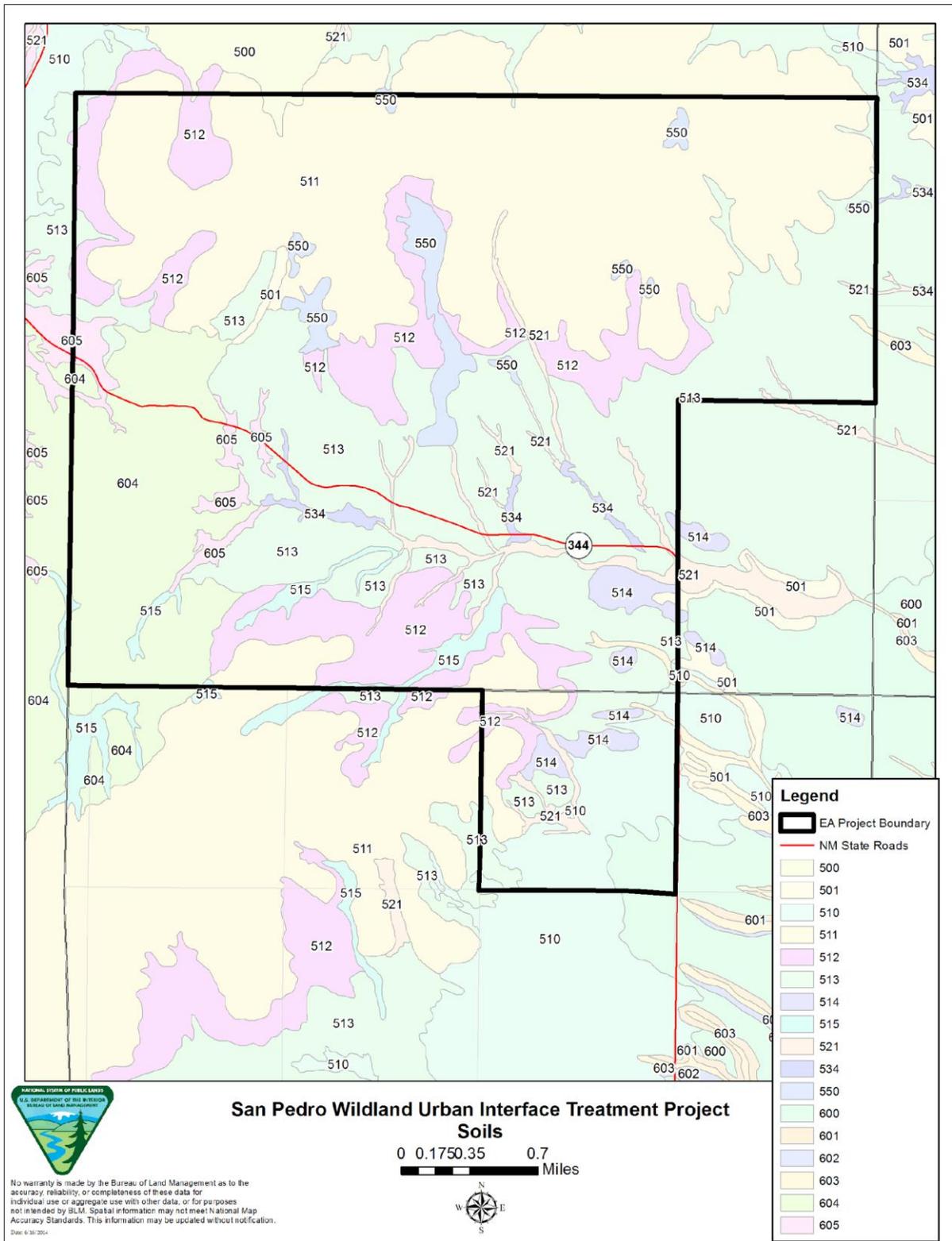
Map 1. Project Boundary



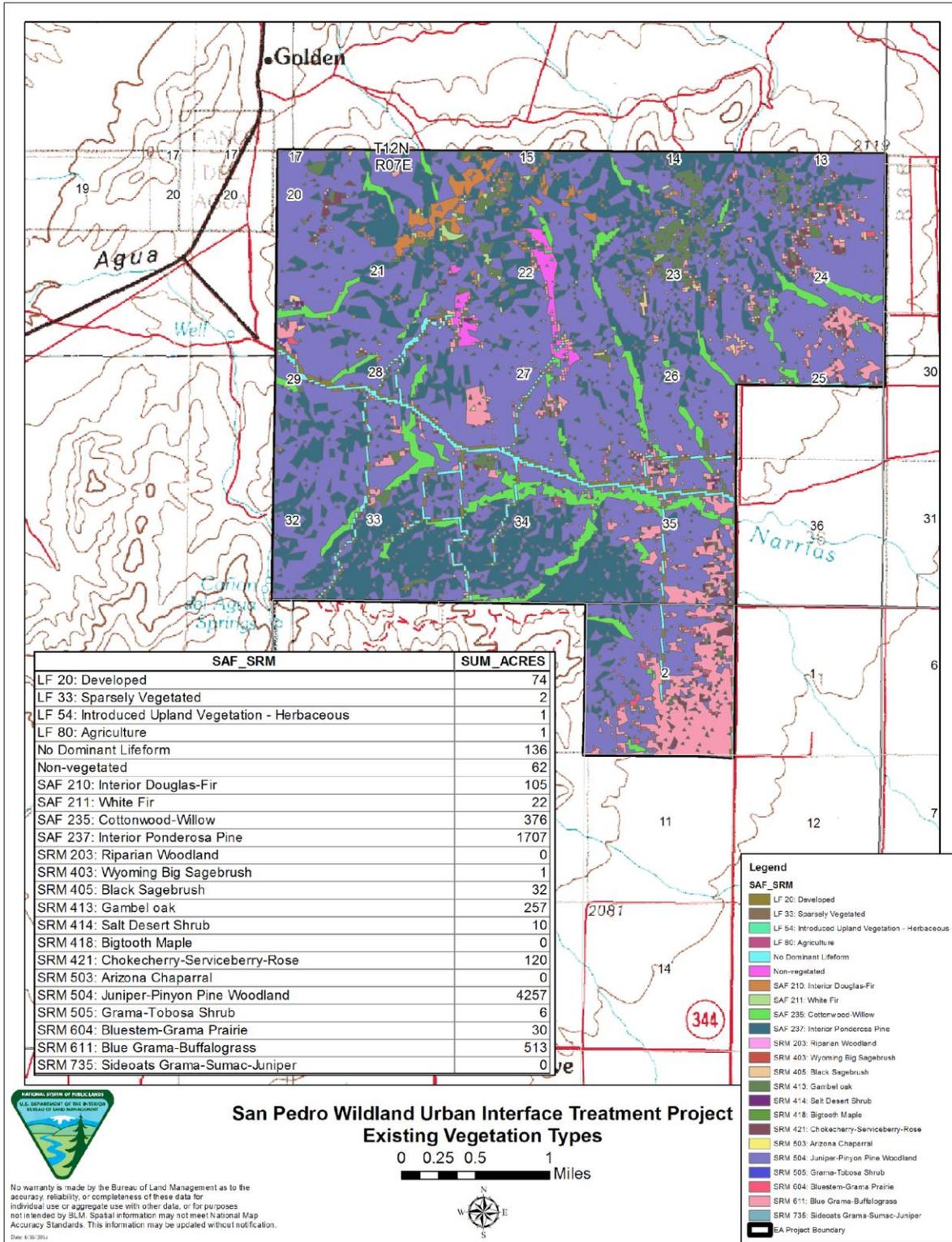
Map 2. Project Boundary, Aerial Imagery



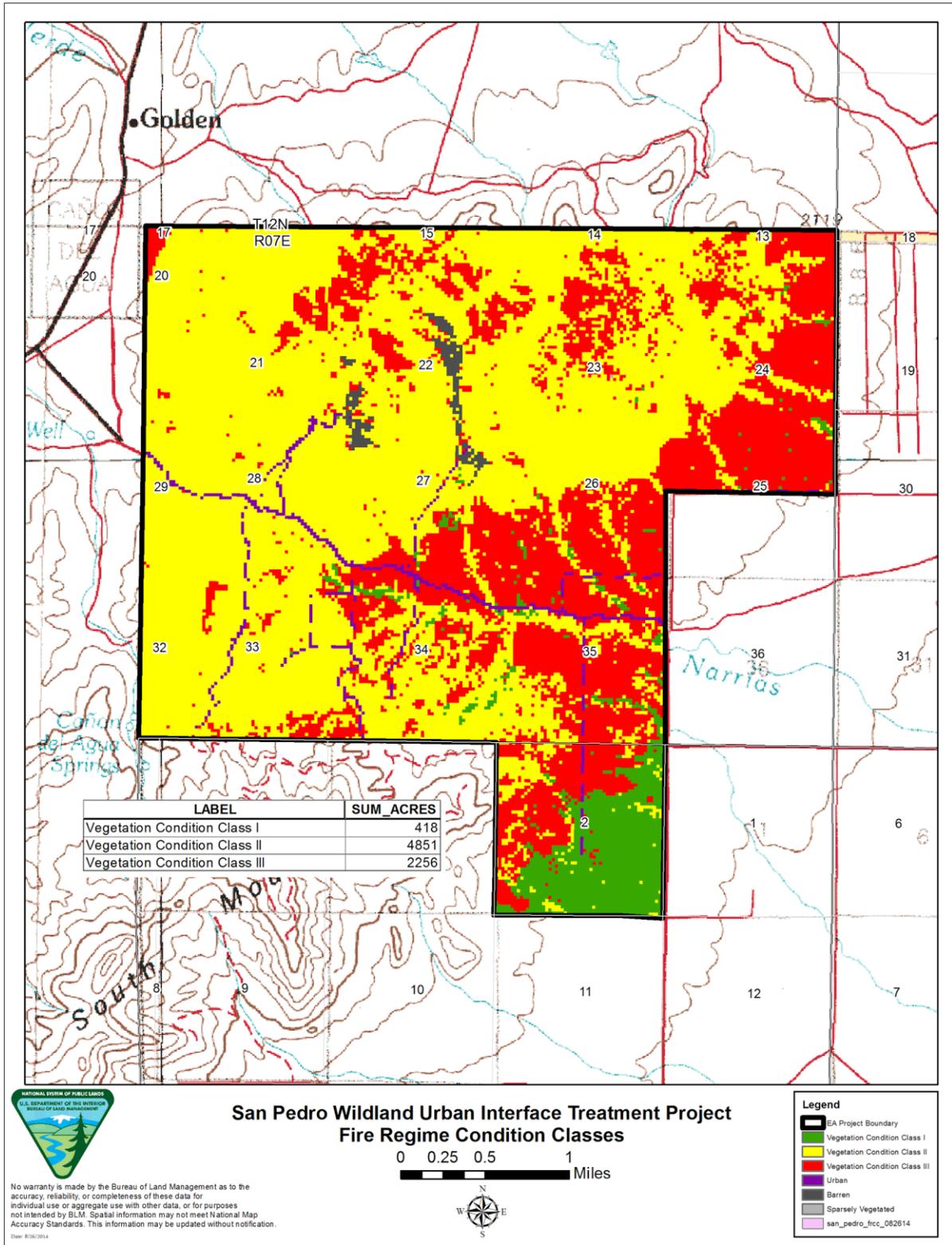
Map 3. Soils



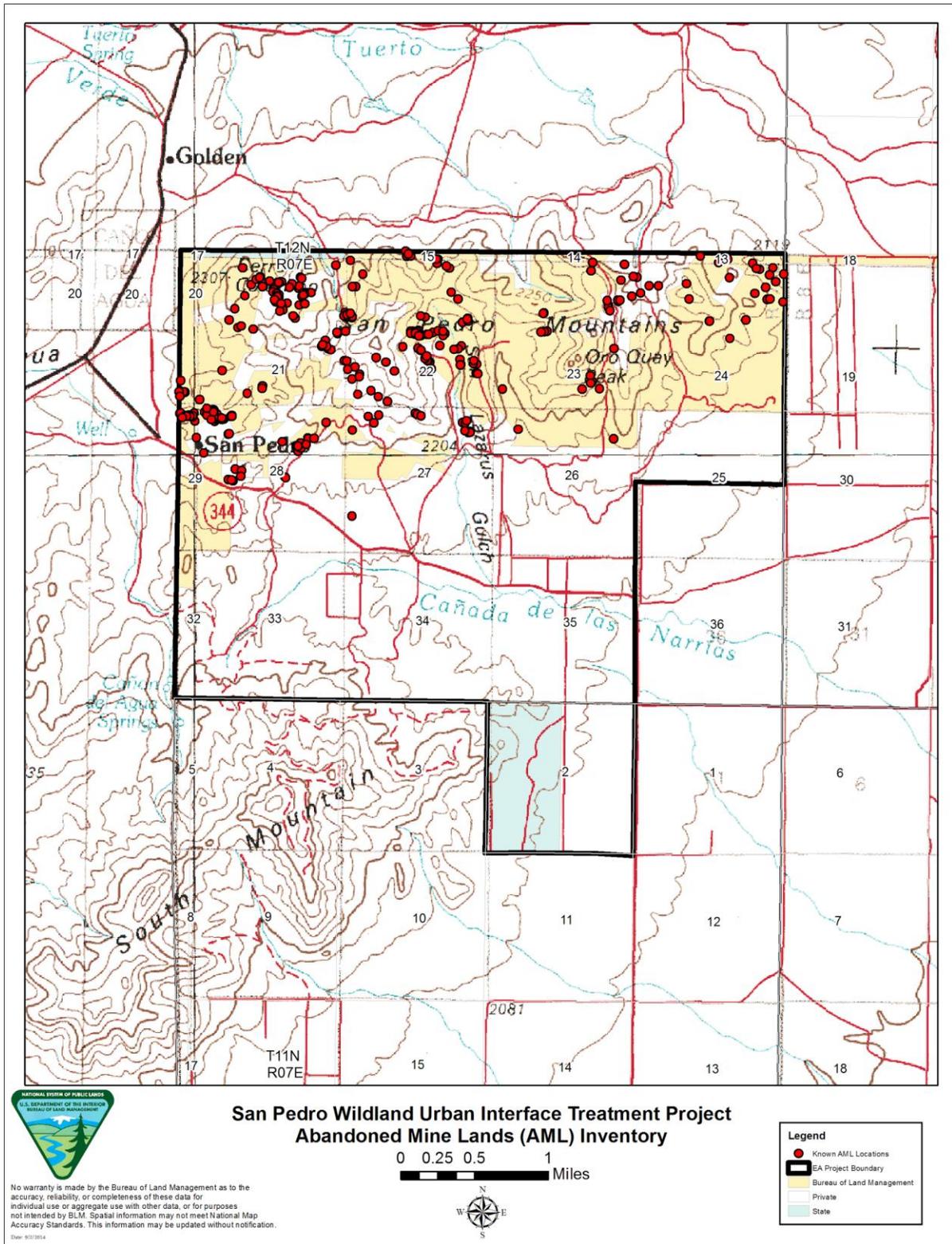
Map 4. Existing Vegetation Types



Map 5. Fire Regime Condition Classes



Map 6. Abandoned Mine Lands (AML) Inventory



Appendix 2: Summary of Special Status Species

Source: New Mexico Ecological Services Field Office, Listed and Sensitive Species in Santa Fe County (8/26/2014) (E=Endangered; T=Threatened; P=Proposed; C=Candidate)

Source: BLM New Mexico State Office (2011)

SANTA FE COUNTY

USFWS

BLM

Common Name	Scientific Name	USFWS				BLM
		E	T	C	P	Sensitive

Mammals

bat, big-eared, Townsend's	<i>Corynorhinus townsendii</i>					X
bat, spotted	<i>Euderma maculatum</i>					X
prairie dog, Gunnison's						X
mouse, jumping, meadow, NM	<i>Zapus hudsonius luteus</i>					X

Birds

cuckoo, yellow-billed	<i>Coccyzus americanus</i>				X	X
flycatcher, willow, Southwestern	<i>Empidonax traillii extimus</i>	X				
jay, pinon	<i>Gymnorhinus cyanocephalus</i>					X
longspur, chestnut-collared	<i>Calcarius ornatus</i>					X
thrasher, Bendire's						X
owl, burrowing, Western	<i>Athene cunicularia hypugea</i>					X
owl, spotted, Mexican (w/critical habitat)	<i>Strix occidentalis lucida</i>		X			

Fish

trout, cutthroat, Rio Grande	<i>Oncorhynchus clarki virginalis</i>			X		
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Plants

cholla, Santa Fe	<i>Opuntia viridiflora</i>					X
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Appendix 3

Project Area Photos

San Pedro WUI Project Photo No. 1 –South southwest



San Pedro WUI Project Photo No. 2 – North West



San Pedro WUI Project Photo No. 3 –South Southeast



San Pedro WUI Project Photo No. 4 – Southeast



San Pedro WUI Project Photo No. 5 – Southwest



San Pedro WUI Project Photo No. 6 – West Northwest

