

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

**Environmental Assessment for the
Galisteo Basin Archaeological Sites Protection Act
General Management Plan**

DOI-BLM-NM-F020-2012-OO30-EA

U.S. Department of the Interior
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Acronyms and Abbreviations

ACEC	Area of Environmental Concern
ACS	American Community Survey
Act	Galisteo Basin Archaeological Sites Protection Act
ARMS	Archaeological Records Management Section
BISON-M	Biota Information System of New Mexico
BLM	Bureau of Land Management
CFR	Code of Federal Regulations
EA	Environmental Assessment
ESA	Endangered Species Act
I-25	Interstate 25
NEPA	National Environmental Policy Agency
NM	New Mexico Highway
NMDGF	New Mexico Department of Game and Fish
NMDOT	New Mexico Department of Transportation
PL	Public Law
Plan	Galisteo Basin Archaeological Sites Protection Act Management Plan
RMP	Resource Management Plan
SRMA	Special Recreation Management Area
TAC	The Archaeological Conservancy
TCP	traditional cultural property
U.S.	U.S. Highway
USC	United States Code
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
VRM	visual resource management

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DOI-BLM-NM-F020-2012-OO30-EA

1.0 INTRODUCTION

1.1 BACKGROUND

The Bureau of Land Management (BLM) is proposing to approve and implement the Galisteo Basin Archaeological Sites Protection Act General Management Plan (Plan) for the identification, research, protection, and public interpretation of the Galisteo Basin archaeological sites. The Galisteo Basin has a rich cultural heritage, including long-term Native American occupation and use, as well as contact-period Spanish activity and historic homesteading and ranching activity. The material manifestations of this heritage are found throughout the Galisteo Creek and Santa Fe River watersheds in the form of archaeological sites, trails, and petroglyphs. Less immediately tangible heritage resources are also present, including traditional resource procurement areas and other culturally important places.

In 2004, the Galisteo Basin Archaeological Sites Protection Act (Act) was signed into law. The Act identified 24 sites, with Native American and Spanish colonial history, totaling 4,591 acres for “preservation, protection, and interpretation” (Appendix A). The Secretary of the Interior is the responsible party determined by the Act and the BLM has been deemed the lead Federal agency for implementation. None of the 24 designated sites are located entirely on public lands administered by the BLM (Figure 1.1). As such, all of the sites are eligible for cooperative agreements between the Secretary of the Interior (through the BLM), private landowners, and/or other government agencies. The Act also requires ongoing identification of new sites to be considered for addition to the list of designated sites and stipulates that sites can be deleted from this list as appropriate; both additions and deletions require Congressional approval.

In implementing the Act, the BLM Taos Field Office has developed and entered into cooperative agreements with several non-Federal landowners and is currently negotiating cooperative agreements with others. The Plan addresses the BLM portions of sites and those where agreements are in place, and provides management recommendations for all of the listed sites. The Plan outlines procedures and protocols for future communications with landowners, Native American entities, and other stakeholders, and sets priorities for preservation and protection work. Although each of the 24 sites designated in the Act are addressed in the Plan, it also serves to provide broad, programmatic guidance rather than detailed management prescriptions for each site. Individual, site-specific management plans would be developed in the future, tiering to and guided by the Plan.

Although the specific challenges vary from site to site, the 24 designated sites face a spectrum of threats to their integrity, including direct and active problems such as erosion, illicit artifact collection, looting, unregulated access (humans and livestock), etc., as outlined in Chapter 3 (Existing Conditions). Long-term and/or indirect threats include disturbance associated with residential, commercial, and minerals development, as well as linear infrastructure projects (e.g., roads, pipelines, transmission lines). Some sites face more immediate threats than others,

presenting the need for prioritization of site protection actions. Emergency site protection procedures are warranted for a select few of the sites, whereas long-term protection procedures are needed at all of the sites.

This environmental assessment (EA) complies with the requirements of the National Environmental Policy Act of 1969 (NEPA) and its implementing Federal regulations found in 40 Code of Federal Regulations (CFR) 1500. This EA analyzes the impacts associated with the Proposed Action and its alternatives and provides agency decision-makers with detailed information upon which to approve or deny the Proposed Action or an alternative.

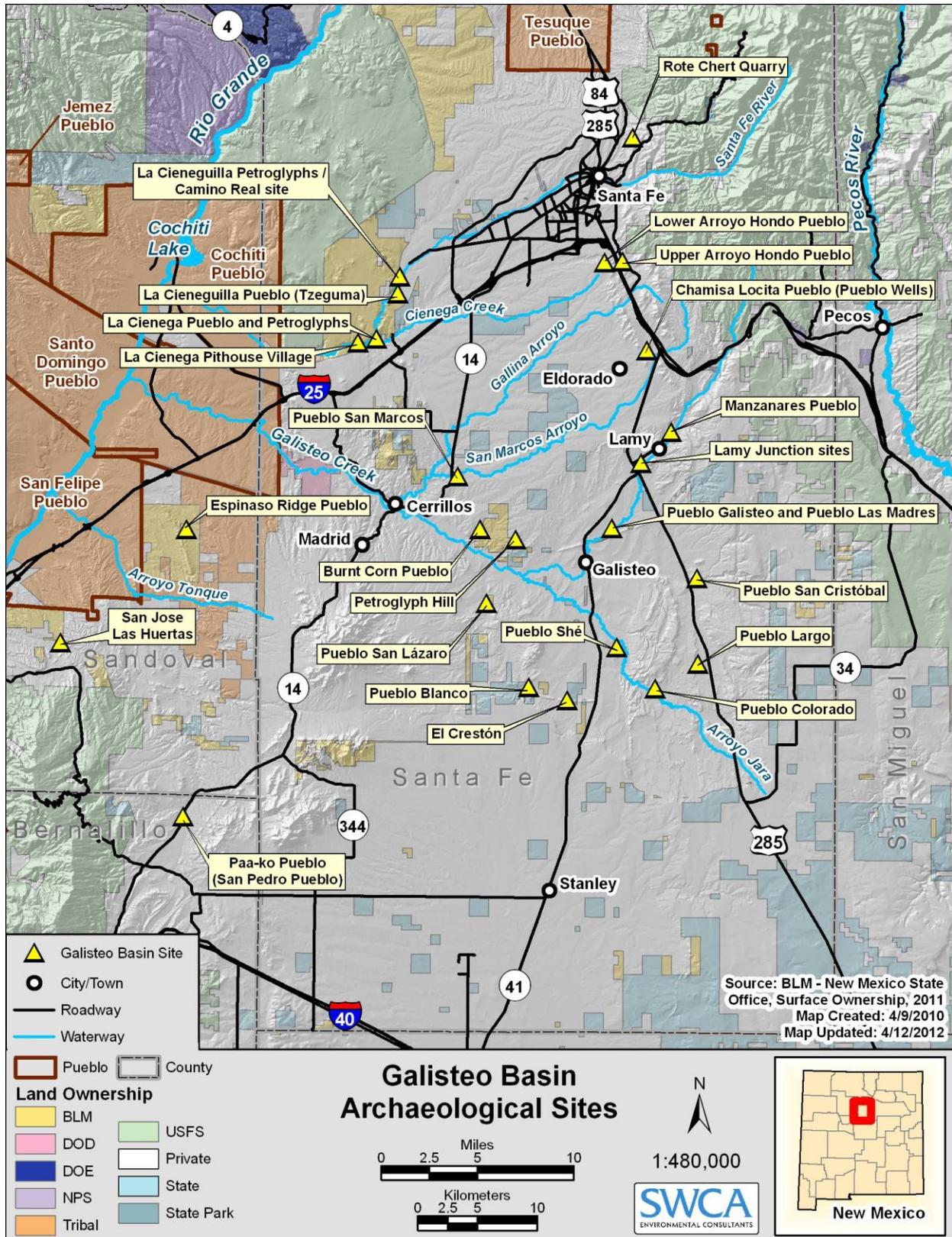


Figure 1.1. Project vicinity map showing protection sites listed in the Act.

1.2 PURPOSE AND NEED FOR ACTION

The purpose of the proposed Plan is to meet the requirements of the Act and provide programmatic guidance and management prescriptions for the protection, preservation, and interpretation of the listed sites. The proposed Plan is needed because the Galisteo Basin and surrounding area holds many well-preserved prehistoric and historic archaeological resources of Native American and Spanish colonial cultures. These sites, on private, state, and Federal lands, include the largest ruins of Pueblo Indian settlements in the United States, spectacular examples of Native American rock art, and ruins of Spanish colonial settlements. These resources are being threatened by natural processes, urban development, vandalism, and uncontrolled excavations. The need for the Plan is supported by the BLM's Taos Resource Management Plan (RMP), which mandates the protection and preservation of cultural resources as called for in the Act. The Act compels the U.S. Department of the Interior to develop and implement a general management plan.

1.3 DECISIONS TO BE MADE

The BLM must decide if the Plan should be implemented as currently written, revised in response to public comment or Native American consultation, or not to approve or implement the Plan.

1.4 LAND USE PLAN CONFORMANCE

The Proposed Action conforms to the Taos RMP, approved in May 2012. The RMP states, "special attention would be directed to protecting and preserving cultural resources as called for in the Galisteo Basin Archaeological Sites Protection Act" (BLM 2012:33).

1.5 SCOPING AND IDENTIFICATION OF ISSUES

1.5.1 INTERNAL SCOPING

The Plan was distributed internally and reviewed by the BLM Taos Field Office interdisciplinary team over the course of several months. The Plan went through several iterations with input by BLM New Mexico State Office staff, in addition to Taos Field Office staff.

1.5.2 EXTERNAL SCOPING

Two public scoping meetings were held in May 2010. One meeting was held in Santa Fe on May 5, 2010, and the other meeting was held in Galisteo on May 6, 2010 (BLM 2010). Landowners, BLM staff, a representative from New Mexico State Parks, and members of the public identified a number of concerns or opportunities that this EA addresses. These issues are presented below.

1.5.3 ISSUES BROUGHT FORWARD FOR ANALYSIS

1.5.3.1 CULTURAL RESOURCES

How will implementation of the Plan affect cultural resources, including but not limited to the sites listed in the Act?

1.5.3.2 TRADITIONAL CULTURAL PROPERTIES

How will implementation of the Plan affect traditional cultural properties (TCPs) and religious practices in the area?

1.5.3.3 LAND USE

How will implementation of the Plan affect land use, including transportation and traditional uses in an area with a myriad of land ownership?

1.5.3.4 RECREATION

How will implementation of the Plan affect related recreational activities that may occur as a result of site visitation?

1.5.3.5 SOCIOECONOMICS

How will implementation of the Plan affect the socioeconomics of the individuals and local communities in the Galisteo Basin?

1.5.3.6 SOILS

How will implementation of the Plan affect soil resources?

1.5.3.7 THREATENED, ENDANGERED, AND BLM SENSITIVE SPECIES

How will implementation of the Plan affect threatened, endangered, or BLM sensitive species?

1.5.3.8 VISUAL RESOURCES

How will implementation of the Plan affect visual resources in the area?

1.5.4 ISSUES DISMISSED FROM ANALYSIS

The following issues were considered but dismissed from analysis because they are not affected by the Proposed Action and No Action alternatives for the reasons stated, and therefore are not discussed in the EA:

- **Mineral Development** – The Act states that subject to valid existing rights, all Federal lands listed within the Act are withdrawn from all forms of mineral entry. The Plan includes proposed boundary adjustments for many of the Act sites and, in the case of some sites, adds additional Federal lands not previously included in the site boundary designated in the Act. The two new sites nominated by the Act do not include Federal lands or minerals. The Taos RMP (BLM 2012) considered the impacts resulting from the preclusion of Federal mineral exploration and development where the BLM-managed Act sites are located, as well as the additional Federal minerals contained within the boundary adjustments, within the RMP's associated Environmental Impact Statement (EIS) (BLM 2012). Therefore, consideration of Federal mineral withdrawals will not be repeated in this EA. For any non-Federal minerals, decisions on development would be handled by the appropriate agency. The State of New Mexico and Santa Fe County currently have restrictions regarding mineral development within the Act sites within their jurisdictions. The BLM recommends that private landowners with private mineral rights consider the protection of Act sites prior to any future mineral development activity on

their lands. The BLM is actively seeking cooperative agreements with private landowners, and mineral development will be addressed in the agreements in cases where privately owned minerals underlie private surface. Since the Plan does not include additional actions related to mineral development, no impacts are anticipated as a result of implementation of the Plan, and this EA does not carry forward mineral development issues in the analysis.

- **Grazing and Rangeland** – The Taos RMP makes all Galisteo Basin sites under BLM jurisdiction unavailable to livestock grazing (parts of allotments 830 and 851, and all of allotments 917 and 926) (BLM 2012:Appendix A, 12). The Plan entails boundary adjustments for many of the Act sites, in some cases adding additional Federal lands not previously included in the site boundary designated in the Act, and also nominates additional sites for Act protection. Impacts of allotment modifications on Federal grazing permits are analyzed in the Taos RMP’s associated EIS (BLM 2012), including any such additional Federal lands contained in the boundary adjustments or proposed additions to the Act. The State of New Mexico and Santa Fe County have measures in place that protect Act sites in their jurisdictions from impacts to sites from grazing. The Plan recommends to private landowners that livestock be restricted from Act sites for the protection of the resources and the BLM is actively seeking cooperative agreements with private landowners. Since the Plan does not include actions that expand grazing controls on federally managed Act sites, grazing is not brought forward for detailed analysis in this EA.
- **Migratory Birds** – The project would not affect migratory birds or their habitat because no actions are proposed that would result in the take, harm, or disturbance to migratory bird nests or their eggs. No migratory bird habitat would be disturbed.

2.0 DESCRIPTION OF ALTERNATIVES

2.1 ALTERNATIVE A: PROPOSED ACTION

The BLM Taos Field Office proposes to implement the Plan—also referred to as the Proposed Action—which provides for the protection, preservation, and interpretation of the Act sites. The Act also includes provisions for access, research, and education, among other aspects of cultural resource management. However, protection of the designated protection sites and any sites added in the future is a necessary prerequisite to the goals of preservation and interpretation. Therefore, the protection of these resources and the lands they occupy is considered to be the first priority to secure the resources from human and natural threats. The complete Plan, as proposed, can be found in Attachment 1.

The Plan is designed to be general in nature and includes broad based management measures. Because the site areas are a patchwork of Federal, state, county, and private lands, the BLM makes management decisions only for lands under BLM jurisdiction. For sites on state, county, or private lands, the BLM only makes recommendations for site management.

Table 2.1 describes each site listed for protection in the Act and carried forward into the Plan, with land ownership and acreage including the boundary adjustments proposed in the Plan to more accurately delineate their respective footprints. Below that is a summary of the key actions proposed in the Plan.

Table 2.1. Land Ownership and Acreages for the Galisteo Basin Archaeological Sites

Site Name	Ownership (Act boundaries)	Protected Area under the Act (acres)	Proposed Area with Boundary Adjustment under the Plan (acres)
Lamy Junction sites	Santa Fe County	80	92
Burnt Corn Pueblo	BLM Private	110	341
Manzanares Pueblo	Private	30	26
Chamisa Locita Pueblo (Pueblo Wells)	Private	16	18
Pueblo Largo	Private	60	128
Pueblo Shé	Private	120	232
Pueblo Colorado	Private	120	370
Pueblo Blanco	State Land Office BLM Archaeological Conservancy Private	878	1,002
Pueblo San Cristóbal	Private NMDOT right-of-way	520	546
Pueblo Galisteo and Pueblo Las Madres	BLM Private	133	265
Pueblo San Lázaro	BLM Private	360	656
Pueblo San Marcos	NM Historical Preservation Division	152	189

Site Name	Ownership (Act boundaries)	Protected Area under the Act (acres)	Proposed Area with Boundary Adjustment under the Plan (acres)
	Private Archaeological Conservancy		
Petroglyph Hill	BLM Santa Fe County	130	137
El Crestón	BLM New Mexico State Land Office Private	764	797
La Cienega Pithouse Village	BLM Private	179	186
Upper Arroyo Hondo Pueblo	Private	12	14
Lower Arroyo Hondo Pueblo	Archaeological Conservancy	21	16
La Cienega Pueblo and Petroglyphs	BLM Private	126	96
La Cieneguilla Pueblo (Tzeguma)	BLM Private	11	11
La Cieneguilla Petroglyphs / Camino Real site	BLM Santa Fe County Archaeological Conservancy	531	460
Rote Chert Quarry	Archaeological Conservancy	5	N/A (to be deleted)
Espinaso Ridge Pueblo	Private	160	160
Paa-ko Pueblo (San Pedro Pueblo)	University of New Mexico NMDOT right-of-way	29	32
San José de las Huertas	Private Archaeological Conservancy	44	52
Total acreage		4,591	5,826

NMDOT = New Mexico Department of Transportation

The Plan also calls for the addition of two new protection sites (Colina Verde and Galisteo Spring) and the deletion of one site (Rote Chert Quarry) (Table 2.2, Figure 2.1). Preliminary recommendations for further evaluation for addition to the Act are also made for four sites (Pueblo La Bajada, Wildhorse Mesa Group, Mt. Chalchihuitl, and LA 149) (see Attachment 1).

Table 2.2. Formal Recommendations for Site Additions to the Act

Site Name	Area	LA #	ARMS	Formal Assessment	Recommended By	Type	Owner	Acreage
Colina Verde	San Cristóbal	309, 1307, 170800	Yes, & In preparation	Yes	OAS	Coalition pueblo	Private	70.4
Galisteo Spring	Galisteo	159306-159312, more to be added	Yes, & In preparation	Yes	OAS	Archaic through historic pueblo, homestead	Galisteo Preserve, State of NM	508

ARMS = Archaeological Records Management Section.

2.1.1 KEY ACTIONS

Site Protection and Preservation

As stated above, the Plan includes provisions for site protection and preservation. Chapter 4 of the Plan focuses on site protection and preservation management measures, including the following actions:

- Prioritize additional documentation of sites “at risk” of damage from erosion or other factors.
- Implement emergency site protection procedures for a select few of the sites and long-term protection procedures at all of the sites.
- Establish cooperative agreements with private landowners and other agencies
- Establish conservation easements where appropriate
- Acquire ownership of selected sites through purchase, donation, or exchange
- Manage for limited or restricted access to sites, including:
 - Guided tours (# and size) or permits
 - Limiting to foot traffic on designated paths only
 - Seasonal access restrictions
 - Native American ceremonial access
 - Fencing of especially sensitive features or intrasite areas
- Implement erosion control measures where appropriate
- Implement stabilization measures where appropriate
- Implement pest control measures where appropriate
- Implement monitoring and surveillance where appropriate
- Manage for the fewest possible indirect impacts from disturbing actions on land bordering site protection areas.

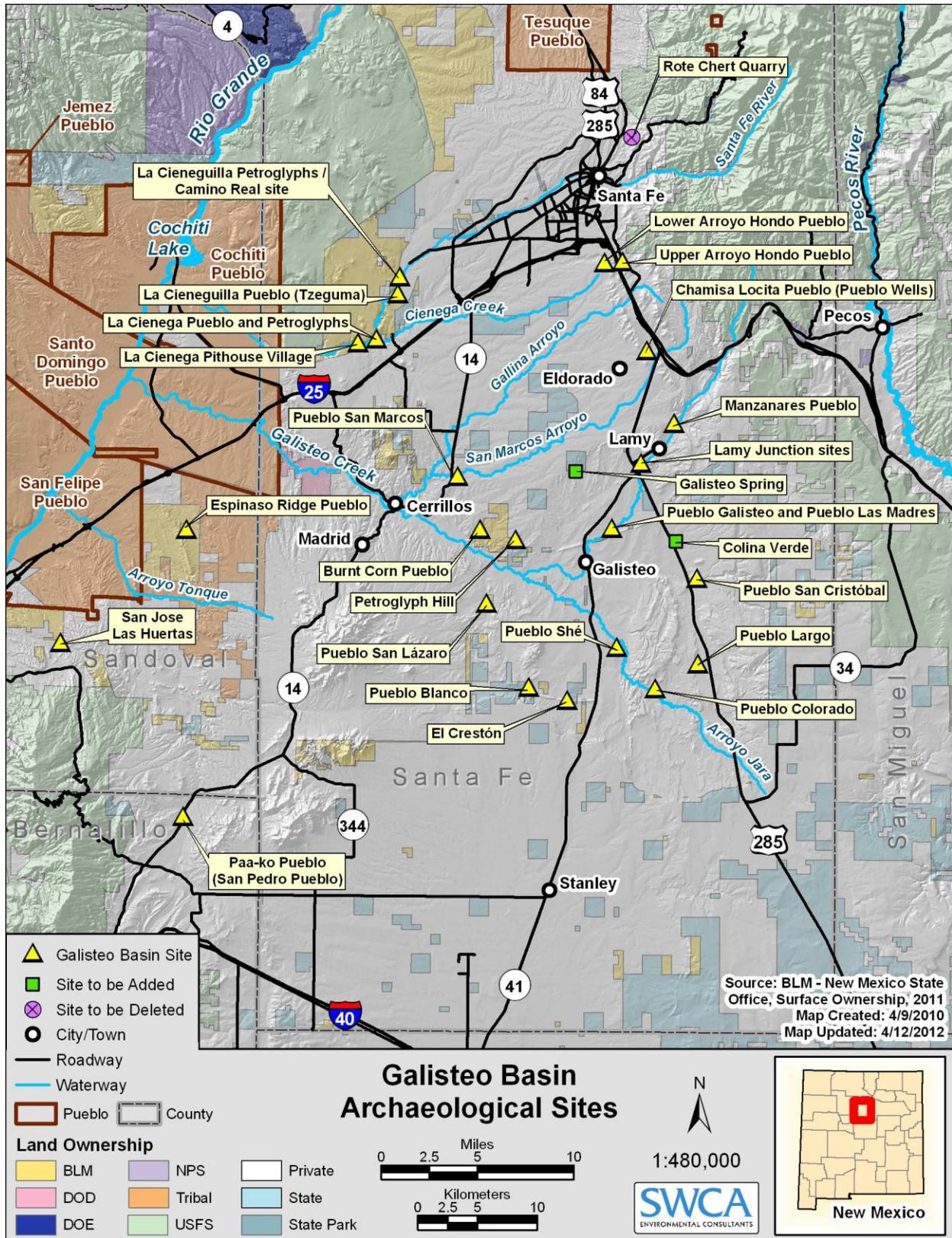


Figure 2.1. Protection sites including those proposed to be added and deleted from the Act.

Interpretation

In conjunction with preservation and protection, the Proposed Action includes provisions for allowing research opportunities at the designated protection sites and conveying the results of that research to the general public. Interpretation and research efforts would be either non-invasive or designed to minimize ground disturbance, indirect effects, and visual impacts. Furthermore, research proposals would be consistent with Native American concerns and recommendations for each site and compliant with all applicable laws and regulations.

Site-specific Management Plans

Adoption of the Plan (Proposed Action) would provide a framework upon which future site-specific management plans may be formulated to better identify measures for the protection, preservation, and interpretation of individual sites. These site-specific plans would undergo site-specific NEPA compliance prior to implementation.

Communication Protocols

Another important component of the Proposed Action is to outline protocols for ongoing communication between stakeholders and interested groups. The BLM would ensure an appropriate forum (Galisteo Working Group) is provided to facilitate continued collaboration in Plan implementation, inter-governmental coordination, and future management efforts for the protection sites.

The Plan reaffirms the national significance of the sites protected by the Act and provides readers with information about each protected site, as well as the cultural context within which they are considered important. Approval of the Proposed Action would ensure fulfillment of Congress' original intent to preserve and protect our collective heritage, as expressed in the archaeological resources of the Galisteo Basin.

2.2 ALTERNATIVE B: NO ACTION

Under the No Action alternative, sites would still experience a measure of protection under the Act, but no comprehensive management plan would be adopted to provide for formal protection, preservation, and interpretation for Act sites. Under the No Action alternative, the BLM would not implement the proposed Plan.

The BLM would continue current management of the sites or portions of sites on public land only and would follow the management direction presented in the Taos RMP (BLM 2012). If the Plan for the Galisteo Basin archaeological sites is not implemented, the BLM would not be in compliance with the Act, which assigns the BLM with providing a management plan. In addition, there would be no general management plan to tier to for future site-specific management plans for individual sites. Furthermore, no new sites would be recommended for addition or deletion, and the sites currently listed in the Act would not have their respective boundaries adjusted for accuracy.

2.3 ALTERNATIVES CONSIDERED BUT NOT ANALYZED IN DETAIL

During formulation of the Plan, the BLM considered a variety of different ways to meet the requirements of the Act. This included consideration of multiple alternatives to meet the purpose and need. The following potential alternatives will not be fully analyzed in this EA.

2.3.1 OTHER SITES CONSIDERED FOR ADDITION TO THE ACT

The BLM thoroughly and carefully considered suggestions from interested parties and stakeholders to determine which additional sites not already named in the Act should be proposed for inclusion in the Act. The criteria for selection are presented in the Plan (Chapter 7). This evaluation resulted in the addition of two new protection sites and the recommendation of further study for four additional sites; one site is recommended for deletion. These modifications were incorporated into the Plan and, by extension, the Proposed Action. Other sites were considered but not named in the Plan because they did not meet the criteria for formal addition to the Act. The Plan provides guidance for future research to further evaluate sites yet to be discovered. Therefore, at this time an alternative to include any additional sites not already included in the Proposed Action would not meet the purpose and need for the Plan, which is to meet the requirements of and implement the Act.

2.3.2 OTHER AREAS SUGGESTED FOR ADDITION TO THE ACT

In the course of conducting the ethnographic study and the multiple meetings held during preparation of the Plan, the BLM heard from numerous pueblos and tribes. Some Native American participants recommended that the following landscape features and geographic areas be added to the Act:

- Cerro de la Cruz
- Los Cerrillos (multiple sites)
- Ortiz Mountains (multiple sites)
- Tunnel Springs
- San Pedro Mountains
- Sandia Mountains traditional use area
- Galisteo Basin Watershed and Galisteo Creek
- Chilibi
- Frijoles Canyon
- Mesa Verde
- Edgewood area
- Villanueva area
- Moriarty area

The BLM evaluated these areas for addition to the Act and concluded that, while all of these areas contain important cultural values, current management of the portions of these areas under Federal jurisdiction, as well as applicable laws and regulations, are sufficient to adequately protect these resources. While inclusion in the Act could provide some benefit, the spirit of the Act is meant for a more specific list of sites grouped by proximity in the Galisteo Basin. The addition of these large geographic areas for protection under the Act is not a feasible alternative. For this reason, alternatives specifically nominating these areas or features were not brought forward for detailed analysis in this EA. Please see the Plan, Chapter 8, and the ethnographic study (Parametrix 2011) for a full discussion of Native American recommendations.

3.0 AFFECTED ENVIRONMENT

The following section presents baseline information for those resources expected to experience measurable impacts to the human environment (see Issues, Section 1.5.3), whether adverse or beneficial, from the Proposed Action and No Action alternatives.

3.1 CULTURAL RESOURCES

The Plan provides a complete cultural history of the Galisteo Basin (Chapter 2). The discussion includes a brief description of the Galisteo Basin's nomadic hunter-gatherer groups, then the more sedentary agricultural cultures are discussed, followed by the rapid rise of the pueblo communities. The Plan then provides a description of how pueblo life changed with the initial Spanish contact, occupation, and expansion of these settlements. The chapter concludes with a brief description of the later historic period occupation and history of archaeological activities within the Galisteo Basin. The following is a brief description of each of the sites listed in the Act and how they fit into the overall historic context of the Basin.

Lamy Junction Sites

The Lamy Junction Community is a village complex comprising 19 structures dating to the Coalition period (A.D. 1200–1325) near the junction of U.S. Highway 285 (U.S. 285) and County Route 33. The area is owned entirely by Santa Fe County. The sites are for the most part small structures and pueblos of less than 20 rooms, with the exception of LA 27, which may have contained up to 60 rooms. Condition threats include three trailers placed close to LA 365, LA 366, and LA 31776. A low rubble mound that was recorded in 1981 at LA 365 is no longer evident and was likely destroyed during leveling of the site for trailer placement. Sites LA 368 and LA 31779 have been severely eroded by a cutbank. Excavation in the structure mound at LA 27 was well documented by Nels Nelson in 1915, and excavation depressions at LA 362 may have also been the work of Nelson. Pot hunting holes are evident at LA 366. Most of the structure mounds have been affected by animal burrows, and many of the sites have been cut by old road grades. It is assumed the artifacts in the area have been subject to illicit collecting (Toll and Badner 2008). The Eldorado Water and Sanitation District owns a well and tank on the eastern boundary of the property, and past maintenance activities narrowly missed affecting the sites.

Burnt Corn Pueblo (LA 358 and LA 359)

Burnt Corn Pueblo is a large Ancestral Puebloan site in the western Galisteo Basin dating to the Late Coalition period (Pindi Phase). The northern 42 acres are privately owned and the southern 68 acres are administered by the BLM. The site has been heavily looted prior to the 1980s when the entire site was on private ranchland. There is moderate erosion occurring, mostly by slope wash during summer rains. Animal burrows are a considerable problem and occur throughout the site. A former two-track road that crossed the site from north to south has been closed and the area has substantially revegetated. Though the site is fairly remote and is only accessible by foot, illicit artifact collecting appears to be ongoing and collectors' piles are present across the site (Toll and Badner 2008).

Manzanares Pueblo (LA 1104 or LA 10607)

Manzanares Pueblo is a Coalition period (A.D. 1200–1325) community 1 mile north of the town of Lamy on a private, dead-end road. The site was partially excavated by Nelson in 1915 and again in the 1970s by Steen (Toll and Badner 2008). Two structures recorded by Nelson could not be relocated and may have been the victim of arroyo down-cutting. Active animal burrows are present in three of the structure mounds on the site. A portion of the site has been impacted by the construction of a modern house, outbuildings, driveway, and two-track road, but none of the room blocks appear to have been affected. Collectors' piles of sherds and flakes are present and suggest illicit artifact collecting in the past. The present owners are sensitive to protecting the cultural resources on their property. Manzanares Pueblo is referred to as Lamy Pueblo in the Act; however, the site name was published as Manzanares Pueblo in 1981 (Steen 1981, as cited in Toll and Badner 2008). Furthermore, to avoid confusion with a mound at the Lamy Junction site group (LA 27), also known as Lamy Pueblo, the site assessment project (Toll and Badner 2008), the Plan, and this EA refer to the site in question as Manzanares Pueblo.

Chamisa Locita Pueblo (or Pueblo Wells) (LA 4)

Chamisa Locita Pueblo is a Coalition period residential complex situated on a hill slope between Arroyo Ancho and Gallina Arroyo. The site lies entirely on private land administered by the Rancho Viejo housing development, though currently the land is being used for cattle grazing. The site was partially excavated by Nelson in the early 1900s and again by Mera in the 1920s (Toll and Badner 2008). A windmill and water tank was constructed in the middle of one of the room blocks. Cattle congregate around the water tank and the trampling of artifacts is a problem. Cattle trails may contribute to erosion in the future. A two-track road also passes over the room block and across the site. Though there is a locked gate on the ranch road, the site is easily accessible to residents of an adjacent subdivision and illicit artifact collecting has likely been occurring for some time.

Pueblo Largo (LA 183)

Pueblo Largo is a multi-component site situated atop a steep ridge. The site lies entirely on private land and is part of the San Cristóbal Ranch. The site was extensively excavated by Nelson in 1914 and Dutton in the 1950s. Neither backfilled their excavations and the excavated structures have collapsed or are in the process of collapsing. The walls of some features built on the edge of a steep escarpment are eroding downslope. The site is accessible by permission of the landowner.

Pueblo Shé (LA 239)

Pueblo Shé is a multi-component building complex located west and south of Arroyo de la Jara. The site is entirely on private land and is part of the San Cristóbal Ranch. The site was partially excavated by Nelson in the early 1900s and was not backfilled; these rooms and structures have collapsed. There is evidence of pot hunting, both recently and in the distant past. Erosion in the form of drainage downcutting exists on the west side of the pueblo. A two-track road cuts through the site and livestock grazing has trampled some areas. Animal burrowing is a long-term process affecting the integrity of the site. The site is accessible by permission of the landowner.

Pueblo Colorado (LA 62)

Pueblo Colorado is a multi-component building complex situated at the base of a sandstone escarpment. The site is entirely on private land and is part of the San Cristóbal Ranch. The site was partially excavated by Nelson in the early 1900s and was not backfilled; these rooms and structures have collapsed. There is evidence of pot hunting, both recently and in the distant past. There are several large drainages that have begun downcutting through the southern portion of the site and numerous smaller drainages are eroding the eastern ridge line. Livestock grazing and animal burrows are affecting the integrity of the site. The site is accessible by permission of the landowner.

Pueblo Blanco (LA 40)

Pueblo Blanco is a large Pueblo IV period Ancestral Puebloan village. The site is on land owned by the New Mexico State Land Office. A major arroyo, Cañada del Medio, flows through the site. This arroyo appears to have widened considerably over the last 100 years and has caused the collapse of many structures. The site was partially excavated by Nelson in the early 1900s and was not backfilled; these rooms and structures have collapsed. Recent looting of the site includes illicit artifact collecting and excavation beneath the floor of the southern room block. The site is open to the public, but permission is needed by the New Mexico State Land Office. The site is beyond three locked gates and keys must be obtained. Other portions of the site are located on BLM land, as well as land owned by the Archaeological Conservancy (TAC) and other private landowners.

Pueblo San Cristóbal (LA 80)

Pueblo San Cristóbal is a multi-component site situated on the banks of Arroyo San Cristóbal. The entire site, with the exception of the New Mexico Department of Transportation (NMDOT) right-of-way, belongs to the San Cristóbal Ranch. The site was partially excavated by Nelson in 1912 and was not backfilled; these areas continue to collapse and erode. Arroyo San Cristóbal and its tributaries are eroding out both surface and subsurface structures. An irrigation ditch runs through the site, causing ongoing and considerable loss of midden deposits through erosion. A two-track ranch road is causing erosion along the east side of the site. The site is accessible by permission of the landowner.

Pueblo Galisteo (LA 26) and Pueblo Las Madres (LA 25)

This collection of sites includes multiple properties. Pueblo Galisteo is a large multi-component site on the bank of the Rio Galisteo, and Pueblo Las Madres is a small pueblo on the opposite bank. The southwest portion of the site is on land administered by the BLM. Three additional sites are located on the BLM parcel, including El Pipo Pueblo, where stone masonry room blocks date to the Coalition and Classic periods. The other portion of the site grouping is privately owned, but the owner granted TAC a conservation easement. Pueblo Galisteo was partially excavated by Nelson in 1912 and Pueblo Las Madres was excavated by Dutton in 1963. Neither backfilled their excavations and these areas are in various collapsed states. Pueblo Galisteo continues to erode, and large sections of structures have collapsed since Nelson first recorded the site. A two-track ranch road cuts across the north edge of the site. The sites are accessible from the Las Madres Ranch driveway.

Pueblo San Lázaro (LA 91 and LA 92)

Pueblo San Lázaro is a multi-component site situated on either bank of Arroyo del Chorro. Most of the site lies on the private land of various owners. A smaller eastern portion is on BLM land. The site was partially excavated by Nelson in 1914 and was not backfilled. The present owner of the majority of the site has either excavated parts of the site himself or allowed various archaeological entities to excavate. These excavations have not been backfilled and are subject to erosion. In addition, the owner of the site has used mechanized equipment to excavate several areas across the site, presumably in search of artifacts. Natural erosion around the perimeter of the site in the form of sheet washing and arroyo downcutting is severe in some places. Access to the site is restricted by two locked gates.

Pueblo San Marcos (LA 98)

Pueblo San Marcos is a very large multi-component site within the San Marcos land grant and Los Cerrillos Mining District. The site lies on land administered by the State of New Mexico, TAC, and on privately owned land. Part of the site is owned jointly by the State of New Mexico and TAC, and it is the sole responsibility of TAC to administer those portions of the site that are jointly owned. The site was excavated in 1915 by Nelson. Later, David Thomas of the American Museum of Natural History excavated and mapped the *convento* and Ann Ramenofsky of the University of New Mexico conducted site mapping, surface collection, and limited testing. The site is experiencing severe erosion from the San Marcos Arroyo, which flows through the center of the site, as well as from many smaller tributaries. Several dirt roads and mechanical disturbances in the northern portion of the site are contributing to sheet washing. A horse corral covers portions of the northeast part of the site and there are private residences scattered across other parts of the site. Animal burrows are abundant across the site. The site is bounded by New Mexico Highway 14 (NM 14) on the west side and by county roads on the others. The site is accessible from any of these roads, although TAC has fenced much of the site and posted no trespassing signs.

Petroglyph Hill (LA 148959)

Petroglyph Hill is a major rock art site in the western Galisteo Basin. The site consists of 1,865 petroglyphs scattered across two volcanic hills joined by a saddle. The eastern portion of the site has been recently acquired by Santa Fe County from a private owner. The western portion is on BLM land. It is a popular, well known recreation area, and some of the petroglyphs have been worn away by foot travel. Others have been intentionally defaced by scratching or chiseling. At least one portion of a panel has been cut out and there is evidence of smaller boulders being removed. The site is easily accessible via a jeep trail leading up to the top of the saddle between the two hills.

El Crestón (LA 76065)

El Crestón is composed of four contiguous basalt ridges extending from near NM 41 on the east almost to Pueblo Blanco to the west. Portions of the site are on privately owned land, state trust land, and BLM land. Most of the damage to the petroglyphs stems from natural erosion, spalling, and rock fall. Though there has been the addition of modern graffiti to prehistoric panels, very little defacing of petroglyphs has taken place. Vandalism is more prominent on the east side, closer to NM 41. The most damage to the site was done when a portion was dynamited in the

early 1900s for construction of a railroad, although during the 1980s visitors were so common as to create a potential danger of erosion from foot traffic. The site is easily accessible from the east side of NM 41, although no trespassing signs have been posted to discourage visitors from accessing any part of the site. El Crestón is referred to as the Comanche Gap Petroglyphs in the Act; however, the latter designation is now considered too narrow for this extensive linear resource. Therefore, this site is referred to as El Crestón in this EA.

La Cienega Pithouse Village (LA 166)

La Cienega Pithouse Village is a multi-structure, Late Developmental period site atop a small mesa on the banks of the Santa Fe River. The western and river bottom portion of the site is on BLM land, and the eastern and southern portions are on privately owned land. The biggest threat to the site is animal burrows. Erosion in the form of wind action and sheet wash is minimal. Some of the rock art at the site has been altered and modern graffiti has been added. There appears to be very little visitation of the site.

Upper Arroyo Hondo Pueblo (LA 76)

Upper Arroyo Hondo Pueblo sits atop an alluvial plain almost completely surrounded by two channels of Arroyo Hondo. The site is on the land of various private owners, one of which granted access for the site assessment. The site was partially excavated in 1915 and 1934; these areas were not backfilled and are now eroded. Erosion is taking place on the north, east, and south edges due to arroyo downcutting. The site is bounded on the north and east by residential and commercial properties. It is assumed that some degree of illicit visitation and artifact collecting has taken place, though it does not appear to be a significant problem.

Lower Arroyo Hondo Pueblo (LA 12)

Lower Arroyo Hondo Pueblo is a large Puebloan settlement of the late Coalition and early Classic periods. The site is owned by TAC, which leads public tours by request. The site is partially fenced with a pedestrian opening and is accessed by a public road that leads to a parking area in front of the site, which is posted as a TAC preserve (T. Stewart, personal communication 2011). The site was partially excavated by Nelson in 1915 and more extensively in the 1970s. The areas excavated by Nelson were not backfilled and have since eroded. There is some erosion in the form of downcutting occurring along the edge of Arroyo Hondo, but are not threatening any structures yet. There is evidence of pot hunting from the late nineteenth century. A water tank and outbuilding were built on the site, most likely in the 1940s. The tank used to release water into an acequia on the southern edge of the site and used for ranching or agriculture. Animal burrows are a problem in the main area of the village. Residential housing and road construction surrounding the site likely damaged or destroyed outlying features. It is assumed that some degree of illicit visitation and artifact collecting has taken place, though it does not appear to be a significant problem.

La Cienega Pueblo and Petroglyphs (LA 3)

La Cienega Pueblo and Petroglyphs site encompasses a mesa top and hill slope down to the confluence of the Santa Fe River and La Cienega Creek. Most of the site is on BLM land and a portion is privately owned. The site was partially excavated by Nelson in 1915; these areas were not backfilled and are now eroded. Several looters' holes were noted on the site. Modern and

abandoned fence lines and two two-track roads crisscross the site. A scatter of boulders has been dumped on the site. A small portion of the petroglyphs has been defaced with scratching and pecking. There is moderate animal burrowing in all of the room blocks. The petroglyphs along the base of the cliff are frequently visited. An abandoned fence bisects the site, and a modern fence bounds a large portion of the eastern side of the site; otherwise, the site is open.

La Cieneguilla Pueblo (Tzeguma) (LA 16)

La Cieneguilla Pueblo is a Classic period village on the east bank of the Santa Fe River. About 40% of the site is on BLM land. Fencing surrounds the BLM-owned portion of the site, separating it from NM 56 and private land on all sides. The rest of the site is privately owned and much of it has been sold for housing development. This development has damaged and destroyed a large portion of the site. There is evidence that at least some of the landowners have recovered artifacts from their property and sold them for profit. The BLM portion of the site has also been looted despite fencing. It has been reported that petroglyphs on boulders were badly vandalized by souvenir hunters after WWII. There have been several archaeological excavations at the site, the most significant by Nelson in 1915. The site boundary along the banks of the river is severely eroding with several deep drainages cutting down to the river.

La Cieneguilla Petroglyphs (LA 9064)

La Cieneguilla Petroglyphs are adjacent to La Cieneguilla Pueblo and the Camino Real site, occurring on the cliffs and boulder fields north of the pueblo and southwest of the Camino Real site. Most of the site is on BLM land, while Santa Fe County owns a portion of the northeast side. The petroglyphs have been used for target practice and more recently have been defaced with paint balls. Names and other graffiti have also defaced the panels. Smaller boulders with images have been stolen. Natural exfoliation has eroded panels as well. The site is open to the public and visited frequently, but has been closed to target practice. Recent BLM improvements include a designated parking area, a trail, signage, and additional fencing along the highway.

Rote Chert Quarry (LA 65206)

The Rote Chert Quarry is a 1-acre, T-shaped parcel fit in among three private residences comprising an area where chert cobbles have been naturally exposed due to erosion. The site is owned by TAC and is open on all sides. There is a small drainage eroding down between two of the houses. There is evidence of foot traffic on the site and it is probable that some collecting of cultural or raw toolstone material has taken place.

Camino Real (LA 16767)

Camino Real is a seventeenth century Spanish Colonial ranch built along the Santa Fe River. It is surrounded by the La Cieneguilla Petroglyphs site. The 1-acre site is owned by TAC. Some erosion has occurred on the river side of the site. A major drainage runs between the site and the county road. Some garbage has been dumped around the site, but not recently. The site is accessible from the county road, but it is fenced with a locked gate (Toll and Badner 2008).

Espinaso Ridge Pueblo (LA 278)

The Espinaso Ridge Pueblo is a multi-component site west of Arroyo de la Vega de los Tanos. The entire site is privately owned. There are several looters' holes present on the site and illicit

artifact collection has likely taken place. A road, corral, and water tank have been constructed on the periphery of the site. A bulldozer swath crosses the southern room block, but has completely revegetated. There is some active erosion along small drainages across the site. There are numerous animal burrows across the site. No trespassing signs are posted at the site and the roads across BLM land surrounding the site have locked gates, the keys to which can be signed out at the Rio Puerco Field Office in Albuquerque (Toll and Badner 2008). Two different spellings have been used to refer to this site: “Espinoso” and “Espinaso.” Although the Act and the site assessment project (Toll and Badner 2008) use the “Espinoso” spelling, “Espinaso” is believed to be correct (T. Stewart, personal communication 2011) and is therefore used in this document.

Paa-ko Pueblo (or San Pedro Pueblo) (LA 162)

Paa-ko Pueblo is a multi-component site at the eastern base of the Sandia Mountains, just west of San Pedro Creek. The fenced portion of the site is owned by the University of New Mexico and an NMDOT right-of-way is adjacent to the east. All other land to the north, west, and south is privately owned. The site was partially excavated by Nelson in 1914 and again in the 1930s. Recently it has been used for field school by the University of Chicago and Northwestern University. A drainage runs through the two major room blocks, but does not appear to be actively downcutting. The construction of NM 14 has altered deposits in the northeast corner of the site. Surface collecting and pot hunting has taken place at the site. Animal burrows are densely distributed across the site. A bladed road cuts through the northern side of the site. Wooden lathe demarcating a future housing development were observed during the latest site assessment. Though the site is fenced, it is easily accessible to the public, although whether public access is legal is uncertain.

San José de las Huertas (LA 25674)

San José de las Huertas is at the northern end of the Sandia Mountains on a wide, flat terrace at the base of the Cuchilla de Escala hills. TAC owns much of the site. The eastern portion is privately owned and divided into several residential lots. Construction of a house in 2007 likely damaged or destroyed deposits in that part of the site. An abandoned road and retaining wall built in the early 1900s runs through the middle of the site. It is possible some of the stones for the wall were removed from structures on the site. A modern road was constructed along the east edge of the site. In the 1960s various structures were built along the creek, again possibly using stones from the site. There are several drainages eroding the west end of the site. Limited excavation occurred in the 1980s in a pipeline right-of-way across the northern section of the site. From 2002 to 2004 Columbia University conducted several surface collections and excavated test units. The portion of the site owned by TAC is fenced and posted with no trespassing signs. It is assumed that some degree of illicit visitation and artifact collecting has taken place.

3.2 TRADITIONAL CULTURAL PROPERTIES

TCP is a term that has emerged in historic preservation management and the consideration of Native American religious concerns. TCPs are places that have cultural values that transcend, for instance, the values of scientific importance that are normally ascribed to cultural resources such as archaeological sites. The National Park Service has defined TCP as follows:

A traditional cultural property can be defined generally as one (a property) that is eligible for inclusion in the National Register because of its association with cultural practices or beliefs of a living community that (a) are rooted in that community's history, and (b) are important in maintaining the continuing cultural identity of the community. (Parker and King 1998:1)

Native American cultural associations are the "communities" most likely to identify TCPs, although TCPs are not restricted to this group. Some TCPs are well known, whereas others may only be known to a small group of traditional practitioners or otherwise vaguely known.

There are several laws or Executive Orders that should be considered when evaluating Native American religious concerns. These govern access and use of sacred sites, possession of sacred items, protection and treatment of human remains, and the protection of archaeological resources ascribed with religious or historic importance. These include the following:

- American Indian Religious Freedom Act of 1978 (42 United States Code [USC] 1996, Public Law [PL] 95-431 Stat. 469)
- Executive Order 13007 (May 1996)
- Native American Graves Protection and Repatriation Act of 1990 (25 USC 3001, PL 101-601)
- Archaeological Resources Protection Act of 1979 (16 USC 470, PL 96-95)

To assess the presence of TCPs with the potential to be affected under the Act and Plan, the BLM conducted an identification process over the course of several months. The BLM solicited input from 24 pueblos and tribes, through a series of letters and meetings, as well as an ethnographic study. The BLM invited government officials and cultural resource specialists from all of the pueblos and tribes consulted to attend a series of meetings in 2010 and 2011. The purpose of the meetings was to introduce the goals of the Act and the Plan to interested Native American parties and to seek their input with regard to management of the protection sites. Photographs and maps of sites were viewed, and fieldtrips to selected protection sites were undertaken during several of the meetings.

Congruent with ongoing efforts to incorporate Native American concerns and recommendations in the management of the protection sites, the BLM conducted an ethnographic study as a way to solicit and document tribal perspectives. The ethnographic study involved multiple meetings, interviews, and fieldtrips with tribal representatives, cultural specialists, elders, and government entities (Parametrix 2011).

The results of this tribal outreach are summarized below. Many of the sites protected by the Act hold cultural significance for Native American pueblos and tribes with connections to the Galisteo Basin.

The overall findings of the ethnographic study can be summarized as follows:

1. Multiple Pueblo, Apache, Comanche, and other tribes maintain strong attachments to sites and landscape features in the Galisteo Basin, through oral histories and ongoing visitation for religious pilgrimages and natural resource collection trips.
2. These Native American communities are profoundly affected by, and deeply concerned about, development of all types in the Galisteo Basin.
3. Traditional tribal knowledge and practices can inform the protection and management of sites and landscape features in the basin, and Native American groups are eager to partner with government agencies, land managers, and private property owners in these efforts.
4. Site access for the purposes of performing traditional cultural practices and obtaining traditionally important natural resources is crucial to ensure long-term preservation of cultural heritage for Native American groups with ties to the Galisteo Basin (Parametrix 2011).

The ethnographic study recommends that traditional resource procurement areas, landforms of religious significance, and other TCPs should be considered for protection in the Act. The importance of such TCPs to contemporary pueblos and tribes and the associations of such TCPs with archaeological sites in the Galisteo Basin represent important connections between the past and present.

No formally designated TCPs are known to exist within or adjacent to the proposed project areas. Many of the protection sites have values that would render them potentially eligible as TCPs; however, the Proposed Action does not recommend that any of the protection sites be designated as TCPs.

3.3 LAND USE

Land uses within the protected site areas vary based on the priorities of the individual landowners and managing agencies. As the bulk of the protected site areas are privately owned, the BLM has little control over uses of site areas within privately held lands. The Plan relies heavily on collaboration with landowners, Native American pueblos and tribes, government agencies, heritage resource professionals, organizations, and other members of the public to support and assist the BLM with implementation of the Act. Please see Section 4.1.1.2 of the Plan (Attachment 1) for details concerning agreements with private landowners.

Portions of some sites and entire sites, in some cases, are managed explicitly for the protection of the cultural resources found at the site. Arroyo Hondo, La Cieneguilla Petroglyphs/Camino Real Site, San José de las Huertas, Paa-ko Pueblo, Pueblo Blanco, and San Marcos Pueblo are those sites that are either entirely or partially owned by TAC, the New Mexico Historical Preservation Division, or the University of New Mexico. Many of the private landowners manage the land adjacent to the project area for livestock grazing or other agricultural purposes, recreational uses and open space, or residential real estate. The BLM has executed a Memorandum of Understanding with Santa Fe County and should establish a similar agreement with the New Mexico State Land Office, which owns portions of protection sites. The primary advantage of establishing such agreements is to reach and document a shared understanding with regard to collaborative management of Act sites, including allowable uses.

The Taos RMP has designated areas of critical environmental concern (ACEC), around several of the protected sites, including the sites located within La Cienega and Burnt Corn Pueblo (70 BLM acres), Petroglyph Hill (40 BLM acres), Pueblo Blanco (190 BLM acres), Pueblo Galisteo/Las Madres (70 BLM acres), and San Lázaro Pueblo (80 BLM acres). Management prescriptions within the RMP detail allowable uses within these special designation areas that may surround or overlap with site protection areas.

3.3.1 TRANSPORTATION

There are four main transportation arteries that either provide access to the sites or are adjacent to the protected areas. These routes include Interstate 25 (I-25), U.S. 84/285, NM 41, and NM 14. There are also informal dirt roads located on public land or private property that provide access to some of the sites and are used by the different site management agencies or landowners. In many cases these informal dirt access roads are not open to the public. Visitors who access the sites that are open to the public, such as those on BLM-managed surface, use designated roads, trails, and parking areas. These visitors currently include a wide range of user groups and transportation modes, including pedestrians, equestrians, bicyclists, and off-highway vehicular traffic.

Within the intrasite areas and greater site boundaries presented in the Plan, non-pedestrian uses are not considered compatible with the primary goal of site protection set forth in the Act or Plan. As such, only pedestrian travel is allowed on BLM-managed sites, and foot traffic should be limited to existing paths. The Plan recommends that only pedestrian use limited to existing paths be permitted within all of the protected sites. Exceptions such as vehicle use on existing roads to access sites for approved purposes would be acceptable.

3.3.2 TRADITIONAL USES

The social characteristics throughout the Galisteo Basin are similar to other small rural western communities in that they are strongly tied to traditional natural resource-based uses such as agriculture and ranching. Farming practices date back to the first inhabitants of the Galisteo region; this rich heritage has been passed down from each generation along with the land. While traditional uses may occur within the project area at or around various sites, most landowners have demonstrated cooperation with the spirit of the Act, which calls for protection of sites, and most ground- or site-disturbing traditional uses have already been discontinued or relocated to more favorable areas. Traditional uses based on Native American religious or cultural use is addressed in Section 3.2.

3.4 RECREATION

The Galisteo Basin holds some of the nation's most dramatic archaeological evidence of indigenous ways of life and historic contacts between indigenous peoples and European explorers and settlers (New Mexico Energy, Minerals and Natural Resources Department 2008). This historic significance paired with favorable weather and climatic conditions, plant resources, and wildlife has resulted in year-round outdoor recreation opportunities within the Galisteo Basin. The combination of these natural resources, a relative lack of development, abandoned historical mining shafts, and a backdrop of the Sangre de Cristo, Jemez, and Sandia mountains has created a viewshed with high aesthetic value for recreationists. Other geographical features,

such as the cerrillos that define the topography of the area, the Galisteo River, numerous arroyos, and the Rio Grande on the western edge of the Galisteo Basin all add important recreational value to the region.

Recreation in the Galisteo Basin includes, but is not limited to, the following activities: hiking, biking, equestrian, outdoor educational programs, night sky interpretation, fishing, wildlife viewing, opportunities for solitude, and the visiting of historic sites such as abandoned pueblos and mine sites (New Mexico State Parks 2006). These activities take place on both public and private lands. The dominant public land ownership in the Galisteo Basin, where recreation takes place, is New Mexico State Parks, Santa Fe County Open Space, and BLM lands.

Tourism destinations in the Galisteo Basin include Cerrillos Hills State Park, the Turquoise Trail National Scenic Byway with associated interpretive markers, and natural and archaeotourism via Santa Fe County and the site steward efforts of TAC at other cultural and historic sites of interest in the area.

Cerrillos Hills State Park

Cerrillos Hills State Park was transferred to state ownership in 2009. The park is a day-use area and currently features 5 miles of trails that are accessible year-round for hikers, horseback riders and mountain bikers, and interpretive staff, as well as public facilities including restrooms and parking (New Mexico State Parks 2012). The park provides access to numerous historic mine sites and includes a portion of the Turquoise Trail National Scenic Byway. The Cerrillos Hills State Park Visitor Center, opened in May 2012, is located in the village of Cerrillos, approximately 0.5 mile from the park.

Turquoise Trail National Scenic Byway

The Turquoise Trail National Scenic Byway is an alternate route to I-25 and links Santa Fe and Albuquerque. As NM 14 it passes through the historic mining towns of Golden, Madrid, and Cerrillos, as well as other areas.

Archaeotourism

As noted in the Plan (Section 6.2.1), TAC manages seven Act protection sites and provides interpretive and research opportunities, supervised and mostly by request. The historic mining towns of Golden, Cerrillos, and Madrid are also destinations for old west historic tourism.

3.4.1 BLM-MANAGED RECREATION

BLM lands in the Galisteo Basin provide an undeveloped and dispersed setting for recreation activities. According to the Taos RMP, there is a growing interest in La Cieneguilla Petroglyphs, which are of particular interest to school groups and archaeological groups. The petroglyphs are also visited for hiking and horseback riding (BLM 2012). As a result of the interest, The BLM Taos RMP (2012) established Special Recreation Management Areas (SRMAs), which include management of recreation near six Act protection sites located all or partially on BLM lands. The Cieneguilla SRMA includes five sites: La Cienega Pithouse Village, La Cienega Pueblo and Petroglyphs, La Cieneguilla Pueblo (Tzeguma), La Cieneguilla Petroglyphs Site, and Camino

Real Site. The Cerrillos Hills/Burnt Corn SRMA encompasses Burnt Corn Pueblo. Management for recreational use of these areas is contained within the Taos RMP (BLM 2012).

3.5 SOCIOECONOMICS

The scope of the analysis for socioeconomic resources includes a discussion of current demographic data relevant to the Galisteo Basin area and surrounding communities within Santa Fe County. Communities within Santa Fe County that could be impacted by the Proposed Action include Eldorado, Lamy, Los Cerrillos, Galisteo, and Madrid. Recent Census data from 2010 was used for the comparison between Santa Fe County, the State of New Mexico, and the aforementioned communities. There are two sites in Sandoval County and one site in Bernalillo County that were not included in the following analysis due to their remote nature and proximity to the urban center of Albuquerque, respectively.

In accordance with Executive Order 12898, “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,” the demographic characteristics of the Galisteo Basin were analyzed for any potential impacts to environmental justice from the Proposed Action (Table 3.1).

Table 3.1 summarizes the demographic characteristics for Santa Fe County and the five communities. The majority of the population living within Santa Fe County is white (76.2%) with the largest minority representation consisting of the Hispanic population (50.6%). As noted by the U.S. Census Bureau, Hispanic denotes an ethnic group which could be made up of any race. Within Galisteo, Eldorado, Lamy, and Madrid the white populations are proportionally greater than the minority populations. The exception is Los Cerrillos where the Hispanic population consists of 38.3% of the total population. Eldorado is the largest community with a total population of 6,130 and Madrid is the smallest community with a total population of 204 persons.

Table 3.1. Demographic Characteristics

	Santa Fe County	Galisteo	Eldorado	Lamy	Los Cerrillos	Madrid
Total population	144,170	253	6,130	218	321	204
White	109,800 (76.2%)	217 (85.8%)	5,113 (83.4%)	188 (86.2%)	182 (56.7%)	190 (93.1%)
Hispanic*	73,015 (50.6%)	79 (31.2%)	780 (12.7%)	55 (25.2%)	123 (38.3%)	7 (3.4%)
African American	1,239 (0.9%)	1 (0.4%)	2 (0%)	0	0	0
American Indian	4,486 (3.1%)	2 (0.8%)	10 (0.2%)	4 (1.8%)	3 (0.9%)	0
Two or more races	5,135 (3.6%)	8 (3.2%)	86 (0.7%)	7 (3.2%)	1 (0.3%)	6 (2.9%)

*Note: Hispanic denotes an ethnic group that could be represented by any race. Therefore, table totals do not equal 100%.

Source: U.S. Census (2010) DP-1 Demographic Profile Data.

Table 3.2 includes the 2010 five-year estimates from the U.S. Census American Community Survey (ACS) for income, employment, and poverty status within Santa Fe County and the five communities. The total percentage of the Santa Fe County population living under the poverty

level is estimated at 10% for 2010 with a 10.4% unemployment rate. In comparison, the percentage of the population living below the poverty level in Galisteo (31%) and Madrid (38.6%) are significantly higher than the other communities analyzed.

Table 3.2. Economic Characteristics

	Santa Fe County	Galisteo	Eldorado	Lamy	Los Cerrillos	Madrid
Total population	144,170	253	6,130	218	321	204
Percent below poverty level (all persons)	14,831 (10%)	78 (31%)	282 (4.6%)	24 (11.1%)	0	79 (38.6%)
Median household income	\$47,080	\$26,122	\$82,845	\$53,036	\$70,056	\$7,353
Employed civilian labor force	91,260 (63.3%)	242 (95.6%)	3,003 (61.4%)	147 (67%)	93 (3.5%)	65 (32%)
Unemployed civilian labor force	14,993 (10.4%)	12 (4.5%)	262 (5.4%)	0	0	0

Source: U.S. Census ACS (2010) five- and one-year estimates.

The median household income varies greatly between the five communities with Eldorado being the highest at \$82,845, Los Cerrillos the second highest at \$70,056, and Madrid being the lowest at \$7,353. The estimate for the median household income within Santa Fe County is \$47,080. The majority of the communities have high employment rates with the exception of Los Cerrillos and Madrid. This trend would directly correlate with the higher percentage of persons living below the poverty level in Madrid, as well as a lower median household income than the other communities.

With regard to regional employment, the traditional natural resource-based industries such as agriculture, ranching, and tourism are still vital to the semi-rural and rural way of life within the Galisteo Basin. Public lands comprise a large portion of the study area and provide scenic beauty, wildlife habitat, and recreational opportunities. However, according to the 2010 ACS one-year estimate for industries for the employed civilian population within Santa Fe County, the three largest employment sectors do not include the traditional agriculture and ranching industries. The three largest industries in the county include the following: educational services, health care, and social assistance at 12,996 persons; professional, scientific, management, administrative, and waste management services at 9,610 persons; and arts, entertainment, recreation, accommodation, and food services at 9,707 persons (U.S. Census Bureau ACS 2010). Agriculture, forestry, fishing and hunting, and mining employ just 1,106 persons in the county.

3.6 SOILS

The Galisteo Basin is one of the seven major physiographic provinces of Santa Fe County. This basin is located predominately in south-central Santa Fe County, but extends into portions of the adjoining San Miguel and Sandoval counties to the east and the west, respectively. The Galisteo Basin is composed mainly of shales and sandstones of the Cretaceous Age Mancos Shale and Dakota Sandstone formations (U.S. Department of Agriculture [USDA] 2004).

The cultural resources that the Act has sought to protect are being threatened by natural processes (PL 108-208). Of these natural occurrences, soil erosion is a key concern in the

greater Galisteo Basin because of the highly erodible nature of the soils in the area. The soil erodibility factor, Kw, quantifies soil detachment by runoff and raindrop impact, as applied to the whole soil. This erodibility factor is used to predict the long-term average soil loss from sheet and rill erosion under crop systems and conservation techniques. Experimentally measured Kw factors vary from 0.02 to 0.69. Soils with a higher Kw factor are more erodible than soils with a lower Kw factor. Of the 5,826 acres within the project area, 2,339 acres, or roughly 40% of the project area, occur on soil with a Kw factor of 0.28 or above, meaning they are moderately to highly erodible.

The Plan has identified that all of the Act-listed sites are impacted by erosion, and that six of them (Pueblo Galisteo, Pueblo San Marcos, Pueblo San Cristóbal, Chamisa Locita Pueblo, Lamy Junction, and San José de las Huertas) are suffering from severe erosion (see Attachment 1). The Plan goes on to say that this soil erosion can occur from natural processes, including sheet washing, arroyo downcutting, and eolian processes, as well as pedestrian and other modes of travel, such as bicycles, and off-highway vehicles. Livestock are also sources of soil erosion in the area.

Soils that constitute more than 3% of the project area are described in detail below. Those soils that make up less than 3% of the project area are presented in Appendix B but not formally discussed.

Bond family-Cerropelon-Rock outcrop complex, 5% to 50% slopes

Bond family-Cerropelon-Rock outcrop complex makes up 855.73 acres (13.34%) of the project area. Constituting the largest composition-percentage of the Bond family-Cerropelon-Rock outcrop complex, the parent material of the Bond family is slope alluvium derived from sandstone over residuum weathered from sandstone. The landform is of structural benches on hills. The upper profile (0–4 inches) of the Bond family is loamy fine sand and fine sandy loam. The parent material of Cerropelon slope alluvium derived from sandstone and shale over residuum weathered from shale. The upper profile (0–6 inches) of Cerropelon is very cobbly sandy loam and gravelly clay loam. Both the Bond family and Cerropelon component are well drained (USDA 2004).

Penistaja family loam, 3% to 8% slopes

Penistaja family loam makes up 355.67 acres (5.55%) of the project area. This well-drained soil is typically found within basins and toe slopes among fan aprons. The parent material for this loam is slope alluvium derived from sandstone and shale. The available water capacity is high. Permeability is medium, runoff is medium, and the hazard of erosion is moderate. Potential native vegetation includes blue grama (*Bouteloua gracilis*), black grama (*B. eriopoda*), galleta (*Pleuraphis* sp.), ring muhly (*Muhlenbergia torreyi*), and broom snakeweed (*Gutierrezia sarothrae*) (USDA 2004).

Musofare-Alesna family complex, 20% to 50% slopes

Musofare-Alesna family complex makes up 343.43 acres (5.36%) of the project area. Musofare series soils are typically found on mesas, cuestras, knolls, and intrusive dikes. These soils are formed in alluvium derived from diorite, andesite, shale, siltstone, and sandstone. Alesna soils a

typically found on mesas, cuestras, and volcanic cones. These soils are formed in alluvium, slope alluvium, and colluviums derived from basalt, shale, and sandstone. Both of these soils are well drained. The present vegetation is bottlebrush squirreltail (*Elymus elymoides*), black grama, blue grama, sideoats grama (*Bouteloua curtipendula*), alkali sacaton (*Sporobolus airoides*), galleta, cholla (*Cylindropuntia* sp.), juniper (*Juniperus* sp.), curlyleaf muhly (*Muhlenbergia setifolia*), and threeawn (*Aristida* sp.) (USDA 2004).

Penistaja family fine sandy loam, 1% to 3%

Penistaja family fine sandy loam makes up 332.59 acres (5.19%) of the project area. Penistaja family soils are typically found on alluvial flats. The parent material for this soil is slope alluvium derived from sandstone and shale. These soils are well drained and have a low runoff class. Potential native vegetation includes blue grama, galleta, black grama, ring muhly, and broom snakeweed (USDA 2004).

Rock outcrop-Skyvillage complex, 5% to 35% slopes

Rock outcrop-Skyvillage complex makes up 279.06 acres (4.35%) of the project area. Skyvillage soils are typically found on the summits, shoulders, and/or back slopes of ridges and/or structural benches. The parent material for this soil is residuum weathered from sandstone. These soils are well drained and have a high runoff class. Potential native vegetation includes sideoats grama, blue grama, black grama, New Mexico feathergrass (*Hesperostipa neomexicana*), true mountain mahogany (*Cercocarpus montanus*), and oneseed juniper (*Juniperus monosperma*) (USDA 2004).

Zia-Gullied land complex, 2% to 10% slopes

Zia-Gullied land complex up 277.81 acres (4.33%) of the project area. Zia-Gullied land complex soils are typically found along the back slopes and shoulders of low stream terraces. The parent material of this soil is alluvium derived from sandstones and shale. This soil is well drained and has a low runoff class. Potential native vegetation includes blue grama, black grama, galleta, ring muhly, and broom snakeweed (USDA 2004).

Espinos very gravelly coarse sandy loam, 5% to 40% slopes

Espinos very gravelly coarse sandy loam makes up 255.43 acres (3.98%) of the project area. Espinos soils are typically found on summits, shoulders, and/or back slopes of low hills. The parent material of this soil is slope alluvium derived from tuff breccias and monzonite over residuum weathered from tuff breccias. These soils are well drained and have a low runoff class. Potential native vegetation includes: blue grama, black grama, sideoats grama, New Mexico feathergrass, galleta, juniper, and twoneedle piñon (*Pinus edulis*) (USDA 2004).

Cumacho fine sandy loam, 2% to 8% slopes

Cumacho fine sandy loam makes up 247.00 acres (3.85%) of the project area. Cumacho soils are found on foot slopes and back slopes of pediment landforms. These soils are well drained and composed of eolian deposits and alluvium derived from sandstone and shale over residuum weathered from shale. The typical profile of the top 0 to 1 inch is fine sandy loam. These soils

are well drained and have a low runoff. Potential native vegetation includes blue grama, black grama, ring muhly, galleta, and broom snakeweed (USDA 2004).

Ildefonso-Rock outcrop-Rubble land complex, 30% to 70% slopes

Ildefonso-Rock outcrop-Rubble land complex makes up 223.46 acres (3.48%) of the project area. The Ildefonso series consists of deep, well-drained soils are of colluviums derived from basalt over residuum weathered from fanglomerate. Rock outcrops consist of exposed basalt bedrock, while the Rubble land consists of talus of irregularly shaped cobbles, stones, and boulders that are devoid of vegetation. Runoff is high and the slopes are between 30% and 70%. Potential native vegetation includes blue grama, black grama, galleta, ring muhly, and broom snakeweed (USDA 2004).

Penistaja family-Truehill complex, 3% to 15% slopes

Penistaja family-Truehill complex makes up 221.95 acres (3.46%) of the project area. Penistaja family soils are typically found on the foot slopes of fan aprons. Both the Penistaja family soils and Truehill soils are primarily of slope alluvium derived from sandstone, shale, and monzonite. Truehill soils, on the other hand, are more likely to be found on the summits of inset fans and fan aprons. Both soils are well drained and fall under the low to medium runoff class. Potential native vegetation includes blue grama, black grama, sideoats grama, New Mexico feathergrass, galleta, oneseed juniper, twoneedle piñon, ring muhly, and broom snakeweed (USDA 2004).

3.7 THREATENED, ENDANGERED, AND BLM SENSITIVE SPECIES

A variety of plant and wildlife species occur in the Galisteo Basin. Appendix C presents all species listed as threatened, endangered, proposed, candidate, or species of concern by either the U.S. Fish and Wildlife Service (USFWS) or the State of New Mexico for Santa Fe or Sandoval counties, and sensitive species listed by the BLM Taos Field Office. This list consists of 13 plant, three fish, 28 bird, one amphibian, 12 mammal, two mollusk, one insect, and one reptile species (New Mexico Administrative Code 2006; USFWS 2010; New Mexico Department of Game and Fish [NMDGF] 2012; V. Williams, BLM Taos Field Office, personal communication, March 17, 2011)

The New Mexico Rare Plant Technical Council (1999) website was reviewed for habitat data for all plant species to determine which species have potential to occur within the project area. The Biotic Information System of New Mexico (BISON-M) database (NMDGF 2012) was consulted to determine which wildlife species have potential to occur within the project area.

Of all listed species, 19 species listed by the USFWS, the State of New Mexico, or the BLM Taos Field Office have the potential to occur in the project area. The remaining listed species are not likely to occur within the project area because either the location is clearly beyond the known geographic or elevation range of these species or the project area does not contain vegetation or landscape features known to support these species, or both.

The listed species with potential to occur in the project area include Wright's nipple cactus (*Mammillaria wrightii*), Santa Fe milkvetch (*Astragalus feensis*), New Mexico spiny milkvetch

(*A.s kentrophyta* var. *neomexicana*), tufted evening primrose (*Oenothera caespitosa*), grama grass cactus (*Pediocactus papyracanthus*), western burrowing owl (*Athene cunicularia hypugaea*), loggerhead shrike (*Lanius ludovicianus*), ferruginous hawk (*Buteo regalis*), mountain plover (*Charadrius montanus*), gray vireo (*Vireo vicinior*), pale Townsend’s big-eared bat (*Corynorhinus townsendii pallenses*), spotted bat (*Euderma maculatum*), western small-footed myotis bat (*Myotis ciliolabrum*), long-eared myotis bat (*M. evotis evotis*), fringed myotis (*M. thysanodes thysanodes*), Yuma myotis bat (*M. yumanensis yumanensis*), big free-tailed bat (*Nyctinomops macrotis*), slate millipede (*Comanchelus chihuanus*), and Texas horned lizard (*Phrynosoma cornutum*).

Habitat requirements, potential for occurrence, and possible effects on these species are summarized in Appendix C.

3.8 VISUAL RESOURCES

Visual and scenic characteristics in the Galisteo Basin include rolling hills, sagebrush vegetation, plateaus and mesas, and striking land formations such as the Cerrillos Hills. While evidence of development and modern human presence is common, many of the Act site viewsheds retain a rural or undeveloped feel.

For lands managed by the BLM, a visual resource management (VRM) system has been established to inventory and manage visual resources on public lands. The primary objective of VRM is to maintain the existing visual quality of public lands and to protect unique and fragile visual resources. The VRM system uses four classes to describe the different degrees of modification allowed to the landscape. VRM classes are visual ratings that describe an area in terms of visual quality, viewer sensitivity to the landscape, and the distance in which a viewer could observe an area. Once an area has been assigned a VRM class, that class can be used to analyze and determine the visual impacts of proposed activities on the land, and to gauge the amount of disturbance an area can tolerate before it exceeds the visual objectives of its VRM class.

Table 3.3 presents the VRM classes assigned to sites located all or partially on BLM-managed surface.

Table 3.3. BLM-managed Site Areas and Corresponding VRM Classes

Site Name	Total Acres	Acres on BLM Surface	VRM Class
Burnt Corn Pueblo	341	159	II
Camino Real	1	1	II
El Crestón	797	2	II
Pueblo Galisteo and Pueblo Las Madres	265	69	II
La Cienega Pithouse Village	186	123	I & II
La Cienega Pueblo and Petroglyphs	96	93	I & II
La Cieneguilla Petroglyphs	460	454	I & II
Petroglyph Hill	137	8	II
Pueblo Blanco	1002	183	II

Site Name	Total Acres	Acres on BLM Surface	VRM Class
La Cieneguilla Pueblo (Tzeguma)	11	10	II
Pueblo San Lázaro	656	79	II

As depicted above, VRM classes assigned to Galisteo sites range from I to II with I being the most restrictive on development. The objectives of each class are summarized in the following points.

- Class I: Preserve the existing character of the landscape. The level of change should be very low and must not attract attention.
- Class II: Retain the existing character of the landscape. The level of change should be low and can be seen but should not attract the attention of the casual observer. (BLM 1986)

Figure 3.1 and Figure 3.2 provide representative photographs of the project area.



Figure 3.1. View from Lamy Junction.



Figure 3.2. View from Chamisa Locita Pueblo.

4.0 ENVIRONMENTAL IMPACTS

This section describes and analyzes the reasonably foreseeable impacts of the Proposed Action and the No Action alternative on the resources described in Section 3.0.

4.1 ALTERNATIVE A: PROPOSED ACTION

4.1.1 CULTURAL RESOURCES

The Proposed Action would result in beneficial impacts to cultural resources. The prescriptions for archaeological site protection, preservation, and interpretation set forth in the Plan would ensure that the cultural resources currently listed in the Act, and those recommended for addition to the Act would be more effectively managed in the future. The Proposed Action provides guidelines for cooperation with landowners, Native American pueblos and tribes, and other stakeholders. The boundary adjustments for listed sites recommended in the Plan would enhance resource protection and facilitate more comprehensive management in the future. The guidelines for research and public interpretation of the protection sites outlined in the Plan would result in broader dissemination of information regarding the archaeology and history of the Galisteo Basin and promote public appreciation of our shared heritage.

The Plan provides for the development of conservation easements for protection sites and portions thereof located on private lands. Public visitation is encouraged at eight of the protection sites (seven through guided tours only), but not encouraged at the remaining sites. The Plan does not recommend formal closure of any public lands under the provisions of 43 CFR 8364.1, but rather recommends that public access not be actively encouraged at any of the protection sites, with the exception of La Cieneguilla Petroglyphs, in order to help protect the sites from degradation.

The Plan includes developing educational and off-site interpretive materials and facilities to engage and educate the public without negatively impacting the resources themselves. Research themes and procedures for permitting of research are also provided, and the use of invasive or ground-disturbing research techniques is discouraged. Although site protection and preservation measures involving ground disturbance have the potential to adversely affect cultural resources, the Proposed Action provides guidance for minimizing impacts and concurrently recovering information about the listed sites.

In short, the Proposed Action is specifically designed to result in both short- and long-term beneficial impacts to cultural resources. The anticipated environmental consequences of implementing the Proposed Action are discussed below by site.

Lamy Junction Sites

The Lamy Junction Sites would experience beneficial impacts as a result of the Proposed Action. The Plan would allow for collaborative management of these sites by Santa Fe County and the BLM to continue. Implementation of the Proposed Action would provide a foundation for site-specific management to address potential threats posed to this resource by expansion and maintenance of the existing County and Eldorado Water and Sanitation District facilities,

looting, and erosion. The Proposed Action would expand the protected site area from 80 to 92 acres, thereby affording additional protection to the Lamy Junction Sites.

Burnt Corn Pueblo (LA 358 and LA 359)

Implementation of the Proposed Action would result in beneficial impacts to Burnt Corn Pueblo. The Plan would allow for collaborative management of the site by the BLM and the private landowner to continue. Implementation of the Proposed Action would provide a foundation for site-specific management to address potential threats posed to this resource by illicit artifact collection, looting, animal burrowing activity, and erosion. The Proposed Action would expand the protected site area from 110 to 341 acres, resulting in protection to ancillary features not currently protected under the Act.

Manzanares Pueblo (LA 1104 or LA 10607)

Manzanares Pueblo would experience beneficial impacts to cultural resources as a result of the Proposed Action. The Plan provides a foundation for collaborative management of this privately owned site through a cooperative agreement between the BLM and the private landowner. Implementation of the Proposed Action would establish guidance for site-specific management measures to address potential threats posed to this resource by residential development, erosion, animal burrowing activity, and illicit artifact collection. The Proposed Action would reduce the protected site area from 30 to 26 acres in order to focus protection on the post-assessment site boundary, which is considered to be more accurate than that established by the Act.

Chamisa Locita Pueblo (or Pueblo Wells) (LA 4)

The Proposed Action would beneficially impact Chamisa Locita Pueblo. The Plan would facilitate collaborative management of this privately owned site by the BLM and the private landowner. Implementation of the Proposed Action would provide a foundation for site-specific management to address potential threats posed to this resource by cattle grazing, associated ranching infrastructure, and erosion. The Proposed Action would expand the protected site area from 16 to 18 acres, thereby protecting additional acreage at the site.

Pueblo Largo (LA 183)

Pueblo Largo would experience beneficial impacts to cultural resources as a result of the Proposed Action. The Plan provides a foundation for collaborative management of this privately owned site through a cooperative agreement between the BLM and the private landowner. Implementation of the Proposed Action would establish guidance for site-specific management measures to address potential threats posed to this resource by erosion. The Proposed Action would more than double the protected site area from 60 to 128 acres, resulting in protection to ancillary features not currently protected under the Act.

Pueblo Shé (LA 239)

Implementation of the Proposed Action would result in beneficial impacts to Pueblo Shé. The Plan would allow for collaborative management of this site by the BLM and the private landowner to continue. Implementation of the Proposed Action would provide a foundation for site-specific management to address potential threats posed to this resource by looting, animal burrowing activity, grazing, and erosion. The Proposed Action would expand the protected site

area from 120 to 232 acres to more fully encapsulate and protect the cultural resources associated with this site.

Pueblo Colorado (LA 62)

Pueblo Colorado would experience beneficial impacts to cultural resources as a result of the Proposed Action. The Plan provides a foundation for collaborative management of this privately owned site through a cooperative agreement between the BLM and the private landowner. Implementation of the Proposed Action would establish guidance for site-specific management measures to address potential threats posed to this resource by pot hunting, grazing, animal burrowing activity, and erosion. The Proposed Action would more than double the protected site area from 120 to 370 acres, resulting in protection to features and constituents of the site not currently protected under the Act.

Pueblo Blanco (LA 40)

The Proposed Action would beneficially impact Pueblo Blanco. The Plan would facilitate collaborative management of this site by the New Mexico State Land Office, the BLM, TAC, and the other private landowners. Implementation of the Proposed Action would provide a foundation for site-specific management to address potential threats posed to this resource by erosion and looting. The Proposed Action would expand the protected site area from 878 to 1,002 acres, thereby protecting additional acreage at the site.

Pueblo San Cristóbal (LA 80)

Implementation of the Proposed Action would result in beneficial impacts to Pueblo San Cristóbal. The Plan would allow for collaborative management of this site by the BLM, the NMDOT, and private landowners to continue. Implementation of the Proposed Action would provide a foundation for site-specific management to address potential threats posed to this resource by erosion and irrigation. The Proposed Action would expand the protected site area from 520 to 546 acres to more fully encapsulate and protect the cultural resources associated with this site.

Pueblo Galisteo (LA 26) and Pueblo Las Madres (LA 25)

Pueblo Galisteo and Pueblo Las Madres would experience beneficial impacts as a result of the Proposed Action. The Plan would allow for collaborative management of these sites by the BLM, TAC, and the other private landowners to continue. Implementation of the Proposed Action would provide a foundation for site-specific management to address potential threats posed to this resource by access and erosion. The Proposed Action would double the protected site area from 133 to 265 acres, thereby affording additional protection to these sites.

Pueblo San Lázaro (LA 91 and LA 92)

The Proposed Action would beneficially impact Pueblo San Lázaro. The Plan would facilitate collaborative management of this site by the BLM and private landowners. Implementation of the Proposed Action would provide a foundation for site-specific management to address potential threats posed to this resource by erosion and excavation. The Proposed Action would expand the protected site area from 360 to 656 acres, thereby protecting additional acreage at the site.

Pueblo San Marcos (LA 98)

Implementation of the Proposed Action would result in beneficial impacts to Pueblo San Marcos. The Plan would allow for collaborative management of this site by the BLM, the State of New Mexico, TAC, and private landowners to continue. Implementation of the Proposed Action would provide a foundation for site-specific management to address potential threats posed to this resource by erosion and animal burrowing activity. The Proposed Action would expand the protected site area from 152 to 189 acres to more fully encapsulate and protect the cultural resources associated with this site.

Petroglyph Hill (LA 148959)

Petroglyph Hill would experience beneficial impacts to cultural resources as a result of the Proposed Action. The Plan provides a foundation for collaborative management of this site through a cooperative agreement between the BLM and Santa Fe County. Implementation of the Proposed Action would establish guidance for site-specific management measures to address potential threats posed to this resource by pedestrian access and vandalism. The Proposed Action would slightly expand the protected site area from 130 to 137 acres, resulting in protection to portions of the site not currently protected under the Act.

El Crestón (LA 76065)

The Proposed Action would beneficially impact El Crestón. The Plan would facilitate collaborative management of this site by the State of New Mexico, the BLM, and private landowners. Implementation of the Proposed Action would provide a foundation for site-specific management to address potential threats posed to this resource by pedestrian access, erosion, and vandalism. The Proposed Action would expand the protected site area from 764 to 797 acres, thereby protecting additional acreage at the site.

La Cienega Pithouse Village (LA 166)

Implementation of the Proposed Action would result in beneficial impacts to La Cienega Pithouse Village. The Plan would allow for collaborative management of this site by the BLM and private landowners to continue. Implementation of the Proposed Action would provide a foundation for site-specific management to address potential threats posed to this resource by vandalism and animal burrowing activity. The Proposed Action would expand the protected site area from 179 to 186 acres to more fully encapsulate and protect the cultural resources associated with this site.

Upper Arroyo Hondo Pueblo (LA 76)

Upper Arroyo Hondo Pueblo would experience beneficial impacts to cultural resources as a result of the Proposed Action. The Plan provides a foundation for collaborative management of this site through cooperative agreements between the BLM and various private landowners. Implementation of the Proposed Action would establish guidance for site-specific management measures to address the threats posed to this resource by erosion. The Proposed Action would slightly expand the protected site area from 12 to 14 acres, resulting in protection to portions of the site not currently protected under the Act.

Lower Arroyo Hondo Pueblo (LA 12)

The Proposed Action would beneficially impact Lower Arroyo Hondo Pueblo. The Plan would facilitate collaborative management of this site by the BLM and TAC. Implementation of the Proposed Action would provide a foundation for site-specific management to address potential threats posed to this resource by animal burrowing, erosion, and residential development. The Proposed Action would reduce the protected site area from 21 to 16 acres in order to focus protection on the post-assessment site boundary, which is considered to be more accurate than that established by the Act.

La Cienega Pueblo and Petroglyphs (LA 3)

Implementation of the Proposed Action would result in beneficial impacts to La Cienega Pueblo and Petroglyphs site. The Plan would allow for collaborative management of this site by the BLM and private landowner to continue. Implementation of the Proposed Action would provide a foundation for site-specific management to address potential threats posed to this resource by looting, animal burrowing activity, dumping, vandalism, and access. The Proposed Action would reduce the protected site area from 126 to 96 acres in order to focus protection on the post-assessment site boundary, which is considered to be more accurate than that established by the Act.

La Cieneguilla Pueblo (Tzeguma) (LA 16)

La Cieneguilla Pueblo would experience beneficial impacts to cultural resources as a result of the Proposed Action. The Plan provides a foundation for collaborative management of this site through cooperative agreements between the BLM and various private landowners. Implementation of the Proposed Action would establish guidance for site-specific management measures to address the threats posed to this resource by erosion, uncontrolled excavation, residential development, and vandalism. The Proposed Action would not change the site area protected by the Act (11 acres).

La Cieneguilla Petroglyphs (LA 9064)

The Proposed Action would beneficially impact the La Cieneguilla Petroglyphs. The Plan would facilitate collaborative management of this site by the BLM and Santa Fe County. Implementation of the Proposed Action would provide a foundation for site-specific management to address potential threats posed to this resource by vandalism and theft. The Proposed Action would reduce the protected site area from 531 to 460 acres in order to focus protection on the post-assessment site boundary, which is considered to be more accurate than that established by the Act.

Rote Chert Quarry (LA 65206)

Implementation of the Proposed Action would result in no net impacts to the Rote Chert Quarry, as it would be deleted from the list of sites protected under the Act. The BLM would no longer be involved in the management of this site. However, the site is owned by TAC and is not currently threatened, so adverse impacts are not anticipated to result from the Proposed Action.

Camino Real (LA 16767)

The Camino Real site would experience beneficial impacts to cultural resources as a result of the Proposed Action. The Plan provides a foundation for collaborative management of this site through cooperative agreements between the BLM and TAC. Implementation of the Proposed Action would establish guidance for site-specific management measures to address the threats posed to this resource by erosion and dumping. The Proposed Action would not change the site area protected by the Act (1 acre). The Camino Real site is surrounded by the La Cieneguilla Petroglyphs site and the two sites are combined for the purposes of the Act.

Espinaso Ridge Pueblo (LA 278)

The Proposed Action would beneficially impact Espinaso Ridge Pueblo. The Plan would facilitate collaborative management of this privately owned site by the BLM and private landowners. Implementation of the Proposed Action would provide a foundation for site-specific management to address potential threats posed to this resource by erosion, animal burrowing, and development. The Proposed Action would expand the protected site area from 160 to 167 acres, resulting in protection to portions of the site not currently protected under the Act.

Paa-ko Pueblo (or San Pedro Pueblo) (LA 162)

Implementation of the Proposed Action would result in beneficial impacts to Paa-ko Pueblo. The Plan would allow for collaborative management of this site by the BLM, the University of New Mexico, the NMDOT, and the private landowners to continue. Implementation of the Proposed Action would provide a foundation for site-specific management to address potential threats posed to this resource by illicit artifact collection, looting, animal burrowing activity, construction, and residential development. The Proposed Action would expand the protected site area from 29 to 32 acres to more fully encapsulate and protect the cultural resources associated with this site.

San José de las Huertas (LA 25674)

San José de las Huertas would experience beneficial impacts to cultural resources as a result of the Proposed Action. The Plan provides a foundation for collaborative management of this site through cooperative agreements between the BLM, TAC, and the other private landowners. Implementation of the Proposed Action would establish guidance for site-specific management measures to address the threats posed to this resource by erosion, residential development, and linear infrastructure construction. The Proposed Action would slightly expand the protected site area from 44 to 52 acres, resulting in protection to portions of the site not currently protected under the Act.

4.1.2 TRADITIONAL CULTURAL PROPERTIES

The Proposed Action would not directly impact any land near a TCP, as no formally designated TCPs have been identified in the vicinity. The Proposed Action is not known to physically threaten any TCPs, prevent access to sacred sites, prevent the possession of sacred objects, or interfere or otherwise hinder the performance of traditional ceremonies and rituals. On the contrary, the Proposed Action promotes collaboration and communication between tribal entities, government agencies, private landowners, and other stakeholders.

The Proposed Action provides a framework for increased communication and collaboration between the BLM, landowners, and Native American entities, as well as the protection and preservation of the listed sites. Implementation of the Proposed Action would result in a beneficial impact to TCPs, as protective measures proposed in the Plan could lead to formal designation of some of the protection sites as TCPs in the future. Although no TCPs have been identified in the project area, any heretofore unidentified effect of the Proposed Action to Native American religious concerns is expected to be negligible in both the short and long term, as the Plan provides a framework for ongoing consultation with tribes and pueblos affiliated with the Galisteo Basin.

4.1.3 LAND USE

The Plan outlines BLM strategies for obtaining cooperative agreements from landowners where necessary and appropriate (see the Plan, Section 4.1.1.2). The majority of the protection sites are located on private lands. Even most of those sites that include portions of public land administered by the BLM contain private lands. The cooperative agreements that the BLM have and will negotiate with private landowners would lay the foundation for future management efforts for the sites collectively. Private landowners may wish to continue certain activities, such as the use of existing roads or grazing activities within the protection sites or portions of protection sites that they own. The BLM will seek to establish agreements with terms that afford protections for cultural resources that are amenable to each private landowner. Although the overall response from private landowners to the BLM with regard to site protection has been positive and cooperative, it is possible that a cooperative agreement may not be reached for one or more protection sites. In this case, negotiations will continue indefinitely, as deemed appropriate by the BLM, with the site(s) in question remaining protected under the Act. Protection under the Act offers several benefits to private landowners who own all or portions of a currently listed protection site or a site considered for addition to the Act. Private landowners may benefit from proposed protection measures, including but not limited to fencing, stabilization, pest control, and erosion control efforts at protection sites on their land.

For sites managed by the BLM, access will be limited to pedestrian traffic and site access may require a permit, a guide, or be limited by seasonal restrictions. The details of site access will vary by site and would be detailed in future site-specific management plans.

4.1.3.1 TRANSPORTATION

For BLM-managed sites, transportation within site boundaries would be restricted to foot traffic only. Foot traffic would be limited to specific trails to avoid undue disturbance and excessive erosion resulting from unrestricted pedestrian access. If alternative modes of transportation are

permitted at all within a site boundary, they would be clearly limited to certain portions of the site. Exceptions may be made on a case-by-case basis, such as for vehicular access to sites by approved personnel for the purposes of research, interpretation, or implementation of fencing, erosions, or pest control measures. For BLM-managed lands, the allowable transportation methods would be consistent with the travel management prescriptions in the Taos RMP (BLM 2012).

The Plan makes the same recommendation for transportation and access to sites outside BLM jurisdiction. The recommendation is to eliminate motorized vehicle use within sites and in most cases limit access to pedestrian foot traffic only, particularly within intrasite features. No major access routes currently open to the public, either paved or unpaved, would be impacted by the Proposed Action.

4.1.3.2 TRADITIONAL USES

The erosion control and fencing management recommendations have the potential to impact traditional uses that may occur within or adjacent to the protected sites. Managing agencies and private landowners may limit uses within site boundaries to protect sites, and traditional uses of site areas on private lands such as farming and ranching may not continue to occur. This impact would be minimal, as these traditional uses could continue to occur outside of site boundaries, at the discretion of site managers and landowners. Traditional uses would be addressed on a site-specific level through future site-specific management plans.

4.1.4 RECREATION

The primary goal of the Act and the Plan is to preserve and protect the Act sites. This entails limiting visitor use and not allowing for recreational activities at or around most of the sites. In general, the Plan recommends that activity within site boundaries be restricted to foot traffic on designated paths only. In some cases other forms of traffic may be used to access the sites. Site-specific management plans to be completed in the future would address any alternative modes or routes available for recreation. If alternative modes of transportation (e.g., bicycle, equestrian, vehicle) are permitted within a site boundary, they would be limited to designated routes within certain portions of the site. Since these recreational activities would be very limited within site boundaries, some impact to availability of these recreational activities would occur. Each agency or landowner responsible for individual site management would decide which activities to allow at certain sites and when to allow them.

Implementation of the Plan may indirectly impact visitation to the Cerrillos Hills State Park, as increased interest in the park's visitor's center could be generated because the visitor's center provides a place for the public to learn about Galisteo Basin archaeology. Similarly, increased interest may be directed toward the historic destinations along the Turquoise Trail National Scenic Byway for visitors looking for archaeotourism area destinations. Archaeotourism destinations in general within the basin as a whole may experience an increase in visitors looking for Galisteo Basin site interpretation.

The Plan does include recommendations for developing educational and off-site interpretive materials and facilities to engage and educate the public without degrading the resources themselves (see Attachment 1). While the Plan does allow for supervised public visitation, it is

for interpretive purposes only, such as educational visitation and scientific research. Limiting visitor use in order to protect sites is most practical for the sites on private, county, and state lands, as well as the sites managed by TAC. See the following discussion for impacts to public lands.

4.1.4.1 BLM-MANAGED RECREATION

The Plan does not recommend formal closure of any public lands under the provisions of 43 CFR 8364.1, but rather recommends that public access not be actively encouraged at any of the protection sites, with the exception of La Cieneguilla Petroglyphs, in order to help protect the sites from degradation. Recreational opportunities and impacts from recreation at La Cieneguilla Petroglyphs is discussed and analyzed in the Taos RMP (BLM 2012) and will not be repeated herein.

An indirect impact of implementation of the Plan is that as most Act sites are not available to the public, increased interest may be directed toward the sites on BLM public lands, which are not prohibited from access. In order to satisfy visitors eager for information regarding Act sites, the Plan encourages off-site interpretation. One example of this is the visitor center at Cerrillos Hills State Park, which could be a possible interpretive “gateway” to the rich archaeological resources of the Galisteo Basin. The Plan also calls for other interpretive possibilities such as additional kiosks or signage to help satisfy public interest in the sites. Please see Section 6.5 of the Plan for a full summary of potential interpretive efforts.

4.1.5 SOCIOECONOMICS

There are potential beneficial impacts to socioeconomics from the Proposed Action that could result in an increase in regional and local revenues from archaeotourism or employment opportunities associated with site management and stewardship. These potential economic multipliers would be a result of increased levels of visitors frequenting local restaurants and hotels for lodging and incidentals. These economic multipliers would be low. In addition, areas withdrawn from development (open space) can indirectly contribute to increased values of land adjacent to or in view of the open space. Any potential property value multipliers would also be low.

It was determined that minority or low-income populations located within the project vicinity would not experience adverse impacts from the Proposed Action. In addition, these minority populations would not be impacted disproportionately in relation to the majority populations. There would be no impacts to minority populations from the Proposed Action since any management recommendations would apply equally to all populations, regardless of minority status. The potential economic multipliers impacting local communities from the Proposed Action would also benefit the communities of Galisteo and Madrid, which have significantly higher percentages of persons living below the poverty level than the other communities analyzed.

4.1.6 SOILS

Implementation of the Proposed Action would have a beneficial impact on soils because the Plan recommends implementing several erosion control measures at highly erodible areas of the sites. Erosion is one of the threats identified in the Plan that is compromising the integrity of many of

the Act sites. Pueblo Galisteo, Pueblo San Marcos, Pueblo San Cristóbal, Chamisa Locita Pueblo, Lamy Junction, and San José de las Huertas are identified as suffering from severe erosion. The Plan describes sheet washing, arroyo downcutting, eolian processes, and travel activities, such as foot travel, bicycles, and off-highway vehicles, as the cause of much of the erosion. Cattle and livestock are also sources of soil erosion in the project area.

Site protection measures, including access restriction, fencing, and erosion control would reduce the erosion of soils within the project area. Access restriction may be implemented in several methods. The BLM has restricted livestock access on BLM-managed surface. Seasonal restrictions would prevent pedestrian and livestock access during winter and spring when foot traffic is considered more harmful due to wet soil conditions. Year-round restrictions using permanent fencing can be used to permanently limit entry to the site to protect soils. In general activity and transportation within site boundaries would be restricted to foot traffic only. Foot traffic should be limited to specific trails to avoid undue disturbance and excessive erosion resulting from unrestricted foot access. Fencing would reduce foot traffic by cattle, other livestock, and people. It would also prevent soil loss in the project area due to bicycles and off-highway vehicles. Erosion control measures including seeding, gabions, sand fences, mulch, berms, and other techniques may also benefit soil resources by reducing erosion.

4.1.7 THREATENED, ENDANGERED, AND SENSITIVE SPECIES

There are 19 listed species with potential to occur in the project area (Appendix C). These include five plant species, five birds, seven bats, one insect, and one reptile. The Proposed Action is not likely to adversely affect any of the 19 species. Several site protection measures are discussed in the Plan, and these may affect listed species in different ways. The potential effects of fencing, erosion control, and pest control are discussed below. All other site protection measures are not expected to affect listed species.

Fencing

At sites where fencing is used as a site protection measure, additional protection would be provided to all listed plant species. Pedestrian and livestock traffic contribute to erosion and resource degradation through creation of “social trails” and topsoil disturbance, which adversely affect vegetation. Public access would not be encouraged at the majority of the designated sites, and fencing is a good measure for limiting unwanted human access. Therefore, the five listed plant species would benefit from this site protection measure. Fencing may also benefit some listed wildlife species. The loggerhead shrike uses fences to impale its prey. Additional fencing would provide additional habitat for the loggerhead shrike.

Erosion Control

Erosion control measures such as hydroseeding, or placing straw wattles or other materials intended to slow the movement of water and sediment atop the ground surface, may benefit plant species by conserving topsoil and the seed bank contained therein. However, hydroseeding may introduce plants that can out-compete sensitive plant species. The use of straw wattles and straw bales can sometimes result in the introduction of invasive species that may out-compete sensitive plant species.

Pest Control

One measure of pest control outlined in the Plan includes enhancement of habitat features of natural predators on BLM lands. Such measures could include construction of raptor stands to encourage avian predation on rodents at affected sites. Pest control measures may benefit the ferruginous hawk (*Buteo regalis*).

4.1.8 VISUAL RESOURCES

The Proposed Action would largely impact scenic values in the Galisteo Basin in a beneficial way. Protection and preservation measures included in the Plan provide for not just the physical extremities of the sites themselves but also include extensions of boundary areas around many sites. These boundary adjustments allow for protection of integrity of setting (which refers to the level of disturbance to the physical environment surrounding a site) and integrity of feeling (which refers to a site's expression of the aesthetic or historic sense of a particular period of time). Where possible and where the cooperating agencies can control it, development would not be permitted inside these boundaries, creating a positive impact to visual and scenic values from each site, as well as for the landscape of the Galisteo Basin in general.

The BLM Taos Field Office conducted a visual inventory as part of its recent RMP revision process (BLM 2012). The VRM classes for BLM-managed lands in the vicinity of Act sites area are VRM I and II.

The Proposed Action would not change the characteristics of the landscape because measures would be limited to fencing and ground treatments, with no buildings or other large features proposed. Some visible site protection measures are proposed as part of the Plan, including partial fencing, erosion control, stabilization of stone masonry, hydroseeding, and pest control. While these activities may be visible to the casual observer, many would be temporary and none of these proposed activities would compromise the existing character of the landscape. Protective fencing may be seen from short distances; however, the characteristics of the larger viewshed would not be altered and these modifications to the landscape would be considered very low. Therefore, the Proposed Action is consistent with VRM Class I objectives (as well as objectives for the less restrictive VRM Class II).

4.2 ALTERNATIVE B: NO ACTION

Under the No Action alternative, the BLM would not implement the proposed Plan. The BLM would continue current management on the sites or portions of sites on public land and would follow the management direction presented in the BLM Taos RMP (2012). If the Plan is not implemented, the BLM would not be in compliance with the Act.

4.2.1 CULTURAL RESOURCES

Under the No Action alternative there would be no beneficial impact to the Act sites as a result of the protection and preservation measures described in the Plan. The current threats to site integrity posed by erosion, looting, animal burrowing, development, and other factors would not be addressed in a systematic and collaborative manner at all of the currently listed protection sites. Under the No Action alternative, the Rote Chert Quarry would remain protected under the

Act and would have no change in status. The No Action alternative would not have the beneficial impact of adding two new sites to the list of sites protected under the Act. In addition, future opportunities for research and collaborative management of listed sites would not be provided for. The BLM would not be in compliance with the Act, which stipulates protection for the important cultural resources of the Galisteo Basin. Although current site stewards would continue current management of sites according to Act guidelines, without a comprehensive management plan, preservation measures could easily lapse when and if funding for management is not available.

4.2.2 TRADITIONAL CULTURAL PROPERTIES

Although no formally designated TCPs are known to exist within or adjacent to the proposed project areas, many of the protection sites have values that would render them potentially eligible as TCPs. Under the No Action alternative there would be no beneficial impact to TCPs because, if the Proposed Action is not implemented, the framework for increased communication and collaboration between BLM, landowners, and Native American entities, as well as the protection and preservation of the listed sites provided by the Plan, would not exist.

4.2.3 LAND USE

If the Proposed Action is not implemented, the current site protections outlined in the Act would still be maintained, including the withdrawal of public lands within the protection sites from mineral entry. The No Action alternative would consist of no boundary adjustments, which would ultimately have a detrimental impact on the protected sites.

4.2.4 RECREATION

Under the No Action alternative there would be no change to recreational opportunities in the project area. Recreational use would continue as is current and specific types of use such as horseback riding, bicycling, and off-highway vehicle use would not change. Future archaeotourism opportunities proposed through off-site interpretation plans would not be available to the public.

4.2.5 SOCIOECONOMICS

If the Proposed Action is not implemented, the current site protections outlined in the Act would still be maintained. Implementation of the No Action alternative would not cause the communities within the Galisteo Basin to realize any additional impacts beyond existing conditions, including any of the potential beneficial impacts from the Proposed Action.

4.2.6 SOILS

Under the No Action alternative erosion prevention measures would not be implemented, and soils in the project area would continue to erode away at the current rate. Beneficial impacts described in Section 4.1.6 would not occur.

4.2.7 THREATENED, ENDANGERED, AND SENSITIVE SPECIES

Under the No Action alternative, no protection or preservation measures would be implemented because the Proposed Action would not be approved. Beneficial impacts to special-status species described in Section 4.1.7 resulting from fencing, erosion control, and pest control measures would not be realized.

4.2.8 VISUAL RESOURCES

Under the No Action alternative visible protection measures such as fencing, hydroseeding, and stabilization would not be implemented and no visible modification to the landscape would be made. While the sites as delineated in the Act would still be protected by the Act, if the protection and preservation measures proposed in the Plan are not approved, it is likely that visible remnants of the protection sites might continue to disappear. This could create an adverse impact to the landscape over time, as the remnants of historic and prehistoric occupation would continue to deteriorate. As some of these sites are a unique and integral part of the landscape (particularly the visible pueblos and petroglyphs), losing these visible remains of past human occupation would be an adverse impact to the landscape itself. Beneficial impacts described in Section 4.1.8 would not occur.

4.3 CUMULATIVE EFFECTS ANALYSIS

A cumulative impact, as defined in 40 CFR 1508.7, is the impact on the environment that 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.

4.3.1 CUMULATIVE ANALYSIS AREA

The cumulative impact area defined for this analysis is the Galisteo Basin and includes any related or unrelated projects that might impact the protection sites as delineated in the Plan or areas around and in between the protection sites. This area of analysis was delineated based on a geographic area encompassing the protection sites.

4.3.2 PAST AND PRESENT ACTIONS

The past and present actions can be defined as all actions contributing to the current conditions of the Act sites. Some past actions were preservation minded and included the conservation efforts of TAC, the BLM, the State of New Mexico, and Santa Fe County to protect the Act sites, both prior to the Act and since the Act came to be in 2004. Without the efforts of these entities as well as private landowners, the condition of the sites may have deteriorated further than they already have. The affected environment analysis in this EA includes a complete description of the current conditions of the protection sites. In addition, other past and present actions have contributed to the deterioration of Act sites, including unrestricted recreation, historic excavations, and historic grazing.

4.3.3 REASONABLY FORESEEABLE FUTURE ACTIONS

It is important in this case to differentiate between landscape planning projects with preservation components, such as the Taos RMP and Santa Fe County Oil and Gas Ordinance 2008-19, and development projects with potential impacts on the ground. While impacts may be cumulative, the impacts have a different net outcome, resulting either in overall preservation or overall net disturbance.

Taos Resource Management Plan (2012)

The Taos RMP is a landscape level plan that considers land use planning decisions for public lands and resources administered by the BLM in northeastern New Mexico. The planning area, which consists of lands within Colfax, Harding, Los Alamos, Mora, San Miguel, Santa Fe, Taos, and Union counties and the eastern portion of Rio Arriba County, includes approximately 595,100 surface acres and 1,520,000 acres of Federal minerals administered by the Taos Field Office. Applicable management from the RMP references the Act, and in some cases overlaps with management from the Plan, but is consistent in the goals and objectives stated in the Plan, which are to protect and preserve the Galisteo Basin site resources for future generations. The Taos RMP calls for the preparation of an ACEC management plan for the extended La Cienega ACEC, including newly acquired lands (Rael property), which contains historic and prehistoric cultural sites.

Camel Tracks Road Rehabilitation and Fencing Project

The Taos Field Office is proposing to rehabilitate a dirt road in the La Cienega ACEC on the La Bajada Mesa near Santa Fe, NM. The project also identifies approximately 3.5 miles of fencing adjacent to the roadway to limit both on and off road travel and the subsequent illegal dumping associated with the open access.

Environmental Assessment for the Cerrillos Hills State Park Visitor's Center

The Cerrillos Hills State Park Visitor's Center was built in 2011–2012 and opened to the public in May 2012. This center will potentially be the “gateway” to the Galisteo Basin protection Act sites, and provide off-site interpretive opportunities for visitors and researchers alike.

Santa Fe County Open Space Plan (Reasonably Foreseeable)

This plan is expected in the coming years and will provide landscape-level policy and management for the Santa Fe County's open space program. Specifics are not known at this time, but it is likely the open space plan will incorporate the Plan by reference. The BLM has executed a Memorandum of Understanding with Santa Fe County that states the two agencies' common goal of implementing the Act to protect, preserve, and interpret the Galisteo Basin protection sites.

Santa Fe County Oil and Gas Drilling Ordinance 2008-19

The Santa Fe County oil and gas drilling ordinance is a county land use and zoning document and addresses oil and gas exploration, drilling, production, transportation, abandonment, and remediation. This ordinance impacts some of the same resources as the Proposed Action, including land use, visual resources, cultural resources, recreation, and socioeconomics. Cultural

resource surveys ahead of oil and gas development could lead to discoveries of more sites potentially added to the Plan and Act. Most of the impacts from the ordinance would not overlap with impacts from the Proposed Action, as the Plan is generally confined to the sites and surrounding area up to the proposed boundary adjustments, while the ordinance would apply to lands outside site boundaries. The ordinance references the Act and impacts to cultural resources.

New Mexico Highway 41 Corridor Study

The NMDOT has proposed to improve NM 41 between Clark Hill, located south of Galisteo, and U.S. 285. This 6-mile length of the highway would be improved to discourage speeding and accommodate bicycle travel, while minimizing the change to the highway within the Galisteo Basin. The project aims to maintain compatibility with the historic character of the area. The design of the rehabilitated highway would be based on a 55-mile-per-hour speed limit. The existing centerline would be maintained and 6-foot shoulders would be added for bicyclists and other safety precautions. This project would provide recreational opportunities for bicycling.

4.3.4 CUMULATIVE EFFECTS

4.3.4.1 CULTURAL RESOURCES

The geographic scope of analysis for cumulative impacts to cultural resources is the entire Galisteo Basin. The project area, comprising the various protection sites, is currently under the management of several different agencies as well as TAC and other private landowners. In addition, the surrounding areas and areas in between sites are also managed by a variety of parties. Prior to the Act and also in the years since the Act was passed in 2004, these parties have worked collaboratively to put protection measures in place and cooperate to follow the edict of the Act. Landscape-level planning efforts of the state, Santa Fe County, and the BLM combined with approval of the Plan would cumulatively impact the sites of the Galisteo Basin in a long-term and beneficial way by preserving the unique characteristics of the sites for generations to come.

Other types of actions in the Galisteo Basin, such as those related to development of residential housing and linear infrastructure, have the potential to result in both short- and long-term negative impacts to cultural resources. Development can result in both direct and indirect negative impacts to cultural resources. Direct impacts include the damage or destruction of sites or portions of sites through ground-disturbing activities. Indirect impacts can include the degradation of a cultural resource's integrity of setting, feeling, and association, as well as illicit artifact collection associated with increased human activity in and around archaeological sites. The Proposed Action would result in short- and long-term beneficial impacts to cultural resources, thereby offsetting the negative cumulative effect to cultural resources expected to result from development in the Galisteo Basin.

The No Action alternative combined with foreseeable actions would potentially impact the sites in a negative way. If the Plan is not implemented, other developmental projects may be implemented instead. Combined with inevitable development of areas near sites, this alternative would contribute to a cumulative detrimental impact to sites in the short and long term.

4.3.4.2 TRADITIONAL CULTURAL PROPERTIES

No formally designated TCPs were identified during the course of the ethnographic study and scoping. Therefore, the Proposed Action and No Action alternative would not contribute to past, present, or foreseeable impacts to TCPs.

4.3.4.3 LAND USE

The Proposed Action impacts the site areas in a number of ways; access is limited, privately owned lands are incorporated into Federal agreements with permission of the landowners, minerals are withdrawn, and traditional uses and transportation are limited or recommended for limitation. At this time, no other past, present, or foreseeable actions contribute to this type of impact to land uses in the project area. While the Plan will have impacts to uses in the site areas, the other actions considered to be cumulative generally have the opposite impact in the surrounding areas and promote uses rather than limit them. The No Action alternative would not discourage development near site areas in the way that the Proposed Action would. Cumulatively with other developmental actions in the foreseeable future, adoption of the No Action alternative would have a negative overall impact in the long term.

4.3.4.4 RECREATION

It is anticipated that future opportunities for interpretation of sites will be developed in cooperation with site managers. The Cerrillos Hills State Park Visitor's Center is an example of this type of organized effort to provide the public with learning opportunities via off-site interpretation. These efforts combined with the BLM-managed interpretive opportunities would provide archaeotourism destinations in the Galisteo Basin, without actually directing traffic to the sites. The opening of the Visitor's Center would contribute positively to recreation because of the increased opportunities for archaeotourism, and the information available there could direct users toward recreation opportunities in the area. No cumulative impact is anticipated to result from the No Action alternative.

4.3.4.5 SOCIOECONOMICS

The Proposed Action would have minor impact to socioeconomics of the area. Local communities may benefit from increased traffic associated with archaeotourism and interpretive opportunities. Any increased attention to the Galisteo Basin cultural resources can only benefit the local communities when handled in a way that does not negatively impact sites. The Cerrillos Hills State Park Visitor's Center may provide increased employment opportunities, but these beneficial impacts would not likely be substantial enough to quantify. The No Action alternative would not result in a cumulative impact when considered in addition to the past, present, and reasonably foreseeable actions.

4.3.4.6 SOILS

The Proposed Action together with other foreseeable preservation actions contained in the RMP, would have a beneficial impact to soils via erosion controls and stabilization measures proposed in the Plan, and restrictions on access prescribed in the RMP. However, the No Action alternative would continue to jeopardize the soils in the project site areas. Together with other past, present, and foreseeable actions, the No Action alternative would contribute to continued and cumulative degeneration of the integrity of the sites.

4.3.4.7 THREATENED, ENDANGERED, AND SENSITIVE SPECIES

The Proposed Action would result in minor beneficial impacts to some sensitive species as a result of fencing and erosion and pest control measures. Some beneficial cumulative impacts may occur as a result of the Santa Fe County Open Space Plan and the Santa Fe County Oil and Gas Ordinance's restrictions on development. These beneficial impacts would not be realized under the No Action alternative, but no cumulative impacts are expected to occur to sensitive species as a result of the other reasonably foreseeable actions.

4.3.4.8 VISUAL RESOURCES

The Proposed Action would have a minor impact to visual values of the site areas and surrounding lands through visible changes such as fencing and erosion controls. In addition, a positive impact to the visual characteristics of the landscape could occur due to preservation of important cultural values. The Camel Tracks Road Rehabilitation and Fencing Project includes some fencing plans which could impact the scenic characteristics of the Galisteo Basin Area. The project included a four wire wildlife fence along the entire road alignment to help control vehicle access to minimize illegal dumping, looting of cultural resources, and off road use. Preventing these activities is a beneficial impact to visual resources from fencing. No cumulative impact to visual resources is anticipated as a result of the No Action alternative.

5.0 CONSULTATION AND COORDINATION

5.1 SUMMARY OF CONSULTATION AND COORDINATION

The BLM has approached each of the private landowners with designated sites, or portions thereof, located on their property in an effort to establish formal cooperative agreements with all of them. To date, the BLM has established cooperative agreements with two landowners, including TAC. The cooperative agreements provide coverage for eight of the 24 sites. Additional cooperative agreements are currently under review by landowners and their attorneys at present and would likely be executed in the near future.

Pursuant to Section 106 of the National Historic Preservation Act, the BLM consulted with 24 pueblos and tribes with regard to the development of the Plan. Letters were sent to each of the following groups in November 2009 and April 2010:

- Apache Tribe of Oklahoma
- Hopi Tribal Council
- Mescalero Apache Tribe
- Wichita and Affiliated Tribes
- Pueblo of Isleta
- Pueblo of Laguna
- Pueblo of Ohkay Owingeh
- Pueblo of Pojoaque
- Pueblo of Santa Ana
- Pueblo of San Felipe
- Pueblo of Santo Domingo
- Pueblo of Zia
- Comanche Indian Tribe
- Jicarilla Apache Nation
- Navajo Nation
- Pueblo of Cochiti
- Pueblo of Jemez
- Pueblo of Nambe
- Pueblo of Picuris
- Pueblo of Sandia
- Pueblo of Santa Clara
- Pueblo de San Ildefonso
- Pueblo of Tesuque
- Pueblo of Zuni

The groups consulted were selected based on geographic proximity and potential cultural affiliation with the prehistoric and historic Native American archaeological resources protected by the Act. Native American contact lists maintained by both the BLM and the NMDOT were consulted in an attempt to ensure that the appropriate current individuals were contacted within each group's government.

The BLM and its partners invited government officials and cultural resource specialists from all of the pueblos and tribes consulted to attend a series of meetings in 2010 and 2011. The purpose of the meetings was to introduce the goals of the Act and the Plan to interested Native American parties and to seek their input with regard to management of the designated sites.

5.2 SUMMARY OF PUBLIC PARTICIPATION

The BLM, as the lead agency, implemented a comprehensive approach to provide information to the public and solicit community input regarding the project. Prior to initiating the project, the BLM developed a communication plan that outlined all components of public interaction for the project. Information was included in direct mailings that were sent to 77 people identified as owning land associated with the Act, other Federal or state agencies, tribal entities, and members of the public interested in the project. Two public scoping workshops were held in Santa Fe and Galisteo. In addition to accepting comments at the workshops, the BLM invited interested individuals to submit their comments using email, the U.S. Postal Service, or fax.

Issues of primary concern to the public during the scoping period were:

1. Protection of sites
2. Interpretation of sites
3. Site monitoring
4. Land use
5. Biological characteristics of the sites

Comments received during public scoping were entered into a database and assigned an identification number based on its sequential entry. Each comment was then reviewed and categorized by issue. Table 5.1 provides the comment categories and the number of comments received that fall into each category.

Table 5.1. Comment Categories and Number of Responses

Comment Categories	
Communication - 2	Cooperative Agreements - 2
Act Clarification - 3	Information Request - 1
Interpretation of Sites - 9	Land Use - 7
Protection of Sites - 7	Repatriation of Artifacts - 1

A summary of the written comments received and issues identified during the scoping period is included in final scoping report for this project (BLM 2010).

5.2.1 PUBLIC COMMENTS AND ANALYSIS

To be completed following 30-day comment period.

5.3 LIST OF PREPARERS

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Dave Simons, Archaeologist	BLM New Mexico State Office
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Tami Torres, Recreation Specialist	BLM Taos Field Office
Valerie Williams, Wildlife Biologist	BLM Taos Field Office
Cynthia Herhahn, Cultural Resource Program Lead	BLM Rio Puerco Field Office
Alex Wesson, Project Manager and Senior Archaeologist	SWCA Environmental Consultants
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APPENDIX A
GALISTEO BASIN ARCHAEOLOGICAL SITES PROTECTION ACT

1

Public Law 108–208
108th Congress

An Act

Mar. 19, 2004
[H.R. 506]

To provide for the protection of archaeological sites in the Galisteo Basin in New Mexico, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

Galisteo Basin
Archaeological
Sites Protection
Act.
16 USC 470aa
note.

SECTION 1. SHORT TITLE.

This Act may be cited as the “Galisteo Basin Archaeological Sites Protection Act”.

SEC. 2. FINDINGS AND PURPOSE.

(a) **FINDINGS.**—The Congress finds that—

(1) the Galisteo Basin and surrounding area of New Mexico is the location of many well preserved prehistoric and historic archaeological resources of Native American and Spanish colonial cultures;

(2) these resources include the largest ruins of Pueblo Indian settlements in the United States, spectacular examples of Native American rock art, and ruins of Spanish colonial settlements; and

(3) these resources are being threatened by natural causes, urban development, vandalism, and uncontrolled excavations.

(b) **PURPOSE.**—The purpose of this Act is to provide for the preservation, protection, and interpretation of the nationally significant archaeological resources in the Galisteo Basin in New Mexico.

SEC. 3. GALISTEO BASIN ARCHAEOLOGICAL PROTECTION SITES.

(a) **IN GENERAL.**—Except as provided in subsection (d), the following archaeological sites located in the Galisteo Basin in the State of New Mexico, totaling approximately 4,591 acres, are hereby designated as Galisteo Basin Archaeological Protection Sites:

Name	Acres
Arroyo Hondo Pueblo	21
Burnt Corn Pueblo	110
Chamisa Locita Pueblo	16
Comanche Gap Petroglyphs	764
Espinosa Ridge Site	160
La Cienega Pueblo & Petroglyphs	126
La Cienega Pithouse Village	179
La Cieneguilla Petroglyphs/Camino Real Site	531
La Cieneguilla Pueblo	11
Lamy Pueblo	30
Lamy Junction Site	80
Las Huertas	44
Pa'ako Pueblo	29
Petroglyph Hill	130
Pueblo Blanco	878
Pueblo Colorado	120
Pueblo Galisteo/Las Madres	133

Name	Acres
Pueblo Largo	60
Pueblo She	120
Rote Chert Quarry	5
San Cristobal Pueblo	520
San Lazaro Pueblo	360
San Marcos Pueblo	152
Upper Arroyo Hondo Pueblo	12
Total Acreage	4,591

(b) AVAILABILITY OF MAPS.—The archaeological protection sites listed in subsection (a) are generally depicted on a series of 19 maps entitled “Galisteo Basin Archaeological Protection Sites” and dated July, 2002. The Secretary of the Interior (hereinafter referred to as the “Secretary”) shall keep the maps on file and available for public inspection in appropriate offices in New Mexico of the Bureau of Land Management and the National Park Service.

(c) BOUNDARY ADJUSTMENTS.—The Secretary may make minor boundary adjustments to the archaeological protection sites by publishing notice thereof in the Federal Register.

(d) WITHDRAWAL OF PRIVATE PROPERTY.—Upon the written request of an owner of private property included within the boundary of an archaeological site protected under this Act, the Secretary shall immediately remove that private property from within that boundary.

SEC. 4. ADDITIONAL SITES.

(a) IN GENERAL.—The Secretary shall—

(1) continue to search for additional Native American and Spanish colonial sites in the Galisteo Basin area of New Mexico; and

(2) submit to Congress, within 3 years after the date funds become available and thereafter as needed, recommendations for additions to, deletions from, and modifications of the boundaries of the list of archaeological protection sites in section 3 of this Act. Deadline.

(b) ADDITIONS ONLY BY STATUTE.—Additions to or deletions from the list in section 3 shall be made only by an Act of Congress.

SEC. 5. ADMINISTRATION.

(a) IN GENERAL.—

(1) The Secretary shall administer archaeological protection sites located on Federal land in accordance with the provisions of this Act, the Archaeological Resources Protection Act of 1979 (16 U.S.C. 470aa et seq.), the Native American Graves Protection and Repatriation Act (25 U.S.C. 3001 et seq.), and other applicable laws in a manner that will protect, preserve, and maintain the archaeological resources and provide for research thereon.

(2) The Secretary shall have no authority to administer archaeological protection sites which are on non-Federal lands except to the extent provided for in a cooperative agreement entered into between the Secretary and the landowner.

(3) Nothing in this Act shall be construed to extend the authorities of the Archaeological Resources Protection Act of 1979 or the Native American Graves Protection and Repatriation Act to private lands which are designated as an archaeological protection site.

(b) MANAGEMENT PLAN.—

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Deadline.

(1) **IN GENERAL.**—Within 3 complete fiscal years after the date funds are made available, the Secretary shall prepare and transmit to the Committee on Energy and Natural Resources of the United States Senate and the Committee on Resources of the United States House of Representatives, a general management plan for the identification, research, protection, and public interpretation of—

(A) the archaeological protection sites located on Federal land; and

(B) for sites on State or private lands for which the Secretary has entered into cooperative agreements pursuant to section 6 of this Act.

(2) **CONSULTATION.**—The general management plan shall be developed by the Secretary in consultation with the Governor of New Mexico, the New Mexico State Land Commissioner, affected Native American pueblos, and other interested parties.

SEC. 6. COOPERATIVE AGREEMENTS.

The Secretary is authorized to enter into cooperative agreements with owners of non-Federal lands with regard to an archaeological protection site, or portion thereof, located on their property. The purpose of such an agreement shall be to enable the Secretary to assist with the protection, preservation, maintenance, and administration of the archaeological resources and associated lands. Where appropriate, a cooperative agreement may also provide for public interpretation of the site.

SEC. 7. ACQUISITIONS.

(a) **IN GENERAL.**—The Secretary is authorized to acquire lands and interests therein within the boundaries of the archaeological protection sites, including access thereto, by donation, by purchase with donated or appropriated funds, or by exchange.

(b) **CONSENT OF OWNER REQUIRED.**—The Secretary may only acquire lands or interests therein with the consent of the owner thereof.

(c) **STATE LANDS.**—The Secretary may acquire lands or interests therein owned by the State of New Mexico or a political subdivision thereof only by donation or exchange, except that State trust lands may only be acquired by exchange.

SEC. 8. WITHDRAWAL.

Subject to valid existing rights, all Federal lands within the archaeological protection sites are hereby withdrawn—

(1) from all forms of entry, appropriation, or disposal under the public land laws and all amendments thereto;

(2) from location, entry, and patent under the mining law and all amendments thereto; and

(3) from disposition under all laws relating to mineral and geothermal leasing, and all amendments thereto.

SEC. 9. SAVINGS PROVISIONS.

Nothing in this Act shall be construed—

(1) to authorize the regulation of privately owned lands within an area designated as an archaeological protection site;

(2) to modify, enlarge, or diminish any authority of Federal, State, or local governments to regulate any use of privately owned lands;

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(3) to modify, enlarge, or diminish any authority of Federal, State, tribal, or local governments to manage or regulate any use of land as provided for by law or regulation; or

(4) to restrict or limit a tribe from protecting cultural or religious sites on tribal lands.

Approved March 19, 2004.

LEGISLATIVE HISTORY—H.R. 506 (S. 210):

HOUSE REPORTS: No. 108-346 (Comm. on Resources).

SENATE REPORTS: No. 108-7 accompanying S. 210 (Comm. on Energy and Natural Resources).

CONGRESSIONAL RECORD:

Vol. 149 (2003): Nov. 4, considered and passed House.

Vol. 150 (2004): Mar. 4, considered and passed Senate.



APPENDIX B
COMPLETE SOIL INVENTORY OF ACT SITES

Soil Type	Acres in Project Area	Percentage of Project Area
Bond family-Cerropelon-Rock outcrop complex, 5 to 50 percent slopes	855.73	13.34
Penistaja family loam, 3 to 8 percent slopes	355.67	5.55
Musofare-Alesna family complex, 20 to 50 percent slopes	343.43	5.36
Penistaja family fine sandy loam, 1 to 3 percent slopes	332.59	5.19
Rock outcrop-Skyvillage complex, 5 to 35 percent slopes	279.06	4.35
Zia-Gullied land complex, 2 to 10 percent slopes	277.81	4.33
Espinosa very gravelly coarse sandy loam, 5 to 40 percent slopes	255.43	3.98
Cumacho fine sandy loam, 2 to 8 percent slopes	247.00	3.85
Ildefonso-Rock outcrop-Rubble land complex, 30 to 70 percent slopes	223.46	3.48
Penistaja family-Truehill complex, 3 to 15 percent slopes	221.95	3.46
Devargas-Riovista-Riverwash complex, 0 to 5 percent slopes, non-flooded and flooded	189.12	2.95
Urraca-Herrada complex, 3 to 15 percent slopes	185.06	2.89
Zozobra-Jaconita complex, 5 to 25 percent slopes	169.22	2.64
Khapo fine sandy loam, 1 to 3 percent slopes	150.38	2.35
Cumacho fine sandy loam, 2 to 8 percent slopes	143.65	2.24
Oelop family-Charalito complex, 1 to 3 percent slopes	142.46	2.22
Harvey-Cascajo association, 5 to 15 percent slopes	129.07	2.01
Jaralosa-Chupe-Riverwash complex, 0 to 1 percent slopes, flooded	126.07	1.97
Churipa very cobbly sandy loam, 5 to 15 percent slopes	118.84	1.85
Atarque family-Cueva complex, 10 to 50 percent slopes	117.27	1.83
Delvalle-Urban land complex, 0 to 2 percent slopes	107.54	1.68
Tsinat gravelly loam, 1 to 6 percent slopes	101.86	1.59
Cuyamungue-Riverwash complex, 0 to 2 percent slopes, flooded	83.57	1.30
Puertecito-Paraje complex, 15 to 50 percent slopes	76.48	1.19
Villario-Puertecito family complex, 25 to 45 percent slopes	75.63	1.18

Musofare-Alesna family complex, 20 to 50 percent slopes	73.24	1.14
Espinosa very gravelly coarse sandy loam, 5 to 40 percent slopes	59.01	0.92
Starlake family very fine sandy loam, 0 to 2 percent slopes	58.55	0.91
Bond family-Cerropelon-Rock outcrop complex, 5 to 50 percent slopes	57.87	0.90
Penistaja family loam, 3 to 8 percent slopes	53.35	0.83
Parida gravelly loam, 3 to 10 percent slopes	48.59	0.76
Devargas-Riovista-Riverwash complex, 0 to 5 percent slopes, non-flooded and flooded	46.70	0.73
Oelop family-Charalito complex, 1 to 3 percent slopes	45.68	0.71
Zozobra-Jaconita complex, 5 to 25 percent slopes	45.14	0.70
Agua Fria-Paraje complex, 1 to 8 percent slopes	40.94	0.64
Zia-Gullied land complex, 2 to 10 percent slopes	37.80	0.59
Ildefonso cobbly loam, 15 to 35 percent slopes	37.52	0.59
Ildefonso-Sandoval complex, 5 to 35 percent slopes	34.82	0.54
Golondrina-Paraje complex, 8 to 45 percent slopes	31.85	0.50
La Fonda loam, 1 to 5 percent slopes	31.27	0.49
Penistaja family fine sandy loam, 1 to 3 percent slopes	27.06	0.42
Kech-Horchata complex, 1 to 8 percent slopes	24.53	0.38
Khapo fine sandy loam, 1 to 3 percent slopes	24.36	0.38
Silver and Witt soils, 5 to 9 percent slopes	22.52	0.35
Riovista gravelly loamy sand, 0 to 1 percent slopes	22.18	0.35
Ildefonso extremely gravelly sandy loam, 5 to 15 percent slopes	21.52	0.34
Placitas gravelly loam, 8 to 40 percent slopes	19.94	0.31
Chupe-Riverwash complex, 1 to 3 percent slopes, flooded	17.56	0.27
"Zia fine sandy loam, 0 to 2 percent slopes	16.33	0.25
Penistaja family loam, 3 to 8 percent slopes	16.18	0.25
Calabasas loam, 1 to 3 percent slopes	15.53	0.24
Penistaja family-Truehill complex, 3 to 15 percent slopes	14.57	0.23

Truehill extremely gravelly loam, 25 to 55 percent slopes	13.42	0.21
Vitrina-Haozous gravelly coarse sandy loams, 5 to 15 percent slopes, non-flooded and flooded	11.47	0.18
Alire loam, 2 to 6 percent slopes	10.43	0.16
Penistaja family fine sandy loam, 1 to 3 percent slopes	10.18	0.16
Manzano loam	9.68	0.15
Encantado very cobbly sandy loam, 25 to 45 percent slope	9.34	0.15
Sedillo family very gravelly loam, 2 to 6 percent slopes	9.25	0.14
Medrano extremely gravelly loam, 5 to 65 percent slopes	8.29	0.13
Truehill-Penistaja family-Rock outcrop complex, 4 to 50 percent slopes	7.62	0.12
Panky loam, 1 to 4 percent slopes	7.58	0.12
Arnor gravelly sandy loam, 2 to 8 percent slopes	7.12	0.11
Morenda, Fiesta, and Espanola soils, 1 to 85 percent slopes, flooded and non-flooded	5.69	0.09
Setonville-Antonchico complex, 3 to 15 percent slopes	5.67	0.09
Travessilla-Raydawn-Sandoval-Rock outcrop complex, 5 to 45 percent slopes	5.40	0.08
Encantado very cobbly sandy loam, 25 to 45 percent slope	5.12	0.08
Setonville-Antonchico complex, 3 to 15 percent slopes	3.87	0.06
Puertecito extremely gravelly fine sandy loam, 15 to 25 percent slopes	3.82	0.06
Walkibout-Innacutt complex, 2 to 80 percent slopes, non-flooded and flooded	3.17	0.05
Raydawn very cobbly sandy loam, 15 to 35 percent slopes	2.67	0.04
Arents-Urban land-Orthents complex, 1 to 60 percent slopes	2.56	0.04
Starlake family very fine sandy loam, 0 to 2 percent slopes	2.40	0.04
Alire-Urban land complex, 2 to 8 percent slope	2.00	0.03
Dondiego loam, 1 to 3 percent slopes	1.79	0.03
Ohke sandy loam, 1 to 3 percent slopes	1.55	0.02
Levante-Riverwash complex, 1 to 3 percent slopes, flooded	1.54	0.02
Enmedio-Atalaya-Rock outcrop complex, 5 to 60 percent slopes	1.40	0.02
Delvalle-Urban land complex, 0 to 2 percent slopes	1.04	0.02

Legate-Yohalem-Zarmand complex, 5 to 50 percent slopes	1.01	0.02
Levante-Riverwash complex, 1 to 3 percent slopes, flooded	0.90	0.01
Khapo sandy loam, 3 to 8 percent slopes	0.86	0.01
Sabroso-Verano complex, 35 to 65 percent slopes	0.73	0.01
Zia sandy loam, 3 to 6 percent slopes	0.60	0.01
Arents-Urban land-Orthents complex, 1 to 60 percent slopes	0.56	0.01
Zepol silt loam, 0 to 2 percent slopes, flooded	0.39	0.01
Andanada very gravelly loam, 5 to 15 percent slopes	0.28	>.01
Altazano loamy sand, 0 to 2 percent slopes, flooded	0.17	>.01
Morenda, Fiesta, and Espanola soils, 1 to 85 percent slopes, flooded and non-flooded	0.09	>.01
Tanoan-Encantado complex, 5 to 25 percent slopes	>.01	>.01
Ildfonso-Harvey association, 10 to 35 percent slopes	>.01	>.01
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APPENDIX C
SENSITIVE SPECIES LISTS

Common Name (Species Name)	Status*	Range or Habitat Requirements	Potential for Occurrence in Project Area	Determination of Effect
Plants				
Santa Fe cholla (<i>Cylindropuntia viridiflora</i>)	USFWS SOC State E BLM SS	Gravelly rolling hills in piñon-juniper woodland; 1,770–2,200 m (5,800–7,200 feet). Known from only three areas: Fort Marcy Park in Santa Fe, near Pojoaque, and near Chimayo (New Mexico Plant Rare Technical Council 2011).	Unlikely to occur. The project area is outside the known range.	No effect.
Greater yellow lady's slipper (<i>Cypripedium parviflorum</i> var. <i>pubescens</i>)	USFWS - State E BLM -	Grows in boggy areas, swampy areas, damp woods (often with a rich layer of humus and decaying leaf litter), near rivers or canal banks (NatureServe 2012).	Unlikely to occur. There are no suitable aquatic sites present in the project area.	No effect.
Wood lily (<i>Lilium philadelphicum</i> var. <i>andinum</i>)	USFWS - State E BLM -	Grows in open, wet habitats, such as prairies, bogs, fens, meadows, and shores (Ohio Department of Natural Resources 2011).	Unlikely to occur. There are no suitable aquatic sites present in the project area.	No effect.
Great Plains lady's tresses (<i>Spiranthes magnicamporum</i>)	USFWS - State E BLM -	Habitats are variable, but often associated with calcareous soils, dry or wet prairies, riverbanks, and floodplains (NatureServe 2012).	Unlikely to occur. There are no suitable aquatic sites present in the project area.	No effect.
Parish's alkali grass (<i>Puccinellia parishii</i>)	USFWS SOC State E BLM -	Alkaline springs, seeps, and seasonally wet areas that occur at the heads of drainages or on gentle slopes at 800–2,200 m (2,600–7,200 feet) range-wide. The species requires continuously damp soils during its late winter to spring growing period.	Unlikely to occur. There are no suitable aquatic sites present in the project area.	No effect.
Gypsum townsendia (<i>Townsendia gypsophila</i>)	USFWS SOC State - BLM SS	A very narrowly distributed endemic that is moderately abundant to scattered on gypsum or highly gypseous soils. Found in Sandoval County, extending 30 km (19 miles) north from White Mesa near San Ysidro in a narrow band along the western margin of the Nacimiento Mountains stopping short of Cuba (New Mexico Rare Plant Technical Council 2011).	Unlikely to occur. The project area is outside the known range.	No effect.

Knight's milkvetch (<i>Astragalus knightii</i>)	USFWS SOC State - BLM SS	Rimrock ledges of Dakota Formation sandstone in juniper savannah and grassland; 1,750–1,800 m (5,700–5,900 feet). Presently known only from the Mesa Prieta area of the middle Rio Puerco drainage, Sandoval County (New Mexico Rare Plant Technical Council 2011).	Unlikely to occur. The project area is outside the known range.	No effect.
Sand-tufted verbena (<i>Abronia bigelovii</i>)	USFWS - State - BLM SS	Hills and ridges of gypsum in the Todilto Formation, 1,750–2,250 m (5,700–7,400 feet). Populations are usually small and are restricted to gypsum or strongly gypseous soils derived from gypsum outcrops (New Mexico Rare Plant Technical Council 2011).	Unlikely to occur. There is no suitable habitat present in the project area.	No effect.
Wright's nipple cactus (<i>Mammillaria wrightii</i>)	USFWS - State - BLM SS	Semi-desert grasslands, plains grasslands, piñon-juniper woodlands, gentle slopes, mesas, valleys, usually on alluvial or igneous substrates; 1,200–3,000 m (3,940–9,840 feet).	May occur. The project area occurs within the appropriate elevational range and vegetation type for this species.	May affect: not likely to adversely affect.
Santa Fe milkvetch (<i>Astragalus feensis</i>)	USFWS - State - BLM SS	Sandy benches and gravelly hillsides in piñon-juniper woodland or plains-mesa grassland; 1,550–1,830 m (5,100–6,000 feet) (New Mexico Rare Plant Technical Council 2011).	May occur. The project area occurs within the appropriate elevational range and vegetation type for this species.	May affect: not likely to adversely affect.
New Mexico spiny milkvetch (<i>Astragalus kentrophyta</i> var. <i>neomexicana</i>)	USFWS - State - BLM SS	Gullied bluffs, badlands, and dunes, 1,615–2,100 m (5,300–6,900 feet). On both slopes of the Continental Divide in northwestern New Mexico, from the upper San Juan River south to Inscription Rock, east to the Rio de las Vacas and upper Rio Grande in Sandoval and Santa Fe counties (NatureServe 2012).	May occur. The project area occurs within the appropriate elevational range and vegetation type for this species.	May affect: not likely to adversely affect.
Tufted evening primrose (<i>Oenothera caespitosa</i>)	USFWS - State - BLM SS	Common throughout the western U.S., occupies various, usually dry, habitats, ranging from semi-desert foothills to montane from 800–2,900 m (2,500–9,500 feet).	Likely to occur. This species is common throughout the Southwest.	May affect: not likely to adversely affect.

Grama grass cactus (<i>Pediocactus papyracanthus</i>)	USFWS - State - BLM SS	Southern piñon-juniper woodlands, Great Plains grasslands, and Chihuahuan Desert grassland. Usually found on sandy soils with a calcareous or gypseous component, on open flats or gentle slopes from 1,500–2,200 m (4,900–7,200 feet) elevation. The plants often grow in or near blue grama grass and can go unnoticed because the spines resemble the dried leaves of the grass (NatureServe 2012).	May occur. The project area occurs within the appropriate elevational range and vegetation type for this species.	May affect: not likely to adversely affect.
Fish				
Flathead chub (<i>Platygobio gracilis</i>)	USFWS - State - BLM SS	Inhabits turbid alkaline waters with shifting sand or gravel substrates in streams and rivers with moderate to strong current. Generally found in depths of less than 1 m (3 feet) (NMDGF 2012).	Unlikely to occur. There are no suitable aquatic sites present in the project area.	No effect.
Rio Grande silvery minnow (<i>Hybognathus amarus</i>)	USFWS E State E BLM -	Occurs in waters with slow to moderate flow in perennial sections of the Rio Grande and associated irrigation canals, often in pools, backwaters, or eddies formed by debris piles. Rarely uses areas with high water velocities (NatureServe 2011).	Unlikely to occur. There are no suitable aquatic sites present in the project area.	No effect.
Rio Grande cutthroat trout (<i>Oncorhynchus clarki virginalis</i>)	USFWS C State - BLM SS	Prefers clear, cold streams and lakes. Adults use undercut banks and streambank vegetation for resting and hiding cover. Juveniles prefer instream cover, such as rubble and surface turbulence. Eggs are laid in a gravel nest built by the female in flowing water where high dissolved oxygen levels exist, a requirement of developing embryos (NMDGF 2012).	Unlikely to occur. There are no suitable aquatic sites present in the project area.	No effect.
Birds				
Western burrowing owl (<i>Athene cunicularia hypugaea</i>)	USFWS SOC State - BLM SS	Grasslands, pastures, coastal dunes, desert-scrub, edges of agricultural fields, and other human areas where there is sufficient friable soil for a nesting burrow from 198 to 1,871 m (650–6,140 feet) in elevation.	May occur. The project area includes disturbed desert grassland habitat that has potential to be used by the species.	May affect, is not likely to adversely affect.
Northern goshawk (<i>Accipiter gentilis</i>)	USFWS SOC State - BLM SS	Mature dense ponderosa pine (<i>Pinus ponderosa</i>) and Douglas/White fir (<i>Pseudotsuga menziesii/Abies concolor</i>) mixed-conifer forested mountains and plateaus generally above 1,448 m (4,750 feet).	Unlikely to occur. There is no suitable ponderosa pine and Douglas/white fir mixed-conifer vegetation in or near the project area.	No effect.

Boreal owl (<i>Aegolius funereus</i>)	USFWS - State T BLM -	Occurs mainly above 2,900 m (9,500 feet) in climax spruce-fir (<i>Picea engelmannii-Abies lasiocarpa</i>) forests. They have also been reported in Douglas fir, lodgepole pine (<i>Pinus contorta</i>), and aspen forest types	Unlikely to occur. There is no suitable spruce/fir mixed-conifer vegetation in or near the project area.	No effect.
Violet-crowned hummingbird (<i>Amazilia violiceps ellioti</i>)	USFWS - State T BLM -	Common and widespread hummingbird in western Mexico, but in the Southwest it is local and uncommon. Breeds primarily in sycamore and some cottonwood-willow riparian habitats. Summers regularly in Guadalupe Canyon (Hidalgo County), which is the key habitat area in the state for the species.	Unlikely to occur. There is no riparian vegetation in or near the project area.	No effect.
Baird's sparrow (<i>Ammodramus bairdii</i>)	USFWS SOC State T BLM SS	In New Mexico, it has been found in a variety of habitats, ranging from desert grasslands in the south to prairies in the northeast and mountain meadows in the San Juan and Sangre de Cristo mountains, up to 3,600 m (11,800 feet). Breeds in shortgrass prairies (NMDGF 2012).	Unlikely to occur. Rare and only migratory in the northeast region of the BLM Taos Field Office's jurisdiction.	No effect.
White-faced ibis (<i>Pelagadis chihii</i>)	USFWS - State - BLM SS	Uses a variety of habitats, including rivers, riparian woodlands, subalpine marshes, desert riparian deciduous woodlands, annual grasslands, and agricultural areas. Occurs at elevations where stream conditions provide sufficient permanent moisture for emergent plants, or for a narrow band of deciduous trees and shrubs; at low elevation characterized by cottonwood (<i>Populus</i> sp.) and sycamore (<i>Platanus</i> sp.), at mid-elevation by white alder (<i>Alnus rhombifolia</i>) and bigleaf maple (<i>Acer macrophyllum</i>), and at high elevation by willows (<i>Salix</i> sp.). Nesting colonies are located in shrubs and low trees or in dense standing reeds and tules near or in marshes (NMDGF 2012).	Unlikely to occur. There is no riparian vegetation in or near the project area.	No effect.
Loggerhead shrike (<i>Lanius ludovicianus</i>)	USFWS - State - BLM SS	Ranges altitudinally from agricultural lands on the prairies to montane meadows, nesting in sagebrush areas, desert-scrub, piñon-juniper woodlands, and woodland edges	May occur. Breeding habitat occurs on the project area in the form of desert grasslands and piñon-juniper woodlands.	May affect, is not likely to adversely affect.

Ferruginous hawk (<i>Buteo regalis</i>)	USFWS - State - BLM SS	This species may generally be found in arid habitats throughout the western United States. Nests in riparian communities, sometimes in isolated or roadside trees, occasionally near urban areas. Forages only in open plains and grasslands. May also use some agricultural lands (e.g., alfalfa and dry or fallow pasture)	May occur. The desert grassland habitat in the project area may attract foraging ferruginous hawks.	May affect, is not likely to adversely affect.
Common black-hawk (<i>Buteogallus anthracinus anthracinus</i>)	USFWS SOC State T BLM -	Found in mature, well-developed riparian forest stands (e.g., cottonwood bosques) that are located near permanent streams where principal prey species are available.	Unlikely to occur. There is no riparian vegetation in or near the project area.	No effect.
Costa's hummingbird (<i>Calypte costae</i>)	USFWS - State T BLM -	This species is very rare in spring-summer in the extreme southwest, and winters south of the Mexican border. They are a warm-season migrants and occasional breeders, particularly in Guadalupe Canyon (Hidalgo County). Its habitat includes Sonoran desert-scrub, Mohave desert-scrub, and Great Basin desert-scrub, containing the endemic arboreal leaf succulent, Joshua tree (<i>Yucca brevifolia</i>). There are records of rare occurrences in Sandoval County.	Unlikely to occur. The project area is outside the known range, except for rare occurrences. The habitat requirements for Costa's hummingbird are not present in the project area.	No effect.
Mountain plover (<i>Charadrius montanus</i>)	USFWS - State - BLM SS	Breeds on open plains at low to moderate elevations and agricultural lands, often associated with prairie dog colonies.	May occur. Prairie dog colonies may exist in or near the project area.	May affect: not likely to adversely affect.
Broad-billed hummingbird (<i>Cynanthus latirostris magicus</i>)	USFWS - State T BLM -	Riparian woodlands at low to moderate elevations. In New Mexico, the species is a regular summer resident only in the Guadalupe Canyon.	Unlikely to occur. There is no riparian vegetation in or near the project area.	No effect.
Whooping crane (<i>Grus americana</i>)	USFWS - State E BLM -	In New Mexico, whooping cranes occupy the same habitats as sandhill cranes. Foraging areas are generally agricultural fields and valley pastures, particularly where there is waste grain or sprouting crops. Typically roosts on sand bars in the Rio Grande.	Unlikely to occur. There is no riparian vegetation in or near the project area.	No effect.

White-eared hummingbird (<i>Hylocharis leucotis borealis</i>)	USFWS - State T BLM -	In New Mexico, this species appears to be an irregular summer migrant. It is limited to mesic canyons and the adjacent slopes, mainly in the Animas Mountains (Hidalgo County), but rarely found in other mountain ranges in the state.	Unlikely to occur. The project area is outside the known range, except for rare occurrences. There are no mesic canyons in the project area.	No effect.
White-tailed ptarmigan (<i>Lagopus leucura altipetens</i>)	USFWS - State E BLM -	Resides in alpine areas at or above timberline. May be associated with rocky areas, krummholz, moist vegetation near snowfields and streams, and willow-dominated communities.	Unlikely to occur. The project area is well below timberline.	No effect.
Brown pelican (<i>Pelecanus occidentalis carolinensis</i>)	USFWS - State E BLM -	Typically found in marine habitats in warmer waters in North America. Rarely occurs inland, except for the lower Colorado Basin and vicinity. In New Mexico, occurs around large lakes and major rivers, usually as immature-aged wanderers during the summer-fall seasons, possibly driven inland by storms.	Unlikely to occur. There are no suitable aquatic sites present in the project area.	No effect.
Neotropic cormorant (<i>Phalacrocorax brasilianus</i>)	USFWS - State T BLM -	In New Mexico, cormorants are generally found on larger bodies of water such as reservoirs. They nest near or over water, in vegetation such as dead snags or trees that are free from human disturbance. The species breeds and is variably resident in the Rio Grande valley at Elephant Butte and Caballo lakes, and it also occurs regularly at Bosque del Apache National Wildlife Refuge, all of which are key habitat areas. The species also occurs occasionally in the valley northward to the Bernalillo area and southward to Las Cruces, and in the Gila Valley.	Unlikely to occur. There are no suitable aquatic sites present in the project area.	No effect.
Aplomado falcon (<i>Falco femoralis septentrionalis</i>)	USFWS - State E BLM -	In New Mexico, it has been typically associated with yucca grasslands and adjacent shrubby habitats at lower elevations. Needs a good supply of suitable nesting platforms, particularly mesquite and yuccas.	Unlikely to occur. This species may use some habitat at the extreme lower elevations in the project area, but is unlikely to occur in the majority of the project area.	No effect.
Yellow-billed cuckoo (<i>Coccyzus americanus</i>)	USFWS C State - BLM SS	Typically found in riparian woodland vegetation (cottonwood, willow, or saltcedar) at elevations below 2,012 m (6,600 feet). Dense understory foliage appears to be an important factor in nest site selection.	Unlikely to occur. There is no suitable riparian woodland vegetation in or near the project area.	No effect.

Southwestern willow flycatcher (<i>Empidonax traillii extimus</i>)	USFWS E State E BLM -	Found in dense riparian habitats along streams, rivers, and other wetlands where cottonwood, willow, boxelder (<i>Acer negundo</i>), saltcedar, Russian olive, buttonbush (<i>Cephalanthus occidentalis</i>), and arrowweed (<i>Pluchea sericea</i>) are present. Nests are found in thickets of trees and shrubs, primarily those that are 4 to 7 m (13–23 feet) tall, among dense, homogeneous foliage. Habitat occurs at elevations below 2,590 m (8,500 feet).	Unlikely to occur. There is no dense riparian habitat or other vegetation to support this species in or near the project area.	No effect.
American peregrine falcon (<i>Falco peregrinus anatum</i>)	USFWS SOC State T BLM -	In New Mexico, the breeding territories of peregrine falcons center on cliffs that are in wooded/forested habitats, with large "gulfs" of air nearby where they can forage. Prefers elevations of 2,000–2,600 m (6,500–8,600 feet) but may be found in 1,000–2,700 m (3,500–9,000 feet).	Unlikely to occur. Tall cliffs with wooded edges do not occur in the project area.	No effect.
Arctic peregrine falcon (<i>Falco peregrinus tundrius</i>)	USFWS SOC State T BLM -	In New Mexico, this tundra subspecies is a very rare migrant through the state and would be found in habitats similar to <i>F.p. anatum</i> .	Unlikely to occur. Tall cliffs with wooded edges do not occur in the project area.	No effect.
Bald eagle (<i>Haliaeetus leucocephalus alascanus</i>)	USFWS - State T BLM SS	The species is primarily water oriented, and the majority of the populations occurring in New Mexico are found near rivers and lakes. Nests in cliffs, conifer forests, hardwood forests, mixed woodlands, conifer woodlands, and hardwood woodlands with standing snags and hollow trees.	Unlikely to occur. The larger rivers and lakes associated with eagles do not occur in or near the project area; there are no cliffs or tall trees to attract eagles for nesting.	No effect.
Black tern (<i>Chlidonias niger surinamensis</i>)	USFWS SOC State - BLM SS	In New Mexico, black terns are found near water at lower (850–1,675 m [2,800–5,500 feet]) and middle (1,525–2,285 m [5,000–7,500 feet]) elevations. They breed in prairie wetlands, taiga bogs, and marshes.	Unlikely to occur. There are no suitable aquatic sites present in the project area.	No effect.
Least tern (<i>Sterna antillarum athalassos</i>)	USFWS E State E BLM -	Sandbars, islands, and alkali flats devoid of vegetation associated with major rivers and reservoirs.	Unlikely to occur. There are no suitable sites associated with major rivers present in the project area.	No effect.

Mexican spotted owl (<i>Strix occidentalis lucida</i>)	USFWS T State - BLM -	Mexican spotted owls are dependent on the presence of large trees, snags, down logs, dense canopy cover, and multi-storied conditions within predominantly mixed-conifer and pine-oak habitats.	Unlikely to occur. There are no old growth ponderosa pine or pine-oak woodlands in or near the project area.	No effect.
Bell's vireo (<i>Vireo bellii arizonae</i>)	USFWS SOC State T BLM -	In New Mexico this species characteristically occurs in dense shrubland or woodland along lowland stream courses, with willows, mesquite (<i>Prosopis</i> sp.), and seepwillow (<i>Baccharis glutinosa</i>).	Unlikely to occur. There is no suitable riparian shrubland or woodland vegetation in or near the project area.	No effect.
Gray vireo (<i>Vireo vicinior</i>)	USFWS - State T BLM SS	In New Mexico, most often found in arid juniper woodlands on foothills and mesas, these most often associated with oaks and usually in habitat with a well-developed grass component.	May occur. Although marginal, habitat for the gray vireo is present as juniper woodlands on foothills and nearby mesas.	May affect, is not likely to adversely affect.
Amphibians				
Jemez Mountains salamander (<i>Plethodon neomexicanus</i>)	USFWS SOC State E BLM SS	Typically occurs on shady, wooded sites at elevations of 2,190–2,800 m (7,185–9,200 feet). Such areas are characterized by conifers, including white fir, Engelmann spruce, blue spruce (<i>P. pungens</i>), and Douglas fir. Deciduous trees that are present include quaking aspen (<i>Populus tremuloides</i>) and Rocky Mountain maple (<i>Acer glabrum</i>). In these habitats, salamanders spend much of the time below the surface, including under rocks and in fallen logs. Old, stabilized talus slopes are important types of cover for this species, especially those with a good covering of damp soil and plant debris.	Unlikely to occur. There is no suitable coniferous or deciduous vegetation in or near the project area. The majority of the project area is below the lower elevational limit for the Jemez Mountains salamander.	No effect.
Mammals				
Black-footed ferret (<i>Mustela nigripes</i>)	USFWS E State - BLM -	The distribution of the black-footed ferret is closely sympatric with that of prairie dogs. Occurs in mixed shrub habitats.	Unlikely to occur. This species has been extirpated in New Mexico.	No effect.

Pale Townsend's big-eared bat (<i>Corynorhinus townsendii pallenses</i>)	USFWS SOC State - BLM SS	Occupies semi-desert shrublands, piñon-juniper woodlands, and open montane forests. Frequently associated with caves and abandoned mines for day roosts and hibernacula but will also use abandoned buildings and crevices on rock cliffs for refuge.	May occur. Potential roosting and foraging habitat, in the form of semi-desert shrublands and piñon-juniper woodlands, occurs within and near the project area.	May affect, is not likely to adversely affect.
Spotted bat (<i>Euderma maculatum</i>)	USFWS - State T BLM SS	The animal has been captured in ponderosa pine of montane forests, piñon-juniper woodlands, and open semi-desert shrublands. Rocky cliffs are necessary to provide suitable cracks and crevices for roosting, as is access to water. Shows apparent seasonal change in habitat, occupying ponderosa pine woodlands in the reproductive season and lower elevations at other times of the year.	May occur. Semi-desert shrublands and rocky outcrops are both present in the project area and may serve as foraging and roosting habitats for the species.	May affect, is not likely to adversely affect.
Western small-footed myotis bat (<i>Myotis ciliolabrum melanorhinus</i>)	USFWS - State - BLM SS	Western North America; oak-juniper woodlands, desert-scrub, chaparral, and riparian areas in Arizona from 645–2,640 m (2,120–8,670 feet); roost sites vary and include mine shafts, caves, crevices, cracks, under rocks, buildings, etc.	May occur. Potential roosting and foraging habitat, in the form of desert-scrub occurs within and near the project area.	May affect, is not likely to adversely affect.
Long-eared myotis bat (<i>Myotis evotis evotis</i>)	USFWS - State - BLM SS	The species occurs in coniferous forests at moderate elevations. It is most common in ponderosa pine woodlands and is also found in piñon-juniper woodlands and subalpine forests. Uses day roosts in tree cavities, under loose bark, and in buildings. These sites, as well as caves and mines, are used for night roosts.	May occur. Potential roosting and foraging habitat, in the form of piñon-juniper woodlands, occurs within and near the project area.	May affect, is not likely to adversely affect.
Occult little brown bat (<i>Myotis lucifugus occultus</i>)	USFWS - State - BLM SS	Uses desert-scrub, ponderosa pine, spruce-fir, and deciduous riparian. This bat appears to require nearby permanent water since most specimens have been taken in the vicinity of large permanent water sources, such as streams, drainage ditches, or lakes. Areas where such bodies of water are lacking support these animals only as transients.	Unlikely to occur. Typical roosting and foraging habitats for the species does not occur on the project area, nor do permanent water sources.	No effect.
Fringed myotis bat (<i>Myotis thysanodes thysanodes</i>)	USFWS - State - BLM SS	Desert and steppe areas in close vicinity of woodlands; roost sites are located in caves, mine tunnels, and buildings in western North America at 1,220–2,525 m (4,000–8,280 feet).	May occur. Potential roosting and foraging habitat occurs within and near the project area.	May affect, is not likely to adversely affect.

Long-legged myotis bat (<i>Myotis volans interior</i>)	USFWS - State - BLM SS	Primarily a coniferous forest bat, but may also be found in riparian and desert habitats at elevations between 2,012 and 3,050 m (6,600–10,000 feet). Roosts in abandoned buildings, cracks in the ground, cliff crevices, and tree bark and hibernates in caves and mine tunnels. Forages high over water and openings in woods.	Unlikely to occur. Habitat associations are not found within the project area.	No effect.
Yuma myotis bat (<i>Myotis yumanensis yumanensis</i>)	USFWS - State - BLM SS	Occurs in a variety of habitats including riparian, arid shrublands and deserts, and forests. Roosts in bridges, buildings, cliff crevices, caves, mines, and trees. Nursery colonies are usually in buildings or caves and may contain a large number of individuals.	May occur. Potential foraging habitat of desert grassland and shrubland is present within the project area.	May affect, is not likely to adversely affect.
Big free-tailed bat (<i>Nyctinomops macrotis</i>)	USFWS - State - BLM SS	This species occurs rarely up to 2,440 m (8,000 feet) but more common below 1,830 m (6,000 feet). Found in shortgrass plains, sacaton grassland, oak savanna, sycamore, cottonwood, and rabbitbrush. Rocky cliffs with crevices and fissures are apparently required for roosting. Has been documented breeding in colonies along rivers, in a rock shelter, and under slabs of lava on a perpendicular lava cliff.	May occur. Potential foraging habitat of grassland and rabbitbrush is present within the project area.	May affect, is not likely to adversely affect.
American marten (<i>Martes americana</i>)	USFWS - State T BLM -	Inhabits mature old-growth forests of spruce (<i>Picea</i> sp.), fir (<i>Abies</i> sp.), and Douglas-fir (<i>Pseudotsuga</i> sp.) with more than 30% canopy cover, well-established understory of fallen logs and stumps, and lush shrub and forb vegetation.	Unlikely to occur. Old growth forests are not found within the project area.	No effect.
New Mexican meadow jumping mouse (<i>Zapus hudsonius luteus</i>)	USFWS C State E BLM SS	This species is a habitat specialist and uses two riparian community types: persistent emergent herbaceous wetlands and willow/alder (<i>Alnus</i> sp.) riparian areas along perennial streams.	Unlikely to occur. Riparian habitat associations and wetlands are not found within the project area.	No effect.
Mollusks				
Lilljeborg's peaclam (<i>Pisidium lilljeborgi</i>)	USFWS - State T BLM -	The New Mexico population of the species occurs in cold, alpine Nambu Lake, which is located in a glacial cirque. The surrounding habitats include rocky talus, stands of Engelmann spruce and subalpine fir, and grass-sedge-forb communities.	Unlikely to occur. The project area is outside the known range. Additionally, the project area is not near any cold, alpine lakes.	No effect.

Wrinkled marshsnail (<i>Stagnicola caperatus</i>)	USFWS - State E BLM -	Occurs in vegetated ditches, marshes, streams, and ponds, typically that are seasonally dry. In New Mexico, it is known to occur only in the Cerro la Jara area, Jemez Mts. (Sandoval County), which is the key habitat area in the state.	Unlikely to occur. The project area is outside the known range.	No effect.
Insects				
Slate millipede (<i>Comanchelus chihuanus</i>)	USFWS SOC State - BLM SS	Burrows into the soil. Known only from Bernalillo County.	May occur. Potential habitat for the species is located in Bernalillo County.	May affect, is not likely to adversely affect.
Reptiles				
Texas horned lizard (<i>Phrynosoma cornutum</i>)	USFWS - State - BLM SS	This lizard inhabits flat, open, generally dry country with little plant cover, except for bunchgrass and cactus. Strictly terrestrial, this lizard can bury itself in loose soil that is sandy, loamy, or rocky. It seeks shelter under rocks.	May occur. Potential habitat for the species is located throughout the project area.	May affect, is not likely to adversely affect.
<p>* Status Definitions:</p> <p>E = Endangered. The Endangered Species Act (ESA) specifically prohibits the take of a species listed as endangered. Take is defined by the ESA as: to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to engage in any such conduct.</p> <p>T = Threatened. The ESA specifically prohibits the take of a species listed as threatened. Take is defined by the ESA as: to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to engage in any such conduct.</p> <p>C = Candidate. Candidate species are those for which USFWS has sufficient information on biological vulnerability and threats to support proposals to list as endangered or threatened under the ESA. However, proposed rules have not yet been issued because they are precluded by other listing activity that is a higher priority. This listing category has no legal protection.</p> <p>P = Proposed. Any species of fish, wildlife or plant that is proposed in the <i>Federal Register</i> to be listed under Section 4 of the ESA. This could be either proposed for endangered or threatened status.</p> <p>SS = Sensitive. The BLM has designated sensitive species that occur on their land that may be positively affected by conservation management and often occur on other state and federal lists.</p> <p>SOC = Species of Concern. The term species of concern should be considered as a term-of-art that describes the entire realm of taxa whose conservation status may be of concern to the regulating agency. Species of concern have no legal protection under the ESA.</p> <p>Note: Range or habitat information for the plant species is taken from the New Mexico Rare Plant Technical Council (NMRPTC 2011) and the USDA PLANTS database website (USDA 2011). Range or habitat information for wildlife species is taken from the BISON-M website (NMDGF 2012) and the USFWS New Mexico Southwest Region Ecological Services Field Office (USFWS 2011).</p>				

Attachment 1:
Galisteo Basin Archaeological Sites Protection Act
General Management Plan

