United Comstock Merger Mill at American Flat

ENVIRONMENTAL ASSESSMENT

DOI-BLM-NV-C020-2012-0040-EA

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BLM
Sierra Front Field Office, Nevada

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Acronyms

ACHP	Advisory Council on Historic Preservation
AFM	American Flat Mill
ATV	all-terrain vehicle
AUM	animal unit month
BAQP	Bureau of Air Quality Planning
BLM	Bureau of Land Management
BMP	best management practice
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CO	carbon monoxide
CRMP	Carson City Field Office Consolidated Resource Management Plan
EA	Environmental Assessment
E & E	Ecology and Environment, Inc.
EMS	Emergency Medical Service
EO	Executive Order
EPA	Environmental Protection Agency
ESA	Endangered Species Act
HABS	Historic American Buildings Survey
HAER	Historic American Engineering Record
HALS	Historic American Landscape Survey
IM	Instruction Memorandum
lb	pound
µg/m3	micrograms per cubic meter
MBTA	Migratory Bird Treaty Act
NPA	National Programmatic Agreement
NDEP	Nevada Department of Environmental Protection
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NO_2	nitrogen dioxide
NO_x	oxides of nitrogen
NRHP	National Register of Historic Places
OIG	Office of Inspector General
OHV	off-highway vehicle
PA	Programmatic Agreement
PL	Public Law
PM	particulate matter
$PM_{2.5}$	PM with diameter less than or equal to 2.5 micrometers
PM_{10}	PM with diameter less than or equal to 10 micrometers
RMP	Resource Management Plan
RAC	Resource Advisory Council
SCFD	Storey County Fire Department
SCSD	Storey County Sheriff's Department
SHPO	State Historic Preservation Officer
SI	Sampling Investigation

SO_2	sulfur dioxide
U.S.C.	United States Code
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
V&T	Virginia and Truckee
VOC	volatile organic compound
VRM	Visual Resource Management

1.0 INTRODUCTION

The Bureau of Land Management (BLM), Sierra Front Field Office, has prepared this environmental assessment (EA) to evaluate the potential impacts to the human environment from a Proposed Action and three alternatives designed to mitigate hazards to human health posed by the United Comstock Merger Mill at American Flat (AFM), while addressing the historic resources.

1.1 Background

The AFM site is located in Storey County, Nevada (Figure 1-1, also Attachment A). The site is located within the northeast quarter of Section 7, Township 16 North, Range 21 East of the Mt. Diablo Meridian, and is approximately 1.25 miles northwest of Silver City, Nevada, and is 12 road miles northeast of Carson City, Nevada. The site is on approximately 327 acres of BLM-managed lands, and contains eight buildings[1] and associated materials (Figure 2-1) (U.S. Army Corps of Engineers [USACE] 2010). The Proposed Action (Alternative 2) would result in the complete removal of all buildings associated with the AFM site.

The AFM (originally named the United Comstock Merger Mill) was built in 1922 to process local gold and silver ore using a cyanide solution and the Merill-Crowe process (a separation technique for removing gold from a cyanide solution). The mill operated from 1922 to 1926 and produced $7.5 million worth of silver and gold. Over its short life, the mill was owned by two different corporate entities, the United Comstock Mines and the Comstock Merger Mines. At the time it operated, AFM was considered the largest, most modern and sophisticated mill of its type in the U.S. The mill was shut down due to metallurgical problems and the dropping price of silver. When the mill closed, all equipment, metal, and wood materials were scrapped and salvaged. During the salvaging process, little care was taken in the removal of equipment and other materials. Concrete structural components were cut and broken as required to facilitate the removal process, resulting in a great deal of damage. Large holes and voids were left in the concrete, reinforcing steel was cut, and concrete structural members were broken. Reclamation of the structures and sites were not part of the regulations or enforced at the time the mining processes ceased at the site.

Today the existing structures at the site consist of badly decaying concrete, exposed reinforcing steel, broken structural members, and large holes in the concrete floors; only the deteriorated concrete skeletons of the structures remain. A fatality occurred at the site in 1996 while an individual was 'crawling' stairs with an all-terrain vehicle (ATV) inside one of the AFM structures. In response, the BLM officially closed the interior of the AFM buildings to public entry on January 21, 1997 (FR Vol. 61, No. 246, p. 67343) [2]. Beginning in 1998, the BLM has

[1] In this document the terms "buildings" and "structures" are used synonymously.

[2] In addition to closing the interior of the AFM structures to public entry, the closure order also banned: use of fireworks; detonation of explosive devices or rockets; painting of graffiti and possession of paint or spray paint cans; and restricted motorized vehicles to existing dirt roads. The closure order further restricted use of the AFM site to daylight hours only (sunrise to sunset).

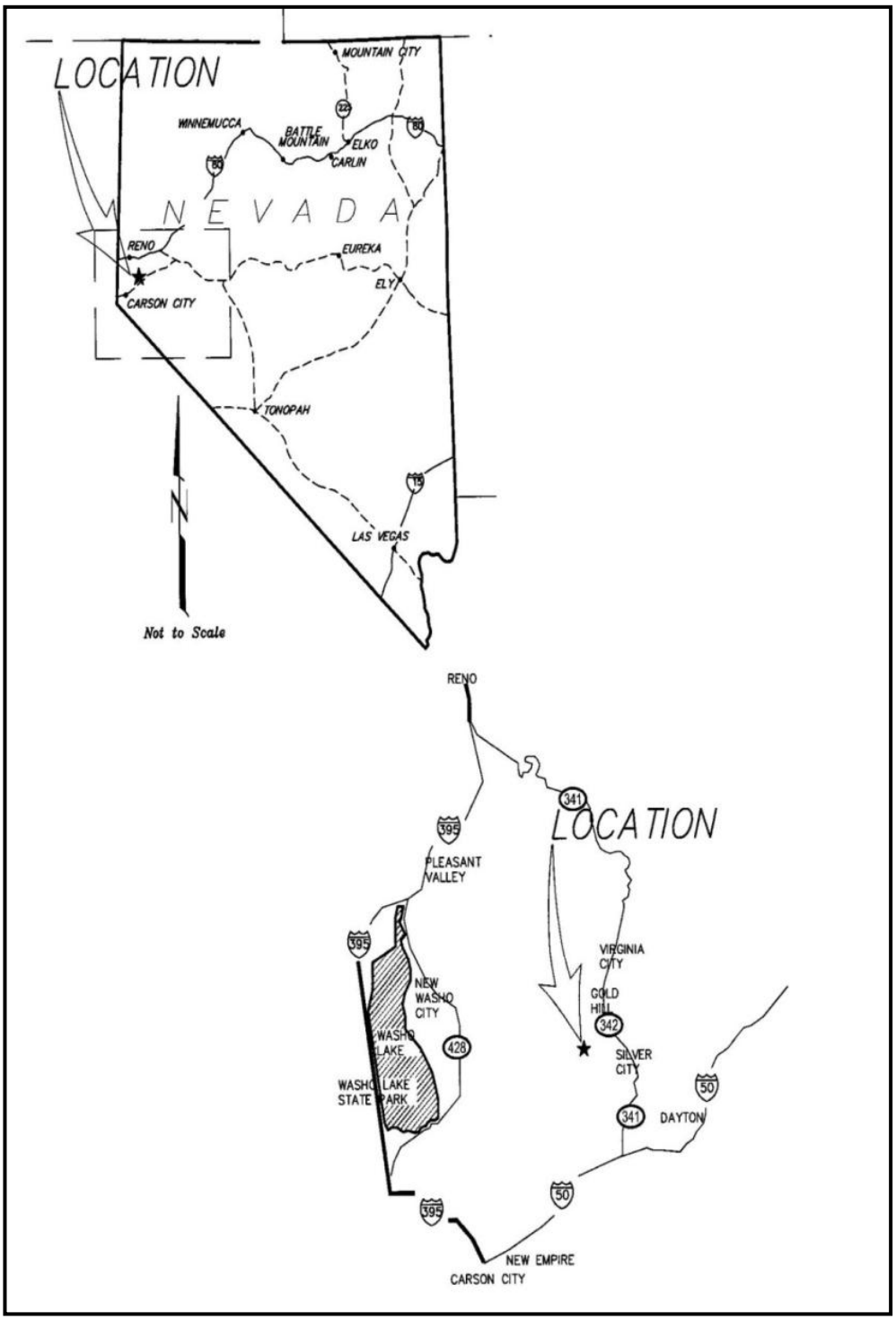

Figure 1-1 Vicinity Map

repeatedly fenced, gated, and posted closure signs at the mill site, and scarified access roads for public safety.

During 2010 the BLM carried out an extensive process to determine the relevant issues that would guide the scope of the environmental analysis and alternatives to be analyzed in the 2010 EA (DOI-BLM-NV-C020-2010-0017). Although not required for an EA by regulation, the BLM conducted public scoping in the early phases in the development of the 2010 EA. The BLM used comments received during the scoping process to determine:

- Important issues to be identified;
- Possible data needs and sources;
- Alternatives to be assessed; and
- Potential environmental and socioeconomic effects of the various alternatives being developed.

The formal scoping period began on April 27, 2010. Two public scoping meetings were held, one on April 27, 2010 in Carson City, and the second on April 28, 2010 in Virginia City. Approximately 13 people attended the meeting in Carson City, and eight people attended the meeting in Virginia City. These numbers are estimates because not all participants who attended the meetings signed-in. The BLM also conducted a presentation and workshop for the Comstock Historic District Commission on July 12, 2010.

Written comments were accepted through May 26, 2010. The BLM received 23 unique comment letters during the scoping period. The majority of the letters were in support of retaining the AFM site structures for recreational and historic reasons. Several comments supported removing the structures for public safety reasons. A Scoping Report (BLM 2010) was published summarizing the comments received during this process. No new action alternatives were proposed during the scoping period.

The 2010 EA (DOI-BLM-NV-C020-2010-0017) was made available for public comment from September 21 until October 22, 2010. The BLM did not identify a single "Proposed Action Alternative." At that time, the BLM had not reached a decision as to which alternative to officially propose, and by not identifying a single proposed action, the BLM had provided the greatest opportunity for public feedback on all alternatives. The BLM also conducted a meeting to inform the public about the EA, staff was also available to describe the alternatives and to receive public comments. The meeting was held on September 28, 2010 at the BLM's Carson City District Office. Approximately five people attended the meeting. These numbers are estimates because not all participants who attended the meetings signed-in.

A total of six written comments were received on the 2010 EA. Two of the commenters supported Alternative 1 – the No Action, and two supported Alternative 2 – the Demolition Alternative. Alternative 4 – Selected Building Retention was supported by the Nevada Division of State Lands and the State Land Use Planning Agency. The Nevada State Historic Preservation Office did not comment on the alternatives, but made three suggestions for improvements to the 2010 EA. No comments received during this public review period resulted

in substantive changes to the alternatives or analysis used in the 2010 EA. Nor did any of the commenter's propose to the BLM a new reasonable alternative for consideration.

On December 8, 2010, the BLM issued a Final EA, Finding of No Significant Impact (FONSI), and Decision Record, selecting Alternative 2 – Demolition as the "Proposed Action." Due to concerns that the BLM made a decision on a selected alternative prior to completing the NHPA Section 106 process, the BLM withdrew the Decision on April 5, 2011. Persons on the BLM's mailing list and the local media were notified of this Decision. Newspaper articles were published on April 6 and 11, 2011 in the Reno and Carson City area. One paper announced that the BLM was accepting public comment until May 6, 2011.

In January 2011, outside of any official commenting period, the BLM received one new citizen proposed alternative for the AFM site. This alternative was considered but not analyzed in detail as described in Section 2.3.7.

1.2 Purpose and Need

As the previous Decision had been withdrawn, the BLM initiated a new round of public scoping and a new EA analysis, starting in May 2011. The purpose and need for action to be considered in this EA are discussed here.

Today, the site attracts the public who use it for unapproved activities such as: partying; posting graffiti; and playing paintball games. Other members of the public visit the site to take photographs and to view the historic structures. While inside or near the unstable concrete mill buildings, the public is exposed to a number of physical hazards including: falling or collapsing concrete structures; underground mill sumps filled with water; unmarked voids and tunnels; and holes in the concrete flooring.

A 2008 audit of the site by the Department of the Interior, Office of Inspector General (OIG) found the property to be a high-risk liability to the U.S. Government. The purpose of taking action is to promote public health and safety on BLM-managed lands and to comply with the direction of the OIG that the BLM "identify and resolve trespassing on abandoned mine sites and assess and mitigate hazards associated with these sites" (DOI 2008). The need for action is to mitigate or abate the physical safety hazards present on the AFM site, while addressing the historic resources.

1.3 Scoping and Issues Identification

1.3.1 Tribal Consultation

The BLM sent a formal consultation letter informing the Yerington Paiute Tribe and the Washoe Tribe of Nevada and California of the results of a National Historic Preservation Act (NHPA) Section 110 inventory (Zeier et al 2009) on April 29, 2010. The letter informed the tribes that one prehistoric site is present near the AFM site, and an invitation was made for their comments and concerns. No response was received to this correspondence. As a follow-up to this letter, on August 25, 2010 BLM staff met with the Washoe Tribe of Nevada and California. The Tribal Historic Preservation Officer stated that a site visit was not necessary and did not voice any concerns on the proposal.

The BLM sent a formal consultation letter to the Washoe Tribe of Nevada and California, the Reno-Sparks Indian Colony, and the Yerington Paiute Tribe on August 31, 2010 informing them of the availability of the 2010 EA and briefly describing the four alternatives. The letters informed them of the presence of one prehistoric site in the vicinity of the AFM, invited their comments and concerns, and offered a site tour. To date, no concerns have been raised by the Yerington Paiute Tribe, Reno-Sparks Indian Colony, or the Washoe Tribe.

1.3.2 Public Scoping in 2011

After the Decision was withdrawn, the NEPA and NHPA processes were reinitiated and the BLM initiated a new round of public input. On May 15, 2011 the BLM officially announced that it was seeking public input on a proposal to reduce site safety hazards at AFM through the provisions of Section 106 of the NHPA. The 30-day public input period closed on June 17, 2011. The BLM received 17 unique comment letters (or emails) on the four alternatives described in the 2010 EA. Several of the comments came from individuals who had previously submitted comments to the BLM. Of those comments, two supported allowing a natural deterioration of the buildings (No Action), one supported removal of the most hazardous structures, and one supported the Institutional Controls Alternative.

On June 6, 2011 a public meeting was held at the BLM's Carson City District Office. Approximately eight people attended. These numbers are estimates because not all participants who attended the meetings signed-in. Section 106 updates were also provided to the Storey County Commissioners meeting on June 7, 2011, and at the Comstock Historic District Commission meeting on June 13, 2011, which afforded the public additional opportunities to comment.

As the December 2010 Decision had been withdrawn, during this 30-day public input period the BLM did not identify a single "Proposed Action Alternative." No comments received during this public input period resulted in substantive changes to the alternatives or analyses that were used in developing this 2012 EA. Nor did any of the commenter's propose to the BLM a new reasonable alternative for consideration.

In June 2012, outside of any official commenting period, the BLM received a proposed alternative for the AFM site as a part of the Walters and Green Report (Walters 2012). This alternative was considered but not analyzed in detail as described in Section 2.3.7.

1.3.3 Issues Considered in this EA

This 2012 EA identifies and analyzes the potential environmental effects of the Proposed Action and three alternatives. Environmental resources potentially affected by the alternatives and evaluated in this EA include:

- Cultural and Historic Resources;
- Public Health and Safety;
- Air Quality;
- Water Quality (Surface/Ground);
- Soils;

- Vegetation;
- General Wildlife;
- Migratory Birds;
- BLM Sensitive Species (Wildlife);
- Recreation and Visitor Services;
- Wastes, Hazardous or Solid;
- Interpretation and Environmental Education; and
- Socioeconomics.

1.4 Land Use Conformance Statement

The alternatives are in conformance or are clearly consistent with the goals and objectives identified in the Carson City Field Office Consolidated Resource Management Plan (CRMP) dated May 2001 (BLM 2001). The applicable section is described below:

- Standard Operating Procedures: SOP-1, item #1 "an environmental review (i.e. environmental assessment) will be prepared before projects are developed…"
- Implementation Level Decisions #1, MIN-5 "Identify hazards to the public around inactive and active mine claims through signing, fencing or other appropriate means. Priorities for hazard reduction will be established and carried out by the minerals program, in cooperation with the State Mine Inspector and claimants."

1.5 Relationships to Statutes, Regulations, and Other Plans

In addition to NEPA, a number of supplemental authorities contain procedural requirements that pertain to elements present on the AFM site. These are listed in Table 1-1. A number of BLM policies and regulations are applicable to this EA and are incorporated by reference.

Table 1-1 Applicable BLM Policies, Plans, and Programs and Supplemental Authorities
BLM Planning Regulations, 40 CFR 1600
BLM National Environmental Policy Act (NEPA) Handbook H-1790-1
BLM Rangeland Health Standards, BLM Manual 4180
Special Status Species Management, BLM Manual 6840
Cultural Resource Management, BLM Manual 8100
Native American Religious Concerns, BLM Handbook 8120
General Procedural Guidance for Native American Tribal Consultation, BLM Manual 8120
Identifying and Evaluating Cultural Resources, BLM Manual 8110
Planning for Uses of Cultural Resources, BLM Manual 8130
Protecting Cultural Resources, BLM Manual Section 8140
Native American Consultation, BLM Manual 8160
Visual Resource Inventory (BLM 1986), BLM Handbook 8410-1
Roads, BLM Manual 9113
Culverts and Bridges, BLM Manual 9112
Visual Resource Management, BLM Information Bulletins (IM) 98-135, 98-164, and 2000-096
Supplemental Authorities
Federal Land Policy and Management Act of 1976 (43 United States Code [U.S.C.] 1701 et seq.)
Clean Air Act of 1977 (33 U.S.C. 1251 et seq.)
Clean Water Act of 1977 (33 U.S.C. 1251 et seq.), as amended
Taylor Grazing Act of 1934 (43 U.S.C. 315)
Healthy Forests Restoration Act of 2003 (Public Law [PL] 108-148)

Table 1-1 Applicable BLM Policies, Plans, and Programs and Supplemental Authorities
Federal Noxious Weed Act of 1974 (PL 93-629)
Endangered Species Act of 1983 (ESA; 16 U.S.C. 1531), as amended
National Historic Preservation Act (16 U.S.C. 470), as amended
Archaeological Resources Protection Act (16 U.S.C. 470), as amended
Native American Graves Protection and Repatriation Act (PL 101-601)
The Archaeological Resources Protection Act of 1979
Archeological and Historic Preservation Act of 1974
36 CFR 65 National Historic Landmark Program
36 CFR 68 Secretary of the Interior's Standards for the Treatment of Historic Properties
Assessing Tribal and Cultural Considerations, IM 2004-052
Consultation and Coordination with Indian Tribal Governments, Executive Order (EO) 13175 and 1300840
Indian Sacred Sites, EO 13007
Migratory Bird Treaty Act of 1918 (16 U.S.C. 703),as amended
Transportation Safety Act of 1974
Hazardous Materials Transportation Act, as amended
Control of Invasive Species, EO 13112
Final EIS: Vegetation Treatment on BLM Lands in the 13 Western States
40 CFR 2740, 2912, 2911, and 2920, Land Use Authorizations

1.6 Decision to be Made

The Authorized Officer would decide which alternative presents the best option for meeting the purpose and need. The action would be the alternative that best promotes public health and safety on BLM-managed lands; mitigates or abates the physical safety hazards present; and addresses the historic resources of the AFM site. The BLM would then proceed to issue a Final EA, sign a Finding of No Significant Impact, (if appropriate) and Decision Record for the selected action. Persons on the BLM's mailing list and local media would be notified of this Decision.

1.7 Organization

This EA has been organized and formatted consistently with applicable National Environmental Policy Act (NEPA) and Council on Environmental Quality (CEQ) guidelines and the BLM NEPA Handbook (H-1790-1). The goal of this EA is to provide the reader with a clear understanding of the alternatives, resources that may be affected, potential environmental consequences, and the environmental review and evaluation process. Chapter titles and brief content descriptions are:

- Chapter 1 – Purpose and Need: Provides the history and background of the AFM and describes the purpose and need for the Proposed Action and alternatives, the public scoping process and issues, related plans, relevant policies, and the overall vision of this EA.
- Chapter 2 – Alternatives: Describes the Proposed Action, alternatives and the alternative development process. It describes four alternatives that are evaluated in detail in this EA including: Alternative 1 - the No Action (Current Management); Alternative 2 – Demolition (Proposed Action); Alternative 3 – Institutional Controls; and Alternative 4 – Selected Building Retention.
- Chapter 3 – Affected Environment: Describes the current physical, biological, human, and land use environments of the AFM. The descriptions provide a comparison of the

baseline (the No Action Alternative) with three other alternatives that would alter the current management of the AFM site. The baseline represents the environmental and social conditions and trends in the AFM at the time this document was being prepared.

- Chapter 4 – Environmental Consequences: Describes how, and to what extent, baseline conditions of the No Action Alternative would be altered by the three other alternatives. These changes are measured in terms of adverse and beneficial impacts, and direct and indirect impacts. In this document, the terms "effect" and "impact" are used synonymously.
- Chapter 5 – Cumulative Impacts: Describes the incremental effects of the Proposed Action and alternatives when considered with other past, present, and reasonably foreseeable actions in the AFM area.
- Chapter 6 – Consultation and Coordination: Describes how the BLM interacted with cooperators, stakeholders, and the public.
- Chapter 7 – References: Provides full citation information for all references, published and unpublished, cited in this document, as well as personal contacts used in developing this EA.

2.0 ALTERNATIVES

2.1 Building Descriptions

The Proposed Action and three alternatives discuss specific buildings on the AFM site (Figure 2-1).

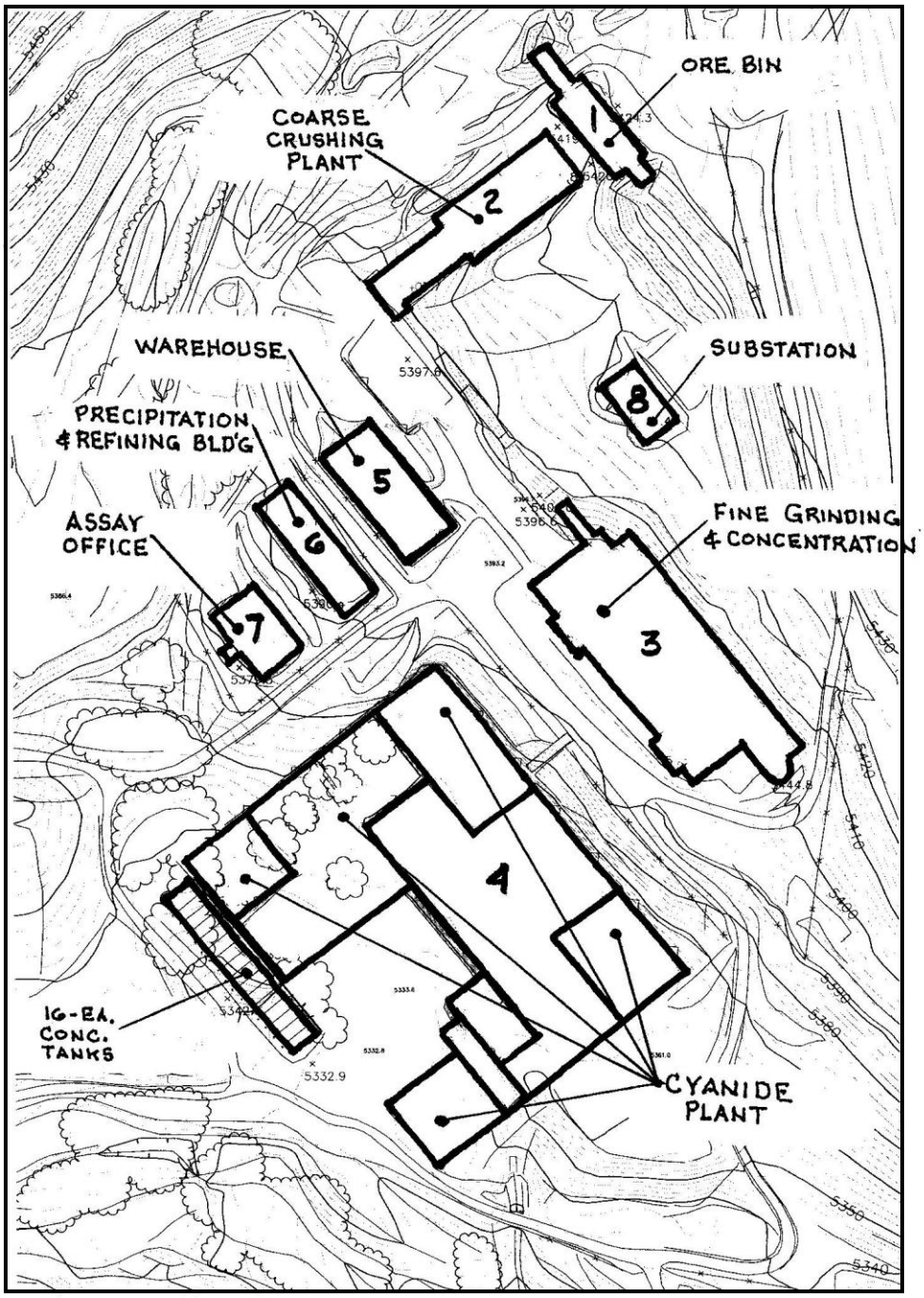

Figure 2-1 AFM Buildings

Brief descriptions of the buildings (based on the 2010 USACE report) are provided below:

Building 1 – Ore Bin

The Ore Bin is a 3,785-square-foot building with 14 concrete supports for the steel rotating tipple. The building and supports are concrete and are largely intact (the tipple has been removed). In addition to the walls and deck, large concrete buttresses project from both sides of the structure (built to bear the weight of the ore trains and offset the rotary action of the tipple). Figure 2-2 shows the current appearance of the Ore Bin.

Figure 2-2 Ore Bin

Building 2 – Coarse Crushing Plant

The Coarse Crushing Plant, shown in Figure 2-3, was constructed entirely of reinforced concrete. The building is 8,473 square feet, and at the time it was built was 80 feet tall. Two other mill components were a structural part of the Coarse Crushing Plant: a machine shop, which was approximately 50 by 80 feet and 32 feet tall in plain view, and a blacksmith shop, which was approximately 32 by 48 feet in plain view. The upper walls of the Coarse Crushing Plant had a reinforced concrete skeleton filled with Fenestra steel sash windows and corrugated galvanized steel. The steel was salvaged in 1927 and is no longer present. There are two basement levels and 10,000 linear feet of tunnels. Little is known about the underground mill sumps and concrete-lined tunnels that underlie the site. The tunnels carried process materials to the next processing stage, mostly on conveyers and through pipes.

Run-of-Mine ore was delivered to this facility via a 10,000-foot-long underground tunnel. Electric railcars dumped ore here to be crushed. A heavily reinforced concrete receiving ore bin occupies the northeastern side of the building. Crushed ore from this facility was sent to the Fine Grinding and Concentration Plant. Today, the building consists of five levels, including two basement levels (now flooded). The upper levels are now only bare skeletons of concrete with protruding rebar.

Figure 2-3 Coarse Crushing Plant

Building 3 – Fine Grinding and Concentration Plant

The Fine Grinding and Concentration Plant (with basement levels; Figure 2-4) is a reinforced concrete building that is 16,998 square feet and stands 83 feet tall. The building is roughly rectangular in shape, with a rectangular extension on the eastern side and the remains of a conveyor belt support structure on the west. The structure was built on the side of a hill and has multiple levels of varying heights, including two levels below surrounding ground on the northern side and one subgrade level on the southern side. This building contained ball mills and classifiers that crushed and washed the ore. Material from this plant was sent to the Cyanide Plant.

Figure 2-4 Fine Grinding and Concentration Plant

Building 4 – Cyanide Plant

The Cyanide Plant, shown in Figure 2-5, is 89,650 square feet and covers about 2.5 acres. Most of the Cyanide Plant has reinforced concrete floors, retaining walls, tunnels, equipment mountings, and cast sills, which supported an array of 40 redwood mixing and leaching tanks. Roof support columns were placed so as not to interfere with the leaching and mixing tanks. The tanks rested on concrete sills placed directly on the concrete floor. The building is set onto cut-and-fill terraces that facilitated gravity flow of the process solutions. Output from the cyanide process was sent to the filter or tank house located at the northwestern corner of the Cyanide Plant. Product from the tank house was delivered to the Precipitation and Refinery Building. The basement at the lowest level of the concrete skeleton of this building is now flooded and has several concrete posts protruding from it.

Figure 2-5 Cyanide Plant

Building 5 – Warehouse

The Warehouse (Figure 2-6) was built of solid concrete. This building is 5,666 square feet and 13 feet tall. A railroad spur was once adjacent to it. The warehouse was surrounded by a concrete platform eight feet wide and four feet above ground level. Most of the interior of this building is now open.

Figure 2-6 Warehouse

Building 6 – Precipitation and Refinery Building

The Precipitation and Refinery Building was constructed of reinforced concrete and is 3,938 square feet (Figure 2-7). Gold and silver were extracted from pregnant cyanide solutions in this building. The building held two rectangular tanks and housed four Merrill-Crowe presses. The remainder of the building held the refinery and included a vault for bullion storage. The windows in this building were covered with heavy metal grates, which have been removed.

Figure 2-7 Precipitation and Refinery Building

Building 7 – Assay Office and Testing Plant

The Assay Office and Testing Plant is 3,005-square-foot two-story rectangular building. The first story was constructed of reinforced concrete and contained equipment for testing and sample grinding equipment. The second story consisted of a metal frame covered with metal lath and cement plaster inside and out. The building contained a furnace room, laboratory, and mill superintendent's office. The building has a concrete daylight basement with a small porch made of cast concrete. The remaining parts of Building 7 are shown in Figure 2-8.

Figure 2-8 Assay Office and Testing Plant

Building 8 – Substation

The Substation was the small (approximately 2,022-square-foot) building located behind the Coarse Crushing and Fine Crushing buildings. All that is left of this building, as shown in Figure 2-9, is a rectangular slab foundation with remnants of concrete stem walls surrounded by an array of concrete pillars.

Figure 2-9 Substation Slab
(Building 3 in Background)

2.2 Introduction to the Alternatives

For an alternative to be considered reasonable[3] under NEPA, it must meet the purpose and need statement (refer to Section 1.2). For this EA, a Proposed Action and three alternatives were identified through internal and external scoping. The alternatives include:

- Alternative 1 – No Action (Current Management)
- Alternative 2 – Demolition (Proposed Action)
- Alternative 3 – Institutional Controls
- Alternative 4 – Selected Building Retention

Given the purpose and need of this EA, Alternatives 2 through 4 would change the BLM's current management at the AFM site. Attachment B provides photographic simulations comparing the alternatives after implementation.

In the context of an EA, a range of alternatives explores alternative means of meeting the purpose and need. The range of alternatives must be reasonable, economically feasible, and within the BLM's decision-making authority. This analysis fully evaluated the Proposed Action and three alternative approaches to address the need to mitigate or abate the physical safety hazards present on the AFM site, while addressing the historic resources.

2.3 Description of Alternatives

Detailed alternatives and management actions are discussed in this section.

2.3.1 Alternative 1 – No Action (Current Management)

Alternative 1 represents the No Action Alternative under NEPA and CEQ regulations. The purpose of the No Action Alternative is to provide the baseline of existing conditions. On the basis of the No Action Alternative, this EA is able to evaluate the degree of change from the current situation to what would occur under implementation of any other alternative. Alternatives 2 through 4 would represent a change in BLM's current management of the site.

Under the No Action Alternative, structures would continue to subside and collapse over time. The public would continue to be at risk due to the physical hazards present. Under the No Action Alternative, the BLM would:

- Maintain the existing closure order;
- Maintain or repair the existing fencing around clusters of buildings and allow public access to the areas between the buildings;
- Maintain and/or repair closure signage; and
- Continue BLM law enforcement patrols; and
- Provide funding to allow for continued Storey County sheriff patrols.

[3] According to CEQ's Forty Questions, question 2a, "reasonable alternatives include those that are practical or feasible from the technical and economic standpoint and using common sense, rather than simply desirable from the standpoint of the applicant."

Attachment C shows examples of recent vandalism, and Attachment D shows examples of closure fencing and signs.

2.3.2 Alternative 2 – Demolition (Proposed Action)

Under the Proposed Action, the BLM would:

- Complete a final design prior to implementation;
- The final design would delineate on-site landfill area perimeters and subgrade characteristics, and identify native borrow material sources for use in filling voids and as soil cover for on-site landfill areas;
- Demolish all eight AFM buildings;
- Reclaim building footprints and other disturbed areas;
- Bury on-site demolition debris;
- On-site landfills and disturbed areas would be covered by native soil and re-vegetated;
- The alternative would include grading contours;
- Prepare a storm water management plan;
- Prepare a re-vegetation plan;
- Prepare a weed control plan;
- Implement removal and re-vegetation best management practices (BMPs);
- Removal would be expected to take approximately one year to complete (contingent on timeframe for securing funding); and
- After removal, the BLM would remove the site closure order and fully open the site to public use.

Details of removal: Water would be removed from the basements of Buildings 2, 3, and 4 prior to removal actions and filling of tunnels and voids. This water would be stored on-site for dust control or other uses. Additional water for dust suppression would be from the nearest municipal source and transported by truck to the site. No on-site reservoir would be needed.

Removal techniques for buildings and structures could include, but are not limited to:

- Excavator with a removal grapple;
- Concrete saw;
- Concrete water-jet;
- Removal of walls by crane;
- Removal of walls by backhoe; and
- Wrecking ball.

Following building removal, ground-level slabs and foundations would be fractured and left in place. Fracture options could include, but are not limited to:

- Excavator with a demolition grapple;
- Backhoe with a breaker attachment;
- Jackhammer;
- Pneumatic and hydraulic breakers; and

- Expansive grout.

Tasks associated with removal would be essentially the same regardless of the selected technique. Typical BMPs for removal and landfill activities could include, but are not limited to:

- Temporary safety fencing around the site perimeter;
- Silt fencing to capture any sediments;
- Sediment logs to control contamination of the stream adjacent to the site;
- Install a gravel tracking pad for washing equipment prior to demobilization/departure from the site; and
- Dust controls, such as water spraying along haul routes during removal and grading activities.

Demolition debris and native borrow material would be used to fill building voids and tunnels. Building 4 is set onto cut-and-fill terraces and it is likely that the Building 4 footprint and substructure has sufficient volume to accommodate all remaining removal debris after other voids and tunnels were filled. Each demolished building footprint would be covered with a minimum three feet of native soil. The American Flat Road to the AFM site would not be closed, nor would re-routing of traffic be necessary.

The site would be graded to blend with existing contours and revegetated to achieve a natural appearance. A vegetated soil cover (minimum 36-inch) would be placed over all building footprints (i.e., ground-level slabs and foundations, including the primary landfill in Building 4). The soil cover would comprise native material excavated from an onsite borrow area. All disturbed surfaces would be covered in accordance with an engineered design. A seed mix comprising native grass and shrub species common in the vicinity would be used to seed all disturbed and soil cover areas. Revegetation BMPs would be implemented to protect the seeded surface and facilitate establishment of the desired vegetation cover. AFM site roads would be reclaimed along with the rest of the site. Access and perimeter roads would not be reclaimed.

Following revegetation actions and demobilization, site clean-up activities would include deconstruction and removal of all temporary structures and features, including a tracking pad and temporary site for security fencing. No long-term site security activities would be required under this alternative.

2.3.3 Alternative 3 – Institutional Controls

Under the Institutional Controls Alternative, the BLM would:

- Fill voids and tunnels inside the buildings with native soil;
- Remove loose rebar and concrete;
- Buildings would continue to subside and collapse over time;
- Enclose the site perimeter within an eight-foot high security fence;
- Post the site perimeter with closure signs (approximately 16 acres would be enclosed within the fencing);
- Implement full-time site security;
- Continue BLM law enforcement patrols;

- Provide funding to allow for continued Storey County sheriff patrols;
- Conduct periodic inspections and maintenance of the fencing and signage;
- Maintain the existing closure order; and
- Installation of new fencing would be expected to take two to four months to complete.

2.3.4 Alternative 4 - Selected Building Retention

Under the Selected Building Retention Alternative, the BLM would:

- Complete a final design prior to implementation;
- Demolish five of the eight buildings (Buildings 3, 5 and 6 would be retained);
- Install soil cover and reclaim Building 1, 2, 4, 7 and 8 footprints;
- Remove loose, hanging concrete and exposed rebar from the retained buildings;
- Fill voids and tunnels;
- Maintain the existing closure order for the retained buildings;
- Secure the upper floors of Buildings 3, 5 and 6 against access by installing bars, metal plates, or other materials over doors, windows, and other openings;
- Enclose each retained building in an eight-foot high security fence;
- Partial removal would be expected to take eight months to one year to complete;
- Continue BLM law enforcement patrols; and
- Provide funding to allow for continued Storey County sheriff patrols.

2.3.5 Actions Common to All Alternatives

- All contaminated materials would be removed under a separate action;
- Maintain a law enforcement assistance agreement with the Storey County Sheriff's Department to provide supplement patrols of the AFM site at an annual cost of up to $5,000 per year;
- All other historic features of the AFM site (a rock quarry pit and crusher, a cement tank, several refuse dumps, an internal railroad spur, and a V&T Railroad spur), except some roads and possible terraces, will be avoided and not affected by any alternative;
- An architectural assessment would be conducted to document a historic building in its present state and to assess the stability of the structure. A qualified professional gathers information about the building such as existing architecture, present condition, and factors affecting stability and structural integrity. This approach would be used to assess any retained buildings and would be undertaken in accordance with the Programmatic Agreement (PA) between the BLM, Advisory Council on Historic Preservation (ACHP) and the State Historic Preservation Office (SHPO)[4];
- Site recordation and documentation would be conducted to mitigate adverse effects to historic and cultural resources by collecting and preserving information on the AFM structures. A qualified professional would prepare Historic American Building Survey/Historic American Engineering Record/Historic American Landscape Survey (HABS/HAER/HALS) documentation of the buildings to create detailed, high-quality records that allow the public, researchers, and future generations to learn about the architecture and history of the AFM; and

[4] The BLM, ACHP and SHPO are signatories to the PA; the National Park Service and Comstock Historic District Commission are concurring parties.

- To minimize impacts to migratory birds during the nesting season, if building removal were to occur between March 1 and July 15, a survey for nesting migratory birds would be conducted within a 0.25-mile buffer of the 27-acre project area by a qualified biologist. If active nests or other evidence of nesting is observed, avoidance measures may be implemented.

2.3.6 Actions Common to Alternatives 2 and 4

- Alternatives 2 and 4 would be implemented in accordance with State and local requirements, as required by law, including permits from the Nevada Department of Environmental Protection (NDEP) for onsite disposal of any associated removal debris.
- The AFM structures may provide summer roosting and/or maternity colony habitat for bats. If buildings are scheduled for removal during summer months (May 1 through October 15), surveys for bats would be conducted by a qualified biologist. If bats are found, avoidance measures may be implemented.

2.3.7 Alternatives Considered but Not Analyzed in Detail

Six other alternatives were considered by the BLM or submitted by the public to the BLM. These alternatives were not carried forward for further analysis because they did not meet the purpose and need, were speculative in nature, were not economically feasible, or were not within the BLM's decision-making authority.

Foundation Stabilization

This alternative would demolish all buildings on the AFM site to a height of 10 feet and/or fill vertical drops of greater than 10 feet with a maximum slope of 3:1, leaving only the vertical structures and outline of the buildings. This alternative does not meet the purpose and need for the action because certain physical hazards would remain at the site after implementation of the proposed stabilization activities. This alternative is not economically feasible; therefore this alternative has been dismissed from further analysis in this document.

Selected Building Stabilization with Controlled Management

Under this alternative, three selected buildings would be stabilized to the degree necessary to safely accommodate human entry and use. Current unauthorized recreational activities, including graffiti and paintball games, would likely continue. The remaining buildings would be demolished and disposed of in onsite landfills. This alternative was dismissed from further analysis because it is not economically feasible.

Disposal and Transfer

Under this alternative, the entire site would be transferred through a sale, transfer, or special legislation to a local or State government, or to a Non-Governmental Organization (NGO). Typically, the federal government does not transfer lands out of federal ownership that have substantial public health and safety liabilities, so any proposal for sale/transfer/legislation would need to address this site's unique health and safety requirements.

This concept has been discussed for years, but no formal proposals have been put forward by any State, local agency or government, or non-governmental organization to take over jurisdiction of the site. Legislation would require Congressional action; at this time, no legislation has been

proposed. This alternative is speculative in nature; therefore this alternative has been dismissed from further analysis in this document.

Site Stabilization/Preservation

This alternative would stabilize all buildings to preserve them in their current state. All graffiti would be removed. The buildings would be fenced to prevent entry by the public and onsite security would be implemented. This alternative was dismissed from further analysis because it is not economically feasible.

Citizen Proposal "Museum of Nevada History"

In January 2011 the BLM received one citizen proposed alternative. This alternative proposed to turn the AFM site into a "Museum of Nevada History." The museum would interpret the history of westward expansion as well as to explain the gold and silver extraction method that was used at the AFM site while it was in operation. The museum would be operated by a partnership between the BLM and a non-specified Friends group and/or other cooperating association(s). The alternative described that a museum could attract 200 thousand visitors per year, and generates $2.0 million per year to fund operations and stabilization efforts. The alternative description had many unspecified details that would be addressed in a business plan and a "to be developed" Interpretive Master Plan.

This alternative was not carried forward for further evaluation for the following reasons: the alternative is too speculative to implement; the CRMP has not identified the AFM site as an interpretive and educational facility; and the proposal is not economically feasible.

Ruins Conservation

In June 2012, under contract by the SHPO and Comstock Historic District Commission, a structural evaluation of the AFM site was completed by Fred Walters, Historical Architect, and Mel Green, Structural Engineer. Included in the report is the framework for a new alternative, although it is incomplete. The alternative included in the report is summarized here and the full report is included in Appendix A.

The alternative includes a combination of structural stabilization, and selected removal of the most unstable portions of structures. The study notes that salvage efforts in the 1920's led to the extensive removal of structural bracing in the buildings, and to actions which cut, exposed, or otherwise compromised reinforcing steel. The study recommends measures to provide new structural bracing to provide stability to the buildings. Exposed reinforcing steel would be encapsulated. Lower levels, tunnels and voids would be filled or permanently closed. Upper levels would be retained although access prevented. In limited situations, restoration of the removed portions of structures would occur through construction of "ghost structures" (as in the case of the trestle for Building 3). All structures would be retained except for Buildings 7 and 8, which would be left as footprints. No new interpretive facilities were specifically proposed, although the report recognized historic values and suggested an interpretation program. Ground-level public access into the stabilized structures could be managed though an unspecified "visitor management program" (Walters 2012).

This report recommends specific measures to stabilize structures/ buildings on the AFM site, as well as measures to reduce or eliminate below grade hazards. SHPO notes that the study's measures are primarily focused on stabilization of the historic and cultural resources, and that these stabilization measures could be combined with a wide range and variety of other measures to allow, restrict, enhance, or curtail public use of the AFM site. While measures such as perimeter fencing, on-site security, on- or off-site interpretation (like those measures considered in Alternatives 3 and 4) could be combined with these building stabilization measures, SHPO asked that the Walters and Green study's recommendations stand on their own as an alternative.

This alternative's "interpretation" and "visitor management" programs are vague in nature, without enough detail to provide for an evaluation of effectiveness in meeting the project's purpose and need – especially in regards to mitigating public safety hazards. While the study identifies new measures to stabilize the buildings, it does not provide sufficient detail about associated public use, access control, interpretation, and site safety measures to fully evaluate all resources, or the effects to the human environment. As such, this alternative was eliminated from further analysis and consideration in this EA.

3.0 AFFECTED ENVIRONMENT

3.1 Introduction

This section describes the existing environmental resources at the AFM site and in the immediately surrounding area—air, water, soil, vegetation, wildlife, and cultural resources, as well as the visual setting—that could be affected by the four alternatives, including the No Action Alternative (Current Management). The description of resources provides baseline information that can be used to compare and evaluate potential impacts on the human environment that may result from implementation of the alternatives.

The AFM site is located along the eastern edge of American Flat, a large bowl-shaped area, south of Gold Hill, and west of Silver City, Nevada. American Flat is bounded on the east by Harford Hill and on the north and west by the Virginia Range. A ridge from McClelland Peak to Beacon Hill, Basalt Hill, and Grizzly Hill forms the southern boundary of American Flat. Topography at the site ranges from moderate to gently sloping and elevations range from 5,320 to 5,480 feet above sea level (Zeier et al. 2009).

3.1.1 Resources Considered for Analysis

The BLM is required to address specific elements of the environment that are subject to requirements in statute, regulation or by executive order (BLM 2008b). Table 3-1 lists the elements that must be addressed through environmental analysis and indicates whether the alternatives affect those elements. Other resources of the human environment that have been considered for analysis are listed in Table 3-2.

Table 3-1 Supplemental Authorities*

Resource	Present	Affected	Rationale
Air Quality	Y	Y	Carried forward for analysis. See Sections 3.4 and 4.4.
Areas of Critical Environmental Concern	N	N	Resource not present.
Cultural and Historic Resources	Y	Y	Carried forward for analysis. See Sections 3.2 and 4.2.
Environmental Justice	N	N	Resource not present.
Farm Lands (prime or unique)	N	N	Resource not present.
Floodplains	N	N	Resource not present.
Invasive, Nonnative Species	Y	Y	Carried forward for analysis. See Sections 3.7 and 4.7.
Migratory Birds	Y	Y	Carried forward for analysis. See Sections 3.8 and 4.8.
Native American Religious Concerns	Y	N	One prehistoric site is present in the AFM site area; however this site would not be affected by any alternative. Therefore Native American Religious Concerns will not be carried forward for further analysis.
Threatened or Endangered Species (animals)	N	N	Resource is not present based on a review of the USFWS website.
Threatened or Endangered Species (plants)	N	N	Resource is not present based on a review of the USFWS website.
Wastes, Hazardous or	Y	Y	Carried forward for analysis. See Sections 3.10 and 4.10.

Table 3-1 Supplemental Authorities*			
Resource	Present	Affected	Rationale
Solid			
Water Quality (Surface/Ground)	Y	Y	Carried forward for analysis. See Sections 3.5 and 4.5.
Wetlands/Riparian Zones	Y	N	Resource not affected as no actions are proposed in wetlands/riparian zones.
Wild and Scenic Rivers	N	N	Resource not present.
Wilderness/WSA	N	N	Resource not present.

**See H-1790-1 (January 2008) Appendix 1 Supplemental Authorities to be Considered.*
Supplemental Authorities determined to be Not Present or Present/Not Affected need not be carried forward or discussed further in the document.
Supplemental Authorities determined to be Present/May Be Affected may be carried forward in the document.

Table 3-2 Resources or Uses Other Than Supplemental Authorities			
Resource or Issue**	Present Yes/No	Affected Yes/No	Rationale
BLM Sensitive Species (wildlife)	Y	Y	Carried forward for analysis. See Sections 3.8 and 4.8.
BLM Sensitive Species (plants)	N	N	Resource not present.
Fire Management/Vegetation	N	N	Resource not present.
Forest Resources	N	N	Resource not present.
General Wildlife	Y	Y	Carried forward for analysis. See Sections 3.8 and 4.8.
Global Climate Change	Y	N	Although there is a public and scientific debate about human-caused contributions to global climate change, no methodology currently exists to correlate greenhouse gas emissions (GHG) from the alternatives, and to what extent these contributions would contribute to global climate change.
Greenhouse Gas Emissions	Y	N	Under all alternatives there would be negligible contribution of a GHG from vehicle emissions, no methodology currently exists to correlate GHG emissions from the alternatives to any specific resource impact within the project area.
Interpretation and Environmental Education	Y	Y	Carried forward for analysis. See Sections 3.11 and 4.11.
Land Use Authorization	N	N	Resource not present.
Lands with Wilderness Characteristics	N	N	Resource not present.
Livestock Grazing	Y	N	The AFM site comprises approximately 0.1 percent of the 23,175-acre Carson Plains/Gold Hill Grazing Allotment. This Allotment is authorized from April 1 to May 31 each year for approximately 535 animal unit months (AUMs). No alternative would affect livestock grazing in the area. Therefore, Livestock Grazing will not be carried forward for further analysis.
Minerals	N	N	Resource not present, although active mining claims occur in the vicinity of the AFM site. Therefore, Minerals will not be carried forward for further analysis.
Paleontological	N	N	Resource not present.
Public Health and Safety	Y	Y	Carried forward for analysis. See Sections 3.3 and 4.3.
Recreation	Y	Y	Carried forward for analysis. See sections 3.9 and 4.9.
Socioeconomics	Y	Y	Carried forward for analysis. See Sections 3.12 and 4.12.
Soils	Y	Y	Carried forward for analysis. See Sections 3.6 and 4.6.

Table 3-2 Resources or Uses Other Than Supplemental Authorities			
Resource or Issue**	Present Yes/No	Affected Yes/No	Rationale
Travel Management	N	N	Resource not present.
Vegetation	Y	Y	Carried forward for analysis. See Sections 3.7 and 4.7.
Visual Resources	Y	N	The project area is designated as Visual Resource Management Class IV which allows for major modifications to the visual character of the landscape. All alternatives are consistent with this Class and there would be no effect on this resource. Therefore, Visual Resources will not be carried forward for further analysis.
Wild Horses and Burros	N	N	There is no BLM-designated herd management area in the AFM area, although State estray horses under the management of the Nevada Department of Agriculture are occasionally seen in the area.

***Resources or uses determined to be Not Present or Present/Not Affected need not be carried forward or discussed further in the document.*
Resources or uses determined to be Present/May Be Affected may be carried forward in the document.

3.2 Cultural and Historic Resources

Section 106 of the NHPA requires federal agencies to take into account the effects that federal "undertakings" may have on historic properties[5]. The implementing regulations found at 36 Code of Federal Regulations (CFR) 800 outlines the process federal agencies must follow to comply with the law. In 1997 the BLM signed a National Programmatic Agreement (NPA) with the National Council of State Historic Preservation Officers and the ACHP, which streamlined the consultation process between these agencies. As allowed for by the NPA, the Nevada BLM and the Nevada SHPO entered into a State Protocol Agreement (NV PA), revised in 2012, which further streamlined the consultation process (BLM 2012).

According to the NV PA, prior to any federal undertaking, the BLM is required to make determinations of eligibility and effect on historic properties in consultation with the Nevada SHPO and other consulting parties (Native American Tribes, certified local governments, etc.). Inventories of the area of potential effect are required to locate historic properties[6]. BLM policy is to avoid historic properties as first choice (BLM 2004). If avoidance is not feasible, mitigation may become necessary. Mitigation most often consists of data recovery through excavation, but may also occur as project redesign, extensive historic research and documentation, or other methods. If a property is inadvertently discovered and affected during the construction phase, mitigation is typically required. Sites that are not eligible for listing on the National Register of Historic Places (NRHP) do not need to be avoided or mitigated (BLM 2004).

[5] Similar but not identical to a "major federal action" under NEPA Section 102 (C), regulations implemented by the ACHP (36 CFR 800.16(y)) have defined an *undertaking* as "as a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including those carried out by or on behalf of a Federal agency; those carried out with Federal financial assistance; those requiring a Federal permit, license or approval; and those subject to State or local regulation administered pursuant to a delegation or approval by a Federal agency."

[6] In December 2010 the BLM determined that the area of potential effect under the provisions of the NHPA consist of eight buildings and seven acres at AFM, and the viewshed and setting relative to the Virginia City National Historic Landmark. This determination was concurred with by SHPO in January 2011.

3.2.1 Site History

The history and cultural resources of the AFM are tied to mining of the Comstock Lode. This history is described by Zeier et al (2009). The following descriptions of the history of the AFM and the cultural resources have been summarized from that report.

In the mid-1850s, prospectors heading toward California explored areas in Nevada and found gold in the area that is now Dayton. By 1859, silver had also been discovered, and by 1860 a silver rush was centered around Virginia City. Many mines were quickly played out, but the discovery of the Big Bonanza resulted in continued mining. By the early 1890s production had dropped off significantly in the Comstock Mining District. There was resurgence in Comstock mining in the 1920s, coinciding with the operation of the AFM. The closure of gold mines during World War II was the end of active mining in the Comstock and most mines did not reopen after the war.

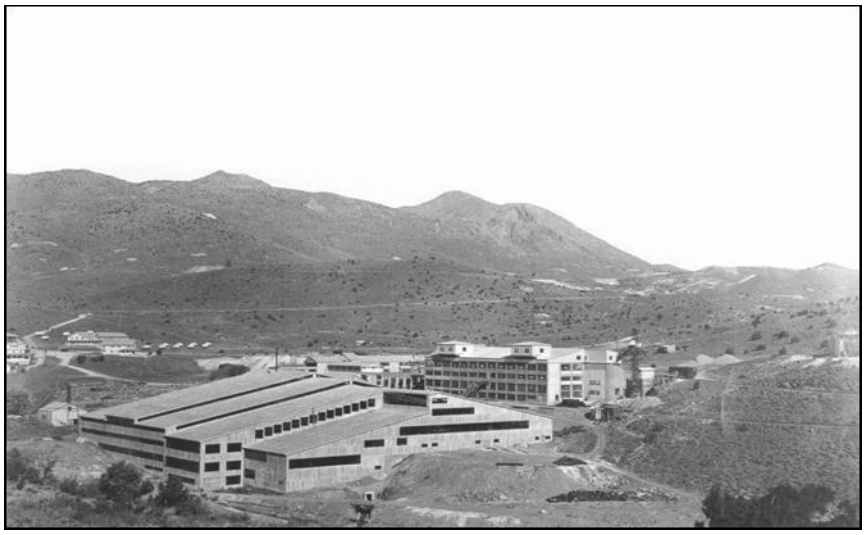

Figure 3-1 AFM circa 1922-1926
(Nevada Historical Society photo ST397)

The AFM site, shown in Figure 3-1, began processing ore in September, 1922. A 10,000-foot-long electrified tunnel that connected all of the American Flat mines transported low-grade ores to the mill. Ore was hauled through the tunnel using an electric locomotive. The tunnel adit where the ore was unloaded is north of the AFM site and is currently covered by mill tailings. The AFM was closed by the end of 1926. Problems that resulted in the AFM closure included milling of low-grade ore, the lack of ore reserves, and the dropping price of silver. When the AFM was closed, all equipment was removed and sold so that all that remained were the building structures. The AFM buildings are described in Section 2.1.

During the life of the AFM, the town of Comstock existed nearby. The town consisted of a number of small houses, a boarding house, an office building, a school, a general store, and an amusement hall. A spur connected the mill to the V&T Railroad. After the mill closed, the Comstock houses were moved to other towns in the area. Most of the town site is now overlain

by mill tailings generated by the Houston Oil and Minerals Corp. operation that occurred between 1978 and 1981. Only the ruins of a few houses remain in the area.

3.2.2 Graffiti

The AFM site had few visitors until tourism became an important part of the Virginia City economy. By the early 1960s the AFM was used by local teenagers as a place to congregate. Graffiti currently covers many building surfaces. Artists from outside the local area gathered at the AFM in earlier years to appreciate and express graffiti art. The graffiti has been repeatedly painted over, but traces of earlier work can be seen. None of the existing graffiti appears to be more than 50 years old, and the BLM in consultation with the SHPO, has determined that graffiti is not eligible for listing under the NRHP under any Criteria[7].

3.2.3 Other Historic Features

Other historic features [referred to as *landscape features* in Zeier et al (2009)] associated with AFM include: roads; a rock quarry pit and crusher; a series of terraces; a cement tank; several refuse dumps; an internal railroad spur; and a V&T Railroad spur. The railroad spurs are contributing elements to the V&T Railroad under Criteria A, C, and D. The quarry, crusher, and cement tank are contributing elements to the Virginia City National Register District (District) under Criterion A. In addition, the quarry and cement tank are locally eligible under Criterion B and the crusher is locally eligible under Criteria B and D. The terraces, roads, refuse dumps, and cyanide drum dumps are not eligible under any Criteria. The remaining associated historic resources would be not impacted by any alternative and will not be discussed further.

3.2.4 National Register Eligibility

The AFM is the last remnant of the United Comstock and the Comstock Merger mining and milling operations and as such contributes to the eligibility of the District under Criteria A and C. The AFM is also locally eligible under Criterion B.

In terms of architecture, the AFM represents the International Style of architecture, which embraced the "form follows function" concept; rejected ornament; and used modern building materials, including concrete, structural steel, and large window panels. The remaining skeletal structures are also in keeping with the International Style because they emphasize the structural system. Repetition of identical elements throughout the site, especially in the crusher and cyanide buildings, is also characteristic of this style. The 1920s construction was about a decade earlier than most other buildings of this style in the U.S. The location of these buildings in the American West and not in a large city is also unique.

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[7] NRHP eligibility criteria guide State and local governments, Federal agencies, and others in evaluating potential entries in the National Register of Historic Places. Criteria for Evaluation: The quality of significance in American history, architecture, archeology, engineering, and culture present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and: A. That are associated with events that have made a significant contribution to the broad patterns of our history; or B. That are associated with the lives of persons significant in our past; or C. That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or D. That have yielded or may be likely to yield, information important in prehistory or history.

The AFM has retained its integrity of location, and, to a lesser degree, its design. Previous removal of the equipment and tanks has diminished the elements of workmanship, material, and association. The elements of setting and feeling have been compromised by development of two heap-leach milling operations very close to the site. On-going deterioration of the structures and graffiti distracts from the historical nature, as does the impact of vehicles, pedestrians and the trash left behind.

3.3 Public Health and Safety

Most structures at the AFM site have few remaining outside walls. Steel has been cut, there are large holes in building floors, and concrete structural members are broken as a result of the historic salvage of the mill compounded by years of decay from weathering and vandalism. In addition to the aboveground structures, the site contains numerous voids and tunnels. Public safety hazards associated with the former mill structures were evaluated by the USACE on behalf of the BLM. Potential safety hazards assessed by the USACE include: falls from heights greater than 10, 20, and 30 feet; drowning hazards; confined space; unexpected drop-offs; exposed sharp edges; and limited vertical clearances. The OIG has reported that "the site presents serious and unacceptable risks to the public health and safety" (DOI 2008).

In 1996, a fatality at the site prompted the BLM to close the buildings to public entry. Despite the closure which is in effect today, the site is a popular gathering location for teens. The site also attracts photojournalists.

The U.S. Army Corps of Engineers report (USACE 2010) characterized and described potential risks to human safety associated with each of the structures on the AFM site. These are summarized in Table 3-3.

Table 3-3 Building Risks

Description	Building 1	2	3	4	5	6	7	8
Historical Risk								
Death			X					
Serious Injury		X	X	X				
Potential Risk								
Falling from heights greater than 10 ft.	X	X	X	X	X	X	X	
Falling from heights greater than 20 ft.		X	X	X				
Falling from heights greater than 30 ft.			X					
Drowning		X						
Confined space or entrapment	X	X	X	X				
Unexpected surface level openings or drop-offs		X	X	X			X	
Impaling/exposed reinforcing steel or sharp edges		X						
Limited vertical clearances		X						

Table 3-3 Building Risks								
Description	**Building**							
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
General Risk								
Accessibility	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**
Visitation attractant	**X**	**X**	**X**	**X**		**X**		
Number of Risks	**4**	**10**	**9**	**7**	**2**	**3**	**3**	**1**

Storey County Law Enforcement patrols the American Flat area on a regular basis. The Storey County Sheriff's Office records indicate there is one generic emergency response address for the site and the surrounding area (including an approximate five-mile radius around the site). Multiple responses to this generic site address have occurred that are not attributed to the AFM site. Incidents associated with the AFM site for the years 2005 through 2012 are shown in Table 3-4.

Table 3-4 Summary of Incidents		
Year	Storey County Sheriff's Department	Storey County Fire Department
2012*	1 graffiti 1 dui 5 trespassing 1 drug possession	
2011	3 graffiti 5 trespassing	
2010		
2009	1 graffiti 8 trespassing	1 fire-related incident 09-0718231 wildland fire (wildland fire at the old mill site)
2008		1 EMS incident 08-1119147 EMS incident (transport by Storey County Fire Department ambulance)
2007	3 graffiti 5 trespassing	1 fire-related incident and 1 EMS incident 07-0713140 unauthorized burning (illegal camp fire at the old mill site) 07-1018223 EMS incident (patient transported by Care Flight)
2006		1 fire-related incident 06-0606118 wildland fire (illegal camp fire at the old mill) 06-1102206 false alarm smoke sighting (smoke sighting at the old mill site) 06-1102106 false alarm smoke sighting (smoke sighting at the old mill site)
2005	1 graffiti	4 fire-related incidents 05-0721124 wildland fire (wildland fire at the old mill site) 05-0906215 building fire (structure fire in the old Houston Oil and Mineral building) 05-0905117 false alarm smoke sighting (smoke sighting at the old mill site)

Table 3-4 Summary of Incidents		
Year	Storey County Sheriff's Department	Storey County Fire Department
		05-1001115 wildland fire (wildland fire next to the old mill) 05-1023110 dumpster fire (illegal camp fire at the old mill)

* This information is current as of August 2012, but subject to change as the year continues.
Source: USACE 2010; SCSD 2012
Key: EMS = emergency medical service

Additional injuries/accidents that were identified by emergency response and Storey County officials (Curtis, pers. comm. 2010) but are not reflected in emergency response records include:

- An additional fatality (unconfirmed);
- Additional injuries and incidents related to falling, stabbings, burns, and shootings;
- Vehicle accidents;
- Reports of stolen vehicles (stripped, abandoned, abandoned and lit on fire); and
- Unauthorized bonfires, and wildland fires originating from in- and around- structures at the site.

BLM law enforcement personnel also provide routine patrol, and respond to violations and incidents at AFM. They are also responsible for maintenance of closure signs and fencing. In 2001 fencing and gates were installed. The following is a summary of activities at the AFM site between September 2011 and early August 2012:

- All fencing replaced and repaired in September;
- Law enforcement:
    - Made 27 visits to the site and 101 contacts;
    - Observed 83 violations and issued 48 citations;
    - Violations included: trespass, drug possession, graffiti, and driving under the influence;
    - Made one arrest for felony warrant/resisting arrest;
    - Repaired fences 69 times due to vandalism;
    - Replaced 79 signs due to vandalism;
- Continued law enforcement assistance agreement with Storey County; and
- Other BLM staff repaired fencing.

3.4 Air Quality

Federal and State governments have established ambient air quality standards for criteria air pollutants, including carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter (PM) with diameters less than or equal to 10 micrometers (PM_{10}), PM with diameters less than or equal to 2.5 micrometers ($PM_{2.5}$), ozone, and lead. Ozone is typically not emitted directly from emission sources, but at ground level it is created by a chemical reaction between ozone precursors, including oxides of nitrogen (NO_x) and volatile organic compounds (VOCs). The U.S. Environmental Protection Agency (EPA) regulates emissions of VOCs.

With respect to National Ambient Air Quality Standards, the EPA classifies all locations in the United States as either "attainment" (including "unclassified"), "non-attainment", or "maintenance" areas. These classifications are determined by comparing actual monitored air pollutant concentrations with their applicable federal standards. Storey County is an attainment area for all criteria air pollutants (EPA 2010). The closest air monitoring station is in Carson City and is maintained by the Nevada Bureau of Air Quality Planning (BAQP). Ozone, CO_2, and $PM_{2.5}$ are measured with this station. The most recent data (from 2003) indicate concentrations for most pollutants were within standards. There was an exceedance of the 65 micrograms per cubic meter ($\mu g/m^3$) standard for $PM_{2.5}$ in 2001 (NDEP, BAQP 2010).

3.5 Water Quality (Surface/Ground)

The AFM site is within the Carson River Basin – Dayton Valley Hydrographic Area. The Carson River, approximately six miles south of the site, is the major perennial drainage in the vicinity. The American Ravine holds a perennial creek that flows along the southern side of the project site. Surface flow is generally toward the southeast (Schaefer and Whitney 1992).

The AFM site is within a structural block fault basin. Tertiary and Quaternary basin fill deposits composed of unconsolidated clay, silt, sand, and gravel within the fault basin are the primary aquifer in the area (Schaefer and Whitney 1992).

Aquifers in this area are generally unconfined and groundwater flow is generally west to east. Depth to groundwater varies from more than 200 feet (close to the mountain fronts) to near surface (close to the Carson River). Average depth to water is approximately 60 feet (Schaefer and Whitney 1992). The BLM drilled two groundwater wells at the AFM site to determine depth to groundwater. Both wells were drilled to 60 feet and neither encountered groundwater. Groundwater quality generally meets all Nevada State drinking water standards (Thompson and Lawrence 1994).

American Creek, which flows through American Ravine, the primary drainage in the area, is approximately 145 feet south of the AFM site. This perennial stream is fed by springs located along the western edge of American Flat. Other drainages are ephemeral, transporting water during spring snow melt and during major rain events (Zeier et al. 2009). American Ravine empties into Gold Creek at Silver City.

3.6 Soils

Soils in the AFM site area generally consist of a thin veneer of colluvium and alluvium over shallow bedrock. Alluvium and colluvium are thickest on the flatter portions of American Flat and are thinnest or nonexistent on steeper slopes (Zeier et al. 2009).

Soils at the AFM site consist of the Springmeyer-Reno association and the Devada-Rock outcrop complex. The Springmeyer-Reno association soils are typically well drained, gravelly loams, gravelly sand clay loam, and loamy sands. The surface area is covered with cobbles, stones, or boulders. Water capacity is low, about 4.6 inches (USDA 2010). The Devada-Rock outcrop complex soils are typically well drained, very cobbly loam grading to gravelly clay. Unweathered bedrock is present at 18 to 22 inches in depth. The surface area is covered with cobbles, stones, or boulders. Water capacity is very low, about 2.4 inches (USDA 2010).

3.7 Vegetation

Vegetation in the vicinity of the AFM site consists of a pinyon-juniper-sagebrush community. Pinyon (*Pinus monophylla*) and juniper (*Juniperus osteosperma*) are found in the upper elevations. At lower elevations, a native shrub overstory includes sagebrush (*Artemisia tridentata*), bitterbrush (*Purshia tridentata*), desert peach (*Prunus andersonii*), green ephedra (*Ephedra viridis*), and rabbitbrush (*Ericameria viscidiflorus*). An herbaceous understory of native graminoids and forbs is dominated by Thurber's needlegrass (*Achnatherum thurberianum*), Indian ricegrass (*Achnatherum hymenoides*), basin wildrye (*Leymus cinereus*), bottlebrush squirreltail (*Elymus elymoides*), Douglas sedge (*Carex douglasii*), narrow-leaved milkweed (*Asclepias fascicularis*), horsemint (*Agastache urticifolia*), poverty weed (*Iva axillaris*), and blazing star (*Mentzelia laevicaulis*). The disturbed nature of the site is reflected in the presence of a number of non-native herbaceous understory species such as cheatgrass (*Bromus tectorum*), curly dock (*Rumex crispus*), tansy mustard (*Descurainia sophia*), stork's bill (*Erodium cicutarium*), yellow sweet clover (*Melilotus officinalis*), and tumble mustard (*Sisymbrium altissimum*). Tall whitetop (*Lepidium latifolium*), a noxious non-native weed, is present at the AFM site.

Riparian vegetation is found along the adjacent stream in American Ravine and is characterized by Fremont cottonwood (*Populus fremontii*), gray willow (*Salix exigua*), horsetail (*Equisetum* sp.), and rushes (*Juncus* spp.).

3.8 General Wildlife, Migratory Birds, BLM Sensitive Species (Wildlife)

Wildlife habitat in the vicinity of the AFM site consists of a pinyon-juniper-sagebrush community, with a small ribbon of riparian vegetation following the adjacent American Creek. Some habitat functions of this vegetation type in the site area are likely reduced by the amount of non-native vegetation on the site as well as focused human activities that include numerous day- and night-time visitors, vehicle traffic, and noise disturbance from parties and activities such as paintball and posting graffiti.

Black-tailed jackrabbits (*Lepus townsendii*), tolerant of human disturbance, are likely present on or near the project area. Golden mantled ground squirrels (*Spermophilus lateralis*) may occur, although this is the lower edge of their altitudinal tolerance, and Townsend's ground squirrels (*Spermophilus townsendii*) are likely present. Deer mice (*Peromyscus maniculatus*) and northern grasshopper mice (*Onychomys leucogaster*) forage among shrubs for seeds, grasshoppers, and other insects. Desert woodrats (*Neotoma lepida*) seek cover in their middens. Coyotes (*Canis latrans*) and bobcats (*Lynx rufus*) pass through the project area during foraging rounds as they search for small mammal prey. Occasional mule deer (*Odocoileus hemionus*) may move through the site.

Bats are common in arid shrubland areas where water is available. The little brown myotis (*Myotis lucifugus*) is very likely present; the big brown bat (*Eptesicus fuscus*) may also be present (both are also BLM sensitive species). Both could use the AFM buildings for summer roosts or maternity colonies.

The Nevada Department of Wildlife stocks rainbow trout in the American Creek in the spring time each year. This is a "put and take" fishery and is not a self-sustaining population. No information is available regarding populations of other fish species in this creek. The list of species of concern that may occur in the site area is shown in Table 3-5.

Table 3-5 Potential Special Status Wildlife Species at the AFM Site

Common Name	Scientific Name	Nevada BLM Sensitive Species	Western BLM Bird Species of Conservation Concern	Game Birds Below Desired Condition
Mammals				
Big brown bat	*Eptesicus fuscus*	√		
Little brown myotis	*Myotis lucifugus*	√		
Birds				
Mountain quail	*Oreortyx pictus*	√		
Lewis's woodpecker	*Melanerpes lewis*	√	√	
Loggerhead shrike	*Lanius ludovicianus*	√	√	
Pinyon jay	*Gymnorhinus cyanocephalus*	√	√	
Yellow-breasted chat	*Icteria virens*	√		
Vesper sparrow	*Pooecetes gramineus*	√		
Black-throated gray warbler	*Dendroica nigrescens*		√	
Virginia's warbler	*Oerothlypis virginiae*		√	
Brewer's sparrow	*Spizella breweri*		√	
Sage sparrow	*Amphispiza belli*		√	
Band-tailed pigeon	*Patagioenas fasciata*			√
Reptiles				
Short-horned lizard	*Phrynosoma douglassi (P. hernandesi)*	√		

Migratory Birds

In 2001, President Clinton signed Executive Order (EO) 13186 placing emphasis on the conservation and management of migratory birds. Migratory birds are protected under the Migratory Bird Treaty Act (MBTA) of 1918 and EO 13186 addresses the responsibilities of federal agencies to protect migratory birds by taking actions to implement the MBTA. The BLM management for migratory bird species on BLM-managed lands is based on Information Bulletin (IB) No. 2010-110 (BLM 2010a). Based on this IB, migratory bird species of conservation concern include "species of conservation concern" and "game birds below desired conditions."

Species Information: A number of migratory bird species are likely to occur on the AFM project site or make use of particular habitat features at certain times of year. Warblers such as yellow-rumped warbler (*Dendroica coronate*) and yellow warbler (*D. petechia*) likely stop over along the riparian corridor during spring and fall migration, and yellow warblers may stay and nest. Additional migrants in the riparian corridor include orange-crowned warbler (*Vermivora celata*), Virginia's warbler (*V. vigineae*), and Wilson's warbler (*Wilsonia pusilla*). In the sagebrush, loggerhead shrikes (*Lanius ludovicianus*), sage sparrows (*Amphispiza belli*), and sage thrashers (*Oreoscoptes montanus*) may forage and nest. Bullock's orioles (*Icterus bullockii*), warbling vireos (*Vireo gilvus*), and house wrens (*Troglodytes aedon*) may also nest in the riparian

corridor. Turkey vultures (*Cathartes aura*) and red-tailed hawks (*Buteo jamaicensis*) likely soar overhead searching for prey.

BLM Sensitive Species (Wildlife)

BLM Manual 6840 (Special Status Species Management) provides policy and guidance for the conservation of BLM special status species and the ecosystems upon which they depend on BLM-administered lands (BLM 2008). BLM special status species are: (1) species listed or proposed for listing under the Endangered Species Act (ESA), and (2) species requiring special management considerations to promote their conservation and reduce the likelihood and need for future listing under the ESA, which are designated as BLM sensitive by the State Director(s). For more information on the BLM Sensitive Species Manual, go to: http://www.blm.gov/wo/st/en/info/regulations/Instruction_Memos_and_Bulletins/national_instruction/2009/IM_2009-039.html.

Species Information: The project area is not within greater sage-grouse (*Centrocercus urophasianus)* preliminary general or priority habitat and this species is not discussed further. The BLM sensitive species that may occur within the AFM project area are shown in Table 3-5.

3.9 Recreation

The AFM site does not include developed recreation or formal visitor services such as restrooms and interpretive displays. The BLM issued a site closure order for the interior of the buildings in January 1997 after a fatality occurred on the site. The closure order for the buildings themselves remains in effect today. The BLM has repeatedly fenced, gated, and posted closure signs at the site, and scarified roads for public safety.

As the region around the AFM has grown in population, more people began to visit the AFM site for recreational purposes. Many visitors engage in off-highway vehicle (OHV) use, partying, post graffiti, play paintball games, take photos, and carry out other unauthorized recreational activities at the AFM site.

3.10 Wastes, Hazardous or Solid

The BLM conducted a preliminary investigation at the AFM site in 2008. The objective of that investigation was to characterize the potential risk to human health and the environment resulting from past metals processing operations at the AFM site. A total of six samples comprising soil, concrete, waste rock, mill sump water, groundwater, and surface water were collected from the AFM site. Samples were analyzed for the presence of metals and cyanide. Of the samples collected, only one sample was reported to contain very small amounts of cyanide (BLM 2008a).

In 2010, the BLM tasked Ecology and Environment, Inc. (E & E) to conduct an expanded Sampling Investigation (SI) of the AFM site. The objective of the SI was to provide sufficient data to confirm the results of previous sampling and to determine if other activities associated with recent human uses of the site may have contaminated concrete, sediment, soil, and/or water in the vicinity. In addition to analyzing samples for cyanide and metals the SI was expanded to test for dioxins and petroleum hydrocarbons related to burned waste, and VOCs related to aerosol paint cans evident at the AFM site.

The SI determined that contaminated materials are present at the site in localized areas of surface soil, sediment, and debris containing metals and/or VOCs (E & E 2010a). One of these areas was burned and also contains small amounts of dioxins. Concrete was analyzed using the EPA Toxicity Characteristic Leaching Procedure to determine whether hazardous constituents would leach from the concrete into the surrounding environment. The results of this analysis indicated that hazardous constituents would not leach in concentrations large enough to affect the surrounding environment (BLM 2010a).

3.11 Interpretation and Environmental Education

There are no formal interpretive facilities at the AFM site. Some members of the public do visit the site for its historical resources. Additionally, recreational train rides for tourists occur on the V&T Railroad which is within the AFM viewshed. During a refueling stop along the scenic train ride, railroad personnel do describe to the public the location of the AFM site nearby. The AFM site is not identified in the CRMP as an educational and interpretive site.

3.12 Socioeconomics

The AFM site is located in Storey County, the second smallest county by area in Nevada. According to the U.S. Census, the population in 2000 was 3,399, with 1,462 households. According to the Nevada State Demographer's Office, the population is estimated to have increased to 4,317 in 2009, which is 0.16 percent of Nevada's total 2009 population (Nevada State Demographer's Office 2010). According to the U.S. Census Bureau as of 2000, 94 percent of the population was rural. The county seat is Virginia City, which has a population of 1,011 (Nevada State Demographer's Office 2010). The city is a popular tourist destination for people interested in the mining history of the West. The tourism industry, largely due to the county's mining heritage, continues to attract more than 1.6 million people a year to the county (Storey County 2010). The closest city is Silver City, which is approximately 1.25 miles southeast. The population of Silver City was approximately 170 as of the 2000 census.

During 2011, due to the economic downturn, the unemployment rate in Nevada was 13.2 percent, 4.3 percent higher than the national average. Storey County had slightly lower than State average unemployment at 12.5 percent (Nevada Workforce Informer 2011). The two largest private employers in Storey County as of the 4th quarter 2009 were Wal-Mart and PetSmart (Nevada Workforce Informer 2010). The average annual per capita income for Storey County in 2008 was $36,188, which was less than the State average of $40,936.

4.0 ENVIRONMENTAL CONSEQUENCES

4.1 Introduction

This chapter describes and compares the environmental consequences predicted to result from implementing the Proposed Action or alternatives described in Chapter 2.0. The purpose of this chapter is to present the impact analysis of the alternatives and to disclose the impacts of the actions on affected resources at the AFM site.

The potential consequences or impacts of each alternative are addressed in the same order of resource topics in Chapter 3.0. This parallel organization allows readers to compare existing resource conditions (Chapter 3.0) with potential impacts (Chapter 4.0).

4.1.1 Analytic Assumptions

The alternative analysis describes how each alternative could affect baseline conditions of individual resources at the AFM site. Impacts are typically described by topic, such as surface disturbance, and impact on other resources or resource uses.

The amount of disturbance from potential actions is used to quantify impacts where possible. For this EA, disturbance from roads, buildings, and a potential borrow area was calculated for each alternative. The results of these calculations are shown in Table 4-1.

Table 4-1 Total Disturbance for Reclamation

Area	Alternative 1 (No Action)	Alternative 2 (Proposed Action)	Alternative 3 (Institutional Controls)	Alternative 4 (Selected Building Retention)
Roads	0	108,510	0	108,510
Buildings	0	175,314	0	133,907
Borrow Pit	0	142,393	0	23,500
Total Disturbance	0	426,217	0	265,917
% of Total Site	0.0%	30.6%	0.0%	19.1%

All numbers in square feet.
Based on the AFM site area of 32 acres.

4.1.2 Types of Effects

When applicable, definitions of the following types of impacts are included in the evaluation of reasonably expected environmental consequences (speculative impacts are not addressed).

Impact Thresholds: The general nature of estimated or predicted impacts is categorized by impact thresholds. Thresholds are expressed as beneficial impact, no impact, adverse impact, or major adverse impact. *Beneficial impacts* would result from actions that cause a positive or beneficial impact to a particular resource. The *no impact* situation arises when an action has no detectable effect to a specific resource. *Adverse impacts* occur when an action results in a detrimental or negative impact to a particular resource, but the impacts are less than significant (40 CFR 1508.27). A *major adverse impact* results in significant negative effects to a resource

or the environment. In this EA, no significant impacts have been identified for any resource (see attached draft Finding of No Significant Impact).

Direct/Indirect Impacts: In general, *direct impacts* result from activities authorized by the BLM and occur at the same time and place as the activity or action causing the impact. For example, for the action of building a road, a direct adverse impact is surface disturbance. Surface disturbance is the impact (the effect) of heavy equipment removing existing vegetation (the cause) as it grades the proposed road location. Indirect impacts occur at some distance or time from the action. In the example just given, an *indirect impact* could occur days after the surface is disturbed, as well as some distance from the disturbance. Heavy precipitation following the removal of vegetation and/or disturbance of the ground surface could erode soil and transport sediment into streams. The impact on stream water quality is considered an indirect adverse impact.

Onsite/Offsite Impacts: *Onsite impacts* are those that would occur within the AFM site. *Offsite impacts* are those that would occur outside of the AFM site, but result from an action taken at the AFM site. The degree to which actions and changes under the alternatives would affect other areas depends on the absolute and relative amount of onsite changes, the causal linkage between onsite changes and offsite consequences, and the relationship between changes resulting from the alternative and those that would occur without the alternative.

Short- or Long-Term Impacts: When applicable, the short-term or long-term aspects of impacts are described. *Short-term impacts* occur during or after the activity or action. *Long-term impacts* would last longer, generally beyond the first two years.

4.1.3 Methods and Assumptions

Analysis of alternatives is both qualitative and quantitative and is based on a series of assumptions. The methods and assumptions listed below, and for each resource in the following sections, are presented to provide a basis for the conclusions reached. Assumptions unique to specific resources and resource uses are listed under the appropriate resource section. Assumptions common to all alternatives and all resources are:

- All alternatives would be implemented in compliance with standard practices, BMPs, guidelines for surface-disturbing activities, and applicable laws, standards, and policies, as well as with all BLM policies and regulations;
- Comparison of impacts among resources is intended to provide an impartial assessment to inform the decision-maker and the public. The impact analysis does not imply or assign a value or numerical ranking to impacts. Actions resulting in adverse impacts to one resource may impart a beneficial impact to other resources;
- In general, adverse impacts described in this chapter are considered important if they result from, or relate to:
  - Context and/or intensity of impacts suggesting potential impacts to public health and safety;
  - A potential for violating legal standards, laws, and/or protective status of resources; and/or
  - Potential impacts to unique resources;

- The comparison of individual alternatives is qualitative, relative to Alternative 1 (the No Action Alternative), and based on professional judgment and consideration of the context and intensity of allowable uses and management actions anticipated to impact resources and resource uses; and
- Analysis of environmental consequences focuses on the anticipated incremental and meaningful impact of actions proposed for each alternative.

4.2 Cultural and Historic Resources

Section 106 of the NHPA requires that federal agencies consider the effects of their "undertakings" on historic properties. Historic properties are cultural resources listed on, or eligible to, the NRHP. In evaluating undertakings in relation to historic properties, "effect" means alteration to the characteristics of a historic property that qualify it for the NRHP. If the cultural resource is determined not eligible for the NRHP, or if the undertaking would not directly or indirectly affect historic properties, the action would be determined to have "no effect." An undertaking would have an "adverse effect" if it would alter the historic property in a manner that would diminish the integrity of the characteristics that make it eligible for the NRHP (i.e. location, design, setting, materials, workmanship, feeling, or association). Impacts to resources eligible for the NRHP must be mitigated through excavation, avoidance, or preservation. When effects to identified historic properties can be avoided using the Standard Measures found in the NV PA, the BLM can determine that the undertaking would have "no adverse effect" to historic properties and proceed with the undertaking. The words "adverse effect" in the Cultural Resources sections of this EA are used in the specific context and definition found in NHPA and its implementing regulations (36 CFR Part 800), and not as defined in Section 4.1.2.

Pursuant to 36 CFR Part 800.5(a) of the NHPA, the BLM in consultation with the SHPO has determined that all of the alternatives in this EA would constitute an adverse effect to the Virginia City National Historic Landmark (Landmark), the Virginia City National Register District (District) and to the AFM. To resolve the adverse effects of these undertakings, the BLM has consulted with the SHPO in accordance with Section 106 of the NHPA, 16 U.S.C. Part 470, and its implementing regulations (36 CFR Part 800). On March 5, 2012 a PA was executed between the BLM, the ACHP, and SHPO[8]. Approval of the PA concluded the Section 106 consultation for the alternatives identified in this EA. Mitigation measures described here were agreed to as a part of the PA. The full text of the PA is included as Appendix B.

Alternative 1 – No Action (Current Management)

The No Action Alternative would continue current management actions. Site buildings continue to subside and collapse over time, which would be an adverse impact to the Landmark and District. The AFM site was a ruin at the time the District was designated as a Landmark in 1961. In the years since that designation, some further deterioration has occurred. As the AFM had lost most of its integrity by the time it was considered for inclusion on the NRHP as a contributing element to the Landmark and District, its continued deterioration would not compromise the status of the Landmark and District.

[8] The BLM, ACHP and SHPO are signatories to the PA. The Comstock Historic District Commission and the National Park Service are concurring parties to the PA.

Alternative 1 – Mitigation Measures
In accordance with the approved PA, the BLM would:

- Pursue site stewardship at AFM; and
- Develop a two-page written interpretation material for the V&T Railway.

Alternative 2 – Demolition (Proposed Action)
Impacts from the Proposed Action would adversely affect the Landmark and District. Removal of the buildings would result in the total loss of integrity of the AFM site as a contributing element of the District. Loss of the AFM site would diminish the overall integrity of the District. However, when considering the Seven Aspects of Integrity[9] that can affect the District (location, design, setting, materials, workmanship, feeling, and association), loss of the mill site would not diminish the Landmark or District's integrity to the point of compromising the status of the Landmark or District. Loss of the mill site would result in adverse impacts to the Landmark and District but the impact would not be significant.

Some associated historic resources, including some roads and terraces, may be adversely affected by direct impacts to their structure from removal activities under the Proposed Action. The remaining associated historic resources, including the V&T Railroad spur, a NRHP eligible property, would be avoided and therefore not impacted.

Proposed Action Mitigation Measures
In accordance with the approved PA, the BLM will:

- Develop and install four wayside exhibits, consisting of a three paneled sign kiosk, to be placed in Virginia City, Gold Hill, Carson City and at the Nevada State Railroad Museum or locations to be determined by the signatories of the PA;
- Link the interpretive sign locations in MapQuest/Google Earth and make available the locations via a link on the AFM website;
- Develop a tri-fold brochure for AFM, which would include a map of key features noted. The BLM would print 10,000 copies of the brochure and would provide an electronic version of the brochure for reprinting;
- The BLM will develop a Quick Response code for Smartphone users that would be incorporated into print media;
- Develop a website documenting the historical significance of AFM and its association with the Virginia City National Historic Landmark;
- Produce a high definition video documentary, 15 minutes in length;
- Develop an audio podcast discussing historical information about AFM;
- Consider adding the new technology to the AFM interpretive library as new technology becomes available;
- Develop a one-lesson heritage education plan for use in the Carson and Reno schools that could be incorporated into the Nevada Twentieth Century mining history curriculum;
- Create a tabletop diorama for one of the museums to give visitors an idea of what AFM looked like during the height of the mining activity. The BLM will coordinate with public institutions on hosting the diorama; and

[9] Found in the National Register Bulletin 15 published by the National Park Service titled "How to Apply the National Register Criteria for Evaluation".

- Develop a two-page written interpretation material for the V&T Railway.

Alternative 3 – Institutional Controls
The Institutional Controls Alternative would result in adverse impacts to the Landmark and District. Introduction of an eight-foot high security fence and additional closure signage into the area would change the mill site as a contributing element to the Landmark and District. The change would not introduce a visual barrier from the sites viewshed (such as the V&T Railroad); however the perimeter of the fence would introduce a minor visual obstruction. When considering the Seven Aspects of Integrity that can affect a building, structure, or historic district, integrity would not be diminished to the point of compromising the status of the Landmark and District.

Alternative 3 – Mitigation Measures
In accordance with the approved PA, the BLM would:

- Pursue site stewardship at AFM;
- Develop and install one wayside exhibit, consisting of a three paneled kiosk, to be placed in Virginia City or a location to be determined by the signatories of the PA;
- Develop a tri-fold brochure for AFM, which would include a map of key features noted. The BLM would print 5,000 copies of the brochure and would provide an electronic version of the brochure for reprinting;
- The BLM would develop a website to inform the public about the closure and interesting historical information about the AFM; and
- Develop a two-page written interpretation material for the V&T Railway.

Alternative 4 – Selected Building Retention
Impacts from the Selected Building Retention Alternative would adversely affect the Landmark and District. Removal of five of the eight buildings would diminish the integrity of the mill site to the extent that it would no longer retain status as a contributing element to the Landmark and District. However, when considering the Seven Aspects of Integrity that can affect the District, loss of those five buildings would not diminish the Landmark or District's integrity.

Some associated historic resources, including some roads and terraces, may be adversely affected by direct impacts to their structure from removal activities under this alternative. The remaining associated historic resources, including the V&T Railroad spur, a NRHP eligible property, would be avoided and therefore not impacted.

Alternative 4 – Mitigation Measures
In accordance with the approved PA, the BLM would:

- Pursue site stewardship at AFM;
- Develop and install two wayside exhibits, consisting of a three paneled kiosk, to be placed in Virginia City and Carson City or locations to be determined by the signatories of the PA;
- Develop a tri-fold brochure for AFM, which would include a map of key features noted. The BLM would print 7,500 copies of the brochure and would provide an electronic version of the brochure for reprinting;

- The BLM would develop a website to inform the public about the closure and interesting historical information about the AFM;
- Make available a BLM representative or volunteer to lead interpretive walks through the area (would likely include a walk/tour around the perimeter of the site, or around the facilities depending on whether the site closure is still in effect); and
- Develop a two-page written interpretation material for the V&T Railway.

4.3 Public Health and Safety

This section describes how each alternative responds to the physical safety hazards present at the AFM site, how implementation of the measures would address the hazards, and provides relative comparison of the effectiveness of the measures. Probable effects are considered in both the short-term and long-term.

Alternative 1 – No Action (Current Management)

Under the No Action Alternative, current management of the AFM site would continue. No new site management measures would be implemented under this alternative. The BLM would maintain the existing closure order, site maintenance, and site patrols.

Repairs and maintenance of the existing fencing around clusters of buildings would be ongoing, and public access to the areas between the buildings would be maintained. Continued law enforcement patrols, ongoing maintenance and/or repairs of the closure signage, and removal of graffiti would occur as unauthorized use of the site continues.

Under the No Action Alternative, none of the physical safety hazards would be mitigated or eliminated, and the level of risk to the public‘s health and safety would continue to increase as the buildings continue to deteriorate.

Of the four considered alternatives, this alternative would be least effective at meeting the purpose and need in the short or long-term, an adverse impact. Reasons include the following:

- The existing closure order signage and fencing have proven to be ineffective at discouraging public entry into the AFM site (see Section 3.3 for a detailed discussion);
- Periodic patrols have not been effective in deterring unauthorized entry into the structures;
- Fencing is repeatedly cut by visitors, and has been ineffective barrier to access into the interior of the structures;
- The site structures would continue to subside and collapse, therefore the level of physical hazards, and public risks, would continue to increase over time; and
- The 2008 OIG audit has already found that “BLM has not taken effective mitigation actions to protect the public. . . . Longstanding conditions and excessive delays in mitigation at the American Flat Mill site present serious and unacceptable risks to the public health and safety.”

Alternative 2 – Demolition (Proposed Action)

Under the Proposed Action, the BLM would remove all physical safety hazards present at the AFM site by removal of all structures. Building footprints would be covered in native soil and

re-vegetated. All man-made safety hazards would be permanently removed from the site thus there would be no need for additional mitigation of hazards at the site in the future. No fencing would be needed on-site, eliminating the need for ongoing site security maintenance. Site security patrols by BLM or Storey County law enforcement would no longer need to occur. The risks to public health and safety caused by deteriorating structures would no longer exist once this action is implemented.

In the short-term, there would be adverse effects to public safety while demolition activities occurred. Measures to control public access during demolition would be incorporated into any implementation plan.

The Proposed Action would result in the greatest level of long-term beneficial impacts to public health and safety, compared to the No Action, Institutional Controls and Selected Building Retention Alternatives. All safety hazards found in the OIG audit would be eliminated by the removal of all structures, and the subsequent fill and recontouring/ re-vegetation of the site. The Proposed Action would fully meet the public safety objectives identified in the project purpose and need (Section 1.2).

Alternative 3 – Institutional Controls

Under the Institutional Controls Alternative, the BLM would implement a number of new measures to reduce risks to public health and safety, primarily by further restricting public access to the AFM site, and by the removal of some current physical hazards. The primary measures include:

a) use of full-time site security;
b) enclosure of the site by an eight-foot high security fence;
c) removal of loose rebar and concrete;
d) filling of voids and tunnels inside the buildings; and
e) the installation of bars, metal plates, or other materials over doors, windows, and other openings to prevent access into upper floors of the structures.

In the short-term, there would be adverse effects to public safety while limited demolition occurred, and while new site security features were constructed. If selected, the implementation plan for this alternative would include measures to provide for public safety.

Long-term, there would be a beneficial effect on public safety from Alternative 3, as some hazards would be removed, and as public access would be further restricted. Implementation of this alternative would partially abate and/or mitigate the physical safety hazards at the AFM site. This alternative would be effective at reducing some of the hazards that the site currently presents to the public, however this effectiveness would be expected to decrease over time as structures continue to subside and collapse (this may take decades for all buildings/ structures to fully deteriorate). Continual maintenance of fences and other structures would be needed to ensure the public health and safety. The emergence of new physical hazards, as the site continues to deteriorate, might create a future need for additional measures beyond those considered and analyzed in this Alternative. Compared to Alternative 3 (Selected Building Retention), this alternative keeps all eight structures/ buildings, allowing a greater number of physical hazards to remain at the site, but the overall level of public risk would be offset by the presence of full time

site security. The continued provision of site maintenance and of full-time site security by BLM over the long-term cannot be guaranteed, however, as authorized levels of staffing and funding fluctuates over time.

Overall, implementation of the Institutional Controls Alternative would result in a beneficial effect on public health and safety. The Institutional Controls Alternative partially meets the project purpose and need in that it mitigates/eliminates some of the safety hazards currently at the site, and as it further restricts public access to physical hazards (beyond Alternative 1 Current Management). However, the AFM site would continue to present new physical hazards as the buildings/structures continue to subside and collapse over several years. The continued effectiveness of this alternative would also be contingent on maintaining a relatively high level of annual funding and staffing for the AFM site, which cannot be guaranteed.

Alternative 4 – Selected Building Retention

Under the Selected Building Retention Alternative, three buildings would be retained, combined with limited site rehabilitation, and additional site security measures. The primary measures of Alternative 4 Selected Building Retention include:

a) Retention of buildings 3, 5 and 6;
b) Demolition of five buildings (1, 2, 4, 7, and 8);
c) Install soil cover and reclaim footprints of demolished buildings;
d) Remove loose, hanging concrete and exposed rebar from the retained buildings;
e) Fill voids and tunnels;
f) Secure the upper floors of retained buildings against access by installing bars, metal plates, or other materials over doors, windows, and other openings;
g) Enclose each retained building in an eight-foot high security fence;
h) Maintain the existing closure order for the retained buildings;
i) Continue BLM law enforcement patrols; and
j) Provide funding to allow for continued Storey County sheriff patrols.

In the short-term, there would be adverse effects to public safety while limited demolition occurred, and while new site security features were constructed. If selected, the implementation plan for this alternative would include measures to provide for public safety.

Over the long-term, there would be a beneficial effect on public safety from Alternative 4, as several hazardous buildings would be removed, and as public access would be further restricted at the retained buildings. Implementation of this alternative would partially abate and/or mitigate the physical safety hazards at the AFM site. This alternative would be effective at reducing many of the hazards currently at the site; however this effectiveness would be expected to decrease over time as the three remaining buildings continue to deteriorate. Continual maintenance of fences and other structures would be needed to ensure the public health and safety. The presentation of new hazards, as the site continues to deteriorate, might create a future need for measures not considered and analyzed in this Alternative. Like with Alternative 1 (Current Management), occasional law enforcement patrols by BLM and Storey County would not likely be an adequate deterrent to unauthorized access. Occasional law enforcement patrols would not be as effective as full-time security (Alternative 3 Institutional Controls) in deterring unauthorized site entry.

Overall, implementation of the Selected Building Retention Alternative would result in a beneficial effect on public health and safety. This Institutional Controls Alternative partially meets the project purpose and need in that it mitigates/eliminates safety hazards associated with five buildings/ structures currently at the site, and as it further restricts public access to physical hazards (beyond Alternative 1 Current Management). However, the AFM site would continue to present new physical hazards as the three retained buildings/structures continue to subside and collapse over several years. This alternative depends on occasional law enforcement patrols, which has not proven to be an effective method of deterring public access to the AFM site's buildings in the past.

4.3.1 Comparison of Alternatives' Effectiveness for Reducing Hazards

Table 4-2 compares each of the four alternatives and shows the relative effectiveness at reducing or eliminating the public health and safety hazards at the AFM site. The table considers short-term and long-term timeframes: short-term estimated at 1-3 years (generally corresponds to period necessary for planning and implementation of any demolition activities and/or for construction of new site security features) and long-term of 3-10 years or longer (generally post-project implementation).

Table 4-2 Comparison of Alternatives for Relative Effectiveness at Reducing Hazards

	Alternative 1 (No Action)	Alternative 2 (Proposed Action)	Alternative 3 (Institutional Controls)	Alternative 4 (Selected Building Retention)
Short-Term physical safety hazards	No abatement	Adverse effects during implementation	Adverse effects during implementation	Adverse effects during implementation
Long-Term physical safety hazards	No abatement	Complete abatement	Partial abatement	Partial abatement
Level of risk to public health and safety after initial project implementation	High	Little or None	Medium	Medium-High
Level of project effectiveness over time	Not effective	Most effective & remains effective over time	Partial effectiveness, decreasing over time	Partial effectiveness, decreasing over time

4.4 Air Quality

The proposed alternatives for the AFM would result in air quality impacts because of the following sources and operations:

- Emissions of fugitive road dust due to wind erosion and land disturbance and tailpipe emissions from motorized vehicles required for removal and reclamation; and
- Alternatives 1 and 3 would also include long-term contributions of fugitive dust due to wind erosion, and land disturbance and tailpipe emissions from motorized vehicles used by the public accessing the AFM site; however these numbers are not quantifiable as there is not a count of visitors in motor vehicles currently being kept.

Table 4-3 Potential Emissions for Alternatives 2 and 4					
Pollutant	Emission Factor (lbs./hr.)	Alternative 2 (Proposed Action)		Alternative 4	
		Miles Traveled	Estimated Emissions (lbs.)	Miles Traveled	Estimated Emissions (lbs.)
CO	0.0067	19,700	131.59	16,620	111.02
NO_X	0.031	19,700	610.7	16,620	515.22
SO2	0.002	19,700	40.39	16,620	34.07
VOC	0.0025	19,700	48.66	16,620	41.05
PM_{10}	0.002	19,700	43.34	16,620	36.56

Source for calculations: AP-42 (EPA 2004)
Assumptions: Haul truck weight range is 28,000 to 80,000 pounds (lb). Average weight of 54,000 lbs. was used for calculations.
Controlled emissions based on use of water and 50 percent efficiency.
Key:
CO = carbon monoxide; NOx = oxides of nitrogen; SO_2 = sulfur dioxide; VOC = volatile organic compound; PM_{10} = particulate matter with diameter of 10 micrometers or less

Alternative 1 – No Action (Current Management)

Under the No Action Alternative, the BLM would continue with current management actions including: maintaining and/or repairing fencing and closure signs; continuing BLM law enforcement and Storey County sheriff patrols; and maintain the site closure order. These activities would contribute to short-term direct adverse impacts to air quality from vehicle emissions and fugitive dust.

These actions, and the continuing use of the site for recreational purposes, would have long-term indirect adverse impacts to air quality. Vehicle emissions and fugitive dust from OHV use would continue although not at levels expected to change the air quality status of the area.

Alternative 2 – Demolition (Proposed Action)

Under the Proposed Action, all buildings would be demolished over one to two years. This would result in adverse impacts to air quality in the short-term. Personnel and equipment associated with removal activities would drive over dirt roads, and off-road. Other equipment that could be used includes dozers, scrapers and graders. There would be an increase in vehicle emissions and fugitive dust from personnel involved in building removal. Fugitive dust would be minimized by BMPs such as water spraying of the dirt roads. Building removal would also result in fugitive dust from the concrete and other building materials. Water spraying would be used to control dust during removal. During removal, temporary generators may also be used, which would contribute to emissions.

Heavy truck operation would result in the emission of pollutants including carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and particulate matter less than or equal to 10 microns in size (PM_{10}) or smaller ($PM_{2.5}$). Vehicle emission and fugitive dust from construction equipment would not be expected to change the overall air quality of the area.

Although all buildings would be demolished, there would continue to be recreational use of the AFM area to some degree, which would continue to cause negligible impacts to air quality from emissions and fugitive dust.

Alternative 3 – Institutional Controls
Implementation of this alternative would result in increases in vehicle emissions and fugitive dust which would adversely affect air quality in the short-term.

Long-term increases in vehicle emissions would result from caretaking and law enforcement patrols. These impacts may be offset set to some degree by a reduction in visitation to the site as persons interested in unapproved recreational use of the site would eventually go somewhere else. It is not expected that there would be a change in the overall air quality of the area.

Alternative 4 – Selected Building Retention
Under the Selected Building Retention Alternative, five buildings would be demolished over eight months and three would be permanently retained. This would result in adverse impacts to air quality in the short-term (although to a lesser degree than in the Proposed Action). Personnel and equipment associated with removal activities would drive over dirt roads, and off-road. Other equipment that could be used includes dozers, scrapers and graders. There would be an increase in vehicle emissions and fugitive dust. Fugitive dust would be minimized by BMPs such as water spraying of the dirt roads. Building removal would also result in fugitive dust from the concrete and other building materials. Water spraying would be used to control dust during removal. During removal, temporary generators may also be used, which would contribute to emissions.

Heavy truck operation would result in the emission of pollutants including carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and particulate matter less than or equal to 10 microns in size (PM_{10}) or smaller ($PM_{2.5}$). Vehicle emission and fugitive dust from construction equipment would not be expected to change the overall air quality of the area.

Although some of the buildings would be demolished, there would continue to be recreational use of the AFM area to some degree, which would continue to cause adverse impacts to air quality from emissions and fugitive dust.

4.5 Water Quality (Surface/Ground)

Alternative 1 – No Action (Current Management)
Under the No Action Alternative, recreational use, including OHV use, of the AFM site would continue to pose a risk of impacts to American Creek from soil erosion and fugitive dust. These impacts are considered negligible and would not be expected to change the water quality of American Creek. The No Action Alternative would have no impact to groundwater.

Alternative 2 – Demolition (Proposed Action)
Under the Proposed Action, short-term removal activities pose an adverse risk to American Creek, approximately 145 feet from the southern access road. Increased impacts to water quality from soil erosion, vehicle and equipment use during removal would be minimized by implementation of BMPs. In the long-term, after removal, recreational use to some degree of the

AFM area would be expected to continue. Vehicle and OHV use would continue to pose a risk to water quality from soil erosion and fugitive dust. These impacts are expected to be negligible and would not be expected to change the water quality of American Creek. These impacts would be more noticeable in the short term, but over time would be negligible. The No Action Alternative would have no impact to groundwater.

Alternative 3 – Institutional Controls

Under the Institutional Controls Alternative, recreational use, including OHV use, of the AFM site would continue to pose a risk of negligible impacts to American Creek from soil erosion and fugitive dust. These impacts are considered negligible and would not be expected to change the water quality of American Creek. The Institutional Controls Alternative would have no impact to groundwater.

Alternative 4 – Selected Building Retention

Under the Selected Building Retention Alternative, short-term removal activities pose an adverse risk to American Creek, approximately 145 feet from the southern access road (although to a lesser degree than the Proposed Action). Increased impacts to water quality from soil erosion, vehicle and equipment use would be minimized by implementation of BMPs. In the long-term, recreational use to some degree of the AFM area would be expected to continue. Vehicle use would pose a negligible risk to water quality from soil erosion and fugitive dust. These impacts are expected to be negligible and would not be expected to change the water quality of American Creek. These impacts would be more noticeable in the short term, but over time would be negligible. The No Action Alternative would have no impact to groundwater.

4.6 Soils

Alternative 1 – No Action (Current Management)

The AFM site consists of approximately 2,647 feet of onsite dirt roads, and 1,063 feet of gravel access roads. Use of this road system by the public and BLM employees, and OHV use in the AFM area, contributes to impacts to soils from erosion and compaction. Under the No Action Alternative, there would be no changes to the management of the AFM site, and long-term negligible impacts to soils would be expected to continue.

Alternative 2 – Demolition (Proposed Action)

Under the Proposed Action, during removal activities, access and onsite roads would likely be widened up to 30 feet to accommodate construction vehicles and equipment. For approximately one to two years there would be increased daily traffic on access roads to the site. Removal activities would have short-term adverse impacts to soils. Approximately 426,217 square feet of surface disturbance would occur under the Proposed Action. Impacts would be minimized by BMPs. There would be increased potential of soil erosion from the approximately 108,510 square feet of roads. Removal activities would include soil excavation, mixing, compaction, and new soil added from borrow areas over building footprints. Soil contouring and stabilization would take place. After removal activities are complete, including reclamation which would include reseeding of native plants, soil conditions in the long-term would be beneficial under the Proposed Action and erosion potential would be diminished.

Alternative 3 – Institutional Controls
Under the Institutional Controls Alternative, there would be adverse impacts to soils during construction of the eight-foot high security fence. Under the Institutional Controls Alternative, all vehicle and OHV travel within the enclosure of the eight-foot high security fence would be eliminated which would be beneficial to soils as it would reduce compaction and erosion impacts in that area. Under this alternative, impacts to soils would be considered negligible.

Alternative 4 – Selected Building Retention
Under the Selected Building Retention Alternative, access and onsite roads would likely be widened up to 30 feet to accommodate construction vehicles and equipment. For approximately eight months there would be increased daily traffic on access roads to the site. Selected building retention activities would have short-term adverse impacts to soils (although to a lesser degree than the Proposed Action). Approximately 265,917 square feet of surface disturbance would occur under the Selected Building Retention Alternative. Impacts would be minimized by BMPs. There would be increased potential of soil erosion from the approximately 108,510 square feet of roads. Other activities would include soil excavation, mixing, compaction, and new soil added from borrow areas over building footprints. Soil contouring and stabilization would take place. After activities are complete, including reclamation which would include reseeding of native plants, soil conditions in the long-term would be beneficial and erosion potential would be decreased under the Selected Building Retention Alternative.

4.7 Vegetation

Alternative 1 – No Action (Current Management)
Under the No Action Alternative, negligible impacts would continue to occur from foot, vehicle and OHV use in the AFM site which can crush or trample vegetation. Noxious weeds present, such as the tall whitetop, could continue to be spread throughout the area by on-going recreational uses of the site.

Alternative 2 – Demolition (Proposed Action)
Under the Proposed Action, removal activities would have the greatest short-term adverse impacts to vegetation, although the interior of the buildings themselves are mostly absent of native plants. Approximately 426,217 square feet of surface disturbance would occur under the Proposed Action. Any native plants within the area between the buildings would likely be removed by excavation and recontouring activities. After demolition, soils would be reclaimed and re-seeded with native plants. The total area available for vegetative growth would be increased, and in the long-term impacts from removal would be beneficial. Under Alternative 2 impacts to vegetation would be considered beneficial after reclamation and reseeding success. Noxious weeds would be controlled by implementation of measures contained in the BLM's Weed Management Plan and the chance for spread would be decreased once vegetation from reclamation activities takes hold.

Alternative 3 – Institutional Controls
Under the Institutional Controls Alternative, there would be adverse impacts to vegetation from the construction of the eight-foot high security fence as vegetation could be trampled or removed from areas where the fence is put into place. The interior of the fencing would benefit in the long-term under this alternative because there would no longer be foot, OHV and vehicle traffic

which can crush or trample vegetation. Noxious weed would be less likely to spread from recreational uses of the site as the fence would prohibit these activities.

Alternative 4 – Selected Building Retention

Selected Building Retention Alternative actions would have short-term adverse impacts to vegetation, although the interior of the buildings themselves are mostly absent of native plants. Approximately 265,917 square feet of surface disturbance would occur under the Selected Building Retention Alternative. Any native plants within the area between the buildings would likely be removed by excavation and recontouring activities. Soils would be reclaimed and re-seeded with native plants. The total area available for vegetative growth would be increased, and in the long-term impacts would be beneficial. Under Alternative 4 impacts to vegetation would be considered beneficial after reclamation and reseeding success. Noxious weeds would be controlled by implementation of measures contained in the BLM's Weed Management Plan and the chance for spread would be decreased once vegetation from reclamation activities takes hold.

4.8 General Wildlife, Migratory Birds, BLM Sensitive Species (Wildlife)

Alternative 1 – No Action (Current Management)

Under the No Action Alternative, recreational use of the AFM site would continue. Foot, OHV and vehicle traffic can temporarily disturb and displace wildlife. Vegetative resources (wildlife habitat) would continue to be altered by the spread of noxious weeds and being crushed or trampled by foot or vehicle traffic. Wildlife that uses the AFM site would be negligibly impacted over the long-term from these activities. Some wildlife species, especially those used to human disturbances, benefit from the structures at the site as seasonal habitat. There would be no change under the No Action Alternative to the buildings and therefore those species that use the buildings would continue to benefit from them.

Alternative 2 – Demolition (Proposed Action)

Under the Proposed Action, removal activities would result in the greatest short-term adverse impacts to any wildlife occupying the buildings at the time of removal. Removal of all buildings would result in the permanent loss of the structures as seasonal habitat. Species affected by the loss of the structures would be expected to relocate to alternative sites in the vicinity. Loss of habitat for bats would be mitigated by the installation of one or more bat houses in the area, prior to the beginning of summer after removal actions have taken place. Approximately 36 percent of the site surface would be disturbed, resulting in some negligible loss of vegetation (wildlife habitat). This short-term negligible impact would be off-set in the long-term by the beneficial impacts of reclamation and re-seeding of the site, which would increase the amount of available habitat and decrease the amount of noxious weeds invading or outcompeting with native vegetation used as forage or habitat by the wildlife species in the area.

Alternative 3 – Institutional Controls

Under the Institutional Controls Alternative, construction of the eight-foot high security fence may negligibly impact some wildlife by restricting their movement. A negligible amount of vegetation would have to be disturbed for construction of the fence. For those wildlife species residing inside the security fencing, improved vegetative resources (wildlife habitat) would be a beneficial impact. Wildlife would no longer be temporarily disturbed or displaced by foot and

vehicle traffic. No buildings would be removed which would be beneficial for any wildlife species that use the structures for seasonal habitat.

Alternative 4 – Selected Building Retention

The Selected Building Retention Alternative would result in short-term adverse impacts to any wildlife occupying the buildings at the time of removal (although to a lesser degree than the Proposed Action). Removal of most buildings would result in the permanent loss of the structures as seasonal habitat. Species affected by the loss of the structures would be expected to relocate to alternative sites in the vicinity. Loss of habitat for bats would be mitigated by the installation of one or more bat houses in the area, prior to the beginning of summer after removal actions have taken place. Removing most buildings would result in some negligible loss of vegetation (wildlife habitat). These short-term negligible impacts would be off-set in the long-term by the beneficial impacts of reclamation and re-seeding of the site, which would increase the amount of available habitat and decrease the amount of noxious weeds invading or outcompeting with native vegetation used as forage or habitat by the wildlife species in the area.

4.9 Recreation

Alternative 1 – No Action (Current Management)

Under the No Action Alternative, the BLM would continue to maintain the site closure order. The public would continue to be allowed to view the structures from outside the fencing, which is considered a beneficial impact to recreation. Unauthorized use of the site for recreational purposes would likely continue and site maintenance (fencing and signs) would need to continue. Over time the structures would continue to subside and collapse presenting hazardous site conditions for recreationists at the site.

Alternative 2 – Demolition (Proposed Action)

The Proposed Action includes the complete removal and reclamation of the AFM site. Once removal and reclamation are complete, dispersed recreation would be allowed at the AFM site. Under the PA, kiosks, other exhibits and interpretive materials would be made available for the public and recreational visitors in the vicinity providing information about the history of the site. Overall, impacts to recreation would be beneficial.

Alternative 3 – Institutional Controls

Under the Institutional Controls Alternative, the BLM would maintain the existing closure order for the AFM site. The public would continue to be allowed to view the structures from outside the security fencing, a beneficial impact. Kiosks and other interpretive materials would be available to recreationists regarding the site.

Alternative 4 – Selected Building Retention

Under the Selected Building Retention Alternative, three buildings at the AFM site would be retained. The three remaining buildings would be fenced but available for passive viewing from the outside, and for viewing from the V&T Railroad, a beneficial impact. Interpretive materials would also be developed and available for the public to provide them information about the site.

4.10 Wastes, Hazardous or Solid

Alternative 1 – No Action (Current Management)

The BLM would continue to maintain the site closure order. The BLM would maintain fencing and closure signs and continue current BLM law enforcement and Storey County sheriff patrols. All contaminated materials from the AFM site would be removed under a separate removal action.

Alternative 2 – Demolition (Proposed Action)
Under the Proposed Action, the BLM would demolish and reclaim the AFM site. Removal wastes would be placed in an onsite landfill. The BLM would apply to the NDEP Solid Waste Branch for a Class III landfill waiver for this landfill. All contaminated materials from the AFM site would be removed under a separate removal action.

Alternative 3 – Institutional Controls
Under the Institutional Controls Alternative, the entire site perimeter would be fenced with an eight-foot tall security fence and the area would be posted with warning signs. Loose rebar would be removed and voids and tunnels would be filled. All contaminated materials from the AFM site would be removed under a separate removal action.

Alternative 4 – Selected Building Retention
Under the Selected Building Retention Alternative, three buildings at the AFM site would be retained. The rest would be demolished and disturbed areas would be reclaimed. Removal wastes would be placed in an onsite landfill. The BLM would apply to the NDEP Solid Waste Branch for a Class III landfill waiver for this landfill. All contaminated materials from the AFM site would be removed under a separate removal action.

4.11 Interpretation and Environmental Education

Alternative 1 – No Action (Current Management)
Currently there are no formal interpretive activities or facilities at the AFM site. As described in Section 4.2, the following mitigation included in the approved PA would benefit this resource:

- Develop a two-page written interpretation material for the V&T Railway.

With implementation of mitigation, the No Action Alternative would beneficially impact interpretation and environmental education.

Alternative 2 – Demolition (Proposed Action)
The Proposed Action would result in the complete removal and reclamation of the AFM site. All buildings would be demolished, rubble would be buried, and the surface would be recontoured and seeded to achieve a natural look. This would be an adverse impact.

As described in Section 4.2, the following mitigation included in the approved PA would benefit this resource:

- Develop and install four wayside exhibits, consisting of a three paneled sign kiosk, to be placed in Virginia City, Gold Hill, Carson City and at the Nevada State Railroad Museum or locations to be determined by the signatories of the PA;
- Link the interpretive sign locations in MapQuest/Google Earth and make available the locations via a link on the AFM website;

- Develop a tri-fold brochure for AFM, which would include a map of key features noted. The BLM would print 10,000 copies of the brochure and would provide an electronic version of the brochure for reprinting;
- The BLM will develop a Quick Response code for Smartphone users that would be incorporated into print media;
- Develop a website documenting the historical significance of AFM and its association with the Virginia City National Historic Landmark;
- Produce a high definition video documentary, 15 minutes in length;
- Develop an audio podcast discussing historical information about AFM;
- Consider adding the new technology to the AFM interpretive library as new technology becomes available;
- Develop a one-lesson heritage education plan for use in the Carson and Reno schools that could be incorporated into the Nevada Twentieth Century mining history curriculum;
- Create a tabletop diorama for one of the museums to give visitors an idea of what AFM looked like during the height of the mining activity. The BLM will coordinate with public institutions on hosting the diorama; and
- Develop a two-page written interpretation material for the V&T Railway.

This alternative would have adverse and beneficial impacts. Although the structures would no longer be available for viewing by the public or from the V&T Railroad, the mitigation described above would provide substantial new interpretation and environmental education opportunities.

Alternative 3 – Institutional Controls

Under the Institutional Controls Alternative, the BLM would maintain the existing closure order for the AFM site. The entire site perimeter would be fenced with an eight-foot high security fence and the area would be posted with closure signs.

As described in Section 4.2, the following mitigation included in the approved PA would benefit this resource:

- Develop and install one wayside exhibit, consisting of a three paneled kiosk, to be placed in Virginia City or a location to be determined by the signatories of the PA;
- Develop a tri-fold brochure for AFM, which would include a map of key features noted. The BLM would print 5,000 copies of the brochure and would provide an electronic version of the brochure for reprinting;
- The BLM would develop a website to inform the public about the closure and interesting historical information about the AFM; and
- Develop a two-page written interpretation material for the V&T Railway.

This alternative would have beneficial impacts because the mitigation described above would provide substantial new interpretation and environmental education opportunities.

Alternative 4 – Selected Building Retention

The Selected Building Retention Alternative includes retaining three buildings at the AFM site. The rest would be demolished and disturbed areas would be reclaimed. The three remaining buildings would be fenced, but would be available for passive viewing from the outside, and for viewing from the V&T Railroad.

The Selected Building Retention Alternative would have negligible impacts to interpretation and environmental education because most of the structures would no longer be present.

As described in Section 4.2, the following mitigation included in the approved PA would benefit this resource:

- Develop and install two wayside exhibits, consisting of a three paneled kiosk, to be placed in Virginia City and Carson City or locations to be determined by the signatories of the PA;
- Develop a tri-fold brochure for AFM, which would include a map of key features noted. The BLM would print 7,500 copies of the brochure and would provide an electronic version of the brochure for reprinting;
- The BLM would develop a website to inform the public about the closure and interesting historical information about the AFM;
- Make available a BLM representative or volunteer to lead interpretive walks through the area; and
- Develop a two-page written interpretation material for the V&T Railway.

This alternative would also have beneficial impacts because the mitigation described above would provide substantial new interpretation and environmental education opportunities.

4.12 Socioeconomics

Alternative 1 – No Action (Current Management)

The socioeconomic impacts of the No Action Alternative could prove costly for the BLM and the local area. Future accidents, such as the ATV fatality that occurred in 1996, could lead to additional injuries and fatalities. In addition, it is expected that the estimated six serious injuries on the AFM site per year would continue to occur. This has obvious social costs and an adverse impact on the local community, particularly the local teenagers who frequent this site. The long-term economic costs can be measured in terms of the direct medical costs to members of the community in addition to the lost productivity resulting from injury and death. If no action is taken, it is also expected that the site would remain a popular teenage gathering place; however, given the proven potential for physical injury and death, this may not be an appropriate venue for them.

Costs would continue to be incurred from continuing law enforcement patrols of the area, along with maintenance and repairs of signs and fencing.

A benefit of leaving the site unchanged is the continuing presence of the historic and cultural resources and the portion of economic value this site may contribute to tourism in the general area. The economic benefits of the tourism industry are limited by the fact that the AFM site is only one stop on the historic tours of the area.

Alternative 2 – Demolition (Proposed Action)

The removal of the complete structure would impose short-term costs and provide both social and economic benefits to the community in the long term. The short-term costs of removal would include costs for tearing down the buildings and covering the site. This would include an

estimated 1,032 days and 28,907 hours of labor and material costs that would be covered by the BLM. Demolition labor is expected to provide short-term jobs to the local community. In the long–term the removal of the site would provide economic benefits to the community in terms of medical savings. Also costs associated with maintenance of fences, signs and continued patrols by law enforcement would no longer be incurred under this alternative.

The local tourism industry would lose the AFM site as a place for the public to visit for this site as a historic resource. However, there would be educational and interpretive information available to the tourists visiting the area. Although the impact is considered slightly adverse, there are many other alternative mining attractions in the area.

Alternative 3 – Institutional Controls

Additional institutional controls including fencing and security would impose short-term and long-term costs for the BLM. Construction of the fencing and security would provide short-term and long-term jobs in the area. Costs from continual maintenance of the fence would also continue to occur. The potential economic liabilities of allowing a hazardous site to exist could far outweigh any small job benefits provided to the community. In addition, additional security may lead to additional conflicts with the local community as enforcement of a no trespass notice would surely not be welcomed by the local teenagers. These conflicts could also prove both economically and socially costly for the relationship between the BLM and the local community.

Alternative 4 – Selected Building Retention

Selected building retention would impose short-term costs with the removal of five of the site's buildings. Construction of the fencing and security features would provide short-term and long-term jobs in the area. Costs would continue to be incurred for continued law enforcement patrols of the area as well as maintenance of the fences and signs in the area. The benefits include continuing to provide a stop on the historic tour and a place for the teenage community to congregate.

5.0 CUMULATIVE IMPACTS

A cumulative impact is defined under NEPA as "the change in the environment which results from the incremental impact of the action, decision, or project when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or non-federal) or person undertakes such other action." "Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time" (40 CFR Part 1508.7). Past, present, and reasonably foreseeable future actions are analyzed to the extent that they are relevant and useful in analyzing whether the reasonably foreseeable effects of the alternatives may have an additive and significant relationship to those effects.

Cumulative Impacts Geographic Area. The boundaries used to define impact sources and levels may differ considerably among resources and the boundaries may be either natural or artificial. The cumulative effects study area (CESA) for air quality and recreation is American Flat, a large bowl-shaped area, south of Gold Hill, Nevada, and west of Silver City, Nevada. American Flat is bounded on the east by Hartford Hill and on the north and west by the Virginia Range. A ridge from McClelland Peak to Beacon Hill, Basalt Hill, and Grizzly Hill forms the southern boundary of American Flat. The CESA for air quality and recreation is approximately 2,800 acres in size. For all other resources, the CESA is the AFM site itself, comprised of 32 acres of BLM-managed lands including all structures, and the access road to the site (see Attachment E).

Timeframe for Effects Analysis. Short-term cumulative impacts occur during or after the activity or action (less than two years). Long-term cumulative impacts would be indefinite unless other management decisions were to be made.

Past, Present, and Reasonably Foreseeable Actions.

Past and Present Actions.

The Houston Oil and Minerals Corp conducted mining operations in the Gold Hill area between 1978 and 1981. The company began excavating an open pit mine in the area of the old Consolidated Imperial Mine, and constructed a 1,000-ton cyanide gold processing mill northwest of the AFM site. The mill site, on private lands near AFM, is now abandoned.

Comstock Mining Inc. currently operates a heap-leach gold processing facility on private lands, northwest of the AFM site and has a right-of-way for use of the American Flat Road. Sierra Pacific Power Company holds a ROW in American Flat for an overhead electric distribution line associated with the Comstock Mining Inc. heap-leach gold processing facility.

The V&T Railroad maintains and operates tracks in the American Flat for seasonal tourist train rides between Carson City and Virginia City. The V&T Railroad stops for refueling in American Flat. This is also a recreational activity in American Flat. Narrators on the train often describe the location of the AFM buildings while on tour. Passengers remain on the train while it is stopped for refueling. Although not under the management of the BLM, State estray horses also reside in the vicinity of the AFM and are often seen by passengers on the V&T Railroad.

Past and present activities on BLM-managed lands include livestock grazing (the AFM is a part of the Carson Plains/Gold Hill Grazing Allotment) and dispersed recreation.

Reasonably Foreseeable Actions.
Current exploration activities by Comstock Mining Inc. in the region are likely to continue in the future, and it is expected that operations at their heap-leach gold processing facility near AFM would also continue.

The V&T Railroad, which operates seasonally in American Flat, plans to extend the tracks to a new depot in Carson City; this recreational activity in the vicinity is likely to continue in the future.

Reasonably foreseeable actions on BLM-managed lands would include continuation of livestock grazing in the Carson Plains/Gold Hill Grazing Allotment, and dispersed recreation.

Under the CRMP, the BLM-managed lands associated with the AFM site have been identified for disposal (transfer out of federal ownership). The BLM could, in the future, consider a change in the land tenure status from disposal to retention. This change in status could only occur through a land use planning decision. Changes to land tenure status are outside the scope of this EA.

The BLM could consider a withdrawal of the lands associated with the AFM site to protect the site from incompatible uses. Implementation of a withdrawal is outside the scope of this EA.

Effects Analysis. Resource topics considered for cumulative impacts include all resources identified in Table 3-1 and 3-2 in Section 3.0 which "may be affected" by direct or indirect effects of the Proposed Action or alternatives.

Cultural and Historic Resources.
As stipulated in the approved PA, all alternatives would have an adverse impact to the Landmark, District and AFM.

Under the No Action Alternative, recreational activities would continue to adversely impact the site as on-going graffiti diminishes the historic values of the site. In the long-term, the AFM site would continue to deteriorate, an adverse cumulative impact. At some point the site would no longer be a contributing element to the Landmark and District, which would be an adverse cumulative impact.

The Proposed Action would have the greatest adverse impacts to cultural and historic resources compared to all other alternatives that were considered. All buildings would be demolished and permanently removed from the context of the Landmark and District. This alternative has the most comprehensive set of measures to mitigate adverse effects to historic resources, namely through environmental education and interpretive activities. Although these mitigation measures will be implemented by the BLM, the cumulative impacts of the Proposed Action would be adverse, although not significant.

Under the Institutional Controls Alternative, unauthorized recreational activities within the eight-foot high security fence would be curtailed. In the long-term, the AFM site would continue to

deteriorate, an adverse cumulative impact. At some point the site would no longer be a contributing element to the Landmark and District, which would be an adverse cumulative impact.

The Selected Building Retention Alternative would have the second greatest adverse impacts to the cultural and historic resources of the site. Most buildings would be demolished; the removal of the structures would permanently remove them from the context of the Landmark and District. The remaining buildings would continue to deteriorate, an adverse impact. Although mitigation measures would be implemented by the BLM, the cumulative impacts of the Selected Building Retention Alternative are adverse, although not significant. At some point the three remaining structures would no longer be a contributing element to the Landmark and District, which would be an adverse cumulative impact.

Public Health and Safety.
The No Action Alternative would pose the greatest long-term risk to public health and safety, an adverse cumulative impact. The BLM would continue with current law enforcement and fencing measures to prevent public entry to the structures. This approach has proven to be ineffective in the past, and these measures would likely continue to be ineffective. This alternative would not mitigate the physical safety hazards that exist or were identified in the OIG audit.

Under the Proposed Action, all structures would be demolished. The site would be reclaimed and open to the public. The long-term cumulative impacts from demolition on public health and safety would be beneficial, by eliminating the physical safety hazards associated with the structures as identified in the OIG audit report.

The Institutional Controls Alternative would allow the second highest number of physical safety hazards to remain at the site (although to a lesser degree than the No Action Alternative). An eight-foot high security fence, and full time site security, would beneficially impact public health and safety by restricting access to structure/ buildings presenting hazards. In the long-term, the Institutional Controls Alternative would not fully mitigate the hazards associated with the structures that were identified in the OIG audit report. Public safety would be dependent on maintaining effective site security measures over the long term.

The Selected Building Retention Alternative would pose long-term risks to public health and safety, an adverse cumulative impact. Three buildings would remain on the site and the BLM would implement new measures to prevent entry of the structures by the public, however this alternative would not completely mitigate the safety hazards that exist from the remaining structures being left on site. Public safety would be dependent on maintaining effective site security measures over the long term.

Air Quality.
The No Action Alternative would result in the least amount of short-term adverse impacts to air quality from the on-going maintenance of fencing and closure signage. Over the long-term, law enforcement patrols and the public would continue to use dirt roads to travel to and from the site, and OHV use would continue. These contributions of emissions and fugitive dust would be a negligible cumulative effect.

Under the Proposed Action, the complete removal would have the greatest short-term adverse impacts to air quality from construction equipment and personnel vehicles. Once removal was complete, long-term impacts on air quality would be beneficial due to the reduced use of dirt roads in the area by the public accessing the site for unapproved recreational uses. Although there would be short-term adverse impacts to air quality, the overall long-term cumulative impacts from removal would be beneficial.

Under the Institutional Controls Alternative, there would be negligible short-term impacts to air quality from minor construction activities involved in the installation of the eight-foot high security fencing. There would be negligible increases in emissions from vehicles and fugitive dust during these construction activities. Once the security fence is in place, fugitive dust created within the site itself would be halted. Over the long-term, the public would continue to use dirt roads to access the perimeter of the AFM site; this would be an adverse cumulative impact.

The Selected Building Retention Alternative would have the second greatest short-term adverse impacts to air quality from construction equipment and personnel vehicles. Once removal was complete, long-term impacts on air quality would be adverse due to the continued use of dirt roads in the area by the public accessing the site. Both short-term and long-term cumulative impacts from the Selected Building Retention Alternative would be adverse.

Water Quality (Surface/Ground).
Under the No Action Alternative, long-term adverse cumulative impacts would occur to American Creek from soil erosion and fugitive dust associated with vehicle and OHV use in the AFM area. There would be no cumulative impact to groundwater.

Under the Proposed Action short-term adverse cumulative impacts to water quality could occur during removal, however this would be minimized by implementation of BMPs. Long-term use of the area by vehicles and OHV use would continue to contribute to negligible cumulative effects to water quality (although to a lesser degree than all other alternatives). There would be no cumulative impact to groundwater.

Under the Institutional Controls Alternative, long-term adverse cumulative impacts would occur to American Creek from soil erosion and fugitive dust associated with vehicle and OHV use in the AFM area. There would be no cumulative impact to groundwater.

Under the Selected Building Retention Alternative, short-term adverse cumulative impacts to water quality could occur during removal; however this would be minimized by implementation of BMPs. Long-term use of the area by vehicles and OHV use would continue to contribute to negligible cumulative effects to water quality. There would be no cumulative impact to groundwater.

Soils.
Under the No Action Alternative, on-going recreational use of the AFM site by the public and OHVs would contribute to long-term negligible cumulative impacts to soils.

Under the Proposed Action, during removal there would be the greatest short-term adverse impacts to soils, minimized by BMPs. Long-term cumulative impacts to soils would be beneficial after reclamation and re-seeding with native plants.

Under the Institutional Controls Alternative there would be short-term adverse impacts to soils during construction of the eight-foot high security fence. On-going recreational use of the AFM site by the public and OHVs would contribute to long-term negligible cumulative impacts to soils.

Under the Selected Building Retention Alternative, there would be short-term adverse impacts to soils (although to a lesser degree than the Proposed Action), minimized by BMPs. Long-term cumulative impacts to soils would be beneficial after reclamation and re-seeding with native plants. On-going recreational use of the AFM site by the public and OHVs would contribute to long-term negligible cumulative impacts to soils. Overall cumulative impacts to soils would be neutral.

Vegetation.
Under the No Action Alternative, there would be long-term negligible impacts to vegetation from continuing recreational activities at the AFM site. The spread of noxious weeds from ground disturbance is likely, an adverse cumulative impact.

Under the Proposed Action, there would be the greatest short-term adverse impacts to vegetation. After removal, reclamation and re-seeding efforts would take place; the long-term cumulative effects to vegetation from removal would be beneficial.

Under the Institutional Controls Alternative, there would be short-term adverse impacts to vegetation from construction of the eight-foot high security fence. In the long-term, cumulative impacts to vegetation in the interior of the fencing would be beneficial, from the elimination of foot and vehicle traffic. On-going recreation use of the AFM area outside the fence would continue to adversely impact vegetation, especially from OHV use. The long-term cumulative impacts under the Institutional Controls Alternative would be neutral.

Under the Selected Building Retention Alternative, there would be short-term adverse impacts to vegetation (although to a lesser degree than the Proposed Action). After removal, reclamation and re-seeding efforts would take place; the long-term cumulative effects to vegetation from the Selected Building Retention Alternative would be beneficial.

General Wildlife, Migratory Birds, and BLM Sensitive Species (Wildlife).
Continuation of use of the AFM site for recreational purposes would negligibly impact wildlife as temporary disturbance by foot and vehicle traffic would continue. No change would be made to the buildings, which would benefit wildlife species which uses them for seasonal habitat. Long-term cumulative impacts on wildlife from the No Action Alternative would be neutral.

Under the Proposed Action, there would be the greatest short-term negligible impacts to wildlife that may seasonally reside within the structures. Over the long-term, impacts would be

cumulatively beneficial as the overall amount of vegetation (wildlife habitat) would be increased and mitigation described in Section 4.8 will be implemented.

The Institutional Controls Alternative would negligibly and beneficially impact wildlife. There would be short-term negligible impacts during construction of the security fencing, and some long-term adverse impacts that may restrict wildlife movement. Over the long-term, the Institutional Controls Alternative would be cumulatively beneficial for wildlife because the structures would continue to serve as seasonal habitat. There would no longer be foot or vehicle traffic within the eight-foot high security fence, and there would be an increase in vegetative resources (wildlife habitat) within the fencing.

Under the Selected Building Retention Alternative, there would be short-term negligible impacts to wildlife that may seasonally reside in the structures (although to a lesser degree than the Proposed Action). Over the long-term, impacts would be cumulatively beneficial as the overall amount of vegetation (wildlife habitat) would be increased.

Recreation.
Under the No Action Alternative, no buildings would be demolished, which would be a beneficial impact for sightseeing from the V&T Railroad. Recreational activities at the AFM site would not be impacted as the public would continue to be allowed to view the structures from outside the fencing. Under this alternative new interpretive materials would be prepared as mitigation that was identified in the PA (see cultural resources sections 3.2 and 4.2). Overall there would be beneficial cumulative impacts under the No Action Alternative to recreation.

Under the Proposed Action, all structures would be demolished, eliminating the structures for recreational activities such as paintball games, parties and graffiti. As these activities have not been legally permitted since 1997, there would be no impact under the Proposed Action. Removing all structures from the AFM site would most likely reduce the number of recreational visits to the site. However, with implementation of the mitigation as provided in Section 3.2 and 4.2 of this EA, new educational and interpretive materials and kiosks would be put into place and would be available for the public interested in learning about the history of the site. The Virginia City area offers many alternatives to the public. Overall there would be beneficial cumulative impacts to recreation under the Proposed Action.

Under the Institutional Controls Alternative, no buildings would be demolished, which would be a beneficial impact for sightseeing from the V&T Railroad. Recreational activities at the AFM site would not be impacted as the public would continue to be allowed to view the structures from outside the eight-foot high security fencing, although the fencing would create a minor visual obstruction. Mitigation measures described in Section 4.2 would also provide alternative opportunities for the public interested in learning about the history of the site. Overall there would be beneficial cumulative impacts to recreation under the Institutional Controls Alternative.

Under the Selected Building Retention Alternative, most structures would be demolished, eliminating the structures for recreational activities such as paintball games, parties and graffiti. As these activities have not been legally permitted since 1997, there would be no impact under the Selected Building Retention Alternative. Removing most structures from the AFM site

would most likely reduce the number of recreational visits to the site. However, with implementation of the mitigation as provided in Section 3.2 and 4.2 of this EA, new educational and interpretive materials and kiosks would be put into place and would be available for the public interested in learning about the history of the site. The Virginia City area offers many alternatives to the public. Overall there would be beneficial cumulative impacts to recreation under the Selected Building Retention Alternative.

Wastes, Hazardous or Solid.
Under all alternatives, all contaminated materials from the AFM site would be removed under a separate removal action, when implemented a cumulatively beneficial impact.

Under the Proposed Action, during removal activities, hazardous wastes from vehicles or equipment would be handled by implementation of BMPs. Overall cumulative impacts would be beneficial under the Proposed Action.

Under the Selected Building Retention Alternative, during selected building retention activities, hazardous wastes from vehicles or equipment would be handled by implementation of BMPs. Overall cumulative impacts would be beneficial under the Selected Building Retention Alternative.

Interpretation and Environmental Education.
Under the No Action Alternative, all structures would remain, which is beneficial. The structures would continue to provide the public with informal opportunities to learn about past mining operations. In the long-term, the structures would continue to deteriorate, which would diminish their educational value, an adverse impact. Mitigation described in Section 4.2 would enhance the V&T Railroads ability to provide historical information on the site. Overall short-term cumulative impacts from the No Action Alternative are beneficial, and over the long-term cumulative impacts are adverse as the site continues to deteriorate and these viewing opportunities diminish. However, the interpretive materials developed as mitigation would help to minimize these impacts.

Under the Proposed Action, all structures at the AFM site would be demolished, permanently removing their educational values. Although no formal educational opportunities currently exist at the site, some persons do visit the site for opportunities to view past mining operations. Mitigation described in Section 4.2 would enhance the V&T Railroads ability to provide historical information on the site, and off-site wayside exhibits would provide new educational opportunities to the public without visiting the site. Overall cumulative impacts on interpretation and environmental education from the Proposed Action are beneficial.

Under the Institutional Controls Alternative, all structures would remain for passive viewing, which is beneficial. The structures would continue to provide the public with informal opportunities to view past mining operations. In the long-term, the structures would continue to deteriorate, which would diminish their educational value, an adverse impact. Mitigation described in Section 4.2 would enhance the V&T Railroads ability to provide historical information on the site, and off-site wayside exhibits would provide new educational

opportunities to the public without visiting the site. Overall cumulative impacts from the Institutional Controls Alternative are beneficial.

Under the Selected Building Retention Alternative, five structures would be demolished and three would be retained. The structures would continue to provide the public with informal opportunities to view past mining operations (although to a lesser degree than the No Action or Institutional Controls Alternative). In the long-term, the structures would continue to deteriorate, which would diminish their educational value, an adverse impact. Mitigation described in Section 4.2 would enhance the V&T Railroads ability to provide historical information on the site, and new off-site wayside exhibits would provide educational opportunities to the public without visiting the site. Overall cumulative impacts from the Selected Building Retention Alternative are beneficial.

Socioeconomics.
Under the No Action Alternative, all structures would continue to provide some level of economic value to the regional community from tourism. Those economic benefits may be offset by the costs to local government from expenses related to emergency responses at the site and continued patrols of the site by law enforcement. Additionally, costs would continue to be incurred from maintenance of the fencing and signage of the site. Overall cumulative impacts to socioeconomics are considered to be adverse.

Under the Proposed Action, all structures demolished and their economic value to the regional community from tourism would no longer exist. The local government is likely to benefit as there would likely be fewer emergency responses to the AFM site and fewer patrols by law enforcement needed. Additionally there would not be a need to maintain a fence or signage at the site, which would also reduce costs. Overall cumulative impacts to socioeconomics are beneficial.

Under the Institutional Controls Alternative, all structures would provide some level of economic value to the regional community from tourism. Emergency responses, at the expense of the local government, are likely to be reduced due to the eight-foot high security fence. Patrols by BLM and Storey County law enforcement would be reduced, but those cost savings would be offset by the full time security guards on site. Overall cumulative impacts to socioeconomics are beneficial.

Under the Selected Building Retention Alternative, three structures would remain provide to some degree of economic value to the regional community from tourism. Those economic benefits may be offset by the costs to local government from expenses related to emergency responses at the site and continued maintenance of fencing and signs (although to a lesser degree than the Proposed Action). Overall cumulative impacts to socioeconomics are adverse.

6.0 CONSULTATION AND COORDINATION

6.1 Public Review and Comment

This EA has been made available to the public for review and comment for 45-days. Comments must be received by the close of business on January 19, 2013. This EA and supporting documents are available on the Carson City District website at: http://www.blm.gov/nv/st/en/fo/carson_city_field/blm_information/nepa.html. Hard copies of the EA and supporting documents are also available at the Carson City District Office.

Comments can be submitted by email to: AmericanFlat_EA@blm.gov, by fax to: 775-885-6147 attn: Brian Buttazoni, or by mail to: Carson City District Office, 5665 Morgan Mill Road, Carson City, Nevada 89701 attn: Brian Buttazoni.

Privacy notice: before including your address, phone number, e-mail address, or other personal identifying information in your comment(s), you should be aware that your entire comment – including your personal identifying information – may be made publicly available at any time. While you can ask us in your comment(s) to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

All comments received will be reviewed and categorized. Although not required for an EA by regulation, an agency may respond to *substantive* and *timely* comments received. Substantive comments:

1. question, with reasonable basis, the accuracy of information in the EA;
2. question, with reasonable basis, the adequacy of, methodology for, or assumptions used for the environmental analysis;
3. present new information relevant to the analysis;
4. present reasonable alternatives other than those analyzed in the EA; and/or
5. cause changes or revisions in one or more of the alternatives.

A comment of "I oppose an alternative" or "I support an alternative" is not substantive. No response is necessary for non-substantive comments (BLM 2008b).

6.2 Individuals, Tribes, Organizations and Agencies Consulted

6.2.1 Individuals

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6.2.2 Tribes

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Arlan Melendez, Chairman Reno-Sparks Indian Colony

6.2.3 Organizations

Cynthia Etchegoin, Comstock Residence Association

6.2.4 Agencies

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Dwight Millard, Nevada Commission for the Reconstruction of the V&T Railway
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6.3 List of Preparers

BLM staff that contributed to this document.

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Jim Schroeder	Soil, Floodplains, Water Quality, Wetlands
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Arthur Callan	Recreation
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The Ecology and Environment, Inc., individuals listed below contributed to the predecessor of this document (2010 EA).

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Anita Wahler	Biology, Environmental Studies (Journalism)	Technical Editing
Pat Barker	Anthropology	Historical and Cultural Resources
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7.0 REFERENCES

Bureau of Land Management (BLM). 1986. *Visual Resource Inventory*. BLM Manual 8410-1. U.S. Department of the Interior.

_____. 2001. *Carson City Field Office Consolidated Resource Management Plan (CRMP), Carson City, Nevada*. U.S. Department of the Interior. May.

_____. 2004. *Protecting Cultural Resources*. BLM Handbook 8140. U.S. Department of the Interior.

_____. 2007. *RAC Standards & Guidelines for Rangeland Health, Sierra Front-Northwestern Great Basin Area*. U.S. Department of the Interior.

_____. 2008. BLM Manual 6840 - *Special Status Species Management*. U.S. Department of the Interior. December.

_____. 2008a. *Sampling and Analysis Plan, United Comstock Merger Mill, Storey County, Nevada*. U.S. Department of Interior.

_____. 2008b. *BLM National Environmental Policy Act Handbook (H-1790-1)*. U.S. Department of the Interior. January.

_____. 2009. *Land Health*. BLM Manual 4180. U.S. Department of the Interior. January.

_____. 2010. *United Comstock Merger Mill at American Flat, Scoping Report*. U.S. Department of the Interior. August.

_____. 2010a. Information Bulletin (IM) No. 2010-110. *Memorandum of Understanding Between the Bureau of Land Management and the U.S. Fish and Wildlife Service to Promote the Conservation of Migratory Birds*. U.S. Department of the Interior. August.

_____. 2012. Summary of Incidents and Violations, prepared by Scott Fischer, BLM Law Enforcement. Carson City. June 2012.

_____. 2012. *State Protocol Agreement Between the Bureau of Land Management, Nevada and the Nevada State Historic Preservation Office for Implementing the National Historic Preservation Act*. Revised January 2012.

Ecology and Environment (E & E). 2010a. *Site Investigation Report, American Flat Mill Site, Virginia City, Nevada*. August.

Keppie, Daniel M. and Clait E. Braun. 2000. Band-tailed Pigeon (*Patagioenas fasciata*), *The Birds of North America Online* (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology. http://bna.birds.cornell.edu/bna/species/530. Accessed July 28, 2010.

NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. http://www.natureserve.org/explorer. Accessed July 28, 2010.

Nevada Division of Environmental Protection (NDEP), Bureau of Air Quality Planning (BAQP). 2008. Standards of Quality for Ambient Air. http://ndep.nv.gov/baqp/monitoring/445b391. Accessed July 19, 2010.

_____. 2010. Carson City Long Street Air Data. http://ndep.nv.gov/baqp/monitoring/trend/report.html. Accessed June 8, 2010.

Nevada State Demographer's Office. 2010. 2009 Estimates by County. http://www.nsbdc.org/what/data_statistics/demographer. Accessed June 25, 2010.

Nevada Workforce Informer. 2011. Labor Force Statistics. http://www.nevadaworkforce.com. Accessed March 5, 2012.

Sauer, J. R., B. G. Peterjohn, S. Schwartz, and J. E. Hines. 1996. *The North American Breeding Bird Survey Home Page*. Version 95.1. Patuxent Wildlife Research Center, Laurel, Maryland. http://www.pwrc.usgs.gov/BBS/. Accessed July 28, 2010.

Schaefer, Donald H. and R. Whitney. 1992. *Geologic Framework and Ground-Water Conditions in Basin-Fill Aquifers of the Dayton Valley and Churchill Valley Hydrographic Areas, Western Nevada*. USGS Water-Resource Investigation Report 91-4072.

Storey County. 2010. Storey County Website, Home Page. http://www.storeycounty.org. Accessed June 25, 2010.

Storey County Sheriff's Department (SCSD) 2010. Personal Communication. Subject: Incidents at Old Mill Site 2251 American Flats Road., V.C. Monique Cruse, Storey County Sheriff's Department, Virginia City, Nevada with Natalie Seitz, Ecology and Environment, Inc. Seattle, Washington. May 28 2010.

_____. 2012. Summary of Incidents for 2251 American Flats Road for the period of January 1, 2010 through August 6, 2012. Virginia City, Nevada.

Thompson, James M. and S.J. Lawrence. 1994. *Ground-Water Quality and Geochemistry in Dayton, Stagecoach, and Churchill Valleys, Western Nevada*. USGS Open File Report 93-356.

U.S. Army Corps of Engineers (USACE). 2010. *Final Findings Report for the Assessment of Physical Hazards of Buildings and Facilities, Aerial Survey and Topographic Mapping at American Flat Mill Site, Storey County, Nevada*. Restoration of Abandoned Mine Sites (RAMS Program). March.

U.S. Department of Agriculture (USDA). 2010. Natural Resource Conservation Service Custom Soil Resource Report for Storey County Area, Nevada. June 8.

U.S. Department of the Interior (DOI). 2008. *Audit Report Abandoned Mine Lands in the Department of the Interior, C-IN-MOA-0004-2007*. Office of Inspector General. July.

U.S. Environmental Protection Agency. 2004. Compilation of Air Pollutant Emission Factors, Volume 1, Stationary Point and Area Sources.

_____. 2010. Nonattainment Areas Maps. http://www.epa.gov. Accessed June 1, 2010.

Walters 2012. Report for the Nevada State Historic Preservation Office, prepared by Frederick L. Walters, Historic Architect and Melvyn Green, Structural Engineer. June 8, 2012.

Zeier, C., R. Reno, and M. Drews. 2009. *An Architectural and Archaeological Inventory of the American Flat Mill, Storey County, Nevada*. August.