



National Park Service  
U.S. Department of the Interior  
Valles Caldera National Preserve  
New Mexico

# Replace Storage Containers and Shed with Garage/Maintenance Building for Electric-Vehicle Shuttle Vans

## Environmental Assessment March 30, 2018



# PURPOSE AND NEED

## Introduction

The National Park Service (NPS) proposes to replace the existing storage container structures and a metal welding shed in the maintenance area of Valles Caldera National Preserve’s Cabin District with a 2-bay garage/maintenance workshop to shelter the Preserve’s two all-electric shuttle vans, and provide indoor work space for facilities staff.

Valles Caldera National Preserve (Preserve) was originally established by Congress in 2000 with the purchase of the 89,000-acre Baca Ranch. The ranch encompassed the caldera of a 1.25 million-year-old volcano, and consisted of large areas of grassland valleys, or *valles* in Spanish, and forested volcanic domes. Included with the ranch purchase was a collection of buildings in the ranch headquarters area, now known as the “Baca Ranch Cabin District” (hereafter referred to as the “Cabin District”). These buildings include several historic and non-historic cabins and other buildings (dating back to 1915), a maintenance area with several storage containers, a wooden shed and welding shed, two steel pole barns, a water storage tank, and water treatment facility.

In 2012, the Preserve received a grant from the U.S. Department of Transportation, Federal Transit Administration, under the Paul S. Sarbanes “Transit in the Parks” program, for acquiring two all-electric shuttle vans for transporting public visitors from the Preserve’s entrance station to other areas of the Preserve (trail heads, Cabin District, etc.). The grant also funded the construction of a solar photovoltaic panel system to generate the electricity with which the electric shuttle vans would operate. Finally, the grant provided construction funding for a garage to house the shuttle vans. The garage would provide a secure storage facility, protect the shuttle vans from inclement weather during non-operating times, and prevent the abundant rodent populations from damaging the wiring and electrical systems of the shuttle vans. In 2016, the shuttle vans were purchased and the solar panels installed; thus, this proposed project addresses the construction of the shuttle van garage.

The maintenance area of the Cabin District currently consists of a welding shed (a 3-walled structure open on the west side, and providing a small unlighted, unheated space for metal work and carpentry), a wooden storage shed, three storage container structures, the Cabin District’s well-house (water supply), and numerous piles of ranching supplies (posts, tanks, mechanical equipment) (see Figs 1 and 2 below).



**Figure 1. Cabin District maintenance area, showing storage containers (L) and welding shed (R).**



## Impact Topics Retained For Further Analysis

The following impact topics are carried forward for further analysis in this EA:

- Potential Baca Ranch Cabins Historic District

## Impact Topics Dismissed From Further Analysis

Table 1 indicates which impact topics were dismissed from further analysis with a brief explanation why.

**Table 1 – Impact Topics Dismissed From Further Analysis**

Topic	Affected Environment / Reason Dismissed
Soils and vegetation	<p>The proposed project would construct a 2,800 sq. ft. garage and maintenance facility designed for year-round use, replacing three storage containers and a shed presently on the site. The immediate construction related vegetation and soil impacts of the proposed project encompass ~16,000 sq. ft. (~0.37 ac) with ~12,000 sq. ft. (0.28 ac) occurring in old-growth xeric mixed-conifer forest and the remaining impacts in open grassland. The resulting impacts would include the permanent loss 10 small-diameter (&lt;8 inch) mixed conifer second growth forest, the permanent loss of 0.05 ac of mixed native and non-native grassland and the removal of 2 hazard snag trees. Additionally, the temporary loss (one-season) of 3,500 sq. ft. (0.08 ac) of herbaceous vegetation would also occur, as a result of digging and trenching.</p> <p>Beyond surface disturbance, an additional subsurface area of ~40,000 sq. ft. (0.92 acre) within old-growth mixed conifer forest may be impacted by additions of below-ground (&gt;4 ft deep) nutrients and possible sulfacants (detergents, soaps) as a result of the septic system leach field. Possible impacts from these changes are unknown, but would likely enhance growth of plants having roots in the leach field area.</p> <p>The construction site is already disturbed, having been graded flat at the time that the welding shed and storage containers were installed (during the time of private ownership prior to the year 2000). A concrete building footing was constructed on the site prior to 2000. Erosion is expected to be zero or extremely limited due to the flat, graded nature of the site. Installation of underground utility lines and septic system would be backfilled with soil removed in trenching, leaving the surface as it was before installation. Vegetation is mostly non-native grasses and forbs (Kentucky bluegrass, dandelions). The existing access road to the site would remain the same; removal of the storage containers and welding shed would not require any changes in the access road. Vegetation outside the construction footprint would be left intact. Ten small ponderosa pines and white firs (&lt; 8” diameter at breast height, DBH) and 2 standing dead snags would be removed. Removal of only 10 small trees and 2 standing dead trees from the construction site would have no substantial impact on forest function or wildlife habitat; smaller trees would be removed from the site, and the two larger snag tree trunks would be moved to just outside the site, and left on the ground to decompose under natural conditions. In summary, little to no effect on soils or vegetation is anticipated from this project.</p>

Water and hydrology	<p>The construction site is located outside of the riparian zone of La Jara Creek (the nearest perennial stream) on an alluvial fan emanating from La Jara Canyon, and no impacts on stream ecosystem functioning are anticipated. The construction site is already disturbed, having been bulldozed to a near-level grade, and roof area of the garage would be comparable to the roof areas of the storage trailers; hence, the impacts of the proposed construction on runoff would be minimal. Excavation areas for the septic system and utility lines would be refilled, with no impact on hydrology. Addition of a gravel parking area and improvements to the existing access road may result in a minor increase in runoff into the nearby forest understory, but runoff amounts would be minimal and should not cause erosion or gullying downslope.</p>
General wildlife species	<p>The Preserve supports aquatic and terrestrial habitats for a variety of wildlife. Sixty nine species of mammals are either confirmed or suspected to inhabit the Preserve. A total of 104 bird species have been identified (Johnson 2001, Fettig et al. 2012), with many of those using the Preserve for breeding habitat. Extensive surveys occurring 2000-2003 identified 3 amphibian and 5 reptile species (Cummer et al. 2002; Cummer et al. 2004). In 2012 and 2013, one additional amphibian (Northern Leopard Frog; <i>Rana pipiens</i>) was reintroduced to the Preserve. Seven fish species have been identified in the Preserve's streams. To date, &gt;1,300 species of invertebrates have been identified and on-going work is continuing to identify new species.</p> <p>Impacts on wildlife habitat would be minimal. The proposed project would construct a 2,800 sq. ft. garage and maintenance facility designed for year-round use, replacing three storage containers and a shed presently on the site. The immediate construction related vegetation and soil impacts of the proposed project encompass ~16,000 sq. ft. (~0.37 ac) with ~12,000 sq. ft. (0.28 ac) occurring in old-growth xeric mixed-conifer forest and the remaining impacts in open grassland. The resulting impacts would include the permanent loss 10 small-diameter (&lt;8 inch) mixed conifer second growth forest, the permanent loss of 0.05 ac of mixed native and non-native grassland and the removal of 2 hazard snag trees.</p> <p>Additionally, the temporary loss (one-season) of 3,500 sq. ft. (0.08 ac) of herbaceous vegetation would also occur, as a result of digging and trenching. Trenches may also cause small-bodied wildlife species to be trapped. Having consulted with NM Dept. of Game &amp; Fish, and the U.S. Fish &amp; Wildlife Service, we would include the following mitigations to minimize these impacts: (1) minimizing the amount of open trenches at any given time; (2) trenching during summer months when surveys for Jemez Mountains Salamanders can be conducted and any individuals found can be safely moved; (3) providing escape ramps for any trenches left open overnight; and (4) inspecting trenches daily and removing any animals that may have fallen into the trenches.</p>

<p>General wildlife species (continued)</p>	<p>Beyond surface disturbance, an additional subsurface area of ~40,000 sq. ft. (0.92 acre) within old-growth mixed conifer forest may be impacted by additions of below-ground (&gt;4 ft deep) nutrients and possible surfactants (detergents, soaps) as a result of the septic system leach field. Possible impacts from these changes are unknown, but would likely enhance growth of plants having roots in the leach field area.</p> <p>Exchanging one newly constructed building for several smaller buildings may result in the loss of habitat for individual small mammals, reptiles or birds that have grown accustomed to utilizing this area. The current buildings and additional items stored around the buildings provide ample space for species to reside under and in the old facilities. As these buildings have existed for &gt;20 years, individuals may be displaced a short distance to the outside perimeter of the construction area by the loss of this habitat.</p> <p>Noise disturbance from increases in human activity and construction equipment for a period of 60-90 days may disturb or displace mobile species. This disturbance may temporarily increase intra-species strife in territorial species (e.g., squirrels, birds). Disturbance may also lead to reduced fitness of individuals of small-bodied, high-metabolic species (e.g., shrews). As the construction work would occur outside of bird breeding season, no impacts are expected on breeding or nesting activities. The proposed project would be constructed in areas that would avoid streams and wetland habitats. Mitigation measures designed to protect groundwater, streamflow, floodplains and wetlands during all phases of the construction would effectively eliminate any contaminated runoff that might impact water quality and fish and aquatic life.</p> <p>Due to the limited extent of the habitat loss (&lt;1.5 acres total), the short period of construction noise and limited human use (60-90 days) along with the mitigations outlined above, any temporary impacts to wildlife would occur on an individual-level rather than the population-level or species-level. As such, the topic of wildlife was dismissed from further analysis.</p>
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<p>State listed wildlife and migratory birds of conservation concern</p>	<p>The NPS reviewed the New Mexico Department of Game and Fish' State Wildlife Action Plan for New Mexico (2016) and reviewed the Biota Information System of New Mexico Sandoval County Report of Federal/State Species Status. A list of 50 state-identified threatened, endangered, and species of greatest conservation need for Sandoval country was reviewed (Appendix 1). Potential impacts to Jemez Mountains salamander are addressed below.</p> <p>Of the remaining state-identified species, 15 bird species have the potential to inhabit the area of the proposed project: Grace's warbler (<i>Dendroica graciae</i>), Lewis's woodpecker (<i>Melanerpes lewis</i>), Olive-sided flycatcher (<i>Contopus cooperi</i>), Virginia's warbler (<i>Vermivora virginiae</i>), Williamson's sapsucker (<i>Sphyrapicus thyroideus</i>), Common nighthawk (<i>Chordeiles minor</i>), Clark's nutcracker (<i>Nucifraga Columbiana</i>), Pygmy nuthatch (<i>Sitta pygmaea</i>), Mountain bluebird (<i>Sialia currucoides</i>), Western bluebird (<i>Sialia mexicana</i>), Vesper sparrow (<i>Poocetes gramineus</i>), Cassin's finch (<i>Haemorhous cassinii</i>), Evening grosbeak (<i>Coccothraustes vespertinus</i>), Northern Harrier (<i>Circus cyaneus</i>), Northern goshawk (<i>Accipiter gentilis</i>).</p> <p>Potential impacts to these bird species include the permanent loss of ~0.5 acres of grassland vegetation, consisting of the removal of understory herbaceous vegetation to accommodate parking, and the temporary loss of ~0.15 acre of herbaceous vegetation as a result of trenching and digging. Additionally, the removal of 10 trees and 2 snags would reduce available resources for birds utilizing snags and smaller diameter mixed-conifer trees within the action area. Additional temporary impacts, such as disturbance and displacement, may result from construction related noise scheduled to occur in late-summer for up to 90 days. No disruption of breeding/nesting would occur.</p> <p>Given their widespread distribution, and their common occurrence in the Preserve, the impact of the construction activities and presence of the garage facility would temporarily impact local individuals, but not cause a decline in Preserve populations.</p>
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<p>Special Status Species - Federal</p>	<p>A list of federally-listed species in the action area was obtained from the USFWS Information for Planning and Conservation (IPaC) website on January 29<sup>th</sup>, 2018 (Consultation Code: 02ENNM00-2017-SLI-0342. Event Code: 02ENNM00-2018-E-00780. Project Name: VALL Facilities Projects in Cabin District). Using this list, we determined which of those species/critical habitat had a potential to occur within the action area.</p> <p>IPaC currently lists 3 birds, 1 mammal, 1 fish, and 1 amphibian species as threatened or endangered with the potential to occur in the action area, but with no designated critical habitat: Mexican Spotted Owl (<i>Strix occidentalis lucida</i>), Southwestern Willow Flycatcher (<i>Empidonax traillii eximius</i>), Yellow-billed Cuckoo (<i>Coccyzus americanus occidentalis</i>), New Mexico Meadow Jumping Mouse (<i>Zapus hudsonius luteus</i>), Rio Grande Silvery Minnow (<i>Hybognathus amarus</i>) and Jemez Mountains salamander (<i>Plethodon neomexicanus</i>).</p> <p>Of the species identified by IPaC, suitable habitat within the action area does not exist for Mexican Spotted Owl, Southwestern Willow Flycatcher, Yellow-billed Cuckoo, New Mexico Meadow Jumping Mouse, or Rio Grande Silvery Minnow. Additionally, surveys throughout the Preserve have not identified the presence of any of these species. As such, there would be no effect to any of these federally listed species from the proposed management action (Appendix 2).</p> <p>Suitable habitat for the Jemez Mountains salamander (<i>Plethodon neomexicanus</i>) does occur within the proposed project area. Due to the salamander spending the majority of its time belowground, it can be difficult to determine presence or absence in any given location. However, no salamander detections have occurred on the proposed action area; with the nearest detection occurring in 2016 ~550 meters away from the proposed location. In 2017, two presence/absence surveys were conducted in the proposed action area and no salamanders were detected.</p> <p>Immediate direct effects (if salamanders are present on site) could include the potential to kill or injure a salamander during cutting, digging, or leveling ground during utility trenching, septic system installation, or parking lot construction. Due to previous human disturbance on most of the proposed action area, the 2013 Thompson Ridge wildfire, and the low abundance of cover objects, along with two negative detections during surveys, it is highly unlikely this proposed area supports Jemez Mountains salamanders. Additional proposed cautionary measures of conducting a presence/absence survey shortly before any ground disturbance, and monitoring of trenching/digging activities would further reduce any potential for harm to Jemez Mountains salamanders (Appendix 3).</p>
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<p>Special Status Species – Federal (continued)</p>	<p>Effects to habitat include trenching activities, which would displace ~ 725 cubic yards of soil covering 4,000 sq. ft. of surface area. Approximately 648 cubic yards of this soil disturbance would be in previously disturbed areas; however, this disturbance was 14 years ago and the site has an unknown potential for post-disturbance recolonization by local wildlife. The additional future concrete pad, clearing and grubbing along with the placement of compacted gravel for the existing entrance drive and new parking area would permanently remove ~2,500 sq. ft., of previously unutilized potentially suitable salamander habitat. Beyond surface disturbance, an additional subsurface area of ~40,000 sq. ft. (0.92 acre) within old-growth mixed conifer forest may be impacted by additions of below-ground (&gt;4 ft deep) nutrients and possible surfactants (detergents, soaps) as a result of the septic system leach field. Possible impacts from these changes are unknown, but would likely enhance growth of plants having roots in the leach field area.</p> <p>Combining all direct and indirect effects a total loss of potentially suitable habitat of 1.1 acres is anticipated; of this, ~0.75 acres has already seen extensive disturbance due to previous human use and wildfire.</p> <p>As a result of the combination of (1) previous disturbance, (2) small size of the project area, (3) negative earlier survey results, and (4) proposed biological monitoring during construction activities, the potential impact to Jemez Mountains salamanders and their habitat is considered to be not measurable and extremely unlikely to occur.</p> <p>Based on the above information, an effect determination of “May affect, not likely to adversely affect” (NLAA) was sent to the US Fish and Wildlife Service for concurrence on January 31<sup>st</sup>, 2018.</p>
<p>Air Quality</p>	<p>Construction-related activities could result in localized (within ~50 m), temporary increases of vehicle exhaust, emissions, and fugitive dust during the several weeks of construction activity. There would be no long term impacts to air quality. The project would result in a limited increase of Green House Gas (GHG) emissions from the use of construction equipment and by prompting limited vehicle entry wait times through traffic closures.</p> <p>Construction related activities would result in a localized increase of vehicle exhaust, emissions, and fugitive dust throughout the 60-90 day construction period. Periodic use (i.e. hourly) of various types of equipment (excavators, backhoes, and material delivery trucks) over the 60-90 day period would result in GHG emissions that would be very small relative to those produced from visitor road transportation within the Preserve, and would make an inconsequential contribution to the Preserve’s overall emissions profile. Any increase in GHGs would cease once construction is complete; therefore no long-term contribution of GHGs would occur. The use of the all-electric shuttle vans offset by electricity produced by solar panels would reduce the Preserve’s overall GHG emissions, and the construction of a garage to house them would help to ensure they are maintained in working order for a longer period of time. Use of electric shuttle vans would reduce overall emissions from the Preserve’s shuttle van usage.</p>

<p>Soundscapes</p>	<p>Sounds in the project area are currently a mix of natural and man-made, including those generated from wildlife, humans, vehicle traffic, and wind. Human-caused sounds would temporarily increase during the 60-90 days of construction activity as a result of equipment, vehicle traffic, and construction crews. Long-term levels of sound resulting from the NPS using the workshop and garage would not be much different than current levels, and may actually decrease due to maintenance activities taking place indoors instead of outdoors as they do currently.</p>
<p>Lightscaapes</p>	<p>There is no existing lighting in the project area. The new garage would include outdoor lighting, but these lights would only be in use during entry and exit of shuttle vans or personnel to the building. Use of the building would be during daylight working hours, and staff presence during times of lighting requirements would be limited to dawn and dusk during fall-winter-spring periods. Interior lights within the workshop and garage would cast some limited light outside, but this would occur only during dawn and dusk times when staff were starting or ending their work shifts. Exterior lighting would be shaded for downward display, preventing lights from being viewed elsewhere away from the building or upwards affecting the night sky. Furthermore, as no lights would be on for long after dark, no light impact would occur on night skies.</p>
<p>Paleontological Resources</p>	<p>There are no known paleontological resources in the immediate project area, as the geology of the site is not conducive to fossil formation; the Redondo Peak formation was created by an upwelling of rock debris by the refilling of the magma chamber 1.25 million years ago, and the post-formation conditions for fossil formation did not exist.</p>

<p>Archaeological Resources</p>	<p>The archaeological sites in the vicinity of the construction area consist of prehistoric and historic artifact scatters, and a historic building. Evidence from shovel probes southeast of the garage site and elsewhere in the Cabin District suggests there are intact cultural deposits in and around the project area beyond archaeological site boundaries as they are currently delineated. The extent of these deposits is likely greater than 20 acres.</p> <p>Most of the footprint of the proposed garage building was bulldozed into a terrace by the private ranch owners sometime in the late 20th Century. Additional disturbance occurred in the early 2000's in relation to water pipeline and road work. A considerable portion of the construction activities would be within this area that is already disturbed, but some new ground disturbance is anticipated. The new disturbance is expected with the installation of the septic tank and leach field, some of the trenching for the electric line and some of the driveway and parking area; most of the trenching and road work would occur in previously trenched/graded areas. The total impact area would be less than 1.5 ac. While previous 20th Century disturbance has disturbed cultural deposits in the area, VALL staff would still monitor all digging activities and assess any artifacts unearthed during construction, particularly in the small area without previous disturbance.</p> <p>Construction activities would directly impact archaeological site LA140252, a prehistoric lithic scatter. The site contains hundreds to thousands of pieces of obsidian debitage (chips of obsidian from making stone tools) as well as a few pieces of chert debitage and more intensively worked obsidian. The site also contains two sheds and bits of metal and glass refuse dating to the 20<sup>th</sup> Century, but these components do not contribute to the site's eligibility for the National Register of Historic Places (NRHP). Subsurface testing conducted by Valles Caldera archaeologists suggests that the site contains archeological deposits that could provide information important in prehistory (NRHP criterion d). In 2017, the Valles Caldera recommended that LA140252 is eligible for the NRHP based on the information potential (criterion d) of undisturbed portions of the site. The NM SHPO concurred with that recommendation in 2017 (HPD Log #107021).</p> <p>Much of the subsurface cultural record at LA140252 has been disturbed by earthmoving activities prior to Federal acquisition. However, islands of intact archeological deposits may exist within the proposed project APE. The information potential of these deposits could be diminished by ground-disturbing activities occurring during construction. Thus, this project will have an adverse effect on LA140252. The Valles Caldera is currently consulting with NM SHPO to develop a Memorandum of Agreement that resolves this project's adverse effect on LA140252.</p> <p>Direct construction activities would occur near an historic building, the Bond Cabin (site LA137536). This site consists of a log building and a 15x15 m artifact scatter. The Bond Cabin is a log house constructed under the direction of Frank Bond for his daughter and son-in-law in the summer of 1918. The cabin was recommended eligible for the National Register in 2006, based on its association with events which have made a significant contribution to the broad patterns of history (criterion a) and its embodiment of distinctive architectural characteristics (criterion c). Specifically, the building is associated with patterns of sheep and cattle ranching at the Baca Location No. 1 during the period of 1918-1962, and serves as a good example of rustic vernacular log architecture in the early 20<sup>th</sup> Century. The building's large footprint, nonlinear plan, and sizeable roof span makes it distinctive among older log buildings, which are typically smaller, simpler in plan, and more utilitarian. The NM SHPO concurred with this eligibility recommendation in 2006 (HPD# 87734).</p> <p>The proposed construction activities in the vicinity of the Bond Cabin consist of trenching for a buried electrical line from an electric pole north of the cabin to previously trenched area along a service road. This activity would not affect the integrity of the Bond Cabin.</p>
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Cultural Landscapes	<p>The cultural landscape in the project area, while not formally documented in an NPS Cultural Landscapes Inventory, is reasonably well-known through multiple historical assessments (Anscheutz and Merlin 2005, Martin 2003). Cultural landscape features related to the Baca Ranch Cabin District, in which the project area is located, include an old growth conifer forest, forest-meadow transition, and a NE/SW road alignment of Preserve Road VC-02 road, in addition to various buildings and structures of known ages and uses. The proposed location for the garage is in an area used for maintenance at least since the mid- to late-20<sup>th</sup> century. Maintenance areas are, by their nature, fluid and the presence of a garage in this setting would be consistent with the location's cultural history, and would not remove any cultural landscape features.</p>
Ethnographic Resources	<p>The Pueblo of Jemez has expressed consistent interest in the Cabin District area and a desire to be involved in activities there. The area of La Jara Creek above the Cabin District has generally been of greatest concern. Based on information provided by the Pueblo of Jemez, the project area is far enough from the most culturally important areas and resources known at this time and would have minimal impact on these resources.</p> <p>Other ethnographic resources include the modern ranching era's facilities, which have supported sheep and cattle operations, hunting and fishing, mining and geothermal exploration, forest logging operations, and recreational activities, all of which relied to varying extent on the ranch's maintenance operations. As the new garage/maintenance building is being built in the maintenance area of the original ranch, it would maintain the ethnographic character of the Cabin District.</p>
Socioeconomics	<p>The project would have a short-term (60-90 days) benefit to businesses involved in the contract to build the garage. The presence of the garage would reduce/prevent untimely damage to the shuttle vans, and thus would save NPS funding to repair damages caused by weather or rodents.</p>
Environmental Justice	<p>There would be no disproportionate health or environmental effects on minorities or low-income populations because implementation of the alternatives would not result in any identifiable adverse human health effects and because this environmental assessment demonstrates there would be no substantial environmental impact at all. The shuttle vans supported by this garage would be available for use by all people regardless of race or income, and the construction workforces would not be contracted based on race or income.</p>
Indian Trust Resources	<p>There are no Indian Trust Resources in the project area.</p>

<p>Indian Sacred Sites</p>	<p>No Indian Sacred Sites are known to be at or near the project area at this time. Based on previous consultations with associated American Indian tribes and pueblos, the NPS has not been informed of any known sacred sites in the project area. All associated American Indian tribes and pueblos were sent an informational letter notifying them of the proposed project and the NPS's desire to hear their comments. Furthermore, each tribe would be notified of the completion of this EA and would be asked for their review and comment. If new information about ethnographic resources, tribal concerns, or other subsequent issues, is identified as a result of this consultation, the NPS would reconsider this determination.</p>
<p>Visitor Use and Experience</p>	<p>Visitors to the Cabin District and the visitor contact station would be able to walk through the area to view the historic cabins and outbuildings. The maintenance area, with the new garage, would be mostly shielded from view by vegetation in the forested areas between the cabins and the maintenance buildings. The garage would be painted a dark color to further reduce its visibility from public visitation areas. Public access to the maintenance area (and well/water-treatment system) is restricted, so visitors would not be permitted to access the garage site. As such, the replacement of the storage containers and welding shed with the garage would have no negative visual impact on visitor use or experience. Increased noise during the 60-90 day construction period would be heard from the garage site; limiting construction activities to week days would minimize the number of visitors subjected to construction noise (visitation is higher on weekends).</p>

# ALTERNATIVES

## Alternatives Carried Forward

### **Alternative A – No Action (No garage is constructed)**

Under the no action alternative, the garage would not be built. Storage containers and welding shed would remain where they are. Electric van charging activities would continue by utilizing a single electric van charging station at the welding shed, with no means to provide adequate storage and general condition protection. Maintenance personnel would continue to work outdoors or in the small confines of the unlighted, unheated sheds.

### **Alternative B – Garage Construction in Cabin District Maintenance Area (NPS Proposed Action and Preferred Alternative)**

Under this alternative, the garage with a maintenance/workshop area to support shuttle van maintenance and minor day-to-day repairs would be constructed on a previously disturbed site in the existing maintenance area of the Cabin District (see cover page for shuttle van photos). The new single-story structure would be a pre-fab metal building with non-descript dark exterior finishes to neutralize the visual impact, compliment the surrounding area buildings and blend in with the surrounding landscape. The new structure would comply with the Architectural Barriers Act Accessibility Standard and follow sustainable building practices. Three existing storage containers and a welding shed currently occupy the site (Figure 1): one storage container and the welding shed would be demolished and removed, while the other two containers would be removed from the site and stored offsite at the Union building (a former maintenance area for the geothermal exploration efforts during the 1970s). The Union building is a non-historic facility within the existing Preserve boundaries, and is currently used for equipment and material storage; this site offers adequate space for placement of the storage containers next to an existing storage shed on a graded pad.

The details of the garage to be constructed are shown in Figures 3-7. The structure would be 40 x 70 ft. in dimension, and would consist of two vehicle bays of sufficient size to hold the two electric shuttle vans. In addition, the garage would have a unisex accessible restroom, a small staff meeting room, office space for facility management staff, and an open floor shop area with an additional garage door for loading and unloading maintenance supplies and materials. A conceptual floor plan and building elevations are shown in Figures 4 and 7. Existing potable water is available within the new garage site area of impact, and initial construction would provide the appropriate electric, HVAC and potable water piping “stubbed out” and ready for final connection (see Figure 6, site plan). A ~500-gallon septic tank and leach field (two ~50-ft. lines) would be added near the building for waste processing; the tank and leach field would remain within the limit line of construction shown in Figures 3 and 6. Final tank size, leach line design and associated space requirements for processing of waste water would be approved and permitted by the State of New Mexico Environment Department.

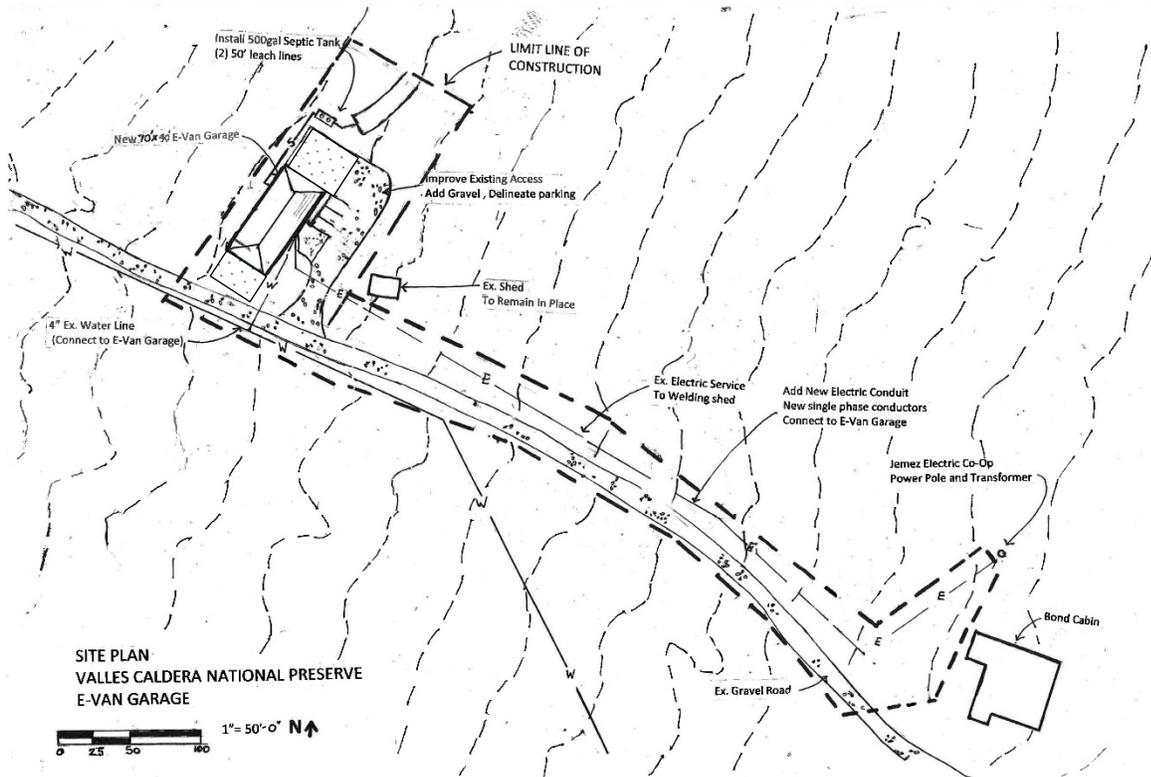


Figure 3. Site plan map showing project area relative to the southern part of the Cabin District. Heavy dashed line indicates boundary of project area.

Figure 4. Elevation schematic for proposed garage/maintenance workshop.

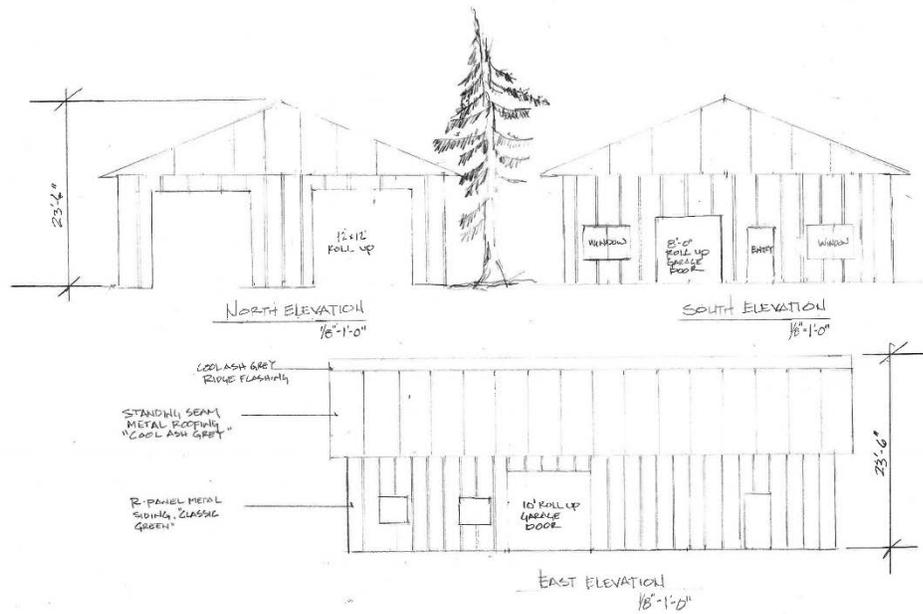


Figure 5. Existing conditions on the proposed construction site.

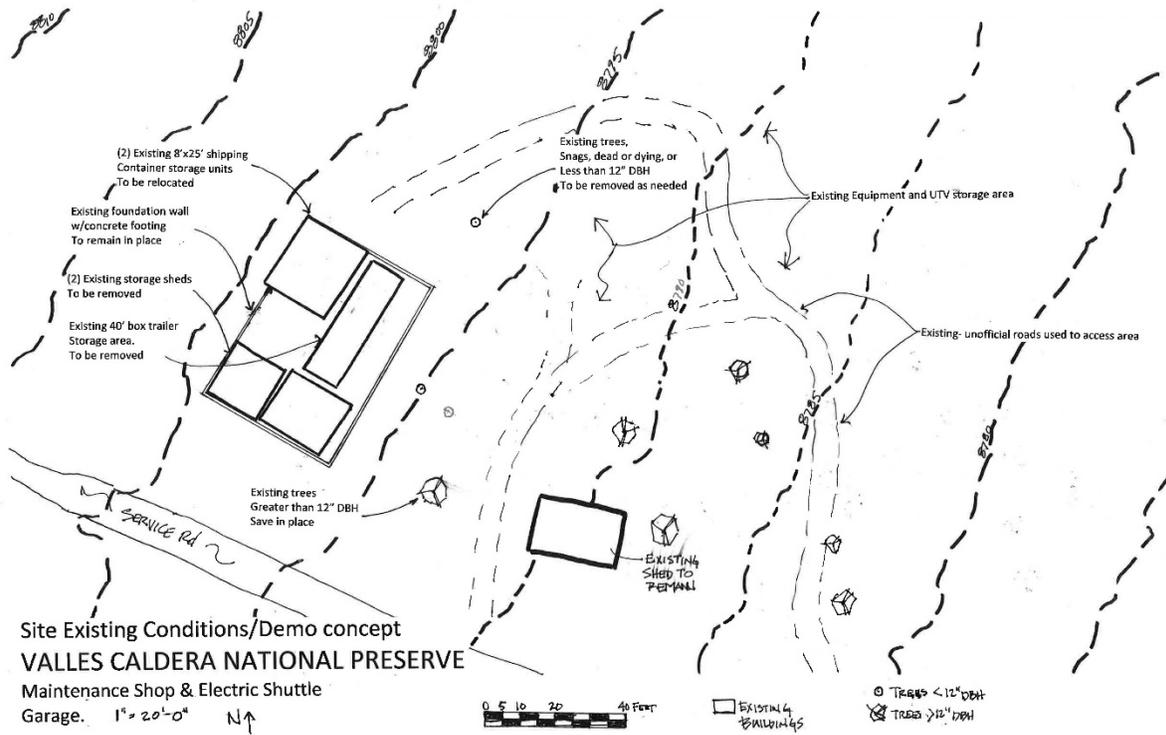
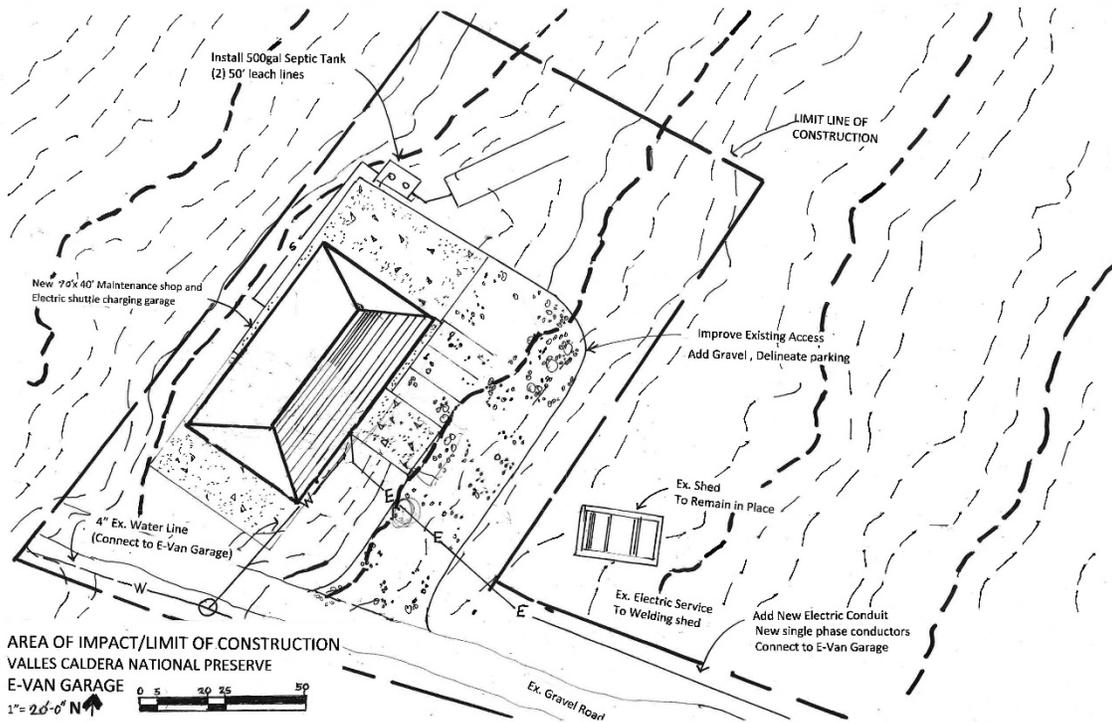
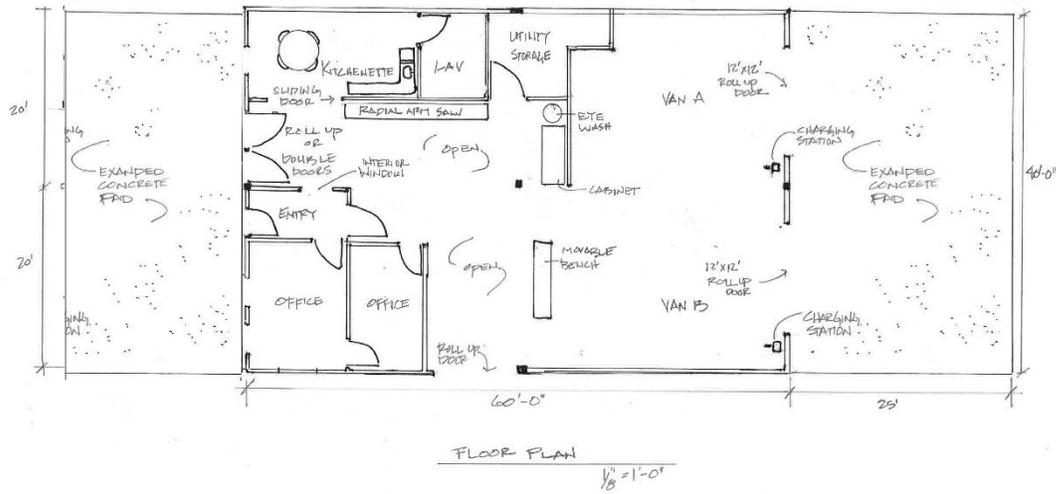


Figure 6. Site map of the proposed maintenance/garage building.





YALLES CALDERA NATIONAL PRESERVE  
 MAINTENANCE BUILDING  
 E-VAN GARAGE.

Figure 7. Construction floorplan for garage/maintenance workshop.

The building would be constructed on a new reinforced concrete pad and would not exceed a 70 x 40 ft. footprint. The conceptual floor plan shown in Figure 7 shows a 70 x 40 ft. layout as an example of how the interior space would be divided, how the building footprint fits within the area of impact, the building orientation, and egress locations. Because the building would be “pre-fab” and purchased as a package through a GSA-Buy agreement, the overall length of the building may be slightly modified but would remain within the limit line of construction as shown in Figure 6. A 25 ft. x 40 ft. section of the concrete pad (stippled area in Fig. 6) would act as an external apron on the northeast side of the building, as well as a smaller concrete apron (20 ft. x 40 ft.) on the southwest side of the building. Evidence of an existing concrete footing and stem wall is apparent at the building site; the exact age or purpose of the footing is unknown; however review by cultural resources staff indicate that the footing is not historic, and appears to have been constructed to support a pole barn or other storage structure. Following review by an NPS architect, the existing footings have been deemed suitable to support the new construction. The existing concrete would remain in place and be used to support the new building and its concrete floor.

Electricity for the new structure would be provided by the Jemez Mountain Electric Cooperative (JMEC). JMEC supplies all electricity to the surrounding Cabin District buildings. The existing welding shed adjacent to the proposed building site contains a 100-amp service panel. Although close in proximity to the proposed building, the 100-amp availability is undersized for the purposes of the new building. A 400-amp service panel would be required to support two electric van charging Stations and the new shop/office space within the building. To meet the required energy needs, a new ground-based transformer would be installed near the existing service pole. The size of ground based transformers able to provide the required power are 3 ft. x 3 ft. x 2.5 ft. tall and placed on a precast concrete pad, which is slightly larger than the transformer footprint dimensions. The transformer would be painted dark green and located behind the Bond Cabin (see Figure 3). The existing pole with high voltage conductors would remain in place

The new electric service would be implemented by trenching approximately 150 yards following an existing trench created during the 2004 water improvement project. The location of the trench is within the existing road prism leading to the building site (see Figures 3, 6). The trench would be 4 ft. deep, and ~2-3 ft. wide; soil and rock removed from the trench would be stockpiled next to the trench, sand bedding and cover material would be added to protect the integrity of the conduit according to industry standards, and then the trench would be re-filled with the stockpiled rock and soil. An existing 4" water supply line is located within the limit line of construction area (see Figure 6). The contractor would be responsible for locating the existing line, excavating to expose the line, and tapping into the line to create a new water service line for the new building. The new water service line would require trenching in the same manner as the electric service line, approximately 70 ft., from the existing four inch line to provide water service inside the building.

The new garage would require a new heating system (HVAC) for year-round use. The heating system would require the use of electricity and propane. For the use of propane, an exterior mounted storage tank is required. The tank would be typically sized at 500 gallon capacity. The space needed for a 500 gallon tank is approximately 10 ft. long and 5 ft. wide. The propane tank would be placed inside the limit line of construction boundary, 10 ft. from the north side of the building; the exact location has not been specified by the engineers, so it is not shown in Fig. 3 and Fig. 6. Propane is widely used as a fuel supply for heating, and is considered a safe, efficient, and reliable source of energy. The tank would be surrounded by 5 ft. high wood slat fencing with a lockable gate.

Nearby healthy vegetation would be left intact; 10 small-diameter trees and 2 snag hazard trees within the area of impact would be removed. All healthy old growth Ponderosa pines or Douglas fir trees would be saved in place. A qualified arborist or forester would be consulted, who would mark and approve all tree removal. An unimproved gravel vehicle access road to the site already exists; however improved grading and drainage would be undertaken, with three to four inches of gravel road base added to the existing access road. Three vehicle parking stalls would be constructed next to the garage. See plan view site drawing depicting access and parking (Figures 3 and 6).

Figure 8. Aerial view of Cabin District, showing maintenance area with proposed garage site hidden in forest area to northwest of cabins.



A turn-key purchase and construction arrangement through GSA E-Buy is expected to begin in 2018. Construction would include: (1) removal of existing structures and storage units; (2) the saving of existing eligible trees and removal of identified trees; (3) clearing and grubbing of the site (within the limit line of construction); (4) trenching and back fill of infrastructure related systems (power, water, sewer) as shown on the concept drawings and remaining within the limit lines of construction; (5) forming and pouring of concrete footings and floor; and (6) erection of a pre-fabricated metal building. Typical construction activities would last two to three months (60-90 days) and include the use of a backhoe for excavation, dump trucks for hauling commercial gravel from outside the Preserve, a concrete truck for pouring the pad, front end loader for moving material, and hand tools. All equipment and materials staging would occur within the project area, and existing Preserve roads would be utilized for transporting equipment, materials and supplies. Night work would not be permitted to avoid impacts to wildlife and to avoid sound and light pollution. Work on weekends would not be permitted to avoid impacts during periods of higher visitation.

## **Best Management Practices**

The following best management practices would be implemented under Alternative B to minimize the degree and/or severity of adverse effects:

### **Wildlife**

- Construction personnel would be oriented on appropriate behavior in the presence of wildlife and on proper storage and handling of food, garbage and other attractants.
- Trenches would be kept open for the minimal amount of time, and provided with escape ramps for small wildlife as per recommendations provided by the New Mexico Department of Game and Fish; trenches would be checked daily and any wildlife found would be rescued and released. Trenching would occur during summer monsoon months of the year to allow for pre-construction surveys and simultaneous monitoring during construction for the Jemez Mountains salamander and moving any observed individuals to safe habitats outside the construction area.
- Construction would not occur in mid-May or June, therefore avoiding elk calving and bird nesting seasons.
- The construction site and staging areas would be monitored by NPS natural resource staff for all compliance requirements related to special status species.

### **Vegetation**

- Non-native invasive plant infestations near the disturbed areas would continue to be treated on a yearly basis, with emphasis on these areas for a minimum of three years following project completion. These treatments, including hand-pulling of invasive plants and use of herbicides, have been previously approved in a 2014 Environmental Impact Statement for landscape restoration within the Preserve.
- Construction equipment would be cleaned before entering the Preserve to minimize the transportation of exotic seeds to the site. All equipment entering the Preserve would be inspected and may be required to be pressure washed to remove foreign soil, vegetation, and other materials that may contain non-native seeds or vegetation.

- Existing vegetation would likely be sufficient to screen the new building, but additional plantings of native tree and shrub species would be used if more vegetation is deemed necessary.

### **Soils**

- Erosion control measures that provide for soil stability and prevent movement of soils would be implemented, such as installing erosion control wattles along the edge of construction. Wattles would be made of weed-free materials.
- Any topsoil temporarily disturbed during construction would be aerated and reseeded with native vegetation.

### **Cultural Resources and Historic Structures**

- Based on recommendations in a consultation letter from the NM SHPO dated May 12, 2017, the color and reflectivity of the garage would be selected to reduce its visibility on the landscape.
- Existing healthy trees would be retained to maintain visual shielding of the garage from the surrounding buildings, especially to the southeast (i.e., toward the Valle Grande).
- If concealed cultural resources are encountered during project activities, all necessary steps would be taken to protect them and the NPS project leader would be notified immediately. Work would cease where the resources are found. At the direction of NPS cultural resources staff, the resources may be covered or stabilized until assessments and/or consultation can be conducted.
- All ground-disturbing work would be monitored by on-site personnel meeting the Secretary of the Interior Standards for Archaeology.
- In the unlikely event that human remains are discovered during construction, provisions outlined in the Native American Graves Protection and Repatriation Act (1990) would be followed.
- The NPS would ensure that all contractors and subcontractors are informed of the prohibition on collecting artifacts or intentionally damaging archaeological sites or historic properties.
- All excavation and construction activities would be undertaken a minimum of 15 ft., or as indicated in the field, from any existing historic structure, to avoid inadvertent damage to other structures.

### **Visitor Use and Experience**

- Signs would be posted and a press release issued to inform visitors when construction is initiated.
- An NPS contractor would be used to implement the new shuttle van garage project. Per NPS and OSHA regulation, construction zones would be identified and clearly marked. All safety protection measures would be clearly stated in the NPS construction agreement. Workers would be instructed to avoid conducting activities beyond the construction zone as defined by the construction zone fencing.
- Public access to all construction sites would be restricted.

- Construction work would not be permitted on weekends and other high visitation days (e.g. holidays).

### **Air Quality and Soundscapes**

- Fugitive dust generated by construction would be controlled by spraying water on the construction site if needed.
- All motor vehicles and equipment would have mufflers conforming to original manufacturer specifications; equipment would be in good working order to prevent excessive or unusual noise, fumes, or smoke.
- Equipment would not be allowed to idle longer than two minutes when not in use.
- No engine brakes (“Jake Brakes”) would be used on Preserve roads.

### **Park Operations**

- The NPS would develop and implement emergency response protocols for the project. Construction activities would be conducted in accordance with established safety protocols.
- Employees and construction crews would be required to park their vehicles in established staging areas as determined by the NPS in consultation with NPS cultural and natural resources staff; if out of walking distance, crews would be shuttled to and from the project site.
- Construction workers and supervisors would be informed about the special sensitivity of the Preserve’s values, regulations, and appropriate activities while construction is underway.

## Alternatives Considered and Dismissed

The following alternative was considered for project implementation, but was ultimately dismissed from further analysis, as described below.

### Garage Location Option – ALTERNATIVE C

In considering other sites for the building location, other regions of the Preserve (or outside the Preserve) were eliminated due to long driving times for the vans to get to the Valle Grande and Cabin District where they would operate; hence, the site selections were limited to the Cabin District area. One other site within the Cabin District was considered for the building (Figure 9). A site near the southwest edge of the Cabin District, behind a structure known as the “Cowboy Cabin”, was considered because it would be close to the visitor contact station; this would reduce travel time by about a minute for the shuttle vans to travel to the areas where public visitors would be picked up and dropped off. However, this site would be in plain view of the visitor contact station, and would require additional access road development to the site; these factors would create an unnecessary detraction from the Cabin District’s historic appearance. In addition, this site is outside the established maintenance area, away from the welding shed and existing utilities (except electricity), requiring additional site disturbance and expense for construction. Therefore, this site was rejected for these reasons (Section 4.3A in NPS NEPA Handbook: #3 “Duplication with other, less environmentally damaging or less expensive alternatives”).

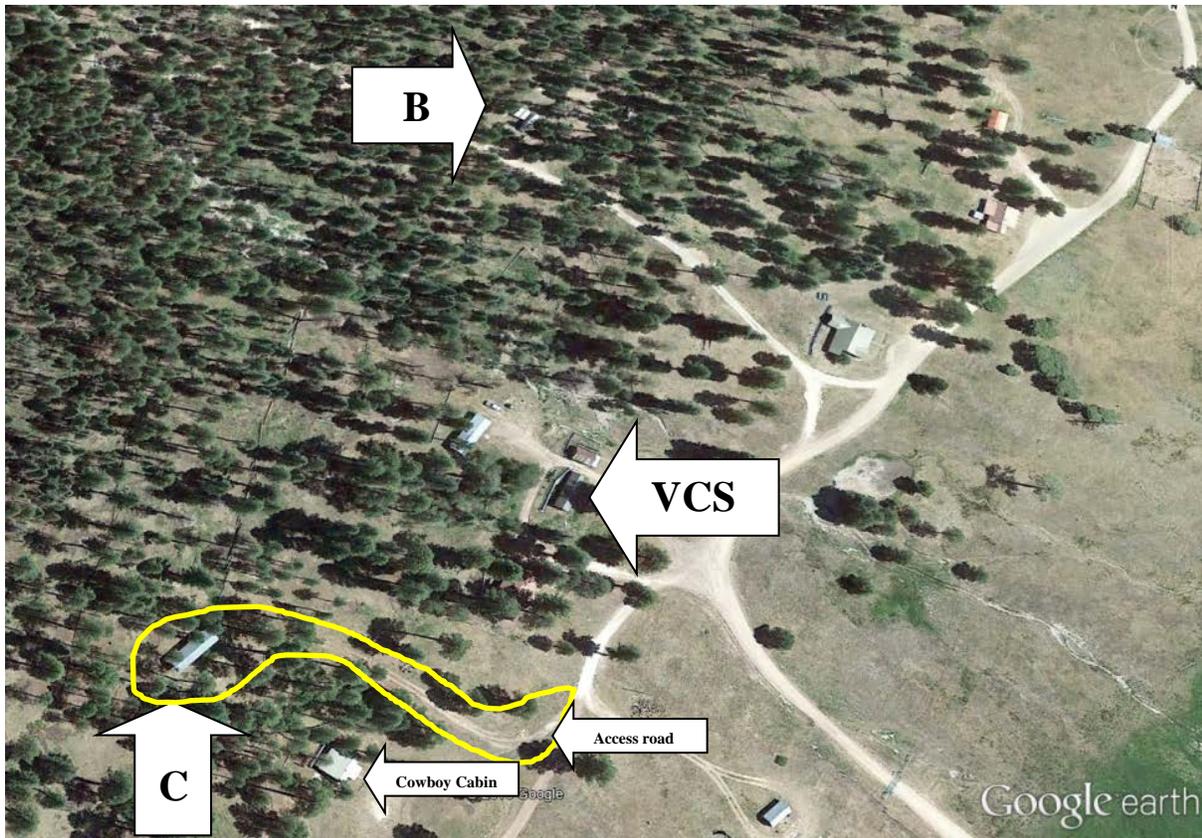


Figure 9. Aerial view showing Alternative C location (“C”) with project area (yellow line) near the Visitor Contact Station (“VCS”); the preferred location (Alternative B, “B”) is shown at the top of the photograph.

## **AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES**

This section describes the affected environment (existing setting or baseline conditions) and analyzes the potential environmental consequences (impacts or effects) that would occur as a result of implementing the alternatives. Direct, indirect, and cumulative effects are analyzed for each resource topic carried forward. Impacts are analyzed based on considerations of impact type, context, duration, and intensity.

### **Affected Environment: Potential Baca Ranch Cabins Historic District**

The Cabin District coincides with a cluster of historic cabins dating from the early- to mid- 20<sup>th</sup> century (Figure 10; Note – the project’s Area of Potential Effect is within the white lined area labeled “Proposed Garage Construction Area”). At least six of these cabins are considered individually eligible for inclusion on the National Register of Historic Places (NRHP). These cabins and their setting represent structures built by successive owners of the Baca Ranch for habitation and to facilitate ranch management. The overall eligibility of these resources as a potential historic district or multiple property listing has not been formally evaluated, nor has the significance of cultural landscapes. However, in 2010-2015 the Valles Caldera Trust worked with historian Jim Steely to prepare a draft nomination for a potential historic district known as the “Baca Ranch Headquarters Area” with a period of significance from 1899–1965. The draft nomination recommended statewide level of significance under NRHP criteria a, c, and d. The description of the potential historic district is drawn primarily from the 2015 draft nomination. Areas of significance include exploration / settlement, agriculture, transportation, architecture, and conservation. The 43-acre rural landscape is historically part of the 19<sup>th</sup> century U.S. land grant “Baca Location No. 1”. The draft nomination identified nine contributing buildings (log and rustic wood cabins/shelters), one contributing structure (the Bland Route spur road), one contributing site (ruins of the Sheep Barn), and five non-contributing buildings and structures. The surrounding old-growth mixed-conifer trees were included as secondary resources as these stands contribute to the association and setting, and are among the few remaining old growth stands in the Preserve.

The cultural features of the potential historic district line up along the edge of the old-growth ponderosa pine grove, the buildings sheltered and textured by the trees to the northwest but with stunning views of the Valle Grande to the southeast. A historic spur of the old Bland Route road, running generally southwest to northeast along the forest-meadow transition zone, helped establish this linear pattern. The 20<sup>th</sup> century use of these cabins as a residential area and operations hub, and enjoyment of the historic tree groves by generations of residents and ranch owners, resulted in the decision to exclude logging here and thus to preserve the old-growth trees as part of a cultural landscape. Extant buildings in the area represent three of the four family ownership eras of the Baca Location No. 1: the Otero Era (1899-1917); the Bond Era (1917-1962); and the Dunigan Era (1964-2000). There are no remaining buildings associated with the 1860 -1899 Baca Era, although the Bland Route spur pre-dates 1898.

From the first surviving log building (the Otero Cabin of 1915) through ongoing improvements prior to the end of the proposed period of significance (1965), these facilities continuously served ranch hands and operations, and have a high degree of integrity in all aspects. All buildings representing the 1915–1965 development period, along with functional and largely compatible post-1965 additions, demonstrate the potential historic district’s strong integrity, summarized below.

- Location: The contributing buildings and the Bland Route spur are in their original locations.
- Design: Peeled-log design is predominant today as it was during the period of significance. Board-and-batten additions are compatible with the rustic-log design theme. Each building has a low-scale composition of a few connected rooms fronting onto the Valle Grande.
- Materials: Most exterior materials (peeled-bark logs or rough board-and-batten siding, and machine-

milled windows, doors, and rafters) are original.

- Workmanship: Workmanship is evident in the hand-tooled log notching and durable assembly of all building components at a very remote setting with few power tools from 1915 through the early 1960s.
- Setting: The physical environment of the area is relatively intact, including the spatial relationships between features and their placement within the old-growth forest-meadow transition.
- Association: The integrity of design, materials, workmanship and setting enable the association of the district with Baca Location No. 1 sheep and cattle ranching in the early to mid-20<sup>th</sup> century.
- Feeling: The collection of physical features—natural and cultural—conveys the district’s historic character and relate to the strong feeling of ranching in the mountains and meadows of rural New Mexico.

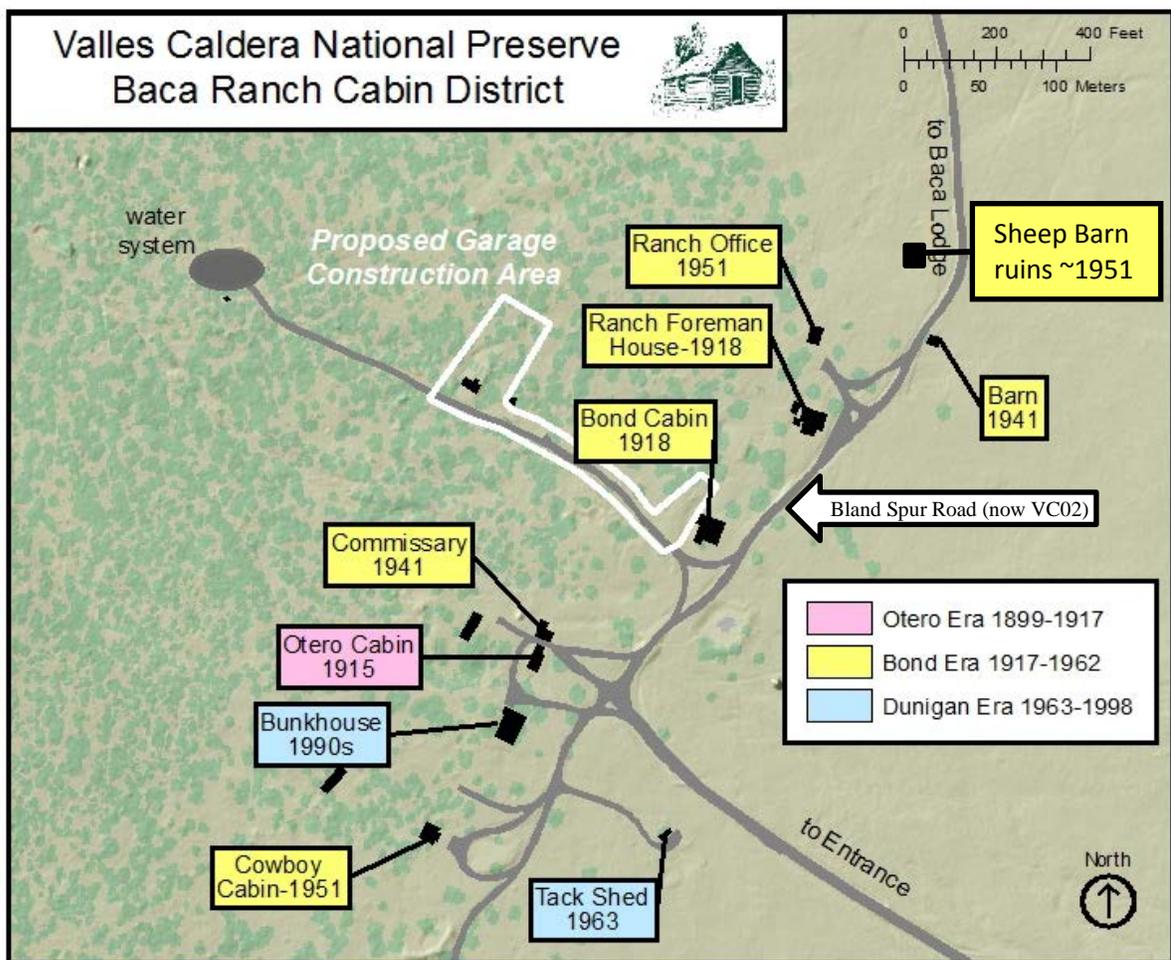


Figure 10. Map of cabins and other structures in the Preserve’s Cabin District. The Area of Potential Effect is the white-lined area of the Proposed Garage Construction Area.

## **Alternatives: Direct, Indirect, and Cumulative Impacts**

The following sections describe the analyses for potential direct, indirect and cumulative impacts/effects of the proposed alternative actions. In addition to the analysis of direct and indirect effects of each project alternative, the CEQ regulations which implement NEPA require assessment of cumulative impacts in the decision-making process for federal projects. Cumulative impacts are defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions" (40 CFR 1508.7). Cumulative impacts are considered for both the no action and preferred alternative.

Cumulative impacts were determined by combining the impacts of each alternative with other past, present, and reasonably foreseeable future actions. Therefore, it is necessary to identify other past, ongoing or reasonably foreseeable future projects that may impact each resource topic. Given this, the following projects were identified for the purpose of conducting the cumulative effects analysis, listed from past to future:

- Replacement of underground utilities in the Cabin District (2004)
- Burned Area Emergency Response (BAER) measures to protect the historic cabins from flash flooding after the 2013 Thompson Ridge Fire (2013)
- La Jara Creek restoration project (planned for 2018 – 2019)

### **Impacts of Alternative A: No Action**

The garage would not be built, and the storage containers and welding shed would remain in place; hence, no change in the area of the potential historic district would occur.

#### **Direct and Indirect Effects:**

*Analysis:* There would be no direct or indirect impacts to the Cabin District under Alternative A.

#### **Cumulative Effects: Past, Present and Reasonably-Foreseeable Future Actions.**

*Analysis:* As there would be no direct or indirect impacts to the Cabin District under Alternative A, this alternative would not contribute to cumulative impacts of other projects in this area.

### **Impacts of Alternative B (NPS Proposed Action and Preferred Alternative): Removal of the Storage Containers and Replacement with Garage/Maintenance Building.**

#### **Direct and Indirect Effects:**

*Analysis:* The shuttle van garage and maintenance workshop would be constructed within the potential Baca Ranch Cabin District. The construction would add a non-contributing feature to the district, while removing four non-contributing features (storage units and shed). In addition, construction would include the installation of a septic system, replacement of the underground electric line, and short new trenching to install the waterline and extend the powerline to the main distribution utility pole. Ten small-diameter trees would be removed, along with 2 larger dead snags (hazard trees) for public safety. New gravel would be added to the access road.

The overall visual impact of the project would be reduced by the placement of the garage behind the other buildings in the district and in a location surrounded by existing trees. The impact would be further reduced by the choice of building materials and design that are compatible with the design, association and feeling of the potential district. The septic system and utility lines would all be underground and out of sight; trench-lines would revegetate with herbaceous vegetation within several years and blend in with natural vegetation, and running underground utility lines mostly within existing trench-lines minimizes new areas of disturbance within the landscape of the district. The construction of the garage adjacent to other

structures built for storage and maintenance activities would be consistent with the historic use of the area. The proposed garage would not physically alter any contributing feature or cabin in the potential district. Removal of the 10 small trees and 2 snags on the construction site would not alter the structure, functioning, and the feeling of a forested area. The visual change would not be obvious to the public from the Bond Cabin and other public-access areas along the VC02 road, as other existing trees would mostly screen the project area from view. The project would introduce non-historic audible impacts during garage construction and utility line trenching. Permanent non-historic audible impacts are not expected to differ much from what has occurred in the past. Due to the location and design of the garage, the project would not affect the historical significance of the district, nor change the eligibility of the potential district to be listed on the National Register of Historic Places. In a consultation letter dated May 12, 2017, the NM SHPO stated “[t]he proposed garage, in our view, would fit well in its proposed location [Alternative B] far behind the row of cabins.” In a follow-up letter dated November 27, 2017, the NM SHPO further stated it “has no concerns regarding the proposed location or design of the Electric Van Shuttle Garage. The materials and design reflect our earlier recommendations and would minimize impacts to the proposed Baca Ranch Cabin Historic District.”

### **Cumulative Effects: Past, Present and Reasonably-Foreseeable Future Actions.**

#### **Past actions:**

*Analysis:* In 2004, under the Valles Caldera Trust, the underground utility lines for water, propane gas, and electricity were replaced throughout the Cabin District. This involved trenching 4-6 ft. deep from the water well and water treatment building in the Cabin District’s maintenance area to all the habitable buildings in the district. New pipes were installed for water and gas, and an empty 4” diameter conduit was added for future use for electric lines (currently on poles with overhead wires). The vegetation in the trench locations has since recovered. The utility line replacement negatively impacted the district, but not to the point of affecting its eligibility for the National Register.

In 2013, the human-caused Thompson Ridge Fire burned through the Cabin District and much of the watershed on Redondo Peak above the district. As part of the post-fire BAER measures, a series of temporary sandbag berms and rows of concrete Jersey barriers and contour-felled logs were installed to protect the cabins from flood waters. These barriers are still present today, and are considered non-contributing elements to the Cabin District, and will be removed when the NPS determines that the threat of flash floods has sufficiently abated (likely by the year 2020). While the temporary barriers are clearly unsightly and not consistent with other features of the Cabin District, they do not negatively diminish the integrity of the Cabin District. Long-term effects of having the barriers in place are positive – the historic buildings would remain undamaged, and the short-term impacts of soil and vegetation disturbance would be transient.

*Present actions:* There are no present actions underway in the Cabin District.

#### **Reasonably foreseeable future actions:**

*Analysis:* The Preserve’s friends group, Los Amigos de Valles Caldera, was awarded funding by the New Mexico Environment Department in 2017 to conduct a riparian/wetlands restoration project along the La Jara Creek, which flows through the Cabin District and was severely damaged by the 2013 Thompson Ridge Fire. The restoration project’s period of performance is from 2017-2019 and is likely to begin implementation near or soon after the construction period for the proposed garage. This may increase the amount of construction equipment in the vicinity for four to six weeks in the spring of 2018. The extra equipment would be a mini-excavator and a small skid steer tractor along with two support trucks. The two projects would be using the same access road to work sites twice a day. The closest the two projects would be from each other is approximately 500 feet for only a few days. The remainder of the restoration project would be up to a half mile away. In the surrounding forested area, the increase in equipment sound would be diffused and should minimize the noise pollution (or impacts) during construction/restoration periods. Restoration of the stream banks and proper hydrologic function of the La Jara Creek will return the stream

to its natural, historic character, and improve the characteristics of the Cabin District. No additional interactive effect with the garage is anticipated.

### **Summary**

As previously described in this Environmental Assessment, the direct and indirect impacts of alternative B would result in the loss of <1 acre of herbaceous grassland habitat, and the removal of 10 small trees and 2 dead snags; this would create only a minor change in the vegetation of the Cabin District, and would not diminish the character of the Cabin District. When these effects are combined with other past, present, and reasonably foreseeable future impacts, the total cumulative impact on the Cabin District would be negligible. The incremental impacts of alternative B would contribute slightly to, but would not substantially change, the impacts that are already occurring.

## **CONSULTATION**

### **List of Persons and Agencies Consulted:**

- Jorge Silva-Bañuelos, Superintendent, Valles Caldera National Preserve, National Park Service
- David Davis, Chief of Facilities, Valles Caldera National Preserve, National Park Service
- Lisa Lorang, Facility Management Software Specialist, Valles Caldera National Preserve, National Park Service
- Robert R. Parmenter, Chief of Science & Resource Stewardship, Valles Caldera National Preserve, National Park Service
- Scott Compton, Natural Resources Supervisor, Valles Caldera National Preserve, National Park Service
- Mark Peyton, Wildlife Biologist, Valles Caldera National Preserve, National Park Service
- Martina Suazo, Plant Ecologist, Valles Caldera National Preserve, National Park Service
- Madeline Scheintaub, Cultural Resources Program Manager, Valles Caldera National Preserve, National Park Service
- Nicholas Jarman, Archaeologist, Valles Caldera National Preserve, National Park Service
- Lillian Dollins, Archaeological Technician, Valles Caldera National Preserve, National Park Service.
- Melissa Trenchik, Chief, Environmental Quality, Intermountain Region, National Park Service
- Steven Moffson and Michelle Ensey, Historic Preservation Division, Department of Cultural Affairs, State of New Mexico
- Jodi Smithem and Michelle Christman, New Mexico Ecological Services Field Office, U.S. Fish & Wildlife Service
- Dr. Matt Wunder, Chief, Ecological and Environmental Planning Division, New Mexico Department of Game and Fish

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**Appendix 1. Wildlife species considered in the analysis for the proposed garage construction project.** Federally and State Listed Threatened Species, Endangered Species, Species of Greatest Conservation Need (SGCN), and Birds of Conservation Concern (BCC) in the vicinity of Valles Caldera National Preserve.

Common Name	Scientific Name	State Status	Federal Status
<b>Birds</b>			
Mexican Spotted Owl	<i>Strix occidentalis lucida</i>		Threatened
Southwestern Willow Flycatcher	<i>Empidonax traillii extimus</i>		Endangered
Yellow-billed Cuckoo	<i>Coccyzus americanus occidentalis</i>		Threatened
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Threatened	BCC
Bendire's Thrasher	<i>Toxostoma bendirei</i>		BCC
Black Rosy-finch	<i>Leucosticte atrata</i>		BCC
Brewer's sparrow	<i>Spizella breweri</i>		BCC
Brown-capped Rosy-finch	<i>Leucosticte australis</i>		BCC
Flammulated Owl	<i>Otus flammeolus</i>		BCC
Golden eagle	<i>Aquila chrysaetos</i>		BCC
Long-billed curlew	<i>Numenius americanus</i>		BCC
Mountain plover	<i>Charadrius mantanus</i>		BCC
Short-eared owl	<i>Asio flammeus</i>		BCC
Fox Sparrow	<i>Passerella iliaca</i>		BCC
Grace's warbler	<i>Dendroica graciae</i>	SGCN	BCC
Lewis's woodpecker	<i>Melanerpes lewis</i>	SGCN	BCC
Olive-sided flycatcher	<i>Contopus cooperi</i>	SGCN	BCC
Peregrine falcon	<i>Falco peregrinus</i>	Threatened	BCC
Pinyon jay	<i>Gymnorhinus cyanocephalus</i>	SGCN	BCC
Swainson's hawk	<i>Buteo swainsoni</i>	SGCN	BCC
Virginia's warbler	<i>Vermivora virginiae</i>	SGCN	BCC
Williamson's sapsucker	<i>Sphyrapicus thyroideus</i>	SGCN	BCC
Boreal Owl	<i>Aegolius funereus</i>	Threatened	
Common nighthawk	<i>Chordeiles minor</i>	SGCN	
Clark's nutcracker	<i>Nucifraga columbiana</i>	SGCN	
Pygmy nuthatch	<i>Sitta pygmaea</i>	SGCN	
Mountain bluebird	<i>Sialia currucoides</i>	SGCN	
Western bluebird	<i>Sialia mexicana</i>	SGCN	
Vesper sparrow	<i>Pooecetes gramineus</i>	SGCN	
Cassin's finch	<i>Haemorhous cassinii</i>	SGCN	
Evening grosbeak	<i>Coccothraustes vespertinus</i>	SGCN	
Northern Harrier	<i>Circus cyaneus</i>	SGCN	
Northern goshawk	<i>Accipiter gentilis</i>	SGCN	

<b>Mammals</b>			
New Mexico Meadow Jumping Mouse	<i>Zapus hudsonius luteus</i>		Endangered
Canada Lynx	<i>Lynx canadensis</i>		Threatened
Spotted Bat	<i>Euderma maculatum</i>	Threatened	
Pacific Marten	<i>Martes caurina</i>	Threatened	
American Pika	<i>Ochotono princeps</i>	SGCN	
Gunnison's prairie dog	<i>Cynomys gunnisoni</i>	SGCN	
Pale Townsend's Big-eared bat	<i>Plecotus townsendii pallescens</i>	SGCN	
Preble's shrew	<i>Sorex preblei</i>	SGCN	
<b>Amphibians</b>			
Jemez Mountain salamander	<i>Plethodon neomexicanus</i>		Endangered
Boreal chorus frog	<i>Pseudacris maculata</i>	SGCN	
Northern leopard frog	<i>Rana pipiens</i>	SGCN	
<b>Fish</b>			
Rio Grande Silvery Minnow	<i>Hybognathus amarus</i>		Endangered
Rio Grande Chub	<i>Gila pandora</i>	SGCN	
Rio Grande Sucker		<i>Catostomus plebeius</i>	SGCN
Rio Grande Cutthroat Trout	<i>Oncorhynchus clarkii virginalis</i>	SGCN	
<b>Invertebrates</b>			
Wrinkled Marshsnail	<i>Stagnicola caperata</i>	Endangered	
Knoblip Fairy Shrimp	<i>Eubbranchipus bundyi</i>	SGCN	

**Appendix 2. Effects Determination of ESA species/critical habitat and rationale.**

<b>Species/Critical Habitat</b>	<b>Effect Determination</b>	<b>Rationale</b>
<b>Yellow-billed cuckoo</b>	No effect	There was no evidence of yellow-billed cuckoo during survey work from 2003-2017, and no suitable habitat for this species occurs in the Preserve.
<b>Southwestern willow flycatcher</b>	No effect	There was no evidence of southwestern willow flycatcher during survey work from 2003-2017, and no suitable habitat for this species occurs in the Preserve.
<b>Mexican spotted owl</b>	No effect	There was no evidence of Mexican spotted owl during survey work in 2004, 2005 and 2009 along Redondo Canyon, Sulphur Canyon, and Indios Creek.
<b>Rio Grande silvery minnow</b>	No effect	The proposed project would not impact aquatic habitat. Also, no evidence of the Rio Grande silvery minnow from annual fisheries surveys from 2003-2017, and no suitable habitat for the minnow.
<b>Jemez Mountains salamander</b>	May affect, is not likely to adversely affect	<p>The proposed project area is suitable Jemez Mountains salamander habitat with canopy cover, downed logs, and surface rock present throughout the project area. Three surveys during 2017 did not detect salamander presence. A known Jemez Mountains salamander location is ~550 meters away from the proposed location.</p> <p>The species is not likely to be adversely affected if mitigation measures (i.e. seasonality restrictions on construction/heavy equipment, surveys before and during construction, and retention of habitat characteristics within the project area) are applied to when and how construction occurs. Additionally, the project is mostly within an existing disturbed footprint, and there is no documentation of salamander presence within 500 meters of the construction site.</p>
<b>New Mexico meadow jumping mouse</b>	No effect	No evidence of meadow jumping mouse from survey work in 2008. The proposed project does not occur in suitable habitat for the New Mexico jumping mouse.

**Appendix 3. Jemez Mountains salamander direct, indirect, and cumulative effects.**

Further Analysis for Jemez Mountains Salamander Impacts:

**Effect Determination:** May affect, is not likely to adversely affect.

*(A copy of the final Biological Assessment, once approved by USFWS, would be included in the PEPC project record.)*

Effect	Determination	Rationale	Mitigation Measures
<b>Direct Effects</b>	May affect, is not likely to adversely affect	<ol style="list-style-type: none"> <li>1. Construction and heavy machinery</li> <li>2. Graveled parking</li> <li>3. Trenching for utilities</li> </ol> <ul style="list-style-type: none"> <li>-Sewer system: two 50 foot lines</li> <li>-Electrical: 150 yards (4ft by 1ft)</li> </ul>	<ol style="list-style-type: none"> <li>1 and 2. Seasonal restriction to reduce take of salamander and compaction of suitable habitat.</li> <li>3. To occur between July-October to allow for surveys by Jemez Mountains salamander permitted NPS biologist before/during construction. The biologist would mark suitable habitat characteristics for retention within the project, and if necessary move salamanders from the construction path.</li> </ol>
<b>Indirect Effects</b>	May affect, is not likely to adversely affect	<ol style="list-style-type: none"> <li>1. Moving soil, rocks, or logs</li> <li>2. Removal trees</li> <li>3. Aerating soil</li> <li>4. Planting vegetation</li> </ol>	<ol style="list-style-type: none"> <li>1. Avoid movement of habitat characteristics (rocks and logs) if possible (see Appdx 4). Removal of soil, rocks, and logs should be done under the supervision of a Jemez Mountains salamander permitted NPS biologist to ensure salamanders are not present, and if salamanders are present, the NPS biologist would remove/relocate salamanders to a new location in close proximity.</li> <li>2. Large diameter trees and logs should be retained within the suitable habitat. If logs are to be removed for hazard reasons, then a portion of the tree should be left as potential habitat.</li> <li>3. Seasonal restriction to reduce take of salamander and compaction of suitable habitat.</li> <li>4. Vegetation should be native and avoid the usage of grasses/forbs that increase soil compaction with roots.</li> </ol>

**Jemez Mountains salamander background:** The Jemez Mountains salamander is a lungless amphibian that only occurs in the Jemez Mountains. Unlike most amphibians, the Jemez Mountains salamander has direct development (meaning they do not have a life stage in water), but they require a moist environment to breathe through their skin. This nocturnal species spends between 9-11 months below ground (perhaps, even years) and emerges terrestrially during the monsoon season to feed and mate. Cover objects (i.e. rocks and logs) provide habitat during the day that retain a temperature and moisture suitable to the salamander. Moisture, plants, trees, soil, and rock features collectively allow the vertical movement of salamanders from subsurface to terrestrial habitats. Because of this, it is imperative to minimize compaction of soil and rocks (presumably underground habitat), which in turn would reduce the impact and take of salamanders during construction.

**Baseline conditions of project area:** Despite the project area occurring within a disturbed footprint, suitable habitat characteristics (i.e. canopy cover, rocks, logs, and an overall moist habitat) still remain in the project area and should be protected and retained. Direct and indirect effects should be mitigated to prevent the compaction of habitat, take of the species, and loss of suitable habitat characteristics.

*Appendix 4. Photos of potential Jemez Mountains Salamander microhabitats in project area.*

