

NATIONAL PARK SERVICE • U.S DEPARTMENT OF THE INTERIOR

Historic Resource Study

Valles Caldera National Preserve

New Mexico

April 2022



Cover illustration: Valles Caldera National Preserve (preserve boundaries in red) facing southwest in the early morning, courtesy of Google Earth Pro.

**HISTORIC RESOURCE STUDY
VALLES CALDERA NATIONAL PRESERVE
NATIONAL PARK SERVICE**

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NATIONAL PARK SERVICE
SANTA FE, NEW MEXICO**

**THROUGH:
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Table of Contents

List of Figures	iii
List of Tables	vi
Acknowledgments	vii
Management Summary	ix
Park Preface	xi
CHAPTER 1: INTRODUCTION (Norris and Elliott).....	1
Scope of Work.....	3
Study Organization	4
CHAPTER 2: ARCHAEOLOGICAL RESOURCES OF THE VALLES CALDERA REGION (Elliott).....	7
From the Valle Grande to the Rio Grande: A Regional Perspective on VALL Archaeology.....	7
National Register Properties.....	11
Chronology.....	17
CHAPTER 3: BIRD’S EYE VIEW OF THE ARCHAEOLOGY OF THE PRESERVE (Elliott).....	33
Introduction	33
VALL Archaeological Sites.....	37
1. Obsidian Procurement and Tool Production Theme.....	46
2. Rock Shelters of the Valles Caldera Theme	60
3. Indigenous Agriculture on the Banco Bonito Theme	62
Other Sites.....	67
Archaeological Properties Summary and Recommendations.....	70
CHAPTER 4: INFRASTRUCTURE DEVELOPMENT (Norris)	73
Roads and Trails	73
Valle Pass Route	79
Santa Clara Canyon Route	82
San Antonio Hot Springs Route	86
Vallecitos Route.....	88
Bland Canyon–Sulphur Springs Route.....	92
Guaje Canyon and Quemazon Canyon Routes.....	96
New Mexico Highway 4.....	98
Other Preserve Routes	104
Telephone Lines	107
Gas Pipeline	109
CHAPTER 5: SHEEP AND CATTLE RANCHING (Norris).....	113
Historical Overview	113
Ecological Modifications Due to Overgrazing	120
Boundary markers	126
Sheep Camps and Culturally Modified Trees.....	130
Buildings and Structures.....	134
Stables and Corrals.....	137
Fences and Stock Tanks.....	141
CHAPTER 6: MILITARY, MINING, AND TOURISM (Norris).....	151
Valle Grande Hay Camp	151

Camp Valles Grandes (Los Valles, Old Fort)	153
Sulphur Springs.....	157
Valle Grande Tourism.....	178
Skiing.....	181
Sport Fishing.....	184
Sport Hunting	186
CHAPTER 7: COMMERCIAL LOGGING ON THE BACA RANCH (Norris).....	191
Commercial Logging Before 1935.....	191
New Mexico Lumber and Timber, 1935–1940.....	195
New Mexico Timber, 1940–1962	197
The Chain Logging Era, 1962–1972.....	200
CHAPTER 8: DRILLING PROJECTS AND FILM-SET CONSTRUCTION (Norris).....	211
Water System Proposals	211
Geothermal Energy Development	214
Continental Scientific Drilling Program.....	223
Film-Set Construction	229
CHAPTER 9: THE LONG TRAIL TOWARD PUBLIC OWNERSHIP (Norris).....	237
Early Proposals; the Role of Edgar Lee Hewett.....	237
The Proposed Valle Grande National Park.....	239
The Domenici-Bingaman Proposals	240
CHAPTER 10: SUMMARY, RECOMMENDATIONS, AND CONCLUSIONS (Elliott and Norris)	245
Summary.....	245
Recommendations.....	246
Archaeological Sites Recommendations	246
Chapter 3	246
Historic Period Sites and Properties Recommendations.....	247
Chapter 4	247
Chapter 5	252
Chapter 6	256
Chapter 7	258
Chapter 8	261
Chapter 9	263
Conclusions and Next Steps.....	263
REFERENCES CITED.....	265
APPENDICES	287
APPENDIX A.....	289
APPENDIX B.....	293
APPENDIX C.....	297
APPENDIX D.....	299
APPENDIX E.....	303

List of Figures

Figure 1.1. Map showing the location of VALL	2
Figure 2.1. Map of previously recorded surveys and sites near VALL prepared by the author.....	8
Figure 2.2. Map of National or State Register properties near VALL prepared by the author.....	9
Figure 2.3. Map showing indigenous provinces near VALL prepared by the author.....	15
Figure 2.4. Map showing Native American lands and land grants near VALL prepared by the author.	16
Figure 2.5. Conventional chronology for northern New Mexico.....	18
Figure 3.1. Map showing areas archaeologically surveyed at VALL prepared by the author.	36
Figure 3.2. Map showing previously recorded sites at VALL by size class prepared by the author....	38
Figure 3.3. Location map of archaeological sites known to have obsidian artifacts geochemically sourced to major obsidian geological deposits in the Jemez Mountains	47
Figure 3.4. Obsidian source area at VALL. Photo courtesy VALL Cultural Resources staff.	50
Figure 3.5. Complete and fragmentary projectile points and other tools of obsidian and CCS. Photo courtesy VALL cultural resources staff.....	58
Figure 3.6. Rockshelter in the Sulphur Creek Drainage (center-right). Photo by the author.	60
Figure 3.7. Standing masonry walls at a fieldhouse site at VALL. Photo courtesy VALL cultural resources staff.	64
Figure 4.1. This photograph of the Soda Dam, taken in 1910, shows the Jemez Springs Road in the foreground.....	74
Figure 4.2. The unimproved condition of the Jemez Springs Road is shown in this 1910 photograph.	75
Figure 4.3. Road development within Valles Caldera National Preserve. Map shows present-day road numbers.	77
Figure 4.4. Road development: Valles Caldera National Preserve and vicinity.	78
Figure 4.5. The first detailed map of Baca Location No. 1 was surveyed by Daniel Sawyer and William McBroom. The government approved a deed to the vast parcel after their 1876 reconnaissance. The map noted few roads or trails.	81
Figure 4.6. By 1898, the so-called Marmon map showed seven ranch access points, including routes to Santa Clara and Bland, but no development as yet along La Jara Creek.....	83
Figure 4.7. A map from Lt. George M. Wheeler’s 1875 survey shows the Vallecitos Route (“Trail to Valle Grande”) ascending the eastern ridge above the Jemez River Valley.....	90
Figure 4.8. In 1933, a Civilian Conservation Corps camp was established in Paliza Canyon, south of the Baca Ranch. Crews from the camp built and improved several roads in the nearby Santa Fe National Forest.	91
Figure 4.9. The Bland mining camp, which was most active between 1895 and 1905, was located along a primary access route to and from the Baca Ranch. Shown in the 2002 photo are a doctor’s residence (left) and the Exchange Hotel.	94
Figure 4.10. Albemarle (above) was a mining camp adjacent to Bland. For a brief period, it was served by regular stagecoach service from Santo Domingo Pueblo to Sulphur Spring.	94
Figure 4.11. Surveyor William B. Douglass, in 1917, compiled this map of the Baca Location and vicinity. It shows various roads accessing the ranch, nearby Indian reservations, and the boundaries of Edgar Hewett’s proposed Pajarito National Park (<i>see Chapter 9</i>).	100

Figure 4.12. By 1927, a New Mexico highway map showed all-weather routes just south of the Baca Ranch (State Highway 7) and east of the ranch (U.S. 485). It would be another decade, however, before State Highway 4 would open across the south end of Valle Grande.	103
Figure 4.13. Lewis Shelton, in 1910, resurveyed the Baca Ranch and discovered that many original (1876) boundary markers had been inaccurately placed. Note the “Forest Service Telephone Line” that courses east to west across the southern end of the map.	108
Figure 4.14. In 1949–1950, the Atomic Energy Commission constructed a gas pipeline across the Baca Ranch. Shown here is a maintenance road along its right-of-way, together with a small maintenance facility.....	111
Figure 5.1. The Baca Ranch was primarily used as sheep pasture throughout the nineteenth century, and sheep predominated there until World War II and its aftermath.	114
Figure 5.2. Some cattle were grazed on the Baca Ranch shortly after 1900, but their heyday at the ranch was between 1950 and 2000.	116
Figure 5.3. The oldest building on the Baca Ranch is the Otero Cabin, the northwest portion of which was erected in 1915. Photo taken in 2006.....	118
Figure 5.4. Although the commissary stands near the 1915 Otero Cabin, it is of more recent vintage, having been built in 1941.	119
Figure 5.5. Shown is one of a series of U.S. Geological Society markers that, since 1876 in various forms, have denoted the Baca Ranch’s exterior boundary.....	128
Figure 5.6. This photo appears to show a typical Baca Ranch shepherders’ camp.....	131
Figure 5.7. A culturally modified tree. Staff and volunteers at the preserve have inventoried more than two thousand of these carved aspen trees.	134
Figure 5.8. The Bond Cabin served as the headquarters for ranch operations from 1918 until the 1960s.	135
Figure 5.9. The Ranch Foreman’s House, also known as the Manager’s Cabin, was (like the Bond Cabin) built in 1918. This photo was taken before the south wing was added.	138
Figure 5.10. This photograph shows a Baca Ranch sheep-shearing operation.	139
Figure 5.11. This photo shows a cattle branding operation at the Baca Ranch.....	141
Figure 5.12. Internal fencing at VALL prior to 1975.	144
Figure 5.13. Stock tanks excavated at VALL prior to May 1966.....	147
Figure 5.14. The Baca Ranch has more than one hundred stock tanks, only a few of which predate the Dunigan family’s tenure. The stock tank shown in this 2020 photo is located adjacent to Road VC06, just southeast of Valle Seco.....	148
Figure 6.1. The Jemez Springs area, about 1910, looking south.....	158
Figure 6.2. Overview of Jemez Springs, about 1910, looking southwest from near San José de los Jémez Mission.....	160
Figure 6.3. The abandoned Otero Sulphur Mill at Sulphur Springs, which was active from 1902 to 1904. Photo taken in early 1920s.	164
Figure 6.4. Hotel and bath houses at Sulphur Springs, 1905.....	167
Figure 6.5. Photo of Sulphur Springs hotel and bath houses, April 16, 1918. The photographer noted that “the little ravine [in the foreground] has numerous vents emitting sulphurous vapors and waters.”.....	168
Figure 6.6. Sulphur Springs Hotel in 1971, not long before it was destroyed.	176

Figure 6.7. Both before and after the 1937 completion of State Highway 4, U.S. Forest Service officials led well-advertised car caravans on summer weekends through the Jemez Mountains.....	179
Figure 6.8. Skiing was a popular area activity starting in the 1930s. Sawyer Mesa, with its primitive rope tow, became a popular downhill area for Los Alamos residents during the immediate postwar years.....	183
Figure 6.9. Since the 1930s, fishing—primarily for rainbow trout—has been a popular pastime on the Baca Ranch, primarily along the East Fork of the Jemez River.	185
Figure 6.10. Elk, which had been hunted to extinction in the Jemez Mountains shortly after 1900, were re-introduced to the range during the late 1940s. Before long, the herd began to prosper.	187
Figure 6.11. The Dunigan family built Kiva Lodge shortly after it acquired the Baca Ranch. By the late 1960s, the so-called Casa de Baca had become a headquarters each fall for hunters in search of trophy-sized elk.	189
Figure 7.1. Early logging (circa 1914) near Sulphur Springs.....	194
Figure 7.2. This aerial photograph, taken of Cerro del Abrigo in 1977, shows a network of logging roads that had been bulldozed out during the 1960s and early 1970s.....	202
Figure 7.3. Ecologist Craig Allen drew this map showing that more than one thousand miles of logging road had been built on the preserve between 1961 and 1973.	204
Figure 7.4. This logging truck, typical of many used to extract Baca Ranch timber during the 1960s and 1970s, was built during the early- to mid-1960s and operated until 1988. These 2008 photographs were taken near Rito de los Indios, in the preserve’s northeastern corner.	208
Figure 8.1. In the summer and fall of 1949, sixteen wells were drilled on the east side of Baca Ranch with an eye toward supplying Los Alamos with water. These wells remain within today’s preserve.....	213
Figure 8.2. Between 1963 and the late 1970s, various exploration crews fanned out across the Baca Ranch to test the area’s geothermal resource potential. Supporting that effort, as shown in this 1967 photo, were Howell Williams (left), Robert L. Smith, and Roy Bailey from the U.S. Geological Survey. Smith and Bailey, along with Clarence Ross, published in 1970 a geologic map of the Jemez Mountains.	215
Figure 8.3. Geothermal drilling sites, 1960–1982, in Sulphur and Alamo canyons.	216
Figure 8.4. In 1971, Union Oil Company officials signed a 99-year lease for geothermal energy development on the Baca Ranch. To protect its assets, it installed this guard house along Redondo Creek in the southwest corner of the ranch property.	218
Figure 8.5. Geothermal drilling sites, 1960–1982, in Redondo Canyon.	220
Figure 8.6. Between the 1960s and the early 1980s, more than twenty geothermal wells were drilled on the Baca Ranch. All that remains at most sites—such as this one along Redondo Creek— are a wellhead pole and a large, surrounding cleared area.....	221
Figure 8.7. The first of three CSDP core holes, called VC-1, was drilled in 1984. As noted in the report’s map caption, “Stars denote moat rhyolite vents. Stipple pattern [which includes Sulphur Springs] shows area of intense intracaldera surface hydrothermal alteration.”	224
Figure 8.8. Preserve staff at the site where CSDP hole VC-2B was drilled during the summer of 1988.	227
Figure 8.9. Continental Scientific Drilling Program drilling sites.	228

Figure 8.10. In 1993, movie crews constructed a house (center of photo) near the ranch’s entrance gate. Ten years later, for a subsequent movie, crews erected a large barn (right) nearby. The barn was removed in 2005.	231
Figure 8.11. Three false-fronted mining town buildings were erected in Jaramillo Valley for the 1993 mini-series <i>Buffalo Girls</i> . Today, the set lies in ruins.	232
Figure 8.12. The Ranch Foreman’s Cabin, constructed in 1918, played an iconic role in the television series <i>Longmire</i> , which ran from 2012 to 2017.	234
Figure 9.1. Early in the twentieth century, Edgar Lee Hewett championed a Pajarito National Park and, later, a Cliff Cities National Park, both of which would have protected a wide variety of archaeological treasures in areas surrounding the Baca Ranch.	238
Figure 9.2. Pete Domenici, who served as a U.S. Senator from New Mexico from 1973 to 2009, and Jeff Bingaman, who served as a U.S. Senator from New Mexico from 1983 to 2013, each played a key role in the 2000 establishment of the publicly-owned Valles Caldera National Preserve.	241

List of Tables

Table 2.1: Breakdown of site types by period occupied in study area	11
Table 2.2. Listed National Historic Landmarks (NHLs) near VALL	12
Table 2.3. Multiple property nominations near VALL	13
Table 3.1. Aggregated survey and site acreage and percentages of VALL as a whole	35
Table 3.2. Counts of recorded prehistoric archaeological sites/components by type	40
Table 3.3. Previously recorded prehistoric site components by time period	40
Table 3.4. Previously recorded historic archaeological sites/components by type	41
Table 3.5. Recorded prehistoric or historic features by type	42
Table 3.6. Recorded artifacts by type	43
Table 3.7. Breakdown of VALL site eligibility recommendations	44
Table 3.8. Previously recorded sites with rock shelters at VALL	61
Table 3.9. Previously recorded historic components by cultural affiliation at VALL	67
Table 5.1. Headquarters-area buildings in Valles Caldera National Preserve and their National Register eligibility	135
Table 5.2. Backcountry Buildings in Valles Caldera National Preserve and their National Register Eligibility	136

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Five staff members deserve special praise. Stephanie Bergman, then the preserve's Cultural Resource Program Manager, answered numerous questions, lent us rows of books and pamphlets, and otherwise helped in a hundred ways. Robert Parmenter, the preserve's Chief of Science and Resources, also answered myriad questions and provided much-needed perspective to several difficult research questions. Anastasia Steffen, previously an Interdisciplinary Scientist/Communicator at the preserve, with an encyclopedic knowledge of park resources based on her extended involvement with the preserve's resources (including her role as Cultural Resources Coordinator from 2005 to 2013/2015), went well out of her way to track down answers to seemingly insoluble questions. Nick Jarman, one of the lead archaeologists at the preserve, provided the team with copious amounts of site and survey data assembled into geographic information system (GIS) shapefiles and Excel tables. And when it came to mapping questions, staff cartographer Michael Shelley proved to be both patient and highly knowledgeable. Mike provided the team with certain GIS data, and he went to great lengths to make the preserve's aerial photograph collection available via the share drive, and he also contributed finished maps found in both Chapter 5 and Chapter 8.

Among other National Park Service staff, we'd first like to thank Angela Sirna, the Intermountain Region's chief historian, who has directed the overall effort and has expertly navigated the necessary bureaucratic hurdles. Jamie Civitello, then Park Archaeologist on the Bandelier National Monument staff (and a former lead archaeologist at the preserve) provided excellent guidance on early migration routes in the Valles Caldera vicinity. In addition, we would like to thank a variety of personnel—at the preserve, on the regional (Denver) office staff, and perhaps elsewhere—who at various times have weighed in with specific editorial comments on the draft chapters. The collective expertise which all of you had to offer regarding the study's subject matter, and the time that all of you took in providing incisive and helpful comments has made this study, in its final form, a far superior product than it would have been otherwise.

Finally, it needs to be recognized that this effort is the result of a cooperative agreement between the NPS and a nonprofit partner, the National Council on Public History, which is based in Indianapolis, Indiana. The authors feel that NCPH has been an excellent partner on this project, and we would like to thank NCPH's Executive Director, Stephanie Rowe, and Program Manager Meghan Hillman for the smooth implementation of this partnership.

Frank Norris, Principal Investigator, and Michael L. Elliott, Cooperator

Management Summary

The document that follows is a historic resource study of the Valles Caldera National Preserve, managed by the National Park Service. The preserve is a nearly 90,000-acre block of land in the heart of the Jemez Mountains of New Mexico. It is a collapsed volcano, or caldera; a high-elevation environment consisting of large grasslands, or *valles*, surrounded by and interspersed with massive volcanic domes of rhyolite. The preserve has been the scene of human activities for at least the last twelve thousand years. These activities focused initially on obsidian procurement and stone tool production, and hunting and gathering. Native Americans began farming in the lowest-elevation reaches of the preserve by as early as the 1400s CE (common era). The preserve is an important sacred landscape for many tribes today.

The area was granted to a New Mexico family named Baca in 1860 as part of a judgment to settle land grant issues in the Las Vegas, New Mexico area. The same family was awarded four other areas, or *floats*, of the same size elsewhere in New Mexico, and in Colorado and Arizona. The first area that the family selected was the one in the Jemez Mountains, thus the name Baca Location Number 1 for that part of the grant. The Baca Location Number 1 was sold and bought a number of times before coming into federal ownership in 2000. It began as a sheep and cattle ranch. By the middle of the twentieth century, other activities such as logging, mining, geothermal exploration affected the landscape, and now, as a unit of the National Park Service, the preserve is open to tourism and recreation.

A historic resource study is a standard document used in the National Park Service to provide a historical overview of a park or region and to identify and evaluate, in terms of the National Register of Historic Places, the significance of a park's cultural resources within historic contexts. The document provides this information and makes recommendations for National Register evaluations and nominations.

Park Preface

An Historic Resource Study (HRS) is an important addition to each park’s baseline cultural resources documents, and Valles Caldera National Preserve is pleased to make available this valuable addition to the park’s resource-management portfolio. This HRS provides essential historic context not only for the park, but also for the surrounding region. We thank the authors, Frank Norris and Mike Elliott, for their effective research and thoughtful synthesis. For a variety of reasons including the COVID-19 pandemic, numerous park documents were unavailable to the authors as they prepared this HRS. Nonetheless the authors persevered to provide this beneficial product. Sections on archaeological sites in the park had to rely primarily on compiled datasets provided by the park and did not benefit from review of site forms or in-house reports, or from organized summaries or syntheses of several other park datasets such as analyses of projectile points or ceramic artifacts. These will be presented in a future Archaeological Overview and Assessment. In the meantime, this HRS provides a meaningful background for understanding the significance of archaeological sites at the park dating from the distant past through to recent history.

This project was overseen from conception through final draft by Stephanie Bergman, former park Cultural Resources Program Manager, and by Angela Sirna, NPS Intermountain Park History Program Lead Historian, from start to finish. Credit for guiding this large endeavor goes entirely to these two, and the park is grateful for their diligence throughout. We also thank Jamie Civitello, Bandelier National Monument Integrated Resources Program Manager, for useful comments on national monuments and historic districts, and park archaeological technician Mallory Hawk for a thorough review of the park’s site log to update missing or outdated entries for National Register of Historic Places (NRHP) site eligibility recommendations. That 2022 review of the park site log was initiated by the park in recognition that the site log spreadsheet provided to the HRS authors (filename: VCNP_sitelog_20200604_AS.xlsx) contained incomplete entries for NRHP site eligibilities. As a result, the park made some revisions in the HRS final draft, resulting in a small number of changes to site eligibility listings in Table 3.7, 3.8, Appendix B, D, and E, and associated text. The park’s changes only corrected errors or omissions in the data originally provided to the authors and did not add any new sites or eligibility recommendations more recent than June 2020.

The final draft was sent for review and comments to the 38 tribal groups the park customarily consults with. We thank those tribes that chose to comment. Most especially, from Pueblo of Jemez we thank Chris Toya, Tribal Historic Preservation Officer, and Dr. Raymond Loretto, Governor, for their in-depth review of the final draft. They provided an historic overview reflecting on the history contained here and offered insightful comments. These include: their recommendation to prioritize NRHP evaluations and nominations (especially those for properties with special or outstanding characteristics); support for cultural landscape analysis, the multiple property approach, and the three themes discussed in Chapter 3; the need for a curation plan; and the urgency for completion of an Ethnographic Overview and Assessment, a Tribal Affiliation Study, and a Traditional Use Study. They emphasize that “Native people's voices should be heard and their thoughts expressed in their own words about the cultural landscape”, and that Tribal Historic Preservation Officers and tribes need to be included at the outset of these studies, as well as this one. We appreciate these recommendations, and we commit to the inclusion of tribal perspectives at the park.

Ana Steffen, Cultural Resources Program Manager, Valles Caldera National Preserve

CHAPTER 1: INTRODUCTION (Norris and Elliott)

In the morning sunlight the Valle Grande was dappled with the shadows of clouds and vibrant with rolling winter grass. The clouds were always there, huge, sharply described, and shining in the pure air. But the great feature of the valley was its size. It was almost too great for the eye to hold, strangely beautiful and full of distance. Such vastness makes for illusion, a kind of illusion that comprehends reality, and where it exists there is always wonder and exhilaration.¹

Valles Caldera National Preserve (Figure 1.1), or VALL in the parlance of the National Park Service, is a nearly 90,000-acre landscape of immense beauty located in north-central New Mexico. It is the central physiographic feature of the Jemez Mountains. As a former working ranch, the preserve has undergone multiple episodes of grazing, logging, mining, natural and human-caused wildfires, and geothermal development impacts, and by now is also beginning to show the impacts of visitors, hunters, fishers, and other recreationists. This evocative caldera (collapsed volcano) and its grassy *valles*² and forested mountains delights the eye and invokes wonder and awe for the power and beauty of nature.

Humans have long known of and used the resources of VALL. Volcanic eruptions 1.61 and 1.25 million years ago³ resulted in the deposits of massive amounts of obsidian, or volcanic glass, of outstanding purity and workability. Obsidian was highly prized by ancient peoples for its ability to be shaped and sharpened into the points of formidable hunting weapons like spears, *atlatl*⁴ darts, and arrows, and other cutting implements. But beyond its utilitarian uses, obsidian tool “blanks” and finished projectile points from the copious deposits found at VALL were widely traded and used across much of North America for thousands of years.

Besides the intrinsic and extrinsic value of obsidian, the preserve was and is a cornucopia of useful resources. Big game, small game, fish, edible plants, water, wood, and other plants were all used by Paleoindian⁵ and later visitors. The preserve lies within a high-elevation environment where several feet of snow may cover the ground over the colder months, so permanent habitations like villages or pueblos were not likely in prehistoric times, nor have they been identified during archaeological surveys. Therefore, it is most useful to think of VALL as a storehouse of abundant and useful warm-weather resources during the prehistoric period (before 1540 CE), and a vast expanse of grazeable grasses, timber, hunting grounds, fishing streams, sulphur springs, geothermal resources, and other useful environmental elements throughout its recorded history. The ways in which the above-named resources have been used during the historic period serves as the basis for several chapters noted below. Finally, the Caldera holds traditional and religious significance to many indigenous groups.

¹ N. Scott Momaday, *House Made of Dawn* (New York: Harper and Row, 1968), 50.

² *Valles* means “valleys” in Spanish.

³ Kirk A. Kempter, Shari A. Kelley, and John R. Lawrence, “Geology of the Northern Jemez Mountains, North-Central New Mexico. Geology of the Jemez Region,” in *New Mexico Geological Society 58th Annual Fall Field Conference Guidebook*, eds. Barry S. Kues, Shari A. Kelley, and Virgil W. Lueth, (Socorro: New Mexico Geological Society, 2007), 155.

⁴ An *atlatl* is a throwing stick that increased the power with which a spear could be thrown by hand.

⁵ The Americas were populated beginning at least 10,000 years ago BCE (before the common era.)

As the oldest of one of only three young caldera-type volcanoes in the United States⁶, studies at the preserve have been important to geological science. (In geological parlance, “young” means less than two million years old.) A study of rocks in the northern part of the preserve helped scientists develop and confirm aspects of the theory of plate tectonics⁷.

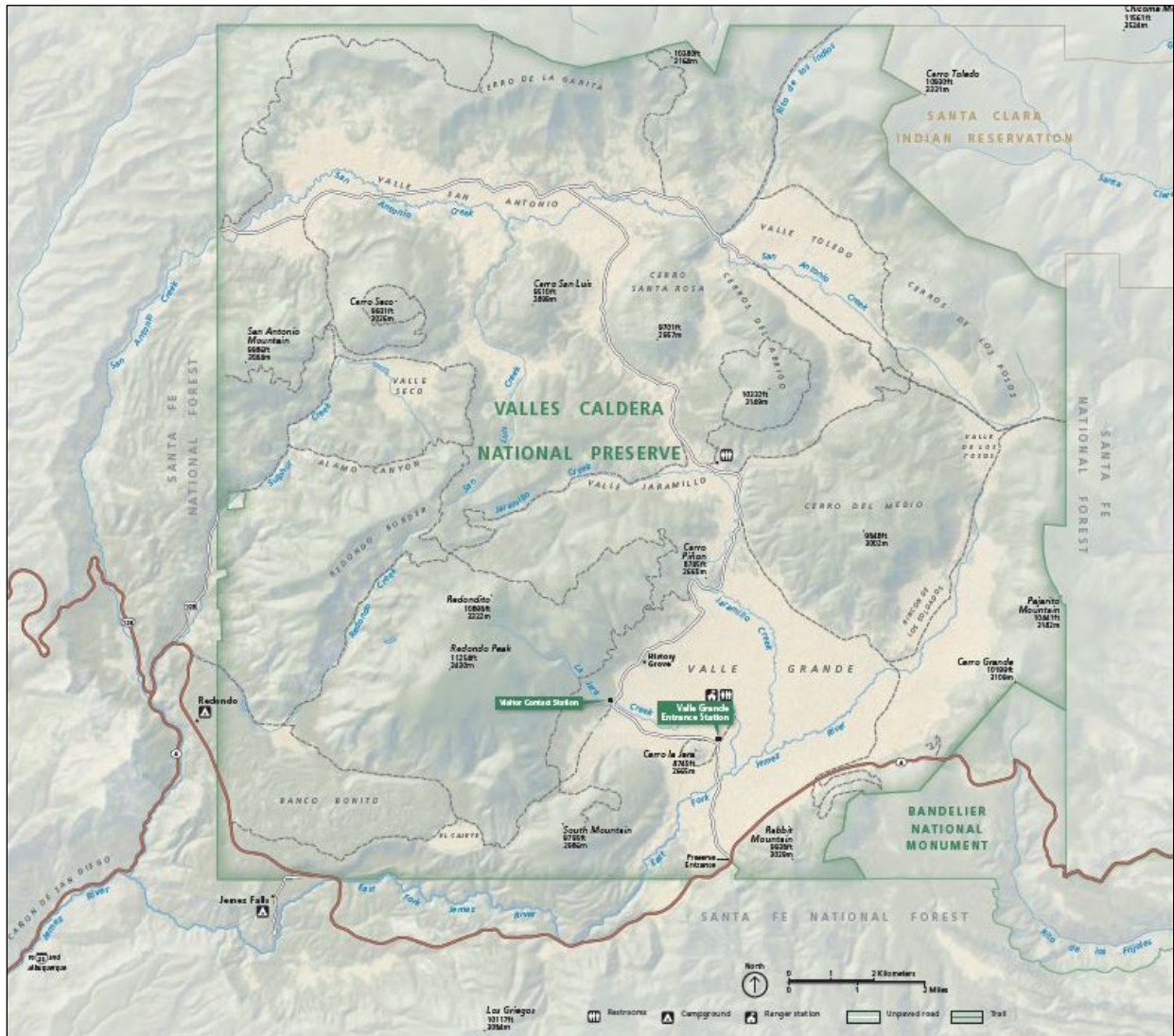


Figure 1.1. Map showing the location of VALL⁸

⁶ “Caldera systems—a worldwide family that is more than just Yellowstone!” Yellowstone Volcano Observatory, accessed February 24, 2020, <https://www.usgs.gov/center-news/caldera-systems-a-worldwide-family-more-just-yellowstone>.

⁷ Fraser Goff et al., *Geologic Map of the Valles Caldera, Jemez Mountains, New Mexico* (Socorro: New Mexico Bureau of Geology and Mineral Resources, 2011).

⁸ National Park Service, *Foundation Document, Valles Caldera National Preserve, New Mexico*, (March 2018), ii.

The Valles Caldera was designated a National Natural Landmark in 1975 because “the site is one of the largest calderas in the world and is an excellent example of a caldera advanced in history but still retaining the essential structures.”⁹

Scope of Work

On June 1, 2020, the authors—under the direction of Regional Historian Angela Sirna—began a task agreement to research and write a historic resource study for Valles Caldera National Preserve. As noted in the agency’s *Cultural Resource Management Guideline* (called NPS-28 or Director’s Order 28) a historic resource study, or HRS,

provides a historical overview of a park or region and identifies and evaluates a park's cultural resources within historic contexts. It synthesizes all available cultural resource information from all disciplines in a narrative designed to serve managers, planners, interpreters, cultural resource specialists, and interested public as a reference for the history of the region and the resources within a park. Entailing both documentary research and field investigations to determine and describe the integrity, authenticity, associative values, and significance of resources, the HRS supplies data for resource management and interpretation. It includes the preparation of National Register nominations for all qualifying resources and is a principal tool for completing the Cultural Landscapes Inventory and the List of Classified Structures. The HRS identifies needs for special history studies, cultural landscape reports, and other detailed studies and may make recommendations for resource management and interpretation.¹⁰

As noted in the project’s scope of work,

The cooperator will prepare an Historic Resource Study for Valles Caldera National Preserve. This will include the collection, evaluation, synthesis, and presentation of data and research findings on the history themes and historic resources of the park and area, as well as comprehensive GIS mapping of resource zones by context. This project requires a thorough multi-year research effort in primary and secondary sources (narratives and all graphics such as photographs and mapping) for the major historical themes, identified below, to complete a multi-chapter narrative history and context for identifying, evaluating, and interpreting the significance of the historic resources associated with the park. To accomplish this, the HRS shall require sustained documentary research and field investigations to determine and describe the integrity, authenticity, associative values, and significance of the park and its resources.

Some of work specified above was constrained by COVID-19 restrictions. For example, the principal investigator and cooperator were not allowed direct access to the preserve’s site files, reports, or library during the research phase of the project because of COVID-19. The NPS support office in Santa Fe was also closed. However, the preserve and other project principals agreed to move forward with the project despite these limitations. With research libraries and other facilities

⁹ “National Natural Landmarks, Valles Caldera,” National Park Service, accessed January 4, 2021, <https://www.nps.gov/subjects/nl/landmarks/site.htm?Site=VACA-NM>.

¹⁰ “NPS-28: Cultural Resource Management Guideline,” National Park Service, accessed January 13, 2021, https://www.nps.gov/parkhistory/online_books/nps28/28chap2.htm. Note that the words “archaeology” and “prehistory” do not appear in this guideline. However, the call is made to synthesize “all available cultural resources information from all disciplines,” for a historic resources study.

such as the New Mexico Historic Preservation Division also closed during this period, much of the research for this project had to be conducted online and by telephone, or in personal libraries.

Study Organization

The scope of work, in addition, stated that the “resulting illustrative narrative will examine, but is not limited to” the following seven themes, noted verbatim below:

- a. **Pre-Columbian Past:** Human use of Valles Caldera dates back 10,000 years. The cooperator should synthesize available information from archaeological reports and secondary source information to capture how native groups utilized the area and the significance of documented sites, primarily the obsidian pits.
- b. **Spanish Entradas:** Using largely secondary sources, the cooperator should put Valles Caldera into a larger regional context of the influence of early Spanish colonial settlement through the U.S. territorial period.
- c. **Baca Location No. 1:** Congress authorized the creation of Baca Location No. 1 in 1860, which is now the land that makes up Valles Caldera National Preserve. The history of this land grant and subsequent litigation is covered in secondary source literature. The cooperator should synthesize this information and put it in a regional context.
- d. **Ranching:** Baca Location No. 1 was used by four successive families for ranching—the Baca family from 1860-1899, the Otero family from 1899-1917, the Bond family between 1917 and 1963, and the Dunigans between 1963 and 2000. The cooperator should discuss how ranching and grazing changed during these different periods of ownership and put these changes in a larger context using a race, class, and gender analysis.
- e. **Commercial Development:** Various entities since the late 1880s tried to commercialize and develop Valles Caldera in different ways. Livestock production underpinned the economics of ranch operations throughout its post-1860 history. In addition, the Oteros were interested in sulphur mining, timbering, and developing a hot springs resort. Commercial timbering occurred during the Bond period. The Dunigans, who were from Texas, intensified ranching and diversified development activities to include using the preserve to film movies, commercial hunting, and geothermal wells. The cooperator should discuss how these different commercial ventures developed, their successes and failures, and put these into a regional/state-wide economic context.
- f. **Scientific Discovery:** The unique geology and high elevation of Valles Caldera combined with the proximity of Los Alamos labs in the mid-twentieth century made the area an ideal location for scientific experimentation and discovery. Significant discoveries were made for caldera research and plate tectonics/continental drift. The cooperator should describe these contributions to the science of geology.

- g. **Conservation:** Interest in maintaining Valles Caldera in the public trust dates to the 1880s and broader efforts to preserve the natural and cultural resources of the Pajarito Plateau. The Bond and Dunigan families tried to gain federal protection for the preserve, but were unsuccessful until the year 2000, when Congress passed the Valles Caldera Preservation Act, which created the Valles Caldera Trust, a non-profit 501(c)1 corporation owned by the federal government. This experiment lasted until 2014, at which time the NPS took over management. The cooperator should describe this history, placing it in a broad national and regional context regarding land conservation movements in the late 20th and early 21st Centuries. However, this should not replace an administrative history of the Trust or the park.

Since Congress created Valles Caldera National Preserve in July 2000, two excellent narrative overviews of the preserve have been completed. The first is Craig Martin's *Valle Grande; a History of the Baca Location No. 1*, published by the All Seasons Publishing Company in 2003. The second volume, by the team of Kurt F. Anschuetz and Thomas Merlan, was *More Than a Scenic Mountain Landscape; Valles Caldera National Preserve Land Use History*, published by the U.S. Forest Service's Rocky Mountain Research Station as General Technical Report RMRS-GTR-196 in September 2007. Martin's volume is a historical narrative, while the Anschuetz-Merlan report emphasizes the preserve's ethnographic values.

The present historic resource study, to some extent, covers many of the same themes noted in the two above volumes, and it relies on many of the same bibliographic resources that are cited in these volumes. It is fundamentally different from these volumes, however, (to quote NPS-28 verbiage) in that it "identifies and evaluates a park's cultural resources within historic contexts." The purpose of this volume, therefore, is to 1) identify each of the preserve's physically-identifiable and significant historical resources (buildings, structures, districts, objects, or sites), 2) to create a historic context for those resources, and 3) to evaluate the importance of those resources—specifically, in light of criteria related to the National Register of Historic Places. The format of this report, therefore, follows this pattern by first identifying and describing the preserve's significant historical resources, after which each historical resource is evaluated in a subsection entitled "Historic Properties Summary and Recommendations."

As noted above, the project's scope of work calls for the HRS to cover various themes that have been significant in the history of Valles Caldera National Preserve. The project has been arranged to include each of these themes. The chapters spotlight the following themes:

- Chapter 1, (this chapter) is an introduction.
- Chapter 2, "Archaeological Resources of the Valles Caldera Region," provides an archaeological overview of the preserve and the surrounding Jemez Mountains region.
- Chapter 3, "Bird's Eye View of the Archaeology of the Preserve," is based on the recognition that the preserve exhibits many unique and extraordinary archaeological resources dating from more than 10,000 years ago into the twentieth century. This chapter will provide a synthesis of the archaeology of the preserve.

- Chapter 4, “Infrastructure Development,” discusses the various long-distance linear features that go to and through the preserve: roads, trails, telephone lines, and a gas pipeline.
- Chapter 5, “Sheep and Cattle Ranching,” focuses on grazing-related structures and objects: boundary markers, sheep camps, culturally-modified trees, ranch buildings and structures, stables, corrals, fences, and stock ponds.
- Chapter 6, “Military, Mining, and Tourism,” describes the Valle Grande hay camp, Camp Valles Grandes, the Sulphur Springs resort, and sites related to Valle Grande tourism, skiing, sport fishing, and sport hunting.
- Chapter 7, “Commercial Logging on the Baca Ranch,” deals with logging-related roads, camps, mill sites, and slash piles.
- Chapter 8, “Drilling Projects and Film-Set Construction,” provides details on two disparate sets of resources: drilling projects (for water, geothermal energy, and scientific drilling) and buildings related to the filming of both motion pictures and television shows on the preserve.
- Chapter 9, “The Long Trail Toward Public Ownership,” is a brief narrative that focuses on the many government proposals, over the years, to purchase the Baca Ranch to preserve its natural, geological, and cultural values.
- Chapter 10, “Summary, Recommendations, and Conclusions,” is a summation of the principal findings and recommendations for the study.

The project’s principal investigator is a historian and the cooperator is an archaeologist. Chapters 2 and 3, therefore, along with some of the appendices, were written by the cooperator, Chapters 4 through 9 were written by the principal investigator, and Chapters 1 and 10 were joint efforts of the two co-authors as were some appendices.

CHAPTER 2: ARCHAEOLOGICAL RESOURCES OF THE VALLES CALDERA REGION (Elliott)

The purpose of this part of the present document, a historic resource study, is to discuss known archaeological resources within a park, classify them by time period, historic context, or theme, and suggest or complete nominations to the National Register of Historic Places¹. What follows, then, is a summary of what scientists now know about the archaeology of the region surrounding the Valles Caldera National Preserve. This will be a 30,000-foot discussion—the park is preparing an archaeological overview and assessment that will provide the minute details in which archaeologists delight. This summary follows Anschuetz’s general archaeological summary² for earlier periods except where it needs updating. This chapter provides a contextual framework for evaluating the preserve’s archaeological resources, including those of the prehistoric and historic periods of human use. The next chapter provides a finer-grained discussion of VALL’s archaeological resources and strategies for National Register evaluation and nomination for *eligible* resources. Buildings and structures of the historic period are discussed in later chapters in this document.

From the Valle Grande to the Rio Grande: A Regional Perspective on VALL Archaeology

The Valles Caldera National Preserve covers a large area, but it is also somewhat homogeneous in elevation and environment: high, forested mountains interspersed with open, grassy, meadowlike *valles*. The elevation of VALL varies from about 7,826 feet amsl (above mean sea level) near where Redondo Creek flows out from the west side of the preserve to about 11,254 amsl feet atop Redondo Peak. The geostatistical average elevation of all land within the current boundaries of the preserve is about 9,062 feet amsl. It has served as an important sustaining resource for inhabitants of the region for millennia, but was not generally suitable for year-round habitation. What follows, then, is a discussion of the major cultural traditions that surround VALL.

For purposes of this discussion, I have considered sites and traditions within twenty-five miles of the geostatistically calculated centroid of VALL as my study area (Figures 2.1 and 2.2). This area of about 1,256,642 acres includes nearly all of the Jemez Mountains region, including the Valles Caldera, the Nacimiento Mountains, and the San Pedro Mountains out to or nearly reaching the Rio Chama, Rio Grande, Rio Jemez, and Rio Puerco del Norte drainages, in Sandoval, Santa Fe, Los Alamos, and Rio Arriba Counties, New Mexico. Data for this study are archived in the New Mexico Cultural Resources Information System (NMCRIS), and indicate that the study area contains about 12,929 recorded archaeological sites,³ 221 recorded buildings, structures, or linear resources; and 132

¹ “National Register Bulletin 16A,” National Park Service, 1997, accessed January 12, 2021, <https://www.nps.gov/subjects/nationalregister/upload/NRB16A-Complete.pdf>.

² Kurt F. Anschuetz and Thomas Merlan, “A Sketch of the Cultural-Historical Environment—Part 1, The Pre-Columbian Past.” In Kurt F. Anschuetz and Thomas Merlan, *More Than a Scenic Mountain Landscape: Valles Caldera National Preserve; Land Use History*. Fort Collins, Colorado: United States Department of Agriculture, Forest Service, Rocky Mountain Research Station, General Technical Report RMRS-GTR-196, (September 2007), 11–24.

³ This number includes most, but not all, recorded sites at VALL. About one hundred previously recorded sites at VALL have been registered with NMCRIS for an LA (Laboratory of Anthropology) site number, but have no data entered.

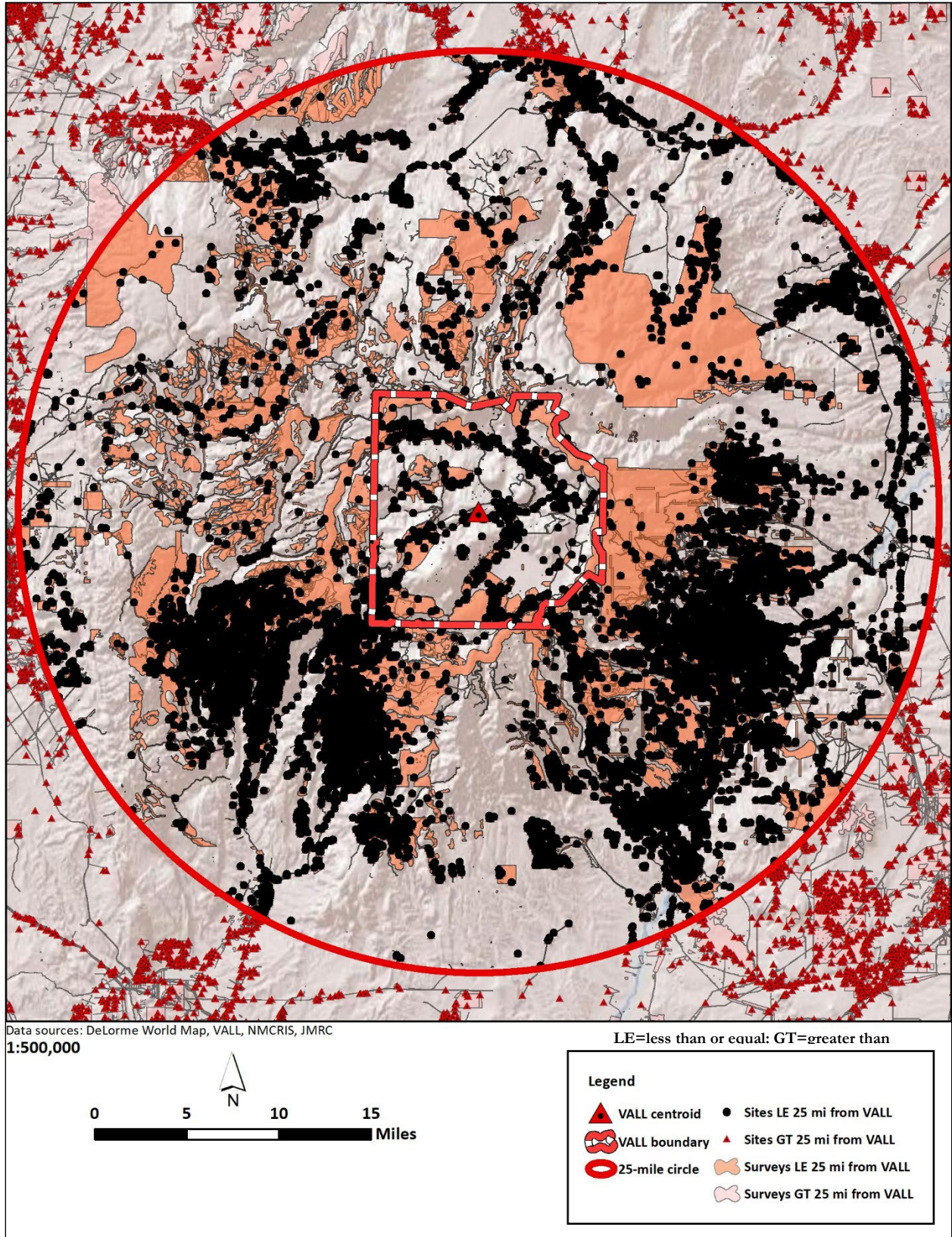


Figure 2.1. Map of previously recorded surveys and sites near VALL prepared by the author.

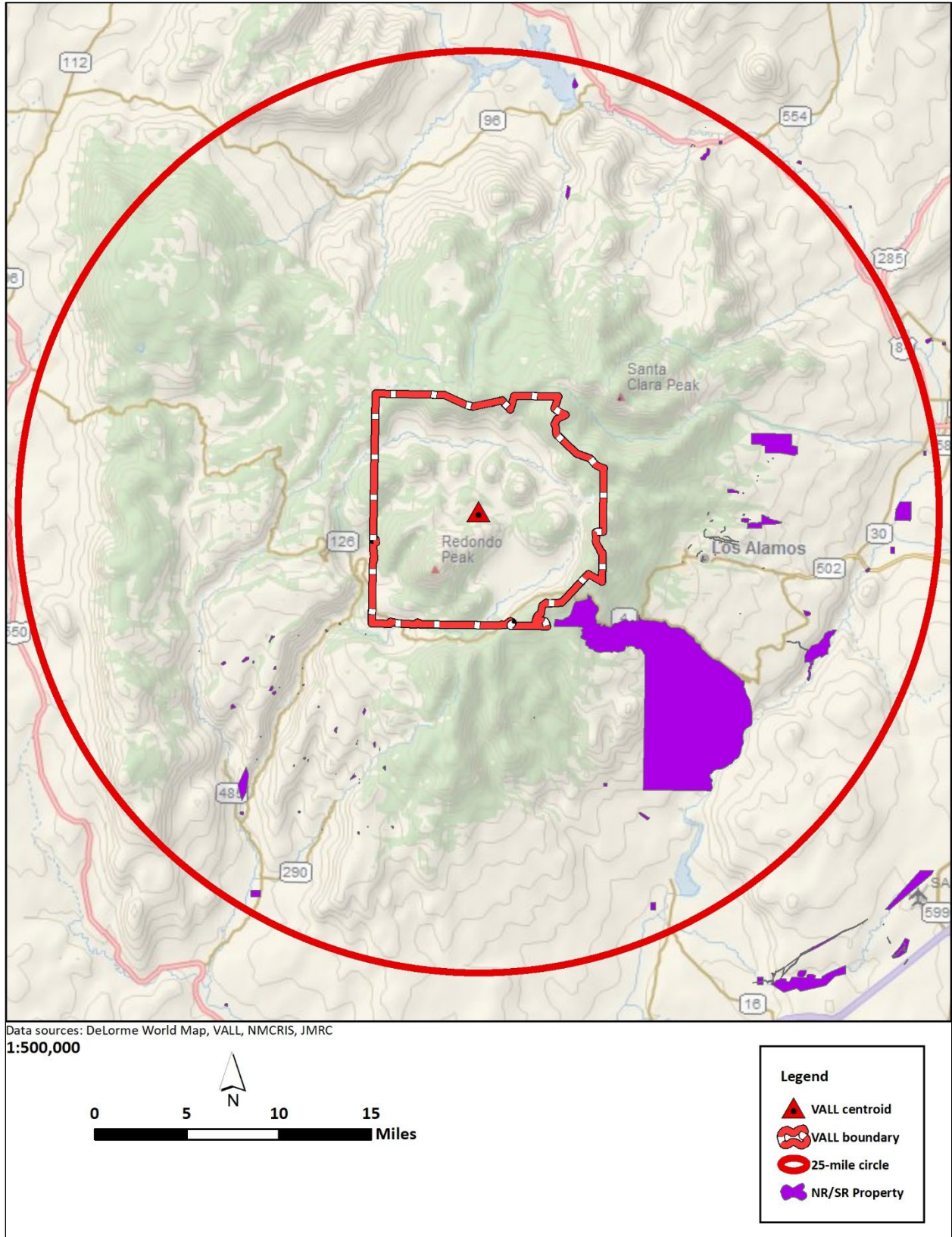


Figure 2.2. Map of National or State Register properties near VALL prepared by the author.

properties listed on the National Register of Historic Places (Appendix A, Table A.1), including five National Historic Landmarks. Some data are also presented from my consulting firm, Jemez Mountains Research Center, LLC (JMRC).

The dense black scatter in Figure 2.1 shows areas of very high site density like the Pajarito Plateau and Jemez Province⁴. The largest purple polygon on Figure 2.2 represents Bandelier National Monument.

The 25-mile circle includes several sources of obsidian and of Pedernal Chert that provided raw materials for countless thousands of stone tools in the region and beyond. Hundreds of pueblo sites, and thousands of fieldhouses lie on the mesas and in the bottomlands of the study area. Mountaintops, springs, valleys, and rivers in the area have been considered sacred for a variety of reasons for a variety of residents of the area, both in history and prehistory. Even the casual reader can appreciate the great diversity and richness of these cultural resources.

An aggregate of approximately 418,871 acres (33.3%) of this area has been surveyed archaeologically. The study area encompasses sites and traditional use areas of several important prehistoric archaeological provinces, many of which are relevant to contemporary indigenous tribes today. Other prehistoric cultural traditions such as Paleoindian and Archaic lifeways are well represented in the region.

The NMCRIS data provides only limited descriptive information about archaeological sites online, but some apparent trends in the sites in the study area are interesting. Two fields indicate the general type of site. The first field indicates whether the site has a feature or not. The second field indicates whether a site is prehistoric, historic, both, or unknown. Both fields have null entries (blanks) because no information was entered. Table 2.1 presents a breakdown of these basic data.

⁴ A “Province” is an archaeological term for a region thought to have shared cultural, linguistic, artifactual, and settlement characteristics over a given period of time, usually during the late prehistoric period, and usually related to a contemporary indigenous group.

Table 2.1: Breakdown of site types by period occupied in study area

Nonst/Other/Stral ⁵ Both/Hist/Preh/Unk ⁶	Count	%
Nonstr	3555	27.5%
Blank	128	1.0%
Both	139	1.1%
Hist	156	1.2%
Preh	1857	14.4%
Unk	1275	9.9%
Other	3	0.0%
Unk	3	0.0%
Stral	9362	72.4%
Blank	12	0.1%
Both	1231	9.5%
Hist	766	5.9%
Preh	6174	47.8%
Unk	1179	9.1%
Blank	9	0.1%
Blank	8	0.1%
Hist	1	0.0%
Total	12929	100.0%

Almost three-quarters of the recorded sites in the study area exhibit one or more features. Almost half of the total are prehistoric sites with features. Close to one-quarter of the sites are prehistoric or unknown sites without features. About 19 percent are not datable, even to the most general terms of prehistoric and historic. The sites in the study area include those recorded within VALL that are registered in the NMCRIS. The contrast in site types and site period revealed in the discussion of only the sites recorded in the preserve is actually quite pronounced, as seen in the next chapter.

National Register Properties

Why should a subdivision of a federal agency such as VALL nominate any sites to the National Register? In part this is because it is mandated under federal law, specifically section 110 of the National Historic Preservation Act of 1970 (as amended), 16 U.S.C 470. The law states:

Section 110 (16 U.S.C. 470h-2)

(a) (1) The heads of all Federal agencies shall assume responsibility for the preservation of historic properties which are owned or controlled by such agency....

(2) Each Federal agency shall establish (unless exempted pursuant to Section 214), in consultation with the Secretary, a preservation program for the **identification, evaluation, and nomination to the National Register of Historic Places, and protection of historic properties** [emphasis added].

Such program shall ensure

⁵ NONSTR=no features; STRAL=site has one or more features, though not necessarily structural.

⁶ HIST=historic; PREH=prehistoric; BOTH=both periods; UNK=unknown

(A) that historic properties under the jurisdiction or control of the agency, are identified, evaluated, and nominated to the National Register;

(B) that such properties under the jurisdiction or control of the agency as are listed in or may be eligible for the National Register are managed and maintained in a way that considers the preservation of their historic, archaeological, architectural, and cultural values in compliance with section 106 and gives special consideration to the preservation of such values in the case of properties designated as having National significance;

NPS-28, the Park Service’s cultural resources management guide states: “Section 110 of the National Historic Preservation Act requires park managers, in consultation with their SHPOs, to establish programs to locate, inventory, *and nominate to the National Register of Historic Places* all properties that appear to qualify (emphasis added).”⁷ Thus, it is both the law and policy that mandate National Register nominations in National Park Service (NPS) units. National Register evaluations and nominations should be a regular and ongoing element of the VALL cultural resources management program. Research done to complete National Register nominations will contribute to the preserve’s research, educational, interpretive, and preservation programs as well.

VALL currently has no properties listed in the National Register. The preserve has been working on nominations for buildings in the Ranch Headquarters area since before the Park Service began to manage the area. One of the goals of this part of the document is to provide a framework, context, and alternatives for evaluating and nominating *eligible* archaeological sites.

As previously mentioned, at least 132 historic properties are listed in either the National or State registers within twenty-five miles of the VALL centroid, (Appendix A, table A.1.), including five National Historic Landmarks (table 2.2). These include modern Pueblo communities, archaeological sites, buildings, historic trail segments, and other resource types. At least seven multiple property type nominations relate to sites near the preserve (table 2.3). Historic contexts prepared for these multiple property nominations could help provide the basis for updated historic contexts for certain types of National Register nominations within the preserve. One of the oldest structures at VALL is the Bond Cabin in the ranch headquarters area. The Bond House in Española (built by the same family) is one of the listed properties within twenty-five miles of the preserve. The nearest National Register property to VALL (other than Bandelier National Monument, listed in its entirety as a historic district) is LA 24553⁸, the Hot Springs Pueblo, an ancestral Jemez village located on the East Fork of the Jemez River about 1,050 meters southwest of the southwest corner of the preserve.

Table 2.2. Listed National Historic Landmarks (NHLs) near VALL

Name	County
Los Alamos Scientific Laboratory NHL	Los Alamos
Puyé Ruins NHL	Río Arriba
San Gabriel de Yungue-Ouinge NHL	Río Arriba
Giusewa (Jemez State Monument) NHL	Sandoval
Bandelier National Monument CCC (Civilian Conservation Corp) NHL	Los Alamos

⁷ “NPS-28: Cultural Resource Management Guideline,” National Park Service, accessed January 13, 2021, https://www.nps.gov/parkhistory/online_books/nps28/28intro.htm. Also known as Director’s Order 28.

⁸ LA means Laboratory of Anthropology site number, the site numbering system for archaeological sites in New Mexico since the 1920s.

Table 2.3. Multiple property nominations near VALL

Multiple Property Nomination Name	County
Large Pueblo Sites Near Jemez Springs, New Mexico ⁹	Sandoval
Late Prehistoric Cultural Developments. Along the Rio Chama and Tributaries in North-Central New Mexico ¹⁰	Rio Arriba
Gallina Cultural Developments in North-Central New Mexico ¹¹	Multiple
Jemez Culture Developments in North-Central New Mexico ¹²	Multiple
Archaic Sites of the Northwest Jemez Mountains ¹³	Multiple
Cultural Development on Pajarito Plateau in North-Central New Mexico ¹⁴	Rio Arriba
Railroad Logging Era Resources of the Cañon de San Diego Land Grant in North-Central New Mexico ¹⁵	Sandoval

The list of historic properties within twenty-five miles of VALL also contains some of the most significant prehistoric, protohistoric, and historic Puebloan sites in the American Southwest. These include all the recorded sites in Bandelier National Monument, thirty-three large ancestral pueblos in the Jemez Province, and ancestral Keres and Tewa sites. The list includes Hispanic and Anglo-American residences, and dozens of other types of sites.

Other significant resources within twenty-five miles of VALL (in addition to VALL) include two National Monuments (Bandelier [administered by the National Park Service], and Kasha-Katuwe [administered by the BLM]; Manhattan Project National Historical Park; the Old Spanish and El Camino Real de Tierra Adentro National Historic Trails; and the Jemez State Historic Site. Much of land in the region is administered by the Santa Fe National Forest, part of which was established in 1905 as the Jemez Forest Reserve. Portions of the Chama and Jemez Rivers have been designated as Wild and Scenic Rivers. Areas around the Jemez and Guadalupe River corridors constitute the Jemez National Recreation Area. Four designated wilderness areas lie within the study area, the Dome Wilderness, Bandelier Wilderness, San Pedro Parks Wilderness, and the Chama River Canyon Wilderness. Fenton Lake State Park lies within the study area. And, of course, the Valles Caldera is a National Preserve and a National Natural Landmark.

The prehistoric provinces that lie within or partially within the study area are the Chama/Biscuitware-ancestral Tewa Province, the Pajarito Plateau-ancestral Tewa and Keres Provinces, the Southern Jemez Plateau-ancestral Jemez or ancestral Towa Province, and part of the

⁹ Michael L. Elliott, "Large Pueblo Sites near Jemez Springs, New Mexico." Thematic Group National Register nomination, Santa Fe National Forest, (1982b).

¹⁰ Michael L. Elliott (with John Beal), "Late Prehistoric Cultural Developments along the Rio Chama and Tributaries in North-Central New Mexico," Multiple Property Documentation Form, National Register nomination. Office of Contract Archeology, University of New Mexico, Albuquerque, (1991a).

¹¹ Thomas Cartledge, "Gallina Cultural Developments in North-Central New Mexico," Multiple Property Documentation Form, National Register Nomination, Santa Fe National Forest, (1988).

¹² Michael L. Elliott, "Jemez Culture Developments in North-Central New Mexico. Multiple Property Documentation Form, national Register nomination, Santa Fe National Forest, (1989b).

¹³ John Peterson, "Archaic Sites of the Northwest Jemez Mountains," Multiple Property Documentation Form for a National Register nomination, Santa Fe National Forest, (1993).

¹⁴ Michael L. Elliott, "Cultural Developments on the Pajarito Plateau in North-Central New Mexico." Multiple Property Documentation Form for a National Register nomination, Santa Fe National Forest, (1990).

¹⁵ Michael L. Elliott, "Railroad Logging Era Resources of the Cañon de San Diego Land Grant in North-Central New Mexico," Multiple Property Documentation Form for a National Register nomination, Santa Fe National Forest, (1992).

ancestral Keres Province, and the Gallina Province. Figure 2.3 provides a general location map for these areas. These are Puebloan groups, but more mobile groups like the Navajos, Apaches, and Utes also lived in the vicinity. The Jicarilla Apache Nation is as close as twenty-one miles from VALL, and portions of the Navajo Nation in the Torreon Chapter lie within thirty miles. The material cultural remains of these mobile groups tend to be less visible, but their presence has been documented in historic sources with certainty and on the ground in many cases. Currently, the study area includes traditional lands near or within thirteen modern Pueblos with strong cultural associations with lands within VALL¹⁶, twenty-one Spanish and Mexican land grants, and numerous historic Hispanic or Genízaro¹⁷ villages, and modern places of exceptional historic significance such as Los Alamos National Laboratory. Figure 2.4 shows the locations of the pueblos, indigenous lands, and various land grants. Time has settled onto this landscape in thick woven strata of historic events, people, places, and processes.

¹⁶ The Pueblos are Cochiti, Jemez, Ohkay Owingeh (once known as San Juan), Nambé, Pojoaque, Sandia, San Felipe, San Ildefonso, Santa Ana, Santa Clara, Santo Domingo (now also known as Kewa), Tesuque, and Zia. All have strong cultural ties with VALL.

¹⁷ A term used primarily in New Mexico for enslaved and detribalized Native Americans that served in Hispanic households. See chapter 3 for more details.

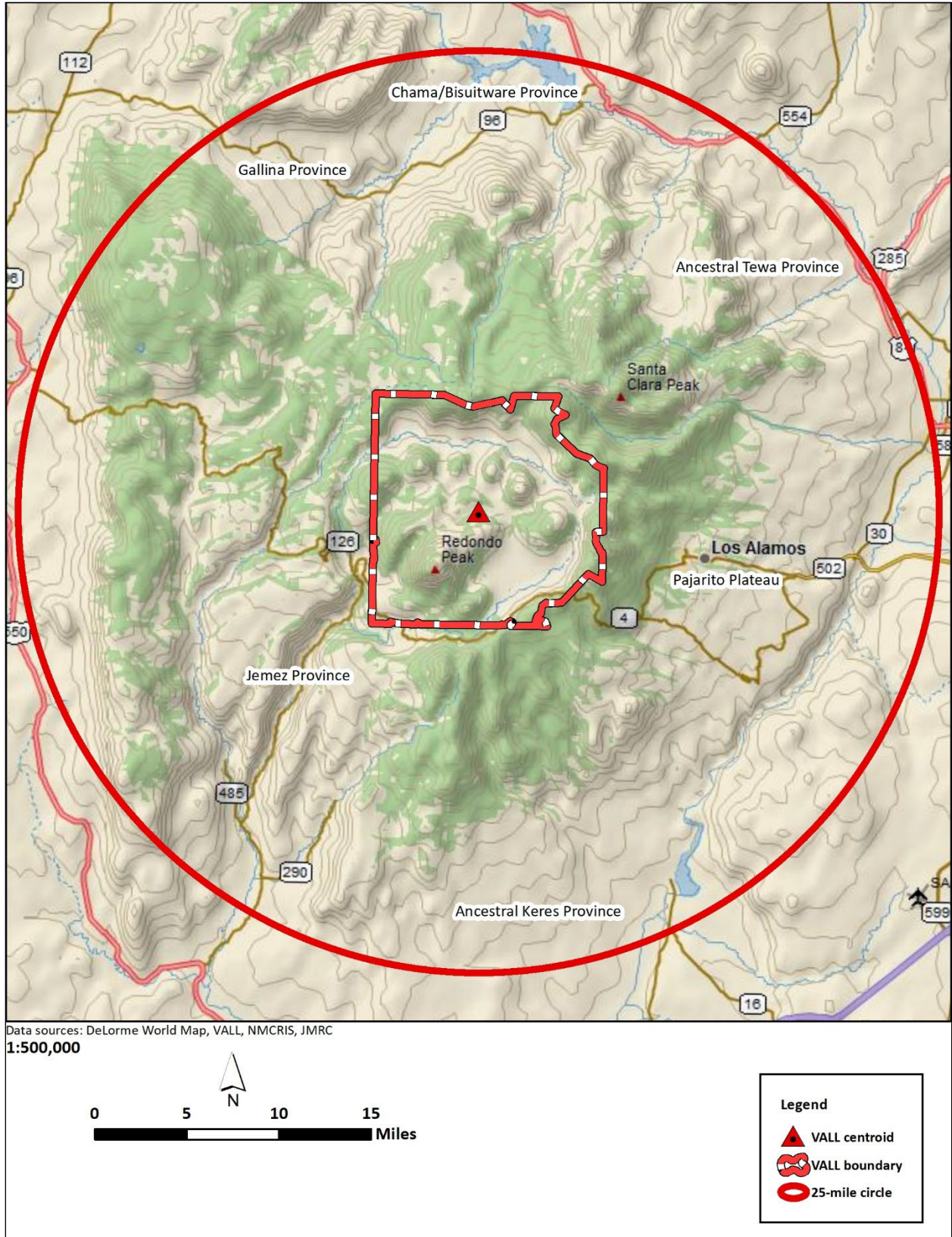


Figure 2.3. Map showing indigenous provinces near VALL prepared by the author.

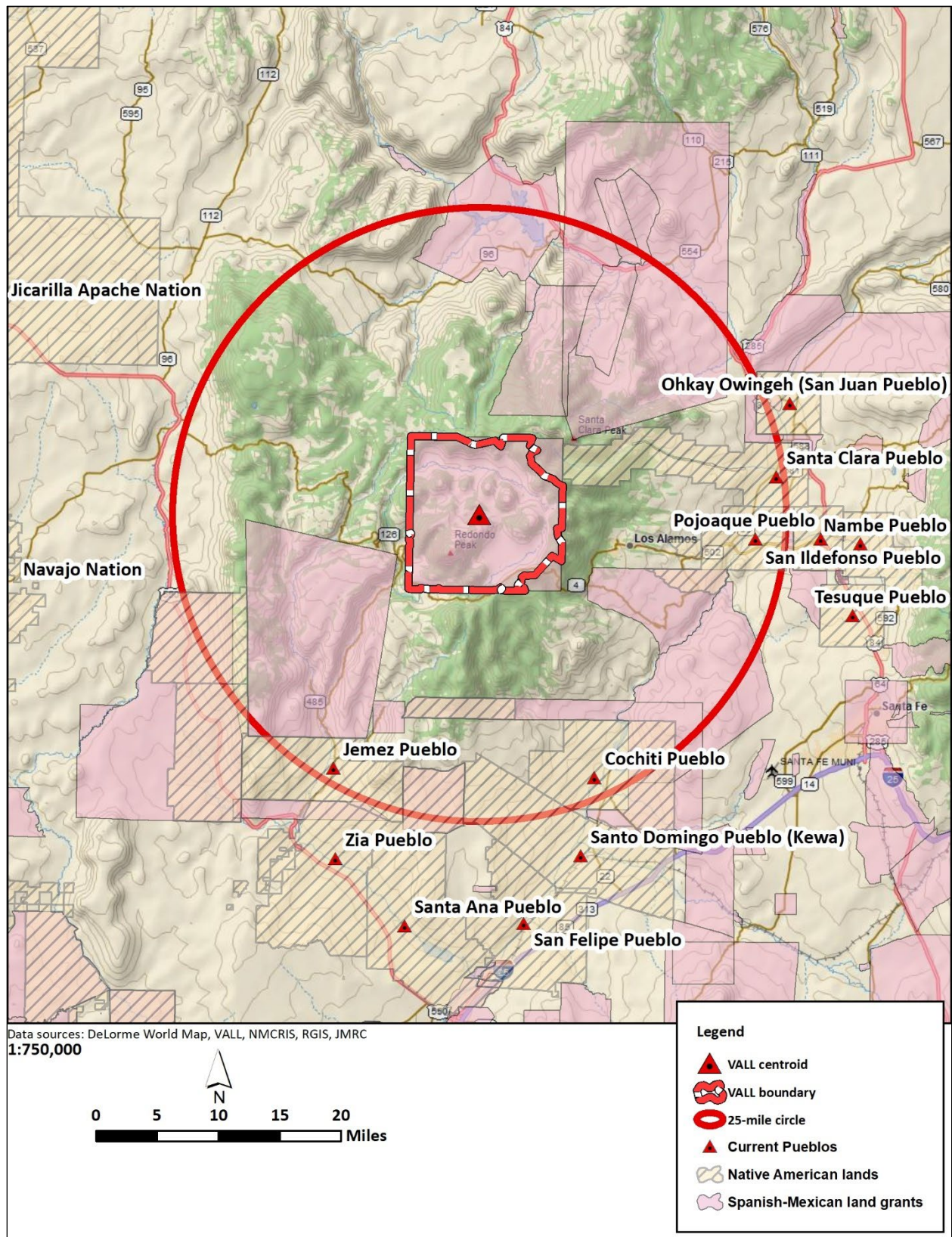


Figure 2.4. Map showing Native American lands and land grants near VALL prepared by the author.

Chronology

Archaeologists have defined several time periods in New Mexico, roughly corresponding to developments in technology and subsistence practices, that appear to correspond to the local expressions of ethnicity or culture. These periods are often divided into shorter periods defined by the presence of certain distinct architectural and other features, or a particularly well-dated or diagnostic artifact type. Dates come from radiocarbon, tree-ring dating, and other “absolute” dating techniques, and from relative dating of stratified materials within an excavated archaeological site. Historic archaeological sites may also be associated with documentary or oral historical evidence. Below I have presented a basic chronology for this area since archaeological sites can be related to any time period. Such standard chronological schemes with conveniently labeled blocks of time stacked on each other, counting the years downward from first humans to the present, makes for a “just so” story that masks considerable variability and overlap. A more verbal exposition is also presented, but see the graphic below (Figure 2.5) that presents a version of standard chronology for northern New Mexico. This scheme has been adjusted many times by many individuals over the years as new data become available, but it provides the basic framework to aid in interpretation of VALL’s archaeological sites and materials.

Not all archaeological sites or materials are datable, and ancient peoples had a tendency to locate their homes, villages, or other sites atop older ones. Later peoples also had a tendency to reuse stone tools that they found in the landscape, adding further confusion to archaeological interpretations. History, in the sense of documentary history, begins at different times for indigenous peoples. Oral histories of Indigenous peoples may continue stories that are truly ancient. Any transition from one era to another does not generally occur simultaneously everywhere, so *caveat lector*.

	Major Period	Sub-periods	Duration	Source
Dates	Years Before the Common Era (except where noted)			
	Paleoindian	Clovis Folsom Plano (Agate Basin, Cody)	10000-5500 10000-9000 9000-8000 8300-6000	Anschuetz 2007
Dates	Years in the Common Era			
	Pueblo	Developmental Coalition Classic {Navajo, Apache, Ute, Comanche arrive)	600-1600 600-1200 1200-1325 1325-1600 1100-1600	Wendorf and Reed 1955
	All Indigenous	Historic	1600-present	
	Hispanic	Entradas Initial Spanish Colonial Pueblo Revolt Interregnum Later Spanish Colonial Mexican	1540-present	newmexicohistory.org
			1540-1598 1598-1680 1680 1680-1692 1692-1821 1821-1846	
	Anglo-American	Territorial Statehood	1846-present	newmexicohistory.org
			1846-1912 1912-present	

Figure 2.5. Conventional chronology for northern New Mexico¹⁸

Discussion

The following discussion is contextual, not exhaustive. It is not strictly possible in New Mexico to draw a straight line between prehistory and history. The Spanish *entradas*¹⁹ stretched over a sixty-year or more period during which the Spanish made occasional contacts with certain indigenous tribes but not others—with tragic outcomes for some—but no impact at all on others. These events were recorded by the *conquistadores* and their chroniclers. In contrast, indigenous groups have relied on oral history passed down through the generations for their “remembrance of things past.” Both kinds of history can be incomplete and biased, so the researcher should not assume otherwise. It might be

¹⁸ Sources: Anschuetz, “A Sketch”; Cynthia Irwin-Williams, “The Oshara Tradition: Origins of Anasazi Culture,” *Eastern New Mexico University Contributions In Anthropology* 5, No. 1, Figure 7, (1973); Fred Wendorf and Erik Reed, “An Alternative Reconstruction of Northern Rio Grande Prehistory,” *El Palacio* 62, 131–173, (1955); “Timelines,” New Mexico State Historian, accessed January 11, 2021, <https://newmexicohistory.org/timelines/>.

¹⁹ An *entrada* is a Spanish word for an exploratory expedition into unknown lands.

more accurate instead to term the era between 1500 and 1600 CE as protohistory in New Mexico. Tribes began dealing with the effects of Spanish *entradas* during that period.

Archaeology provides certain tools, techniques, and methods suitable for the study and area in New Mexico by chronology and culture. A brief discussion of the major time periods follows.

Paleoindian (syn. Paleoamerican): The archaeological record for this area reflects the human record from at least twelve thousand years ago to the extinction of post-Pleistocene megafauna, which was about 7,500 years ago or later. Much of the earlier Paleoindian period was marked by a cooler, moister era known as the Younger Dryas. This temporary global climatic shift—one of several—interrupted the general warming trend after the so-called Late Glacial Maximum, about twenty thousand years ago. Marked by small groups or bands of 20–60 people pursuing a mixed subsistence of hunting of big game (now-extinct megafauna) with thrown or *atlatl*-assisted spears, smaller game hunting, and wild plant foraging strategy for survival. Site types include campsites, kill sites, rock shelters, specialized activity sites such as quarries and workshops, shrines, cairns, or other markers, and infrequently habitation sites. The megafauna hunting focus of these small groups may be somewhat overstated because of the greater visibility of megafaunal remains and the large tools used to hunt and butcher them. Paleodemographics are hard to produce, but many researchers have suggested Paleoindian populations in the New World likely never exceeded the low one hundred thousands at any one time²⁰.

The low population estimates as described above, the light impact of lifeways on the ground, the destruction or obscurement of sites from natural processes, and the overlayment of older sites with more recent materials all contribute to a relatively low number of recorded Paleoindian sites in the US, including New Mexico. The Paleoindian Database project²¹ had cataloged just less than thirty thousand Paleoindian projectile points by 2010.²² Dello-Russo estimated that New Mexico had on the order of 1,200 Paleoindian manifestations, the majority of which were isolated projectile points.²³

Paleoindian is sometimes divided into at least three subperiods based mainly on the presence of distinctive projectile points²⁴, namely Clovis (10,000+ to 9,000 BCE), Folsom (9,000 to 8,000 BCE) and Plano (8,300–6,000 BCE) that have been radiocarbon dated to some degree of thoroughness. Many localized expressions of Paleoindian cultures have also been defined: almost always the result of a projectile point variation on the typical fluted Paleoindian points. I will only venture an opinion on Paleoindian chronology by quoting Tom Dillehay:

²⁰ Matthew Peros et al., “Prehistoric Demography of North America Inferred from Radiocarbon Data,” *Journal of Archaeological Science* 37, (2010): 656–664.

²¹ “Paleoindian Database of the Americas,” accessed February 2, 2021, <http://pidba.utk.edu/>.

²² David G. Anderson et al., “PIDBA (Paleoindian Database of the Americas) 2010: Current Status and Findings,” *Archaeology of Eastern North America* 38, (2010): 63–90.

²³ Robert Dello-Russo, “Archaeological Testing at the Water Canyon Site (LA134764), Socorro County, New Mexico Interim Report for the 2008 and 2009 Field Seasons,” Escondida Research Group, LLC, *Report No. 2009-09*. NMCRIIS Activity No. 116559, (2010).

²⁴ Anschuetz, “A Sketch,” 11–12.

...we have taken a simple aspect of a surmised culture, the fluted projectile point, as the sole basis for broad scenarios of early lifeways. We have made an explicit assertion, not always critically questioned, that the spatial distribution of a particular artifact trait (the flute) is the spatial distribution of an actual culture and society. But as archaeologists, we know that we cannot always make a direct correlation between a particular trait and a particular society, any more than we can say that the distribution of cowboy hats equals the distribution of Texans. If a particular trait does not represent a society, how can it represent a distinct culture? And if it does not necessarily represent a culture, what does it really say about early human migration in the New World?²⁵.

Archaic: Lasts from about 7,500 years ago until about 1,400 years ago. This period follows the extinction of most large Pleistocene megafauna, such as mammoth. The Archaic period was marked by small groups or bands of 20–60 people pursuing a mixed subsistence strategy of hunting and wild plant foraging strategy for survival, on a seasonal round based on resource availability. In the Jemez Mountains region, this has been characterized as an uplands-lowlands pattern.²⁶ Site types include campsites, rock shelters, specialized activity sites such as toolstone source areas and lithic workshops, shrines, cairns, or other markers, and sometimes habitation sites.

Early Archaic periods, like those of the Paleoindian era, have been defined primarily on the basis of diagnostic projectile points that have been more or less securely dated through radiocarbon analysis and other means. Archaic projectile points are generally smaller and unfluted, thought to indicate that hunters sought smaller game. The points were mounted on wooden shafts and called darts, which were propelled by an *atlatl*²⁷. Diagnostic testing of groundstone assemblages show plant and seed processing, which indicates that plants and seeds were an important part of the Archaic diet,²⁸ particularly in the later years of the period.

The Archaic period is often divided in northern New Mexico into six subperiods based on the generally applicable scheme developed in the 1970s known as the Oshara Tradition, on the basis of projectile point morphology and other characteristics. The phases are:²⁹

Jay phase (5500–4800 BCE)—People concentrated on hunting and gathering of locally available game and food, often living near canyon heads. Artifacts found include simple stone tools for processing food and long, narrow projectile points.

Bajada phase (4800–3200 BCE)—Distinguished from the Jay phase by the presence of different projectile point features, different kinds of hearths, ovens, and greater number of sites.

San Jose phase (3200–1800 BCE)—Metates and manos were commonly used to process food. There was an apparent increase in both the size and number of sites during this period. Artifact

²⁵ Thomas D. Dillehay, *The Settlement of the Americas: a New Prehistory* (New York: Basic Books, 2000), 285.

²⁶ Bradley J. Vierra and Teralene Foxx, “Archaic Upland Resource Use: the View from the Pajarito Plateau,” In *Between the Mountains Beyond the Mountains Papers in Honor of Paul R. Williams*, eds. Emily J. Brown et al. (Albuquerque: Archaeological Society of New Mexico, 2009), 153–166.

²⁷ A wooden spear- or dart-throwing device that increased the force behind the throw through leverage.

²⁸ “Peoples of the Mesa Verde Region,” Crow Canyon Archaeological Center, https://www.crowcanyon.org/educationproducts/peoples_mesa_verde/archaic_artifacts.asp, (2011, 2014).

²⁹ Irwin-Williams, “The Oshara Tradition,” Figure 7.

middens (trash heaps) began to accumulate, suggesting a behavioral change regarding waste disposal or population increase.

Armijo phase (1800–800 BCE)—Expedient use of maize (corn) began in this area³⁰ during this period. At certain times, this allowed for food surpluses. Larger sites used seasonally accommodated groups of up to fifty people, possibly because of the use of stored maize. Oshara was one of the first Southwestern cultures to cultivate crops. Late in the phase, projectile points were serrated, stemmed blades.

En Medio phase (800 BCE–400 CE)—During this period site frequency appeared to increase. They were often found at the base of cliffs. Subsurface storage pits began to be used to store surplus food. This phase was roughly analogous to the Basketmaker II culture of the Four Corners area.

Trujillo phase (400–600 CE)—Local equivalent to Early Basketmaker III of the Four Corners area. Pottery first began to be produced during this period.

Materials from other Archaic traditions have also been identified at VALL, indicating visitation by people from afar, or perhaps trade and exchange during the Archaic. For example, archaeologists have identified some materials in the vicinity of VALL as representing lithic styles such as Cochise, an Archaic period tradition in southern New Mexico and Arizona. Even so, it is difficult to determine whether the materials appear as the result of some form of down-the-line trade or were brought in or manufactured by travelers from the south.

The Late Archaic period saw the beginnings of maize horticulture in northern New Mexico, which had begun in Mexico as early as seven thousand years ago. Through what is generally agreed was diffusion, maize horticulture evolved late in the Archaic Period as early as three thousand years ago in north-central New Mexico³¹. In particular, Jemez Cave excavations³², yielded datable corn specimens with a calibrated intercept date of 3,210 BCE.³³ Jemez Cave is “a remarkable site”³⁴ located only four miles or so from VALL. Other important early corn in the area has been found at the Nambé Falls Site on the Pajarito Plateau and at the Chama Alcove Site, near the Rio Chama.³⁵

The development of maize horticulture set in motion other changes, from technology to settlement pattern to social organization. Population is believed by many researchers to have increased during the later Archaic times, setting the stage for the beginnings of group organization based on a sedentary lifeway where people lived in permanent or semi-

³⁰ Maize began to be domesticated in the Tehuacán Valley in Mexico during the El Riego–Coxcatlán Phases, or about 6,800 to 5,000 years BCE (Richard S. McNeish, “Ancient Mesoamerican Civilization.” *Science* 143 (1964): 531–537.

³¹ Bradley J. Vierra, and Richard I. Ford, “Early Maize Agriculture in the Northern Rio Grande Valley, New Mexico,” in *Histories of Maize: Multidisciplinary Approaches to the Prehistory, Linguistics, Biogeography, Domestication, and Evolution of Maize*, eds. John Staller, Robert Tykot, Bruce Benz (Burlington: Elsevier Academic Press, 2006), 507.

³² Hubert G. Alexander, “The Excavation of Jemez Cave,” *El Palacio* 38, (1935): 97–108; Hubert G. Alexander and Paul Reiter, “Report on the Excavation of Jemez Cave, New Mexico,” *A Monograph of the University of New Mexico and the School of American Research*, Monograph Series 1:3, (Albuquerque: University of New Mexico Press, 1935); Richard I. Ford, “Re-excavation of Jemez Cave,” *Ananyu* 3, no. 3 (1975): 13-27.

³³ Richard I. Ford, “The Cultural Ecology of Jemez Cave,” in *From Mountaintop to Valley Bottom Understanding Past Land Use in the Northern Rio Grande Valley, New Mexico*, ed. Bradley J. Vierra (Salt Lake City: University of Utah Press, 2013), 72.

³⁴ Ford, “The Cultural Ecology,” 78.

³⁵ Bradley J. Vierra, “Introduction,” In *From Mountaintop to Valley Bottom Understanding Past Land Use in the Northern Rio Grande Valley, New Mexico*, ed. Bradley J. Vierra (Salt Lake City: University of Utah Press, 2013), 5.

permanent structures, practiced agriculture, manufactured and used ceramic vessels, and employed bows and arrows. This adaptive phase is known in the study area as Puebloan, after the Spanish word for the villages in which they found many of the settled indigenous peoples with whom they came into contact. It is worth pointing out that hunting and gathering lifeways continued to prosper in northern New Mexico even up until historic times and beyond.

Ancestral Puebloan, Puebloan: Defined here as lasting from the end of the Archaic, or about 600 CE in north-central New Mexico, until Spanish Colonization in 1598 CE. Pueblo peoples lived in pithouses, unit houses, fieldhouses, and small to large communal structures known by their Spanish designation as “*pueblos*,”³⁶ with agriculture as their primary means of subsistence. Corn, beans, and squash were the primary crops, though other cultigens were planted and harvested as part of the diet, and for other uses. Various technologies, including irrigation and water control features such as check dams, grid gardens, and terracing, helped increase productivity. Pueblos consisted of habitation and storage rooms, plazas, reservoirs, ceremonial chambers known as kivas, and their larger variants known as great kivas. Puebloans are known for their architecture and artifacts. But they also created campsites, used rock shelters, and developed specialized activity sites such as lithic procurement areas and workshops, shrines, trails, cairns or other markers, and other types of sites.

The Puebloan period has been classified according to several different chronological schemes. The Pecos Classification³⁷, is seldom used in north-central New Mexico because the developmental elements of the scheme do not fit cultural developments in this area. It is more generally applicable to the Chaco Canyon/San Juan Basin, Four Corners, and Mesa Verde Ancestral Puebloan³⁸ regions. The term Anasazi has negative connotations because it translates in the Navajo language, or Diné Bizaad, to “ancient enemy;” Pueblo peoples object to this term.³⁹ That designation will appear within this document only as a direct quote from a reference or a database. One does still encounter the by now somewhat quaint characterizations of “Basketmakers,” or BM-II, BM-III” and “P-I” (for Basketmaker period 2, Basketmaker period 3, or Pueblo period 1), etc., to characterize Upper Rio Grande archaeological sites.” Of course, indigenous peoples have made baskets for thousands of years—and still do—many of whom were not associated with Puebloan peoples at all. Because of all of these factors, the periodization of the Pecos Classification clearly does not work well or provide explanatory power within the Ancestral Puebloan peoples along the Rio Grande and its major tributaries.

Most researchers in the upper Rio Grande and north-central New Mexico area use a version of what is termed the Rio Grande Classification as a framework for interpreting pueblo

³⁶ “Pueblo” means “people”, but also “village” or “town” in Spanish.

³⁷ Alfred V. Kidder, “Southwestern Archaeological Conference,” *Science* 66, no. 1716 (1927): 489–491.

³⁸ “Ancestral Puebloan” is the National Park Service’s preferred term instead of Anasazi.

³⁹ “What Does “Anasazi” Mean, and Why Is It Controversial?” Indian Pueblo Cultural Center, accessed February 8, 2021, <https://indianpueblo.org/what-does-anasazi-mean-and-why-is-it-controversial/#:~:text=The%20term%20is%20Navajo%20in,%E2%80%9D%20or%20%E2%80%9CAncestral%20Puebloan.%E2%80%9D>.

period sites⁴⁰. The prehistoric periods consist of Developmental (600–1200 CE), Coalition (1200–1325 CE), and Classic (1325–1600 CE). The period after 1600 CE is termed Historic.

In Anschuetz's view, the Developmental Period is a rather loosely defined and poorly known time period, which began with small communities of pithouse-dwelling farmers who made ceramics, baskets, chipped and ground stone tools and generally located near water.⁴¹ Early Developmental sites are comparatively rare, suggesting relatively lower populations. Later Developmental sites include small to medium-sized pueblo villages and more diverse artifact assemblages. Population appears to grow given the frequency and size of sites dating to the period.

The succeeding Coalition Period was a time of great change in the study area. Population seems to have increased dramatically, due in part to the arrival of emigrants from the west (Chaco Canyon and Mesa Verde areas). Site size, site frequency, and ceramic diversity greatly increased during the period⁴². Subterranean or semi-subterranean structures known as kivas, or great kivas depending on their size, began to appear at the larger, often quadrangular pueblo sites.

The Classic Period represents the maximum florescence of prehistoric/protohistoric Puebloan culture in the study area. By the end of this period, area population appears to have aggregated into fewer but larger pueblos, often located right next to permanent water (except in the Jemez Province,⁴³. Regionally specialized ceramics dominated, such as Jemez Black-on-white, the so-called Biscuitwares (Abiquiú and Bandelier Black-on-grays), and especially the temporally sensitive Rio Grande Glaze-paint wares. Many of the Classic Period pueblo sites were the villages that the Spanish first encountered when they entered and later colonized the area.

Indigenous Prehistoric (Non-Puebloan): Not all of the indigenous peoples in New Mexico became farmers or pueblo-dwellers. Many tribes lived in the area in the common era and maintained a mobile existence until well into the historic period. These include ancestral Navajo, Apache, Comanche, and Ute peoples. Sites of these mobile groups are often ephemeral, and difficult to distinguish from earlier or later users of the landscape. Such sites can be easily confused as Puebloan, Archaic or Paleoindian.

Dating the arrival of Athabaskan-speaking Navajo and Apache into the study area archaeologically has been controversial. Sites with radiocarbon dates and diagnostic artifactual assemblages or structures have been assigned to the Dinétah Phase of the Navajo cultural sequence, possibly beginning by 1100 CE, but securely by 1500 CE⁴⁴. The related

⁴⁰ Wendorf and Reed, "An Alternative Reconstruction."

⁴¹ Anschuetz, "A Sketch," 11–12.

⁴² Anschuetz, "A Sketch," 16.

⁴³ See, e.g., Michael L. Elliott, "Large Pueblo Sites near Jemez Springs, New Mexico," *Cultural Resources Document* no. 3 (Santa Fe: Santa Fe National Forest, 1982a); "Overview and Synthesis of the Archaeology of the Jemez Province, New Mexico," *Archaeology Notes* No. 51 (Santa Fe: Museum of New Mexico, Office of Archaeological Studies, 1986).

⁴⁴ Yvonne Oakes, "Dinetah-Phase Occupation and the Twin War Gods on the Jicarilla Apache Reservation: Excavations along NM 537, Rio Arriba County, New Mexico," *Archaeology Notes* 344 (Santa Fe: Museum of New Mexico Press, 2007), 9–10.

Apache peoples are also thought to have arrived in study area by at least 1500 CE⁴⁵, perhaps in waves using different migration routes and arriving in the Southwest at different times. After examining a range of Athabaskan migration evidence, the archaeologist Sunday Eiselt concludes that: “There is no good reason at this point for excluding any of these possibilities since it seems likely that Apaches migrated south along several routes and possibly in several different waves or incursions as kinship reconstructions and linguistic evidence suggests.”⁴⁶

The Utes appear in the archaeological record in western Colorado by 1400 CE.⁴⁷ They were mentioned in early Spanish documents, such as Salmerón’s mention of the “Yuta” in the 1620s.⁴⁸ Utes became horse-mounted by the early 1600s.⁴⁹

The prehistoric periods lasted nearly twelve thousand years. From the first humans venturing into the Americas so long ago until the first European encounters with the widely disparate groups living in the study area, change was a constant. Although most of the exposition of regional history will be told in later chapters, a brief outline of historic events that affected the distribution of archaeological sites is provided below.

Indigenous Historic: This period lasted from Spanish Contact in 1540 until the present, and includes Puebloan and more mobile peoples. Sites of this period may include any of the previously mentioned prehistoric site types, but may also include sites that are invisible to archaeologists and others either because of the cultural maxim to leave no trace, the ephemeral nature of the activities conducted in the area, or because they may contain a sacred component that the makers do not wish to display to outsiders.

A specialized group known as *genízaros*, or detribalized indigenous people, is perhaps best categorized in this section. *Genízaros* were originally captured or enslaved under a variety of circumstances from many different tribes by members of other indigenous tribes. Rael-Galvez stated: “Between 1700 and 1880—a period extending through three distinctive governments—almost five thousand indigenous women and children were entered into and held in New Mexico and Colorado households as slaves.”⁵⁰ In particular, within the current study area, they are well-known to have occupied the village of Abiquiú, New Mexico.

⁴⁵ Linda S. Cordell, *Archaeology of the Southwest*, 2nd ed. (New York: Academic Press, 1997).

⁴⁶ Sunday Eiselt, “The Emergence of Jicarilla Apache Enclave Economy During the 19th Century in Northern New Mexico” (PhD diss., University of Michigan, 2006), 56.

⁴⁷ “Peoples of the Mesa Verde Region,” Crow Canyon Archaeological Center website, https://www.crowcanyon.org/educationproducts/peoples_mesa_verde/archaic_artifacts.asp, (2011, 2014).

⁴⁸ Jerónimo Zárate Salmerón, *Relaciones: An Account of Things Seen and Learned by Father Jerónimo De Zárate Salmerón from the year 1538 to the year 1626*, trans. Alicia Milich (Albuquerque: Horn and Wallace, 1966).

⁴⁹ Zárate Salmerón, *Relaciones*.

⁵⁰ Estéban Rael Galvez, “Identifying Captivity and Capturing Identity: Narratives of American Indian Slavery. Colorado and New Mexico, 1776—1934” (PhD diss., University of Michigan, 2002).

Many *genízaros* who were servants or slaves to Spanish settlers⁵¹ were subsequently emancipated following the Civil War in 1867.⁵²

Several sources provide ethnographic context for this period, such as Adolph Bandelier's Final Report,⁵³ and four edited volumes of his journals⁵⁴; the various early twentieth century ethnographies like Parsons's ethnography of Jemez Pueblo⁵⁵ and Joe Sando's memoir on Jemez⁵⁶; Chuck Lange's work at Cochiti⁵⁷; Alfonso Ortiz's⁵⁸ work at his native San Juan (Ohkay Owingeh), and an ethnohistoric volume he edited;⁵⁹ and J.P. Harrington's work with the Tewa (1919).

Florence Ellis was a consultant for various tribal land claims studies, including Jemez, Zia, and Santa Ana that provided important information about historic Puebloan use of VALL and the surrounding area.⁶⁰ Volume 9 of the *Handbook of North American Indians, Southwest*,⁶¹ has provided information to generations of students of Southwestern cultures. Volume 10 in

⁵¹ Mexico banned slavery earlier but could seldom enforce their requirements in New Mexico.

⁵² See, e.g., Rael-Galvez, "Identifying Captivity;" James Brooks, *Captives and Cousins*, (Chapel Hill: University of North Carolina Press, 2002); Doris Swann Avery, "Into the Den of Evils: The Genízaros In Colonial New Mexico," (MA thesis, University of Montana, 2008); and Marc Simmons, "Trail Dust: Class of Indians once called 'genizaros' in New Mexico," *Santa Fe New Mexican* (January 17, 2014).

On June 19, 1862 (now celebrated as "Juneteenth"), Congress prohibited slavery in all US territories. Soon after, New Mexicans petitioned the US Senate for compensation for six hundred Indian slaves that were going to be set free, but their petition was denied. When a federal agent visited the state in June 1866, he found that slavery was still widespread, and many other federal agents had slaves. He reported that there were four hundred slaves in Santa Fe alone. On March 2, 1867, Congress passed the Peonage Act of 1867, which specifically prohibited such practices in New Mexico and elsewhere.

⁵³ Adolph F.A. Bandelier, *Final Report of Investigations Among the Indians of the Southwestern United States, Carried on Mainly in the Years from 1880 to 1885*, 2 Vols. (Cambridge: University Press, 1890–1892).

⁵⁴ Charles H. Lange and Carroll L. Riley (eds.), *The Southwestern Journals of Adolf Bandelier 1880–1882* (Albuquerque: University of New Mexico Press, 1966); Charles H. Lange, Carroll L. Riley, and Elizabeth M. Lange, eds., *The Southwestern Journals of Adolf Bandelier 1883–1884* (Albuquerque: University of New Mexico Press, 1970), *The Southwestern Journals of Adolf Bandelier 1885–1888* (Albuquerque: University of New Mexico Press, 1975), and *The Southwestern Journals of Adolf Bandelier 1889–1892* (Albuquerque: University of New Mexico Press, 1984).

⁵⁵ Elsie Clews Parsons, "The Pueblo of Jemez," *Papers of the Phillips Academy Southwestern Expedition* 3 (New Haven: Yale University Press, 1925).

⁵⁶ Joe Sando, *Nee Hemish, a History of Jemez Pueblo*, (Albuquerque: University of New Mexico Press, 1982).

⁵⁷ Charles H. Lange, "The Cochiti Dam, Archaeological Salvage Project, Part I: Report on the 1963 Season," *Museum of New Mexico Research Records*, No. 6 (Santa Fe: Museum of New Mexico Press, 1968).

⁵⁸ Alfonso Ortiz, *The Tewa World: Space, Time Being and Becoming in a Pueblo Society* (Chicago: University of Chicago Press, 1972a).

⁵⁹ Alfonso Ortiz, ed., *New Perspectives on the Pueblos* (Albuquerque: School of American Research and University of New Mexico Press, 1972b);

⁶⁰ Florence Hawley Ellis, "Anthropological Evidence Supporting the Land Claim of the Pueblos of Zia, Santo Ana, and Jemez," Ms. on file, Clark Field Archive, Department of Anthropology, University of New Mexico, Albuquerque. (1956).

⁶¹ Alfonso Ortiz, ed., *Handbook of North American Indians*, Vol. 9, Southwest, Alfonso Ortiz, ed. (Washington, D.C.: Smithsonian Institution, 1979).

the same series⁶² provides detailed information regarding non-puebloan Southwesterners. In 1993, Nancy Akins prepared report on tribal traditional use areas in New Mexico.⁶³

Specific to the study area, an excellent ethnography was prepared by Lois Wesolowski for the Baca Geothermal Project.⁶⁴ The same volume contains an ethnohistoric summary by Dan Scurlock⁶⁵. The OLE Powerline Project report likewise contains a useful chapter on indigenous uses of the area.⁶⁶ The thorough report that Kurt Anschuetz and Tom Merlan provides powerful insights on ethnohistoric uses of VALL and its sacred significance to many different tribes and to Hispanic residents.⁶⁷

Indigenous history in the study area is dominated by the slow-motion warfare that characterized Spanish settler colonialism.⁶⁸ Spanish contacts beginning in 1540 were sporadic, and affected the indigenes unevenly (cf. Tiguex War of 1540–1541), but eventually the Spanish explorers departed, and only returned in small groups that also soon left. When the Spanish came back to stay in 1598, life at the Pueblos and among the non-Puebloan peoples changed. With Spanish policies like *reducciones* and *congregaciones*,⁶⁹ pueblo residents were aggregated in fewer and often larger sites that featured Catholic missions. The Spanish policies of *encomienda* and *repartimiento*⁷⁰ entitled certain elite Spaniards with the rights to native labor and goods. Spanish land grants often denied Native Americans of traditional use areas. This caused tremendous impacts to Pueblo society, including epidemics, famine, and the aggressive suppression of their lifeways. Some call this a “black legend,” but it is a reality of that time and place.

⁶² Alfonso Ortiz, ed., *Handbook of North American Indians*, Vol. 10, Southwest, Alfonso Ortiz, ed. (Washington, D.C.: Smithsonian Institution), (1983).
1983)

⁶³ Nancy Akins, “Traditional Use Areas in New Mexico,” Office of Archaeological Studies, Archaeological Notes No. 141 (Santa Fe: Museum of New Mexico Press, 1993).

⁶⁴ Lois Wesolowski, “Native American Land Use along Redondo Creek,” In *High Altitude Adaptations Along Redondo Creek: The Baca Geothermal Project*, eds. Craig Baker and Joseph C. Winter (Albuquerque: Office of Contract Archeology, University of New Mexico, 1981), 105–127.

⁶⁵ Dan Scurlock, “Euro-American History of the Study Area,” In *High Altitude Adaptations along Redondo Creek: The Baca Geothermal Project*, eds. Craig Baker and Joseph C. Winter (Albuquerque: Office of Contract Archeology, University of New Mexico, 1981), 131–160.

⁶⁶ Charles M. Carrillo, et al., “Historic Overview of the Project Area,” in John C. Acklen, ed., *OLE [Ojo Line Extension]*, Vol. 1, Context (Albuquerque, Public Service Company of New Mexico, 1997), pp. 132–133, (Carrillo et al. in Acklen 1997).

⁶⁷ Kurt F. Anschuetz and Thomas Merlan, *More Than a Scenic Mountain Landscape: Valles Caldera National Preserve; Land Use History*, (United States Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fort Collins, Colorado, September 2007).

⁶⁸ “Settler colonialism is a distinct type of colonialism that functions through the replacement of indigenous populations with an invasive settler society that, over time, develops a distinctive identity and sovereignty.” Definition from <https://globalsocialtheory.org/concepts/settler-colonialism/>, accessed June 9, 2021.

⁶⁹ Both terms refer to policies whereby the Spanish relocated indigenous inhabitants of their colonies by force into urban settlements modeled on those in Spain. One of the early missions among the Jemez people was known as San Diego de la Congregación.

⁷⁰ Encomienda and repartimiento were forced labor systems, essentially communal slavery, that entitled either a local individual (the encomendero) or the Spanish Crown to force local indigenous residents to work as they saw fit, and benefit from the fruits of their labor.

Non-Puebloan tribes fared somewhat better, but perhaps not by much. Perambulant tribes acquired horses from the Spanish soon after their arrival through trade or raiding. Because of continual military campaigns by the Spanish against them, they were forced into a life of raiding of the colonists and the Pueblos to survive. The Spanish frequently campaigned militarily against the Navajos, Apaches, Utes, and Comanches during the seventeenth century and later. While the Navajo, Apache, and Utes had been in the area for some time, the Comanches were a Plains tribe who ventured into New Mexico by the eighteenth century. They are most commonly mentioned as present in eastern New Mexico at that time, but they interacted with many of the Pueblos. Their earliest mention in Spanish documents is 1706.⁷¹

One of the most egregious insults to Pueblo peoples were the arrests of forty-seven Pueblo “medicine men” in 1675 by New Mexico Governor Juan Francisco Treviño for practicing what they termed “sorcery.” Four of the men were sentenced to death by hanging and three of those sentences were carried out. A fourth prisoner committed suicide. The remaining forty-three were publicly whipped and then sentenced to prison, generally a death sentence of its own.⁷² Small wonder that after that, indigenous resistance grew until it reached a boiling point.

One of those whipped *caciques*, a man named Popé, from Ohkay Owingeh Pueblo, spent five years planning a retaliatory revolt. On August 10, 1680, most of the Pueblos and some members of the nomadic tribes put their internecine squabbles aside, and attacked and drove out the Spanish from all of New Mexico. As noted by Liebmann, this revolt, one of the most successful by indigenous tribes anywhere in the new world, was in essence a revitalization movement designed to reinstitute lifeways that had been brutally suppressed.⁷³ The Spanish did not take their defeat lightly and attempted more than once to reconquer New Mexico. A particularly bloody failed attempt at reconquest in 1689 by Governor Domingo Jironza Petríz de Cruzate resulted in the death of six hundred Zia people, and the capture and removal of seventy others.⁷⁴ Both the revolt and the revitalization ultimately failed, and Diego de Vargas took New Mexico back from the pueblos in his *reconquista* or *recolonialización*⁷⁵ beginning in 1692.

The *reconquista* was not peaceful or “bloodless” event, as is sometimes claimed. The indigenous conquerors and occupiers of Santa Fe withdrew as a tactical measure, still hoping to isolate the Spaniards in the Santa Fe area. Soon however, De Vargas started visiting the rebellious Pueblos to demand loyalty to the Spanish crown, the reestablishment of Spanish rule, and adherence to the Catholic religion. In 1694, he stormed or blockaded three Revolt-era pueblos, Black Mesa (Tunyo) near San Ildefonso, Hanut Kotyiti (near Cochiti) and

⁷¹ Thomas W. Kavanagh, *The Comanches: A History 1706–1875* (Lincoln, Nebraska: University of Nebraska Press, 1996).

⁷² Sando, *Nee Hemish*, 63.

⁷³ Matt J. Liebmann, “Burn the Churches, Break up the Bells: The Archaeology of the Pueblo Revolt Revitalization Movement in New Mexico, A.D. 1680-1696,” (PhD diss, University of Pennsylvania, 2006).

⁷⁴ Rick Hendricks, “Domingo Jironza Petríz de Cruzate,”

<http://www.newmexicohistory.org/filedetails.php?fileID=25098>, (2004–2013 [no longer available online as of February 1, 2022]).

⁷⁵ “Reconquista” means “reconquest,” and “recolonialización” means “recolonization” in Spanish.

Astialakwa (a refuge for the Jemez people and their allies) because they refused to submit. At the Battle of Astialakwa on July 24, 1694, for example, De Vargas and his soldiers and allies killed eighty-four Jemez and took another 361 captives. They seized all of the food and cattle from the Jemez people and then burned the pueblo.⁷⁶ The next day, the Spanish celebrated and moved all of the livestock and stored corn from Astialakwa to Santa Fe along with their prisoners.⁷⁷ In 1696, after two years of uneasy peace, another planned revolt by some of the Pueblos failed. The four horsemen of the apocalypse (war, conquest, famine, and plague) had all visited many of New Mexico's native people.

It is clear that many tribes used and traversed the Valles Caldera during historic times, including in particular Puebloans, Navajo, Apache, and Ute. The Navajo spent considerable time in the preserve during the latter nineteenth century. One often-cited event that illustrates the presence of the Navajo in the Valle Grande occurred in July 1851.⁷⁸ A hay camp established by the U.S. Army contractor was overrun by thirty to forty Navajo raiders, who absconded with forty-three mules and seven horses⁷⁹. A group from Jemez Pueblo returned some of the mules, saying they had attacked the Navajo raiders and killed two of them.⁸⁰

Other evidence of the historic Navajo presence at VALL can be found in a biography of nineteenth century New Mexican Rafael Chacon.

About the middle of August 1862, I was ordered, with my company, to be stationed in Los Valles la Sierra de Ildefonso order to protect the hay cutters who had a contract with the Army and to watch for the entrance of any Navajos. Almost every day we had encounters with them, taking away the animals they had stolen, but they never offered us battle, contenting themselves only with running away leaving the animals. These valleys are some meadows where they cut four hundred tons of hay...⁸¹.

In summary, as Parmenter and others stated,

Today, members of Pueblo communities that surround the Preserve, such as Cochiti, Jemez, San Ildefonso, San Juan, Santa Ana, Santa Clara, Santo Domingo, Tesuque, and Zia, continue to visit the Preserve to collect medicinal and ceremonial plants and to visit shrines and ancestral sites. More distant groups such as the Hopi, Navajo, Ute, and Zuni also maintain a connection with the caldera.⁸²

⁷⁶ John L. Kessell, Rick Hendricks, and Meredith D. Dodge, eds., *Blood on the Boulders: The Journals of Don Diego de Vargas, New Mexico, 1694–97* (Albuquerque: University of New Mexico Press, 1998), 325; Matt J. Liebmann, "The Battle of Astialakwa: Conflict Archaeology of the Spanish Reconquest in Northern New Mexico," *SAA Archaeological Record*, (September 2010), 40.

⁷⁷ Liebmann "Burn the Churches," 176.

⁷⁸ Frank McNitt, *Navajo Wars*, (Albuquerque: University of New Mexico Press, 1972), 184–185.

⁷⁹ Craig Martin, *Valle Grande; a History of the Baca Location No. 1, Background to Creation of the Valles Caldera National Preserve* (Los Alamos: All Seasons Publishing, 2003), 18–19.

⁸⁰ McNitt, *Navajo Wars*, 184–185)

⁸¹ Jacqueline Dorgan Meketa, ed., *Legacy of Honor; the Life of Rafael Chacón, a Nineteenth-Century New Mexican* (Albuquerque: University of New Mexico Press, 1986), 205–206.

⁸² Robert R. Parmenter, Anastasia Steffen, and Craig D. Allen, "An Overview of the Valles Caldera National Preserve: the Natural and Cultural Resources," in *Geology of the Jemez Region, New Mexico Geological Society 58th Annual Fall Field Conference Guidebook* (Socorro: New Mexico Geological Society, 2007), 152.

Hispanic⁸³: This is the period from the onset of Spanish settler colonialism in 1598 until the present, marked by small habitation sites, ranchos, villages and towns, historic trails, special use sites, such as herding and grazing camps, modified trees, and springs. It includes Spanish (until 1821) and Mexican (1821–1846) land grant issues, and wars with indigenous peoples. The study area includes portions of twenty-one Spanish or Mexican land grants.

The first Spanish capitol of New Mexico, known as San Juan de los Caballeros, was founded in 1598 at Ohkay Owingeh Pueblo. Perhaps as a portent of things to come, the next Spanish capitol of New Mexico was established in 1599 at a pueblo named Yunque-Owingeh that was abandoned by Tewa residents. This site was, later known to the Spanish as San Gabriel del Yunque.

Juan de Oñate, leader of the colonists, attempted to pacify the native people but encountered stiff resistance. In one infamous incident, Oñate massacred as many as five hundred men at the pueblo of Acoma as punishment for the killing of one of his lieutenants.⁸⁴ He then had the right foot cut off the surviving men over twenty-five years old, a barbarous act the reverberates in New Mexico even today. Oñate left New Mexico in disgrace soon thereafter. Famously, in 1998, an individual cut the right foot off of a commemorative statue of Oñate that had been placed near Ohkay Owingeh Pueblo in 1994⁸⁵.

Oñate's replacement, Pedro de Peralta, established a new capitol city in Santa Fe in 1610. The Pueblo Revolt of 1680 dealt a blow to the colonists and priests. Over four hundred Spaniards and twenty-one priests were killed, and the remaining two thousand colonists lost everything—for the next twelve years at least. After the *reconquista* in 1692, life in New Mexico continued its slow cycle of subsistence farming, conflicts between church and state, and frequent forays against the Navajo and Apache.⁸⁶

⁸³ I use Hispanic here, but Hispano is a somewhat interchangeable term that indicates the cultural differences between Hispanics from Spain or of Spanish descent who first entered New Mexico from Mexico, and Hispanos of New Mexico who are of Spanish or Mestizo descent who have lived in the region for generation.

⁸⁴ The New Mexico State Historian describes the confrontation thusly: *In December 1598, on their way to Zuni, Capt. Juan de Zaldívar and his soldiers stopped at Acoma for provisions. While there the Acomas accused one of Zaldívar's soldiers of stealing, and violating an Acoma woman. The Acomas proceeded to kill Zaldívar and nearly a dozen of his men, later claiming that the soldiers had demanded excessive amounts of provisions. A Spanish punitive expedition ascended on Acoma resulting in a three-day battle. When the fighting ended, several hundred Indians were dead, and hundreds of surviving Acomas were held prisoner and taken to Santa Domingo Pueblo to stand trial. Oñate severely punished the people of Acoma. Men over twenty-five had one foot cut off and were sentenced to twenty years of personal servitude to the Spanish colonists; young men between the ages of twelve and twenty-five received twenty years of personal servitude; young women over twelve years of age were given twenty years of servitude; sixty young girls were sent to Mexico City to serve in the convents there, never to see their homeland again; and two Hopi men caught at the Acoma battle had their right hand cut off and were set free to spread the news of Spanish retribution.* See "Juan de Oñate," accessed June 16, 2021, <https://newmexicohistory.org/2013/01/10/juan-de-onate/>.

⁸⁵ The foot was replaced at a cost to the taxpayers of \$10,000. The statue has since been removed and placed in storage, perhaps temporarily. See "Equestrian Statue of Juan de Oñate," accessed June 17, 2021, https://en.wikipedia.org/wiki/Equestrian_statue_of_Juan_de_O%C3%B1ate.

⁸⁶ See, e.g., Tracy L. Brown, *Pueblo Indians and Spanish Colonial Authority in Eighteenth-Century New Mexico* (Tucson: University of Arizona Press, 2013); Charles Wilson Hackett, *Historical Documents Relating to New Mexico, Nueva Vizcaya, and Approaches Thereto, to 1773*, 2 vols., (Washington, D.C.: Carnegie Institution of Washington, 1923 and 1937).

Despite the injustices, however, post-revolt colonial life ultimately calmed down considerably. Conflicts between church and state preoccupied the Spaniards, and frequent reprisals against Navajo and Apache bands became a fact of life in later colonial times. In 1821, Mexico gained independence from Spain after a protracted rebellion. If anything, the New Mexico colony then became even more isolated than ever from events in Mexico, which had its own problems. Ultimately, New Mexico became embroiled in the geopolitical issues of the time, like Manifest Destiny, Texas independence, and chattel slavery in the United States.

Mexican governmental policies allowed for legal trade with the United States via the Santa Fe Trail, which Spanish authorities had prohibited. Material culture began to change with the availability of American-made goods and presence of Anglo-American traders and settlers. In 1846, after twenty-five years of increasing trade and exchange, and the gradual immigration of individuals from the United States into New Mexico, the United States Army invaded and took possession of New Mexico in a fit of imperialistic colonialism. During and after the Mexican War, even the arrival of United States Army did little to change the overall dynamic of frequent punitive raids against Navajo and Apache, corruption, short supplies of food, and epidemics.

Anglo-American:⁸⁷ The period saw the military conquest and seizing of New Mexico from Mexico in 1846. Anglo-Americans began applying their own special brand of exploitative settler colonialism to indigenous peoples *and* Hispanos throughout the latter nineteenth and early twentieth centuries. Although the Treaty of Guadalupe Hidalgo guaranteed Hispano and Native American property rights, the American system of land taxation and legions of robber baron lawyers resulted in many grants changing hands from heirs to lawyers. An author of that time wrote an article on the subject aptly entitled “Land-Stealing in New Mexico.”⁸⁸ The Indian reservations of the latter nineteenth century became a way to isolate indigenous peoples in what some would describe as virtual concentration camps. The list of grievous mistreatments of indigenous people during this period is shocking. Hispanos often had to scratch out a living on greatly reduced land holdings. Ultimately, the land grant protests of activists like Reies López Tijerina emerged in the 1960s out of these outrages.

In 1946, the U.S. government passed the Indian Claims Act, which established the Indian Claims Commission. The purpose of the commission was to hear and settle longstanding Indian claims against the United States. Most of these claims had been settled by 1978, when the commission adjourned. Indigenous peoples were denied the right to vote for a century, a practice that only began to be corrected after 1948.

⁸⁷ I use this term in the sense of Anglophones, not in the somewhat racist sense of white-skinned people of English descent. In the United States of the 1800s outside of New Mexico, most people spoke English, regardless of their race. This group could include people of English, African-American, Asian-American, or Indigenous American descent *inter alios*.

⁸⁸ George W. Julian, “Land-Stealing in New Mexico,” *North American Review* CXLV, no. 368 (1887): 684-685. Julian was a former Surveyor-General of the New Mexico Territory.

The Anglo-American period includes the what the U.S. government called the Mexican War⁸⁹ (1846–1848), the U.S. Civil War (1861–1865), Territorial Period (1846–1912), and Statehood Period (1912 until the present). Issues faced during the Anglo-American period included settling all the indigenous and Spanish/Mexican land claims, including the Baca Location Number 1, (an adjudicated settlement of conflicting land grant claims for the Town of Las Vegas grant) that formed the basis for the current boundary of VALL⁹⁰. The Baca Location Number 1 changed owners a number of times during the late nineteenth to early twentieth centuries. Sheepherding and cattle ranching became the dominant activities. Anglo-American sites in the study area often revolve around some kind of resource extraction like logging, mining, ranching, or energy production. A large portion of the study area is part of the Santa Fe National Forest, established in 1915. Tourism, hiking, camping, picnicking, hunting and fishing, and other forms of recreation have become increasingly important to local economies in the study area. The Manhattan Project in Los Alamos during World War II resulted in the development of nuclear weapons, and later, nuclear energy. Film making has been important at VALL, and is becoming more and more important in New Mexico due to generous filmmaking tax credits.

The brief introduction above provides just a sample of the temporal and cultural diversity of past users and residents of the Valles Caldera. As Anschuetz somewhat optimistically noted:⁹¹ “Valles Caldera represents a multi-layered ethnographic landscape with which people of culturally diverse communities—Native American, Hispanic, and Anglo-American—maintain meaningful relationships for their own purposes as part of a dynamic cultural process.”

⁸⁹ The Mexican government calls it “La Intervención Estadounidense En México” (United States’s Intervention in Mexico).

⁹⁰ See Anschuetz and Merlan, *More than a Scenic*, 37ff.

⁹¹ Anschuetz, “A Sketch,” 130.

CHAPTER 3: BIRD'S EYE VIEW OF THE ARCHAEOLOGY OF THE PRESERVE (Elliott)

Introduction

Archaeologists often sift for evidence of past lifeways through fine-meshed screens—seeking to recover every bit of information about past cultures they can find. Analysis may involve optical or even scanning electron microscopes to detect the most minute details in a sample of an artifact, faunal specimen, or ecofact recovered from a site. This level of detail is appropriate for researchers and even cultural resources managers; however, such details are not in the purview of this project. A more detailed overview of site types and distribution will be provided in the forthcoming VALL Archaeological Overview and Assessment (AOA). The purpose of this section of this document is to zoom in from the 30,000-foot viewpoint of the last chapter to the specific cultural resources of the preserve to provide a finer-grained perspective.

The following discussion revolves around the known archaeological resources of VALL¹. The cultural and chronological framework of Chapter 2 provides a context for their interpretation and evaluation. The first part of this chapter deals with archaeological survey, the tool that archaeologists use to identify, analyze, and evaluate archaeological resources. The next part summarizes the results of those surveys, i.e., sites, features, and artifacts and includes limited data from excavations of some sites. Finally, this chapter concludes with suggested strategies for National Register nominations and other management activities.

Because of the COVID-19 pandemic, VALL's administrative offices were closed, eliminating the researchers' access to primary written materials like site forms and reports unless they could be accessed online. Therefore, the main sources of information were GIS data provided by the preserve staff, site and report log spreadsheets, and a variety of online documentary material. The researchers were thus able to assemble an accurate summary of VALL archaeological surveys and sites for preparation of this study.

Archaeological Surveys

An archaeological survey is the systematic pedestrian examination of the ground surface conducted to locate and record archaeological sites, features, and artifacts. Although the American Southwest has been studied by archaeologists and anthropologists since the late 1800s, surveys at VALL have only begun to be conducted fairly recently. This is partly because VALL was private land and exempt from most cultural resources preservation laws until recently; but also because it did not exhibit spectacular ruins like those known in areas such as Chaco Canyon, Mesa Verde, or, closer to VALL, Bandelier National Monument. By the time the ranch went into federal ownership in 2000, little archaeological survey had been performed within the ranch, and few sites were known. Exceptions included survey and site recording conducted for the Baca Geothermal Project², the Ojo

¹ As of about July 2, 2020.

² Craig Baker and Joseph C. Winter, eds., *High Altitude Adaptations along Redondo Creek: The Baca Geothermal Project*. (Albuquerque: Office of Contract Archeology, University of New Mexico, 1981).

Line Extension Powerline survey³, and a small survey implemented along New Mexico State Highway 4 through the southwest corner of the ranch that was conducted for the Jemez Mountains Electric Co-op⁴. By the 1990s, these projects had in total comprised a few thousand acres of survey and a few dozen recorded sites. The Baca Geothermal Project and Ojo Line Extension Project also resulted in the excavation of several sites.

When the ranch became federal property, routine ranching and other activities like road maintenance suddenly became “undertakings,” requiring compliance with a raft of federal laws and regulations such the National Environmental Policy Act (NEPA), and the National Historic Preservation Act (NHPA), with its enabling regulations as promulgated in Title 36 Code of Federal Regulations Chapter 800 (36 CFR 800). Identification of historic properties that might be affected by the undertakings required archaeological surveys and consultations with culturally associated tribes⁵ and the New Mexico State Historic Preservation Office (SHPO).

The Santa Fe National Forest of the United States Department of Agriculture (USDA) Forest Service, particularly the Jemez Ranger District, served as a caretaker for the Preserve conducting archaeological surveys on the Preserve for routine maintenance needs and emergencies while the Board of Trustees members were being vetted, nominated, and confirmed. The resulting Valles Caldera Trust was a completely new federal agency This process took a few years in real time, but it felt like warp speed to those involved in the process. Staff had to be hired, and infrastructure acquired, including office space, computers, and vehicles. The Trust did begin to function as its own organization, and then took over most of the natural and cultural resource management and compliance activities from the Santa Fe National Forest by spring 2003.

After the Trust became functional, archaeological survey frequency and extent grew rapidly. As mentioned, at the time that the ranch was purchased in 2000, only about 2,185 (\pm three per cent) acres of archaeological surveys had been conducted, and about seventy-three archaeological sites recorded⁶. By 2014, when the Trust was terminated and management of the preserve transferred to the National Park Service, based on GIS data provided by VALL staff, about twenty-five thousand acres had been surveyed and around seven hundred sites recorded. By mid-2020, again based on GIS data provided by VALL staff, over thirty-one thousand acres had been surveyed, and over eight hundred archaeological and historical sites had been recorded. Since 2016, VALL staff has stated that most large-scale surveys have been conducted by the Office of Contract Archaeology at the

³ Steven C. Lent, Mark E. Harlan, and Gayle MacPherson, *Preliminary Results of an Archaeological Survey in the Jemez Mountains of New Mexico for the Public Service Company of New Mexico's Ojo Line Extension Project*, (Albuquerque: Public Service Company of New Mexico, 1986).

⁴ Michael L. Elliott, “Jemez Mountains Electric Co-op Buried Transmission Line and Pole Replacement Cultural Resources Inventory,” *Archaeological Report* 89-5, (Albuquerque: Jemez Mountains Research Center, 1989a).

⁵ VALL regularly consults with 38 tribes, including: Apache Tribe of Oklahoma, Cheyenne and Arapaho Tribes, Comanche Nation, Fort Sill Apache Tribe, Hopi Tribe, Jicarilla Apache Nation, Kewa Pueblo, Kiowa Indian Tribe, Mescalero Apache Tribe, Navajo Nation, Ohkay Owingeh, Pawnee Nation, Pueblo of Acoma, Pueblo of Cochiti, Pueblo of Isleta, Pueblo of Jemez, Pueblo of Laguna, Pueblo of Nambe, Pueblo of Picuris, Pueblo of Pojoaque, Pueblo of San Felipe, Pueblo of San Ildefonso, Pueblo of Sandia, Pueblo of Santa Ana, Pueblo of Santa Clara, Pueblo of Taos, Pueblo of Tesuque, Pueblo of Zia, San Carlos Apache Tribe, Southern Ute Indian Tribe, Standing Rock Sioux Tribe, Tonto Apache Tribe, Ute Indian Tribe of the Uintah & Ouray Reservation, Ute Mountain Tribe, White Mountain Apache Tribe, Wichita and Affiliated Tribes, Ysleta Del Sur Pueblo, and the Zuni Tribe,

⁶ Ana Steffen, personal communication, June 3, 2021.

University of New Mexico. Figure 3.1 shows the aggregated areas surveyed⁷ that includes aggregated site areas beyond the putative survey boundaries⁸, clipped to the current borders of VALL.

Previous Archaeological Surveys at VALL

Most surveys on the preserve in the federal era have been conducted for road and building maintenance, energy and utility maintenance and construction, and especially forest treatments (thinning operations and prescribed/managed fires) and wetland and watershed restoration projects. Some surveys have been conducted as parts of university or volunteer projects.

Table 3.1 lists the results of a geographic information system (GIS) analysis of VALL site and survey data⁹ as provided by the preserve¹⁰.

Table 3.1. Aggregated survey and site acreage and percentages of VALL as a whole

VALL Sites and Surveys	Acres
Total VALL acres with Sulphur Springs acquisition	88,897.10
Total unique survey acres as entered within VALL only	30,854.13
Total unique site acres as entered within VALL only	1,943.17
Total unique site acres outside survey boundaries	953.05
Total unique survey acres, plus site acres outside survey boundaries, within VALL only	31,807.18
%Unique surveyed acres/VALL acres	35.78%
%Unique site acres/VALL acres	2.19%
%Unique site acres/unique surveyed acres	6.11%

⁷ No resurveyed acres counted, each surveyed acre only counted once.

⁸ Overlapping site boundaries were also aggregated. Areas within site boundaries outside a survey boundary were considered as surveyed.

⁹ These GIS data were provided by preserve staff on July 2, 2020. Other data provided by VALL staff included the site log, filename VCNP_sitelog_20200604_AS.xlsx, dated June 4, 2020, the survey data from a GIS layer named SURVEY_VALL_OCA_20200625.xlsx, dated June 25, 2020, and the report log named Rpt_log_2020Apr28.xlsx, dated April 28, 2020.

¹⁰ This does not correspond with survey information available in the NMCRIS. VALL has not entered complete information for quite a few of their surveys, particularly older projects, into the NMCRIS. The survey layer that I was provided along with other GIS data does not reference the NMCRIS survey number, so cross-checking was not possible. Archaeological data should be entered into the NMCRIS periodically as a professional courtesy to compliance officials and researchers, and as archival backup for reports and forms. Working with the NMCRIS involves several steps, not just issuance of Activity and Site (LA) numbers. The New Mexico SHPO has for some time required that survey and site data be entered online, and that digital copies of survey reports and NIAF and LA forms be uploaded to the NMCRIS.

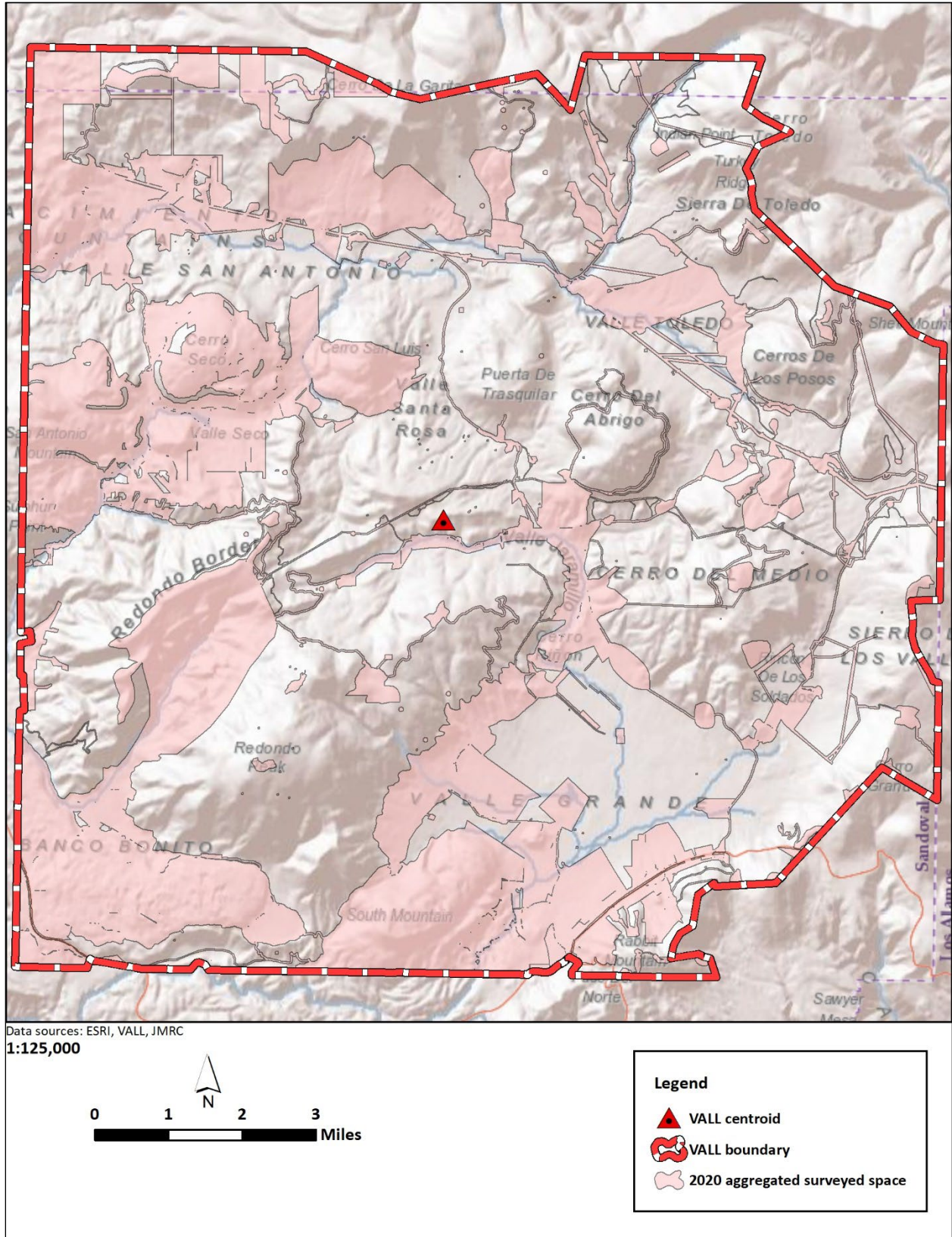


Figure 3.1. Map showing areas archaeologically surveyed at VALL prepared by the author.

Calculating the unique acres of survey at VALL required a number of analytical steps. The “unique survey acres” is a number derived by dissolving¹¹ all individual survey boundaries, clipping¹² the resulting polygon with the current boundary of VALL and calculating the total acreage. These are unique survey acres because in many instances, a particular piece of land may have been surveyed more than once, but by using these GIS techniques, the duplicated survey acres were eliminated. Some surveys in the geodatabase extended beyond the current boundary of VALL, so those acres were clipped out. No survey acreage outside VALL is included. Similarly, the “unique site acres” calculation follows a similar process, i.e., the site boundary polygons are dissolved and clipped by the current boundary of VALL. This eliminates overlapping site boundaries, as well as portions of sites that extend beyond VALL’s boundary. Since some site boundaries extend beyond the survey boundary when they were recorded, a final step involved dissolving the site boundaries and the survey boundaries. This is because any area within a site boundary should be considered as surveyed space regardless of the survey or project boundary for which they were recorded. The table helps answer two questions that managers and archaeologists often discuss. First, as of June 2020, about 35.78 percent of the preserve had been surveyed. This is quite a respectable survey fraction, given the steep slopes and heavy vegetation of much of the preserve, and exceeds the 33.33 percent survey rate for the larger study area as a whole. Second, there are *not* sites everywhere at VALL where archaeologists have surveyed; out of about 31,807 unique survey acres, only 1,943 acres, or 6.1% of the surveyed areas contain sites. Isolated finds do cover a much greater portion of surveyed space.

VALL Archaeological Sites

Introduction

This section deals with that subset of historic resources on VALL known as archaeological sites. An archaeological site is any concentration of artifacts, features (non-portable items of human manufacture), buildings, or structures. By National Register guidelines, “a site is the location of a significant event, a prehistoric or historic occupation or activity, or a building or structure, whether standing, ruined, or vanished, where the location itself possesses historic, cultural, or archaeological value regardless of the value of any existing structure”¹³. Additionally, National Register Bulletin 15 states, “If a building has lost any of its basic structural elements, it is usually considered a “ruin” and is categorized as a “site,” and “If a structure has lost its historic configuration or pattern of organization through deterioration or demolition, it is usually considered a “ruin”¹⁴ and is categorized as a site”¹⁵.

Although archaeological site locations are generally confidential¹⁶, and protected from Freedom of Information Act requests, it would serve the purposes of this document to show in general terms where sites are located. Figure 3.2 presents that information by presenting a map with general site locations indicated as round circles with diameters of the maximum dimension of the site.

¹¹ A geoprocessing technique available in ESRI’s ArcMap GIS application, version 10.8.1.

¹² Another geoprocessing technique available in ESRI’s ArcMap GIS application, version 10.8.1.

¹³ National Park Service, *How to Apply the National Register Criteria for Evaluation*, National Register Bulletin 15, 1995, 5.

¹⁴ Some indigenous people do not like to call these sites ruins, even though that’s how the federal government classifies them.

¹⁵ National Park Service, *How to Apply*, 4.

¹⁶ National Historic Preservation Act, 36 C.F.R.296.18, (last amended February 16, 1984).

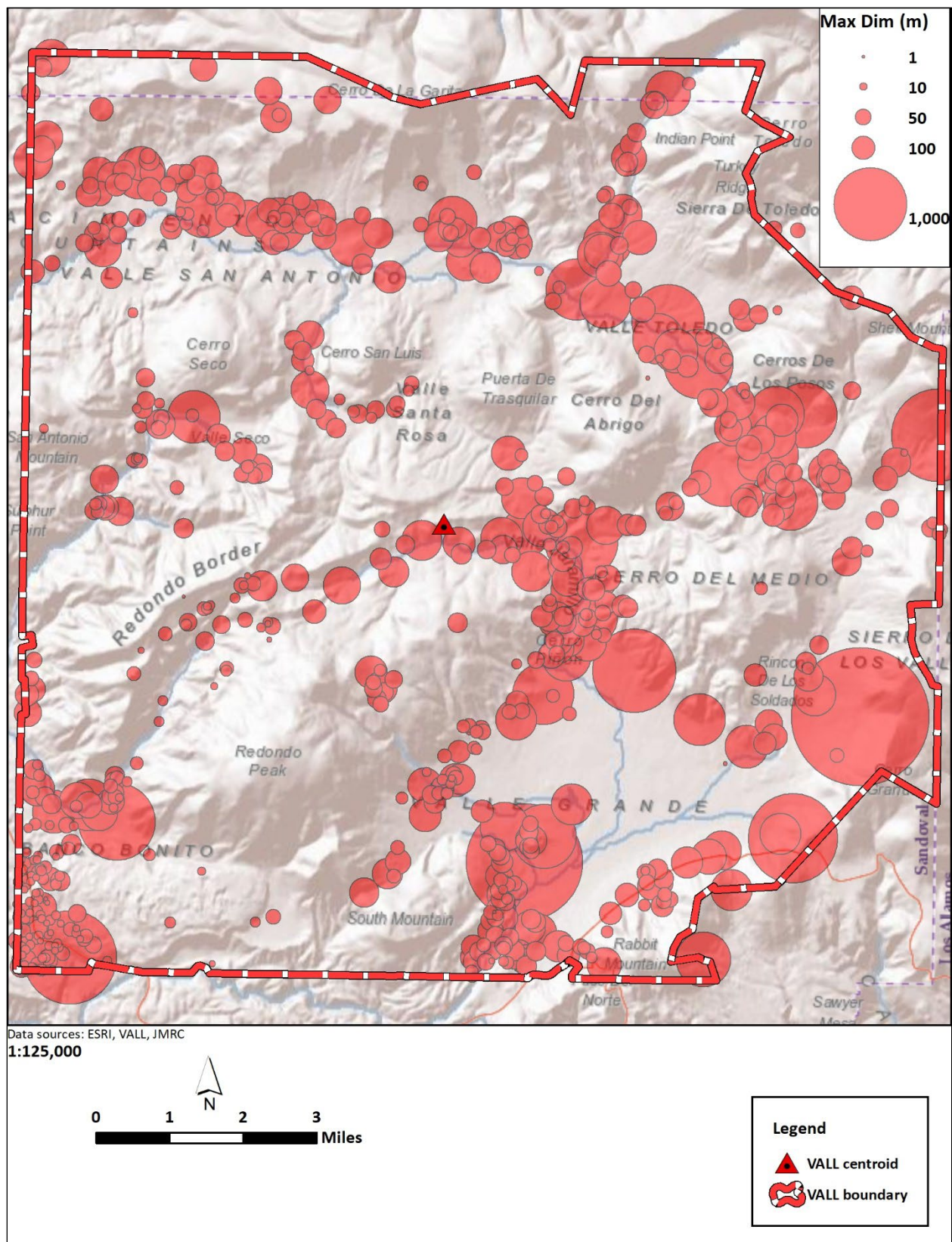


Figure 3.2. Map showing previously recorded sites at VALL by size class prepared by the author.

Archaeologists define site types on the basis of the most visible surface features, or functionally if a function is perceptible. There is always a degree of subjectivity and overlap in site type assignments, which on surveys are almost always made on the basis of visible surface remains. Test pits and excavations provide more information about activities conducted at a site, but even then, certainty eludes us because no site is ever completely excavated in the modern era. Non-invasive techniques like ground-penetrating radar, LiDAR¹⁷, or magnetic resistivity provide other information about the nature of an archaeological site without disturbing the features and deposits at the site. Site components are parts of sites that may date to different periods, or differ in other aspects of their archaeological footprint.

Counts of previously recorded sites with prehistoric component types and counts breakdown are found in Table 3.2. Types are usually functional or represent a particular kind of feature Table 3.3 lists previously recorded sites by component time period. Because of the way archaeology has been done in New Mexico for a long time, the component time periods also have a cultural element to them.

Although a number of ethnographic resources such as shrines are known, the writers recommend sequestration of such resources from conventional site recording and national register evaluation or nomination, and will not discuss them further, even though they might be considered *eligible* as ethnographic cultural landscapes or sites. This is because in many cases information about such sites and their uses is closely held by descendants of the original users and creators of the resources, who may consider them sacred. A number of related laws and regulations allow for locational confidentiality of such resources, and require protection and consultation about their management. A management access only database such as the NPS CRIS database should be used for these resources and tribal and other consultations conducted during planning for management activities in the areas where such resources are located. An Ethnographic Overview and Assessment would help in identifying such resources. This is another standard NPS planning document the parks prepare to assist them in resource management. An ethnographic resource element could be added to the preserve's annual tribal consultation where the preserve staff can discuss avoidance strategies for ethnographic resources. They should not be placed in conventional management categories or proposed for development unless consultations have produced an agreement to do so.

¹⁷ Light detection and ranging technology.

Table 3.2. Counts of recorded prehistoric archaeological sites/components¹⁸ by type

Site/component type	Count	Description
Lithic reduction	521	Stone tool manufacturing debris
Fieldhouse	92	Small 1–4 room structure often associated with agriculture
Quarry-Lithic reduction	28	Locus where stone tools were processed in association with geologic sources of the raw materials
Rockshelter	24	Cleft in bedrock with signs of human use
Lithic and ceramic scatter	15	A mix of stone toolmaking debris and ceramic potsherds
Undefined rock alignment	10	Several rocks in a row
Lithic-Multiple Function	9	May be a campsite, habitation, quarry, or manuf. area
Quarry?-Lithic reduction	5	As above but with some doubt
Fieldhouse, undefined rock alignment	3	As above
Ceramics scatter	2	Scatter of ceramic potsherds
Undefined rock feature	2	Purposeful pile or row of rocks
Quarry-Multiple Function	2	As above
Lithic-Multiple Function-Rockshelter	1	As above
Fieldhouse or blind	1	As above, but possible hunting blind
Depression	1	Purposeful removal of soil from small area
Check dam	1	Waterflow control feature
Total	717	NA

Table 3.3. Previously recorded prehistoric site components by time period

Component period	Count	Comment
Anasazi ¹⁹	2	The Anasazi lived in Four Corners States (term no longer used)
Archaic ²⁰	107	Hunting and gathering. Includes 8 Early, 23 Middle, and 45 Late Archaic components, with 31 unspecified Archaic components
Ancestral Puebloan	7	Thought to be sites ancestral to residents of modern Pueblos. Presumably they could be prehistoric, protohistoric, or historic
Coalition	75	1200–1325 CE in the Rio Grande Classification
Classic	81	1325–1600 CE in the Rio Grande Classification
Unknown prehistoric	499	Undated, not assigned to a temporal or cultural period
BM II	2	Basketmaker II, a Pecos classification for 0–400 CE
Developmental	8	600–1200 CE in the Rio Grande Classification
Pueblo Revolt	2	Occurred in 1680
Early Formative	1	Used in some parts of the world to describe Late Archaic
Paleoindian	9	Ca. 10,000 to 5,500 BCE
Prehistoric artifact scatter	1	Artifacts but no features dating to before 1540, unknown culture
BM III	1	Basketmaker III, a Pecos classification for 400–700 CE
P III/IV	1	Pueblo III/IV, a Pecos classification for 1100–1300–1600 CE
none	65	No prehistoric component, is either historic or unknown
unknown	6	Unknown dates and culture
Ute	1	Presumably a prehistoric Ute component
Total	868	To repeat, some sites have more than one component

¹⁸ Data were provided by VALL cultural resources staff and field personnel, and analyzed and interpreted by the author. Some “types” are functional, others are by feature type. A site may have more than one component.

¹⁹ This term is no longer used because it is considered inappropriate by descendent tribes, but appears in the literature and on some site forms.

²⁰ See Appendix B, Table B1.

A number of archaeological surveys on VALL resulted in the recording of standing buildings as historic or sometimes multi-component prehistoric and historic archaeological sites given Laboratory of Anthropology archaeological site numbers. This can lead to confusion. Ideally, buildings in New Mexico are recorded on what is known as a Historic Cultural Property Inventory (HCPI) form and given their own HCPI number. Approximately twenty-one buildings on the preserve have at least a proxy HCPI building form in the NMCRIS online, but most of the specific data other than locations are missing in the NMCRIS. Table 3.4 provides counts of previously recorded sites with historic component types (many sites on the preserve have both historic and prehistoric components). In many cases, historic land use for building and road construction made the earlier prehistoric cultural materials visible to archaeologists. In history and prehistory, location and nearness to important resources is one of the most important considerations for selecting where to build or create a site.

Table 3.4. Previously recorded historic archaeological sites/components by type

Site/component type	Count	Description
Historic artifact scatter	56	A scatter of historic artifacts like cans or bottles
Cabin	25	A standing roofed structure, not considered in this chapter
Corral	9	Fenced area used for livestock
Mill	7	Facility for milling logs
Cabin remains	7	Ruined structure considered a site here
Historic hydrological features	7	A feature for directing waterflow
Road	5	Linear feature over which vehicles travelled
Modern structure	4	Some type of roofed feature
Check dams	4	Devices to direct waterflow
Aspen carving(s)	4	AKA dendroglyphs, incised names, pictures, dates
Undefined rock alignment	4	Row of stones
Historic rock wall	4	Row of stacked or laid masonry
Ranch/grazing feature	2	Undefined
Rockshelter	2	Cleft in rocky cliff
Sheep pen	2	Small enclosure
Historic marked tree	2	Unspecified carving in a tree
Structure remains	2	Unspecified ruined structure
Geothermal features	2	Unspecified geothermal
Historic trash	2	Probably the same as historic artifact scatter
Unknown	2	Undefined
Historic artifact scatter, dam, car	1	As above with dam and remains of a car
Historic cairn	1	Stacked rockpile or obelisk
Historic artifact scatter, wood structure	1	As above with unspecified wooden structure
Historic features and scatter	1	Unspecified features and artifacts
none	1	As stated
Historic artifact scatter, USGS marker	1	As above with USGS marker
Fence	1	Feature with posts and crosspieces or wire
Historic aspen	1	Possibly an aspen carving
Culverts	1	Round pipe under a roadway
Historic artifact scatter, cairn, hearth, road	1	As above, with cairn, hearth
Barn	1	Structure for housing livestock
Ramada/Shelter	1	Open walled structure
Highway lantern	1	Marking lantern
Historic artifact scatter, fence/corral	1	As above
Historic artifact scatter with features	1	As above
Shed	1	Small structure for storage
Historic wood features	1	Unspecified
Structure foundation(s)	1	Basal course of structure used to hold walls

Site/component type	Count	Description
Hunting blind?	1	Small construction to screen from animals
Trail	1	Narrow winding path for humans or animals
Check dam	1	As above
Borrow pit	1	Larger pit where building materials are removed
Historic rock carvings	1	A petroglyph from historic era
Historic rock shelter	1	As above
Total	176	Historic sites or components

VALL also provided us with two additional GIS data sets for archaeologically recorded features and for artifacts. These data sets are both incomplete and not for citation. They do provide more than ten years' worth of recordings of those items, which could provide some important general information even though incomplete. Table 3.5 provides a breakdown of recorded features by type. Some sites exhibit more than one type of feature or more than one feature of a given type. Some of these features appear to be more on the order of artifacts, like "debitage" or "trash dump" but the data are interesting to consider.

Table 3.5. Recorded prehistoric or historic features by type

Type	Count
Carved Aspen	848
Other	302
Cairn	127
Culvert	125
Logging Feature	111
Fieldhouse	109
Depression	84
Check Dam	70
Marked Tree	68
Berm	64
Fence	51
Cabin	42
Stock Pond	40
Rockshelter	34
Telephone pole	33
Survey Marker	32
Trough	31
Rock Alignment	27
Structure	23
Wall Alignment	19
Hearth	16
Other Marking	13
Undefined rock alignment	9
Debitage	9
Grid garden/terrace	8
Corral	6
Vehicle	6
Terrace	5
Hunting Blind	4
Trash Dump	4
Mound	3
Trail	3
Carved Pine	3

Type	Count
Road	2
Bridge	2
Unidentified Rock Align	2
Fieldhouse, undefined rock alignment	2
Grid garden	2
n/a	1
Terracing	1
Unidentified Structure	1
Fieldhouse or blind	1
Historic scatter	1
Historic trash dump	1
Total	2,345

These data are incomplete and not to be considered accurate, but do provide information about the kinds and numbers of features recorded at VALL. It is mildly surprising how many cairns and culverts have been noted.

VALL also provided an incomplete database of recorded artifacts. Table 3.6 breaks these items down by rough artifact type.

Table 3.6. Recorded artifacts by type

Artifact	Counts	% Of Total
Debitage	69,180	83.10%
Historic	9,777	11.70%
Biface	2,053	2.50%
Ceramic	1,108	1.30%
Non- Biface	847	1.00%
Other	201	0.20%
Groundstone	56	0.10%
Hammerstone	53	0.10%
Total	83,275	100.00%

Although incomplete, these data give us some kind of idea about the types and relative numbers of artifacts encountered at VALL. The vast majority of artifacts is lithicdebitage. That only 1,108 ceramic specimens²¹ were recorded in over ten years at VALL is significant, and may reflect the lack of excavations in the preserve. Since many ceramic types are datable, they should be seen as both rare and precious sources of valuable archaeological information. By way of illustration, I recovered 808 ceramics in a couple of weeks from my excavations of the Jemez fieldhouse site LA 68522 alone, just across the State Highway 4 from VALL. If any of VALL's fieldhouses are ever excavated, the number of ceramics encountered at VALL will likely go up considerably. Currently, many visible artifacts are observable only because of disturbance through natural processes (erosion, tree-root pulls, rodent burrows) and human activities (roads, buildings, logging, ranching, mining). The idea

²¹ It is not clear if the ceramics category includes prehistoric and historic specimens, or just prehistoric, with historic ceramics counted under "Historic."

that more than 2,345 features and over 83,283 artifacts have been recorded in some form at VALL is quite impressive and suggests the thoroughness and rigor of the survey effort there.

Eligibility Evaluations

VALL cultural resources staff has provided a site log with their National Register²² eligibility recommendations for 791 sites that they and others have recorded, a breakdown of which is found below in Table 3.7. In practice, in the absence of a programmatic agreement, the New Mexico SHPO must concur with the agency or site recorder’s eligibility recommendation before the site is determined *eligible*. The log indicates that the eligibility recommendations (and the SHPO concurrence and consultation notes) are not populated for all rows, and that entries have not been quality-checked, so these data must be considered incomplete, and will undoubtedly be considerably refined in the next iteration of the site log.

Table 3.7. Breakdown of VALL site eligibility recommendations

Recommendation	Count
Eligible	404
Undetermined	279
Not eligible	39
Blank	69
Total	791

SHPO consultation on VALL’s staff recommendations as *eligible* appears on the site log about 306 times (most with concurrence), so more than a quarter of the sites recommended *eligible* have yet to be determined *eligible* with the SHPO concurrence. This means that many sites that can be considered here for National Register nomination should be reevaluated and then sent to SHPO for concurrence.

Although archaeological field recordings usually provide an assessment of site significance, one thing they often do not convey is the National Register concept of integrity. Integrity is not just site condition. Integrity is the ability of a property to convey its significance (National Register Bulletin 15, available online). Integrity has seven aspects: location, design, setting, materials, workmanship, feeling, and association. Even though standard archaeological site forms do not allow for recording such information easily, we recommend here that any site evaluated as *eligible* for its significance should also be evaluated for eligibility on the basis of its integrity. Thus, it is not possible from the site log to tell if any of the sites evaluated as *eligible* for significance also convey eligibility through their integrity, although many, if not most, probably do.

²² National Register eligibility is evaluated along four criteria: (A) association with important events, (B) association with important people, (C) representation of an important building or construction style, (D) and presence or potential to yield important information about prehistory or history. See National Park Service, “How to Apply,” 2ff, for additional information.

Discussion

As mentioned previously, VALL currently has no sites listed on the National Register of Historic Places. This part of our study seeks to answer the question, “which known archaeological resources at VALL are *eligible* for listing in the National Register and should be nominated to it?”

The special nature of archaeological remains at VALL make answering that question difficult. Comparatively speaking, the archaeology of VALL is quantitatively and qualitatively different from that of the surrounding region as a whole. It has served as a high-elevation, resource-rich sustaining area throughout its history of use by diverse groups of people. As has been demonstrated in the preceding analysis, much of the archaeological material known thus far at VALL consists of unknown prehistoric (assumed, but see below regarding historic obsidian uses) scatters of lithic debitage. Diagnostic artifacts, while not rare, are not common either, or there would be fewer sites and components described as “unknown prehistoric”. Most prehistoric archaeological sites are nominated to the National Register under Criterion “D,” “have yielded or may be likely to yield, information important in history or prehistory.” Rarely, archaeological sites may be *eligible* under other criteria. So, what important information could the archaeological materials at VALL provide? Are any associated with historically important events, people, or styles? National Register properties may include sites, districts, buildings, structures, and objects. Sites with historic components may be *eligible* under any of the four criteria.

Now any *eligible* site with integrity can be evaluated and nominated to the National Register on its own merits on a site-by-site basis. This approach has the advantage of simplicity, but many disadvantages. The sites nominated under this approach each have to explain the context and significance of each site, over and over for each site of a given type despite the fact that it may share many characteristics with one or many nearby sites.

One way to group historic properties with similar characteristics is to nominate them as a National Register district. The Ranch Headquarters nomination, for example, that VALL staff has been working on is for a historic district nominated on one primary form with many continuation sheets describing each contributing resource. This is a one-off kind of solution. There won't be another Ranch Headquarters to nominate.

Another way to organize information about groups of sites, districts, structures, buildings, or objects is a multiple-property submission. From National Register Bulletin 16B:

The Multiple Property Documentation Form streamlines the method of organizing information collected in surveys and research for registration and preservation planning purposes. The form facilitates the evaluation of individual properties by comparing them with resources that share similar physical characteristics and historical associations. Information common to the group of properties is presented in the Multiple Property Documentation Form, while information specific to each individual building, site, district, structure, or object is placed on an individual registration form. As a management tool, the thematic approach can furnish essential information for historic preservation planning because it evaluates properties on a comparative basis within a given geographical area and because it can be used to establish preservation priorities based on historical significance.²³

²³ National Park Service, *Guidelines for Completing National Register of Historic Places Forms, Part B, How to Complete the National Register Multiple Property Documentation Form, National Register Bulletin 16B, 1999a.*

The last sentence of this extended quotation really captures the best reasons for using this approach to National Register nomination, “As a management tool, the thematic approach can *furnish essential information for historic preservation planning* because it evaluates properties on a comparative basis within a given geographical area and because it can be used to *establish preservation priorities* based on historical significance.” The site-by-site or district approach do result in registered historic properties, but do not necessarily provide the kind of management information required for effective preservation planning and priority setting for the future. It is certainly true that some archaeological sites or small groups of sites are so unique or unusual, or so significant to science or local communities that they should be the subjects of the individual nominations. The many-walled LA 132045 structural complex on and around Cerro La Jara comes to mind, as does the Old Fort shown on old maps but never located on the ground. But since VALL has many sites with similar characteristics, baseline cultural resources planning for nominations should concentrate on the multiple property approach described above, while not ignoring the exceptional, the unique, or the spectacular single sites that may not yet be known.

To organize a way to think about the archaeological resources at VALL, I suggest a thematic approach focused on three interpretive themes:

1. Obsidian Procurement and Tool Production;
2. Rockshelters of the Valles Caldera; and
3. Indigenous Agriculture on the Banco Bonito.

1. Obsidian Procurement and Tool Production Theme

The following is not a technical discussion, but is simply stated for context. Obsidian is a volcanic glass most commonly formed when lava cools quickly, such as when it comes into contact with water. The complex volcanism in play at VALL resulted in the formation of large nodules of obsidian of exceptional purity in some cases. VALL encompasses two major obsidian source areas of great magnitude and importance, the obsidian of the Cerro del Medio (the major component of the Valle Grande Rhyolite Complex) and the obsidian of the Valle Toledo Rhyolite (e.g., Obsidian Ridge). Another important source, obsidian from the El Rechuelos Rhyolite, lies just north of the preserve. Obsidian from VALL sources was widely traded and used across New Mexico and in neighboring areas.²⁴ As Vierra states:

The Jemez Mountains were an important source of obsidian, and this distinctive material can primarily be found on archaeological sites in New Mexico and Colorado but has also been identified in Arizona, Texas, Oklahoma, Kansas, and Nebraska [Arakawa 2006:301; Baugh and Nelson 1987; Hoard et al. 2008; Nichols 2002:215–216; Pitblado 2003:152; Steffen and LeTourneau 2007; Vierra 1993].²⁵

In a study conducted for VALL in 2007, Steffen and LeTourneau analyzed and mapped data on 2,105 artifacts from 565 archaeological sites in twelve states (Figure 3.3).

²⁴ Timothy G. Baugh and Fred W. Nelson, Jr., “New Mexico Obsidian Sources and Exchange on the Southern Plains,” *Journal of Field Archaeology* 14, (1987), 313–329.

²⁵ Bradley J. Vierra, “Introduction,” In *From Mountaintop to Valley Bottom Understanding Past Land Use in the Northern Rio Grande Valley, New Mexico*, ed. Bradley J. Vierra (Salt Lake City: University of Utah Press, 2013), 5.

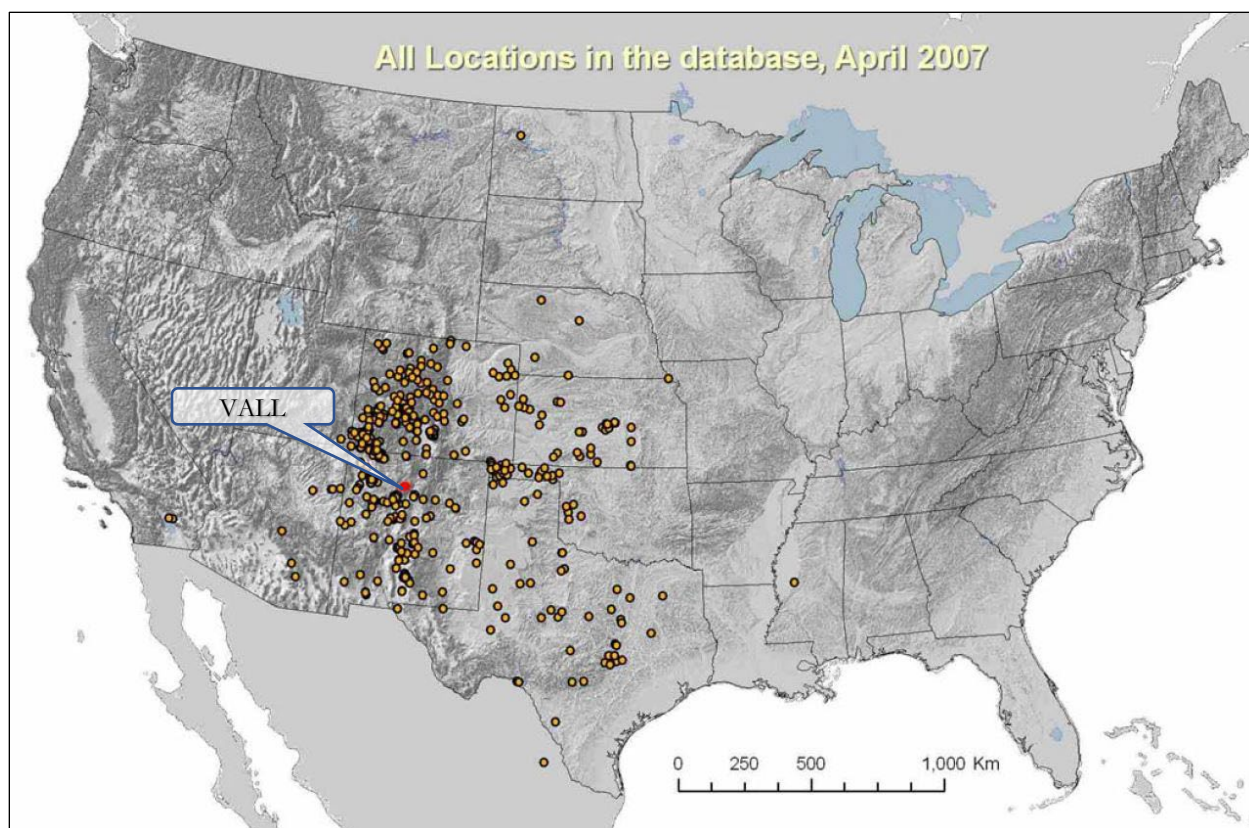


Figure 3.3. Location map of archaeological sites known to have obsidian artifacts geochemically sourced to major obsidian geological deposits in the Jemez Mountains²⁶

The probable geological sources of obsidian artifacts can be determined through use of x-ray fluorescence on the artifact which reveals trace elements in the material. These atomic “fingerprints” are then compared to results of similar analyses of samples from known sources. Obsidian can be deposited secondarily in river gravels, notably the Rio Grande in this area and to the south throughout New Mexico.

Obsidian analyst Steven Shackley notes that the Valle Toledo rhyolite and glass is the predominant type of obsidian found in secondary deposits along the Rio Grande, but that obsidian from the Valle Grande complex did not occur as secondary deposits outside the *valles*, suggesting that artifacts fashioned from that material could only have been made from material collected within the Valle Grande.²⁷ In a large-scale sourcing and obsidian hydration dating study of obsidian artifacts from San Marcos Pueblo (LA 98), Ramenofsky and others derived similar conclusions, stating:

²⁶ Anastasia Steffen and Philippe D. LeTourneau, “Sources in the Middle: The Jemez Mountains Obsidian Database Project.” In symposium “Xenophile: Allure of the Exotic,” Carolyn Dillian & Carolyn White, Organizers, 71st Annual Meeting of the Society for American Archaeology, Austin, (April 2007), Figure 4, p. 17.

²⁷ M. Steven Shackley, “Archaeological Obsidian and Secondary Depositional Effects in The Jemez Mountains and The Sierra De Los Valles, Northern New Mexico,” (Los Alamos: Report prepared for the Ecology Group, Los Alamos National Laboratory, Archaeological XRF Laboratory, University of California, Berkeley, 2002), 6.

Thus procurement of CTR [Cerro Toledo Rhyolite], ERR [El Rechuelos Rhyolite], CCR [Canovas Canyon Rhyolite] (including BSP [Bear Springs Peak], and PC [Paliza Canyon] obsidians could have occurred from secondary gravel sources near San Marcos, but obtaining VR [Valles Rhyolite] obsidian would have required travel into the Valles Caldera or some form of indirect procurement.²⁸

Steffen and LeTourneau reported similar results.²⁹ Hamilton and others reported similar findings in their analysis of Paleoindian artifacts from central New Mexico, stating “Valles rhyolite obsidian is only available in the Valles Caldera, requiring direct procurement from the source.”³⁰ Church reported that El Rechuelos obsidian also occurs in secondary deposits along the Chama and Rio Grande.³¹

Obsidian can be chipped (knapped) into a variety of cutting and stabbing tools with incredible sharpness. Knapping debris is known as debitage. The knapping of a single projectile point could produce hundreds or thousands of flakes, a piece of original material removed from a stone tool. Once VALL became a regular source for obsidian for raw material for producing finished tools, large scatters of debitage were created near obsidian source areas. Certain loci could be used more than once over millennia, creating multi-component scatters of great size and density. Standard archaeological surveys usually cannot distinguish between large, single component obsidian scatters and large multi-component obsidian scatters unless datable artifacts are also found in association with the scatters.³² Unfortunately, even the presence of datable projectile points might not date an artifact scatter since it could have resulted from a completely different discard scenario than the knapping.

Obsidian artifacts can also be directly dated by a technique known as obsidian hydration (OH) analysis in many cases. The technique has been around for at least sixty years³³, is comparatively low-tech, and is relatively inexpensive. This process works by cutting out a thin slice of an obsidian artifact from a known source, examining it microscopically, and measuring the thickness of the hydration rind, or band on the edge of the item. This measurement is then compared to rate of hydration for that particular source that has been calculated through a process of induced hydration to get a chronometric date. OH dating has certain drawbacks, and is somewhat out of favor in contemporary Southwestern archaeology, as noted by Ramenofsky and others, because of a lack of sufficient background research and the availability of other less expensive dating methods.³⁴ Elevation and temperature can affect hydration rates. Fire can dramatically alter obsidian, driving out the water forming the hydration rind and thus resetting the hydration layer used for dating. Surface

²⁸ Ann F. Ramenofsky, Anastasia Steffen, Jeffrey Ferguson, Philippe D. LeTourneau, and Adam Okun, “Obsidian Sourcing, Technology, and Obsidian Hydration,” In *The Archaeology and History of Pueblo San Marcos: Change and Stability*, A. F. Ramenofsky, and K. L. Schleher, eds., (Albuquerque: University of New Mexico Press, 2017), 155–184.

²⁹ Anschuetz, “A Sketch,” 4, 16.

³⁰ Marcus J. Hamilton, Bruce B. Huckell, and M. Steven Shackley, “Clovis Obsidian Sources in the Central Rio Grande Rift Region of New Mexico,” *Current Research in the Pleistocene* 26, 2009, 63.

³¹ Tim Church, “Distribution and Sources of Obsidian in the Rio Grande Gravels of New Mexico,” *Geoarchaeology* 15, 2000, 649–678.

³² Although obsidian can be directly dated (see below), it would not be considered a standard survey technique yet.

³³ Irving Friedman and Robert L. Smith, “A New Dating Method Using Obsidian: Part I, The Development of the Method,” *American Antiquity* 25, 1960, 476–522.

³⁴ Ramenofsky et al., “Obsidian Sourcing,” 177.

artifacts hydrate differently than those that have been underground for a long time. Nevertheless, OH dating is a tool with promise that can provide very important information to the archaeologist.

The Obsidian Who, What, and When

Human use of VALL's obsidian sources (Figure 3.4) began in Paleoindian times, as attested by the presence of materials datable to Clovis³⁵, Folsom³⁶, and other periods. Paleoindian point styles created from VALL obsidian sources have been recovered from sites in many parts of the country. Archaic projectile points made from Cerro del Medio or Valle Toledo obsidian are even more common in the study area.³⁷

Four Corners, Ancestral Puebloan, Gallina

Pueblo peoples also made extensive use of VALL obsidian. At Chaco Canyon, Jemez Mountains obsidian sources were increasingly popular through time.³⁸ At Mesa Verde "almost all of the obsidian found in central Mesa Verde region sites derives from the Jemez Mountains."³⁹ Anschuetz discusses Puebloan visitation of the Valles Caldera to make use of a variety of resources.⁴⁰

³⁵ Hamilton et al., "Clovis Obsidian," 63.

³⁶ Bruce B Huckell, M. Steven Shackley, Matthew J. O'Brien, and Christopher W. Merriman, "Folsom Obsidian Procurement and Use at the Boca Negra Wash Site, New Mexico." *Current Research in the Pleistocene* 28, 2011, 49–52.

³⁷ Christopher A. Turnbow, "Projectile Points as Chronological Indicators," in "OLE" (Ojo Line Extension Project Report), John C. Acklen, ed., 3 vols., (Albuquerque: TRC Mariah Associates for Public Service Company of New Mexico, 1997), 161–230

³⁸ Andrew I. Duff, Jeremy M. Moss, Thomas C. Windes, John Kantner, and M. Steven Shackley, "Patterning in Procurement of Obsidian in Chaco Canyon and in Chaco-era Communities in New Mexico as Revealed by X-ray Fluorescence," *Journal of Archaeological Science* 39, 2012, 2995–3007.

³⁹ Fumiyasu Arakawa, Scott G. Ortman, M. Steven Shackley, and Andrew I. Duff, "Obsidian Evidence of Interaction and Migration from the Mesa Verde Region, Southwest Colorado". pp. 774–796, *American Antiquity* 76, no. 4, 2011, 782.

⁴⁰ Anschuetz, "A Sketch," 59ff.



Figure 3.4. Obsidian source area at VALL. Photo courtesy VALL Cultural Resources staff.

Nearer to VALL, Civitello and Steffen cite several obsidian sourcing studies for obsidian materials collected from a number of Rio Grande and pueblos sites. They concluded, “Use of Jemez Mountains obsidians is heavily represented at all studied Ancestral Pueblo sites, and VR [Valles Rhyolite] obsidian is used in relatively high proportions at many or most of these sites.”⁴¹

⁴¹ Jamie A. Civitello and Anastasia Steffen, “Just Up the Hill and Not Down the Line: Ancestral Pueblo Obsidian Use at the Source,” Paper presented at the 84th Annual Meeting of the Society for American Archaeology, Albuquerque, April 2019.

The Gallina Province, to the northwest of VALL was the scene of an unusual and atypical Puebloan adaptation during the period of about 1050–1275 CE. The Gallina people built and lived in small freeform above-ground pueblo-like structures, pithouses, large square surface houses, cliffhouses, and constructed large, multi-storied towers at many of their larger villages. According to a recent study, their obsidian preferences were strictly local, including El Rechuelos and Cerro del Medio obsidians. The authors also point out the Gallina propensity for reuse of older Archaic tools.⁴²

Navajo, Apache, Ute

Regarding Navajo obsidian use, consultants working on the Mid-American Pipeline project in the San Juan Basin noted:

Obsidian was a significant trade item for the Navajo people. Despite its source location some 100 miles from the project area, obsidian represents 9% of the flaked lithic assemblage. While the source was within the range of travel of the Navajo people, it was probably acquired by trade since the obsidian sources were probably strictly controlled by the people at Jemez Pueblo [Winter 1983].

Sourcing of the 25 obsidian pieces from Navajo contexts revealed that 22 came from the Cerro del Medio source in the Jemez Mountains, two came from the Polvadera Peak source in the Jemez Mountains, and one came from the Government Mountain source in the San Francisco Peaks of Arizona. This high frequency for obsidian derived from the Cerro del Medio source has been seen in other Dinétah Navajo sites [Vierra 1993]. It is not known if this indicates that the Navajo had access to only this source or that it was their preferred obsidian source.⁴³

None of the sites currently documented at VALL have been identified as having components associated with the Apache. Therefore, we must rely on the frequent documentation of Apaches within VALL during historic times⁴⁴ to infer their obsidian use. Interestingly, small obsidian nodules, or marekanites, are sometimes known as “Apache tears” referring to a legend of Apache loss of life. Johnny Cash recorded a song in 1964 entitled *Apache Tears*⁴⁵.

Several sources discuss Ute traditional use areas in New Mexico.⁴⁶ Imprecise maps in these works show Ute traditional areas extending at least into the northernmost areas of the Jemez Mountains, and one map shows VALL in the Ute traditional use area.⁴⁷ The Utes are known to have ranged fairly widely through northern New Mexico in the seventeenth and eighteenth centuries. One previously recorded artifact scatter site at VALL, LA 189872, has been recorded as having a Ute component.

⁴² Jacqueline Marie Kocer and Jeffrey R. Ferguson, “Investigating Projectile Point Raw Material Choices and Stylistic Variability in the Gallina Area of Northwestern New Mexico,” *Kiva*, 83, no. 4, 2017, 532–554.

⁴³ Woods Canyon Archaeological Consultants, “Mid-America Pipeline Project Report, Vol 4, Ch 6:6-28,” accessed 1/27/2021, <http://woodscanyon.net/PDFREPORTS/Excav/MAPL/>.

⁴⁴ Anschuetz, “A Sketch,” 1ff, section entitled, *Soldiers and settlers in the U.S. Territorial Period (1846– 1912)* mentions Apaches and Utes in the Valles Caldera.

⁴⁵ One verse says,

“No head stones but these bones bring Mescalero death moans
See the smooth black nuggets by the thousands laying here
Petrified but justified are these Apache tears.”

⁴⁶ James Jefferson, Robert W. Delaney, and Gregory C. Thompson, *Utes: A Tribal History*. (Salt Lake City: University of Utah Printing Service, 1972); Jan Pettit, *Utes, the Mountain People*, (Boulder: Johnson Books), 1990); Akins, “Traditional Use.”

⁴⁷ Charles S. Marsh, *People of the Shining Mountains: The Utes of Colorado*, (Boulder: Pruett Publishing, 1982).

Hispano Uses of Obsidian in New Mexico

Archaeological investigations at Spanish Colonial era sites in New Mexico have revealed that colonists used obsidian in much the same way that indigenous peoples did. James Moore presented his review of obsidian use at Hispano sites and notes that in a sample from New Mexico, forty-four of forty-seven sites contained chipped stone artifacts. Chipped stone artifacts have also been documented at Spanish sites in Arizona, Texas, and Florida.⁴⁸ Moore suggests this was because of lack of appropriate metal tools, due in part to unreliable supply lines and expense. Moore remarks,

As discussed above, chipped stone artifacts have been found at many Spanish sites in the Southwest. Examples of surviving chipped stone tool traditions have been examined and in most cases are linked to the cost and availability of metal tools. Similar circumstances prevailed in New Mexico until the American Territorial period. Metal tools were scarce, metal was expensive, and people were poor.⁴⁹

Caroline Gabe discussed lithic assemblages at ten Spanish Colonial sites.⁵⁰ She did not employ any geochemical analyses, but she found that obsidian was the most popular material type, at roughly 30 percent, likely processed from secondary obsidian deposits in the gravels of the Rio Grande.⁵¹

Clint Lindsay analyzed lithic materials from LA 20000, a Spanish Colonial site southwest of Santa Fe. Using x-ray fluorescence, he reported that over 95 percent of the forty-five analyzed obsidian artifacts recovered from the site were from Cerro Toledo Rhyolite or Valle Grande Rhyolite sources.⁵²

In my own unpublished work at Spanish Colonial sites in the Jemez Valley, obsidian is the second most common lithic material after Pederal Chert. These findings have been confirmed by another unpublished survey conducted in the same area by the Santa Fe National Forest.

Specialized Penitente Ceremonial Uses

Some sources describe obsidian use in rituals of the Penitentes brotherhood. Rafael Chacón remarked on such a use in 1862.

About the middle of August 1862, I was ordered, with my company, to be stationed in Los Valles de la Sierra de San Ildefonso in order to protect the hay cutters who had a contract with the government and to watch for the entrance of any Navajos. Almost every day we had encounters with them, taking away the animals that they had stolen, but they never offered us battle, contenting themselves only with running away and leaving the animals. These valleys are some meadows where they cut four hundred tons of hay, and they form the origins of the Jemez River and of the Santa Rosa and San Antonio Rivers; these last two run into the Chama River. There is a rocky black hill there, similar to glass or flint which was used by the Penitentes in order to make incisions which they called *sajadas*.

⁴⁸ James L. Moore, "Spanish Chipped Stone Artifacts." In *Adaptations on the Anasazi and Spanish Frontiers: Excavations at Five Sites near Abiquiú, Rio Arriba County, NM*, J.L. Moore, J.L. Boyer, and D.F. Levine, eds., Archaeology Notes 187 (Santa Fe: Museum of New. Office of Archaeological Studies, 2004), 179–200.

⁴⁹ Moore, "Spanish Chipped Stone," 181.

⁵⁰ Caroline M. Gabe, "Seventeenth-Century Spanish Colonial Identity in New Mexico: A Study of Identity Practices through Material Culture," (PhD diss, University of New Mexico, 2019).

⁵¹ Gabe, "Seventeenth-Century," 157.

⁵² Lindsay, Clint S., "Form, Function, and Context: Lithic Analysis of Flaked Stone Artifacts at a 17th-Century Rural Spanish Estancia (LA 20,000), Santa Fe County, New Mexico," (MA Thesis, University of Massachusetts, 2020.)

We gathered this rock, and we threw some little pieces in the fire and they fluffed up from the fire and became white, similar to popcorn.⁵³

Fray Angélico Chávez describes one Penitente ritual: "...some now flogged each other in what one could suspect elements of sadism and masochism; initiates were now sliced down their backs with chips of obsidian, producing welts like the raised tattoos of primitive savages in various parts of the world."⁵⁴ Obsidian was also used as a decorative element in Penitente *bultos*, especially as the eyes of *La Muerte* in a *Carreta de la Muerte*. A good example may be found in the collections of the Philadelphia Museum of Art.⁵⁵ Anschuetz relates Charles Carrillo's informant's discussion of Penitente obsidian sources and uses,⁵⁶ confirming Penitente use of the material.⁵⁷

Medical Uses of Obsidian

Obsidian blades can be fashioned into tools with extremely sharp edges, indeed, Don Crabtree, a flintknapper/experimental archaeologist, fashioned obsidian edged scalpels for his own 1978 open-heart surgery⁵⁸.

Following that successful surgery, a company began making obsidian surgical instruments.

It's hard to believe but the sharpest knives that have ever been used in recent years were mounted with stone flakes made of obsidian. A company called Aztecnic was manufacturing and selling surgical scalpels mounted with different sizes and shapes of obsidian blades. Good quality obsidian fractures down to single molecules which can produce a cutting edge 500 times sharper than the sharpest steel scalpel blade.⁵⁹

Aztecnic does not seem to exist anymore. A German company named Fine Science Tools currently sells obsidian scalpels.⁶⁰

Historic Indigenous Uses of VALL Obsidian

Indigenous uses of VALL obsidian did not suddenly cease with the arrival of the *conquistadores*. Indeed, obsidian acquisition and production of projectile points, drills, and other tools continued well into historic times. While metal tools replaced obsidian for some uses, indigenous peoples continued to use obsidian for a variety of practical purposes, which evolved into sacred and ceremonial uses that continue to the present. In 2020, the United States District Court for the District of New Mexico considered Jemez Pueblo's claim of aboriginal title to VALL and rejected it, stating in pertinent part that "[a]s stated above, numerous Pueblos and Tribes have used the Valles Caldera to hunt, to gather plants, to collect obsidian, and to conduct other traditional practices in the

⁵³ Meketa, "Legacy of Honor," 205–206.

⁵⁴ Fray Angélico Chávez, *My Penitente Land: Reflections on Spanish New Mexico*, (Santa Fe: Museum of New Mexico Press, 1993), 199 and 262.

⁵⁵ "Death Cart (Carreta de la Muerte), c. 1880–1900, Artist/maker unknown, American," Philadelphia Museum of Art, accessed January 2, 2021, <https://www.philamuseum.org/collections/permanent/297235.html>.

⁵⁶ Carrillo et al., "Historic Overview."

⁵⁷ Kurt F. Anschuetz, "Plant Gathering, Game Hunting, Fishing, Mineral Collecting, and Agriculture," In Anschuetz and Merlan, "More than a Scenic," 60.

⁵⁸ The flintknapper was Don Crabtree, see "Flintknapping Hall of Fame, accessed January 1, 2021, <http://flintknappinghalloffame.blogspot.com/2013/01/don-crabtree-hall-of-fame-flintknapper-3.html>.

⁵⁹ *American Medical News*, November 2, 1984, 21.

⁶⁰ "Product Overview: Obsidian Scalpels," Fine Science Tools, accessed February 16, 2021, <https://www.finescience.com/en-US/Products/Scalpels-Blades/Obsidian-Scalpels>.

centuries before trade occurred, i.e., during a period when Jemez Pueblo's relationship with these groups was either nonexistent or belligerent."⁶¹

Discussion

The point of the preceding discussion was not just expounding upon the vast significance of the VALL obsidian sources, but rather to provide context on how widespread their uses were across various cultures through time and space. Obsidian is obviously an important resource of long-term intensive use by indigenous and non-indigenous people at VALL.

Pedernal Chert

Regardless of the importance of obsidian, it would be remiss not to mention another common toolstone material type found all over VALL, Pedernal Chert⁶². Pedernal Chert is a cryptocrystalline silicate (CCS) stone found in deposits and thick bands in the San Pedro Mountains just west of VALL⁶³ all the way around the northwestern extremities of the Jemez Mountains. Named for Cerro Pedernal (Flint⁶⁴ Mountain), the notable landmark just west of Abiquiú, this beautiful chert material was widely used in northern New Mexico, and elsewhere. Quarry pits and quarrying tools have been documented around the Cerro Pedernal⁶⁵, though few investigations into those occurrences have been conducted.⁶⁶

Chert is a hard stone and hard to knap sometimes. Its flaking qualities can often be improved by heat treatment. The heat makes the stone more brittle and thus easier to knap an edge on. Heat treatment often changes the color of Pedernal Chert to a milkier shade. While Pedernal Chert is common at VALL sites, it in no way approaches the ubiquity of obsidian, and is not quarried within VALL. The many beautiful Pedernal Chert tools found at VALL are a valuable resource that should be considered as part of the "tool production" theme.

Approaches to the Obsidian Procurement and Tool Production Theme

Site-by-Site Approach

Paleoindian and Archaic sites may be reasonably expected to provide information regarding to patterns of obsidian procurement and use at VALL, although Puebloan and historic uses of obsidian mean that some non-diagnostic obsidian scatters could be part of the theme as well.

⁶¹ Jemez Pueblo v. United States, Case 1:12-cv-00800-JB-JFR, Document 460, filed September 2, 2020, 191; appeal pending as of May 23, 2022 in Case No. 20-2145 (10th Cir.).

⁶² F. S. Church and J. T. Hack, "An Exhumed Erosion Surface in the Jemez Mountains, New Mexico," *Journal of Geology* 47, (1939): 613–629; A. Helene Warren, "The Ancient Mineral Industries of Cerro Pedernal, Rio Arriba County, New Mexico," in *New Mexico Geological Society Guidebook, 25th Field Conference, Ghost Ranch (Central-Northern N.M.)*, eds. C. T. Siemers, L.A. Woodward, J.F. Callender, (Socorro: New Mexico Geological Society, 1974), 87–93.

⁶³ VALL staff reports that "A naturally occurring outcrop of CCS is also located within the NW corner of the Preserve," Stephanie Bergman, personal communication, 2021.

⁶⁴ Flint and chert are both CCS, but differ primarily on the basis of their color. Flint tends to be black(ish) and chert tends to be white(ish). Pedernal Chert appears in several colors, from white, to brownish-red, to black.

⁶⁵ Kirk Bryan, "Stone Cultures near Cerro Pedernal and their Geological Antiquity?" *Bulletin of the Texas Archaeological and Paleontological Society* 11, (1939): 9–42.

⁶⁶ Gary A. Smith and Bruce B. Huckell, "The Geological and Geoarchaeological Significance of Cerro Pedernal, Rio Arriba County, New Mexico." In *Geology of the Chama Basin*, eds. Spencer G. Lucas, Kate E. Zeigler, Virgil W. Lueth, Donald E. Owen, (Socorro: New Mexico Geological Society, 2005), 425–431.

Paleoindian: Just nine Paleoindian site components have been recorded at VALL (many with later components), although dozens of isolated Paleoindian projectile points have been found. VALL cultural resources staff has evaluated all nine sites as *eligible* for the National Register under Criterion D. The New Mexico SHPO has apparently concurred on as many as five of these recommendations.

Paleoindian sites are rare in New Mexico, and the rest of the country too for that matter. Any Paleoindian site could be reasonably expected to yield important information about the first Americans. However, the specific Paleoindian sites/components at VALL, LA 26917, LA 133161, LA 133165, LA 137061, LA 140146, LA 156535, LA 158846, LA 178124, and LA 189857 should be revisited to better assess their National Register integrity and suitability. A multiple property nomination should be considered for Paleoindian sites. Since objects may be listed on the National Register, outstanding Paleoindian projectile points could be added to the multiple property nomination as a property type.

Archaic: Archaic sites are not as rare as Paleoindian sites but have the potential for yielding important information about Archaic lifeways in VALL and beyond.

Ninety-five previously recorded sites at VALL exhibit at least one Archaic component (see Appendix B, Table B1 for list). VALL cultural resources staff has recommended sixty-eight of the ninety-five Archaic sites as *eligible* for the National Register and twenty-one as undetermined (six sites have no entry in that field, or were later combined with other sites). SHPO consultation has been conducted for at least forty-four of those sites, most resulting in concurrence. Four are multi-component. Most Archaic sites consist of artifact scatters—some occur in rock shelters, considered in next section or both, with a few exhibiting other features.

Many isolated Archaic and other projectile points and tools have been recorded and collected during survey or collected from sites (Figure 3.5). These are by themselves a valuable resource. As noted above, objects may be nominated to the National Register. In New Mexico, several collections, such as the Laboratory of Anthropology collections, are listed on the National Register. VALL has an extensive collection of projectile points.

For Archaic sites, as with Paleoindian sites in the preserve, site integrity in the National Register sense is seldom recorded in enough detail to satisfy nomination requirements, in part because the standard Laboratory of Anthropology (LA) site form in current use does not even provide fields for recording such details⁶⁷.

Thus, we recommend that these *eligible* sites mentioned above be revisited to determine if they remain *eligible* and if their National Register integrity is suitable for nomination to the Register. In terms of the archaeological context of the Archaic Period, Anschuetz notes:

By far the most intensive uses of the Jémez Mountains, judging from the findings of archaeological studies in the Redondo Creek Valley [Baker 1981; Baker and Winter 1981; Winter 1983:94] and along Public Service Company of New Mexico's proposed Ojo Line Extension (OLE) powerline rights-of-

⁶⁷ Site integrity consists of seven aspects, location, design, setting, materials, workmanship, feeling, and association (National Park Service National Register Bulletin 15; also see Bulletin 36 for additional guidance), none of which are specified on the LA form. The LA form has a field for site condition—not the same thing as integrity in the National Register sense. An addendum form specific for evaluating site integrity could be added to the standard LA form, as are many other specialized sub-forms, depending on context. See Appendix C for an example of a modified LA form.

way [Acklen 1993], occurred between about 600 B.C. and A.D. 400. Still, these high-altitude sites represent hunting camps, as indicated by high frequencies of bifacially flaked obsidian knives and spear and dart points. In addition, the abundance of waste flakes indicating the manufacture of these tools suggests that the late Archaic hunters made knives and projectile points for export to other places in the region [Anschuetz et al. 1997:92; see also Glascock et al. 1999].⁶⁸

The remaining forty-plus Archaic sites evaluated as *eligible* that have received SHPO concurrence range from small artifact scatters with no features to large artifact scatters with multiple diagnostic artifacts and features. The eight sites that appear to stand out with regard to their data potential include LA 133111, LA 133157, LA 133165, LA 133538, LA 137061, LA 180511, LA 186938, and LA 187173. These sites should be revisited and reevaluated for significance and National Register integrity. LA 161537 is a quarry site. Investigations at this site may be expected to yield important information if site integrity is high.

The remaining Archaic sites may or may not be *eligible* for the National Register, or if *eligible*, may lack integrity. It would be important to develop an Archaic cultural context as part of an Archaic multiple property nomination and develop property types, significance, and registration requirements.⁶⁹ That way, other Archaic sites, whether new or existing, could be easily evaluated and nominated.

Puebloan: Most sites are identified as Puebloan on surveys because they exhibit ceramics or structural features. One hundred sixty-two previously recorded sites at VALL have Puebloan components. Some of these have been termed Puebloan because of the presence of diagnostic projectile points. The question always arises whether a diagnostic projectile point is associated with a lithic scatter or is more of an isolate deposited at some later date on top of earlier material. Complicating this question even further is the known tendency of some obsidian users to reuse and even reshape earlier discarded or lost projectile points and other tools they find. Since sites with rock shelter, fieldhouses, and other agricultural features are dealt with in other themes, it is prudent for the discussion here to point out that, according to the VALL site log, only twelve of twenty-three Puebloan artifact scatters have been recommended as *eligible* by VALL staff and ten of those recommendations had consultation and concurrence by the NM SHPO. Puebloan artifact scatters should be further studied and evaluated to determine their eligibility and integrity. Some of the multi-component sites with Paleoindian and Archaic components may merit eligibility based on the earlier materials present.

Historic Indigenous and Hispano: While archaeologists know that obsidian procurement and production occurred during historic times, even into the Anglo-American Period defining such use on the ground is difficult. Few diagnostic historic period stone tools can easily be identified, although some Indigenous materials can be dated morphologically. Using absolute dating techniques could help clarify this question, but the mixing of materials from prehistoric and historic times would make this technique laborious and expensive, and could only be recommended if there were legitimate research on the question involved. To date, VALL has recorded only eight sites with likely or possible historic Indigenous components and all but one exhibit features or ceramics. One artifact scatter site, LA 189872, has been recorded with a Ute component. The basis for this

⁶⁸ Anschuetz, "A Sketch," 13.

⁶⁹ National Park Service National Register Bulletin 16B, "Guidelines for Completing."

assertion is not clear from the site form summary available on the NMCRIS. No other non-Puebloan historic groups can be identified for this type of site.

Alternative Approaches for National Register Nomination

Non-site, lithic landscape

Non-site archaeology is usually an approach to field survey and recording in areas where archaeological materials are widely distributed across the landscape, and where structural manifestations are rare or not present. Most cultural resources management-oriented archaeological surveys involve only surveying where a particular undertaking might affect important archaeological sites. Large areas with artifact scatters are ideal for such an approach. These techniques have been around for decades.⁷⁰ VALL has used the approach for some time.⁷¹ Extant VALL methodology employed since at least 2004 and the resulting data thereof are amenable to the approaches being advocated in this section.⁷²

Non-site archaeology as envisioned here specifically for National Register nomination involves intensive survey and recording of all artifacts and features in standard sized survey units or quadrats over a very large area. The results are analyzed geospatially to define clusters of materials and features, but also to characterize the spaces between clusters. The methods in use at VALL can help characterize and bound large areas where obsidian was extracted and shaped into tools and tool blanks, or into other items that they find useful. The mixing of these discarded materials from many different time periods from Paleoindian to Historic may make no sense on a particular site, but could make more sense at the larger, cultural landscape scale.

The VALL lithic landscape is a large area that includes the obsidian source areas on the preserve (Figure 3.4), surrounded by the discarded products of millennia of tool production and use. Over three hundred (almost 40 percent) of the previously recorded sites consist of a lithic scatter with no diagnostic stone tools, no ceramics, and no features. This is the single most common site type at VALL. It is a cultural resource that should not be wasted or simply avoided. Non-site archaeology would provide powerful tools for interpreting the long-term uses of obsidian source areas in the preserve. In combination with analyses of the artifact scatters with diagnostic materials, many questions could be answered. For example, are certain assemblages of debitage datable or assignable to a particular cultural group? Is there a prototypical Archaic core? Can we distinguish between prehistoric and historic debitage?

Management should evaluate the utility of a non-site, lithic landscape approach specifically for a large-scale National Register nomination. While it might be more expensive up front, the investment could pay dividends in the future. Portions of VALL could be nominated to the National Register as lithic landscapes, particularly the Cerro del Medio source areas. Some lithic landscape areas—they are probably not contiguous—might lack significance or the integrity to be nominated. Those areas

⁷⁰ David Hurst Thomas, “Nonsite Sampling in Archaeology: Up the Creek without a Site?” In *Sampling in Archaeology*, ed. James W. Mueller, (Tucson: University of Arizona Press, 1975), 61–81; Cynthia Irwin-Williams et al., “The Density-Dependent Method: Measuring the Archeological Record in the Northern Southwest,” *American Archaeology* 7, (1988): 38–48.

⁷¹ William Barfuss, “Managing a Wealth of Archaeological Resources with GIS Data on the Valles Caldera National Preserve,” poster presented at the 71st annual meetings of the Society for American Archaeology, 2006.

⁷² VALL Cultural Resources Program, “Field Procedures,” May 2017.

would not require additional protection. While many lithic scatter sites would not possess sufficient data potential or integrity to qualify for nomination individually, collectively they might. This approach could make more sense than having many different individually nominated sites or districts. Some objects, such as a perfect projectile point (Figure 3.5) or other tool might also be *eligible* as part of such a nomination. Greater knowledge of the nature and distribution of archaeological materials at VALL through the synthetic approach of a multiple-property documentation form will further the preserve's interpretive and preservation goals.



Figure 3.5. Complete and fragmentary projectile points and other tools of obsidian and CCS. Photo courtesy VALL cultural resources staff.

Thinking Big

Some National Park Service units, such as the adjacent Bandelier National Monument, have been listed on the National Register in their entirety. In Bandelier's case, this was done in 1966, without the benefit of a complete survey or much detailed information about the archaeological resources at the park at all⁷³. The entire CCC-built Headquarters District at Bandelier became a National Historic

⁷³ "Bandelier National Monument CCC Historic District;" National Register of Historic Places, form for National Register listing NR#66000042, accessed February 16, 2021, https://www.nps.gov/parkhistory/online_books/harrison/harrison23.htm.

Landmark in 1987. It seems unlikely the entirety of VALL could be listed on the National Register or become a National Historic Landmark by today's standards for documentation.

However, there is no reason that the Cerro del Medio Rhyolite obsidian source areas could not be combined and nominated as a National Historic Landmark, just as the Obsidian Cliff source area in Yellowstone National Park has been.⁷⁴ Like Obsidian Cliff, Cerro del Medio obsidian has been geochemically characterized. Artifacts made of the material have been recovered many hundreds of miles away, indicating extensive trade and exchange networks in the material. Obsidian Cliff is also not a pristine landscape; several roads have been cut through portions of the area, as is the case with Cerro del Medio. Also, like Obsidian Cliff, large portions of Cerro del Medio have burned in forest fires. The other principal obsidian sources within VALL, in the Cerro Toledo Rhyolite, should also be considered for nomination under this nomination or on their own.

National Historic Landmark nominations have different criteria than National Register nominations.⁷⁵ Within a National Park Service unit like VALL, the regional office National Historic Landmark program would be an outstanding resource for guidance and potentially funding. Collaborating with Yellowstone National Park might also prove valuable to VALL staff in pursuing NHL status. Although National Historic Landmark status has certain compliance implications, it also has tremendous interpretive and preservation benefits.

It may also be worth mentioning that some of the same characteristics that qualify Cerro del Medio as a National Historic Landmark could also make it worthy of consideration as a World Heritage Site. Although Obsidian Cliff is not individually inscribed as a World Heritage site, the whole of Yellowstone National Park is inscribed. In the United States, the National Park Service evaluates and recommends sites in the United States to UNESCO⁷⁶ for World Heritage inscription, usually years in advance. A related approach would be to seek recognition as a UNESCO World Geopark. The Oki Islands UNESCO World Geopark, in Japan, qualified for the designation partially because it was a well-known and well-used obsidian source through time. The first criterion for such designation seems tailor-made for VALL, as do the other three.⁷⁷

In order to become a UNESCO Global Geopark, the area must have geological heritage of international value. This is assessed by scientific professionals, as part of the "UNESCO Global Geopark Evaluation Team". Based on the international peer-reviewed, published research conducted on the geological sites within the area, the scientific professionals make a globally comparative assessment to determine whether the geological sites constitute international value.

VALL staff could reach out to a variety of international parks or sites for input or assistance. The National Park Service has a formal Sister Parks Program that pairs National Park units with parks

⁷⁴ Leslie B. Davis, Stephen A. Aaberg, James G. Schmitt, and Ann M. Johnson, "The Obsidian Cliff Plateau Prehistoric Lithic Source, Yellowstone National Park, Wyoming." Selections from the Division of Cultural Resources No. 6. (Denver: National Park Service, Rocky Mountain Region, 1995); Ann M. Johnson, Leslie B. Davis, and Stephen A. Aaberg, "Obsidian Cliff, National Historic Landmark nomination," (Denver: National Park Service, Rocky Mountain Region, 1995)

⁷⁵ "How to Prepare National Historic Landmark Nominations," National Park Service, 1999b, accessed February 18, 2021, <https://parkplanning.nps.gov/document.cfm?parkID=442&projectID=70917&documentID=78072>.

⁷⁶ UNESCO stands for the United Nations Educational, Scientific, and Cultural Organization.

⁷⁷ "UNESCO Global Geoparks (UGGp)," UNESCO, accessed February 8, 2021, <http://www.unesco.org/new/en/natural-sciences/environment/earth-sciences/unesco-global-geoparks/fundamental-features/>.

throughout the world for collaboration and partnerships. The program’s website states: “These partnerships increase information sharing and direct park-to-park contacts to address many of the common issues...”⁷⁸ National and international recognition of VALL’s outstanding resources could help the educational, interpretative, and preservation efforts at the park and enhance local economies through increased (responsible) visitation from all over world. VALL has many compelling stories to share.

2. Rock Shelters of the Valles Caldera Theme

Rock shelter sites (Figure 3.6) are especially valuable for answering research questions concerning the Archaic and other time periods because they may, if undisturbed, offer stratified deposits and good preservation of organic materials that seldom are preserved in open sites.



Figure 3.6. Rockshelter in the Sulphur Creek Drainage (center-right). Photo by the author.

One of the best-known excavated rock shelter sites in the region is Jemez Cave (LA 6164). Excavations there in the 1930s and 1970s,⁷⁹ yielded datable corn specimens with a calibrated intercept date of 3,210 BCE.⁸⁰ Ford concluded that Jemez Cave is “a remarkable site”⁸¹ and it is

⁷⁸ “Sister Parks Program,” National Park Service, accessed February 23, 2021, <https://www.nps.gov/subjects/internationalcooperation/sister-parks-program.htm>, (NPS 2021c).

⁷⁹ Alexander and Reiter, “Report on the Excavation”; Ford, “Re-excavation of Jemez Cave.”

⁸⁰ Ford, “The Cultural Ecology,” 72.

⁸¹ Ford, “The Cultural Ecology,” 78.

located only four miles or so from VALL. Other important early corn in the area has been found at the Nambé Falls Site on the Pajarito Plateau and at the Chama Alcove Site, near the Rio Chama.⁸²

There are twenty-six rock shelter sites with some number of artifacts recorded at VALL (Table 3.8). While the VALL rock shelters are unlikely to yield corn raised nearby due to their elevation, other macrobotanical specimens could be preserved. In addition, it would not be inconceivable for corn to be found at a VALL rock shelter if it had been carried along from a lower-elevation site. Some have more than one associated rock shelter. Nineteen of those sites have been evaluated as *eligible* by VALL staff, four are of “undetermined” eligibility, two are *not eligible*, and one has no recommendation entered. Some interesting research and excavation involving rock shelters has already been conducted, including at the La Jara Spring Site—LA 158200.⁸³

Table 3.8. Previously recorded sites with rock shelters at VALL⁸⁴

LA No	Cultural/Temporal Affiliation	Special Characteristics	VALL Eligibility
LA 82575	Middle & Late Archaic, BM III, P III/IV	Rockshelters	Eligible
LA 133416	Unknown prehistoric	Rockshelter	Eligible
LA 133417	Unknown prehistoric	Rockshelters (4)	Eligible
LA 133418	Unknown prehistoric	Rockshelter with stone wall (could be historic or prehistoric) and wood shelter logs	Eligible
LA 133419	Unknown	Rockshelter with no cultural material present	Not Eligible
LA 133420	Ancestral Puebloan	Rockshelter	Eligible
LA 133537	Unknown	Rockshelter with no cultural material present	Not Eligible
LA 135593	Unknown prehistoric	Rockshelter	Eligible
LA 158200	Anasazi/Ancestral Puebloan	Rockshelter	Eligible
LA 158202	Developmental–Pueblo Revolt	Rockshelters	Eligible
LA 158203	Unknown prehistoric	Rockshelter	Eligible
LA 158206	Developmental–Pueblo Revolt	Rockshelters	Eligible
LA 160292	Coalition–Classic	Rockshelter	Eligible
LA 160293	Unknown prehistoric	Rockshelter	Eligible
LA 160296	Archaic, Coalition–Classic	Rockshelter	Eligible
LA 160298	Unknown prehistoric	Rockshelter, carved aspen, check dam, telephone line	Eligible
LA 160299	Coalition–Classic	Rockshelter	Undetermined
LA 161922	Unknown prehistoric	Rockshelter	Eligible

⁸² Vierra, “Introduction,” 5.

⁸³ Ariane O. Pinson, “Final Report on Surface Survey along the East Fork of the Jemez River and Limited Data Recovery at the La Jara Spring Site (LA158200) in the Valle Grande, VCNP by the 2009 UNM Southwestern Archaeology Field School,” Valles Caldera National Preserve Report R2010-005, NMCRIS Number 116757, (2010); Nicholas L. Jarman and Ariane Pinson Jarman, and Ariane O. Pinson, “High Altitude Land Use in the Valles Caldera National Preserve: Recent Findings,” poster presented at the 75th Annual Meeting of the Society for American Archaeology, St. Louis, (2010.)

⁸⁴ Summarized from the VALL site log spreadsheet dated June 4, 2020; table updated by the park in 2022.

LA No	Cultural/Temporal Affiliation	Special Characteristics	VALL Eligibility
LA 165320	Middle to Late Archaic	Rockshelter F09-909, Hunting blind F09-910, Unidentified rock alignment F09-911	Undetermined
LA 162530	Developmental–Classic	Rockshelter	Undetermined
LA 178128	Late Archaic	Rockshelter	Eligible
LA 184133	Coalition–Classic	Rockshelter	Eligible
LA 188256	Late Archaic	Rockshelter F17-004	Eligible
LA 192411	Coalition–Classic	Rockshelter with hearth	Eligible
LA 192412	Unknown prehistoric	Rockshelter	Undetermined
none yet (S14-0018)	Unknown prehistoric	Rockshelter	not entered

Discussion

Five of the previously recorded Archaic components mentioned above incorporate at least one rock shelter as a feature, LA 82575, LA 160296, LA 165320, LA 178128, and LA 188256. VALL cultural resources staff recommended four of these sites as *eligible* for the National Register, and one site was recommended as “undetermined” (LA 165320). The New Mexico SHPO concurred with all of these recommendations. Eleven sites exhibit Puebloan components, primarily because they exhibit prehistoric or historic ceramics, and twelve have unknown prehistoric components. All rock shelter sites should be reevaluated for significance and eligibility, and their National Register integrity evaluated. If *eligible* and with high integrity, a large number of these sites could conceivably be nominated as part of a Multiple Property nomination package.

As mentioned, the archaeological research potential for rock shelter sites is especially high. Moreover, rockshelters in general, whether archaeologically of interest or not, have excellent potential for answering paleoenvironmental questions because of the preservation of organic materials that rock shelters afford.

3. Indigenous Agriculture on the Banco Bonito Theme

The Banco Bonito⁸⁵ is the name of a rhyolite lava flow located on the southwest rim of the Valles Caldera, with an estimated age of 35–45 thousand years ago, the youngest eruptive activity within the caldera. The name is generally applied to the southwest corner of the preserve, and to the fieldhouse phenomenon seen only in that area was the site of an agricultural expansion from the Jemez mesas to the south during the fifteenth century CE. Literally thousands of agriculturally related sites like fieldhouses have been recorded in the area. The Banco Bonito fieldhouse zone is a relatively high elevation area for fieldhouses, ranging from about 8,120 to 8,450 feet amsl. Sean Dolan remarks, “The fieldhouses at the Valles Caldera are unusual in that they are the highest-elevation fieldhouses in the region, placed at an elevation of approximately 2,500 meters (8,200 feet).⁸⁶” In actuality, fieldhouses in the Jemez Province may be found at elevations over 8,400 feet

⁸⁵ Fraser Goff and Jamie N. Gardner, “Late Cenozoic geochronology of volcanism and mineralization in the Jemez Mountains and Valles Caldera, North Central New Mexico,” in *The Geology of New Mexico – a Geologic History*, eds. G. Mack, and K. Giles, New Mexico Geological Society, Special Publication 11, (Socorro: New Mexico Geological Society, 2004), 307.

⁸⁶ Sean Dolan et al., *Home Away from Home: Ancestral Pueblo Fieldhouses in the Northern Rio Grande*, Survey No. 1130, Report No. 357, (Los Alamos, Los Alamos National Laboratory, 2019), 12.

amsl⁸⁷. The high mesas south and west of VALL and the Banco Bonito marked the maximum areal and elevational extent of the fieldhouse expression in the Jemez Province. To my knowledge, these are the highest-elevation fieldhouses—in the narrow sense that Southwestern archaeologists use the term—in the country, not just the region.

Explaining the significance of the Jemez fieldhouses requires a bit of backtracking and context-building. This section builds upon and updates some of my previous work.⁸⁸

What is a Fieldhouse?

The most common site type in the Jemez area (as a whole, not in VALL though) is what has been termed the fieldhouse. Fieldhouses are isolated, small, one- to four-room structures thought to have been associated with agricultural utilization in the area (Figure 3.7). However, such sites may have served a variety of functions, e.g., hunting shelters, sweat lodges, and “vacation” homes.⁸⁹ Perhaps at least some fieldhouses were multifunctional.

Over five thousand fieldhouses have been recorded in the Jemez area (Santa Fe National Forest and Valles Caldera National Preserve site records) and over 1,800 are recorded on the Pajarito Plateau.⁹⁰ All but about twenty-five of the Jemez fieldhouses (some of the data are contradictory) appear to date to the Classic Period, or 1325–1600 CE. On the Pajarito Plateau, as many as one-quarter of datable fieldhouses date to Developmental and Coalition periods.⁹¹ Fieldhouses on the Pajarito Plateau are seldom found at elevations above 7,800 feet.

Jemez fieldhouses⁹² are somewhat different from those in adjacent areas such as the Pajarito Plateau. The stereotypical Jemez fieldhouse can be described generally as having more and larger rooms, a larger variety and more elaborate features, more “formal” architecture in its arrangement of features and orientation, and “better,” more carefully coursed, roughly shaped tuff masonry. Many Jemez fieldhouses have extensive and diverse artifact scatters associated with the structures, including ground and chipped stone artifacts, that tend to indicate occupations of substantial length or intensity for a variety of functions at some sites.

⁸⁷ E.g., the fieldhouse sites LA 24439 at 8,460 feet and LA 149447, located at 8,450 feet on the Santa Fe National Forest, and the fieldhouse sites LA 169947 and LA 169948, both located at about 8,445 feet on VALL on VALL.

⁸⁸ Elliott, “Jemez Falls Campground.”

⁸⁹ Florence H. Ellis, “Small Structures Used by Historic Pueblo Peoples and their Immediate Predecessors,” In *Limited Activity and Occupation Sites: A Collection of Conference Papers*, ed. Albert E. Ward, pp. 59-68, Contributions to Anthropological Studies No. 1, (Albuquerque: Center for Anthropological Studies, 1978).

⁹⁰ Dolan et al., “Home away from Home,” 56.

⁹¹ Dolan et al., “Home away from Home,” 67.

⁹² For further descriptions of Jemez fieldhouses see Elliott, “Jemez Falls Campground.”



Figure 3.7. Standing masonry walls at a fieldhouse site at VALL. Photo courtesy VALL cultural resources staff.

In the Jemez area, over 90% of the recorded fieldhouse sites are located at over 7,000 feet elevation. About 80% are located on mesas or on microtopographic features occurring on the mesas. Site forms indicate that about 70% of the recorded fieldhouses contain one room, 26% consist of two rooms, and four per cent exhibit three or more rooms.⁹³ Another factor to consider is that most of these sites were not identified as having more than one room unless definite cross-walls could be discerned. Since some of the cross-walls were probably not visible in highly reduced mounds, it is highly likely that more sites had multiple rooms than those currently identified.

The fieldhouse excavations conducted in the Jemez area have shown that mounds that are roughly square probably contain two rooms. Mounds that are more rectangular tend to only have one room. Some fieldhouse sites have more than one fieldhouse in close proximity. Researchers currently have observed of at least three two-story fieldhouses. The two-story fieldhouses can be identified as such because they exhibit standing architecture above the first story, and definite evidence of a first-floor ceiling and second-story floor in the walls.

The Banco Bonito fieldhouses are not an isolated phenomenon but are instead part of an extension of the broad Jemez fieldhouse expansion in the Jemez Province of the 1400–1500s CE. Jemez fieldhouses extend on the mesatops and canyon bottoms from the Banco Bonito part of VALL southwest for over twenty kilometers. They likely are associated with one or more of the forty or so large pueblos (over fifty estimated rooms) in the area. The closest of these is a smallish pueblo known as the Hot Springs Pueblo (LA 24553), located just over a kilometer from the southwest corner of VALL. The nearest large pueblo village is Unshagi (LA 123), about 2.8 kilometers west. The nearest large pueblo village with a great kiva is Seshukwa (LA 303), about 7.8 km southwest.

⁹³ Observations are from Santa Fe National Forest site records and personal experience.

Banco Bonito Fieldhouses

VALL cultural resources records indicate that over one hundred fieldhouse structures were constructed at about ninety-eight different sites have been recorded (these sites are listed in Appendix D, Table D.1). Just about all of the Banco Bonito area of VALL has been surveyed⁹⁴, so the sample size is close to one hundred percent⁹⁵. Most are one to two-room structures, a few are estimated to contain three to four rooms. Many fieldhouse sites are associated with terracing, check dams, and grid gardens, confirming their agricultural functions. It appears that none has been excavated, though I excavated two fieldhouses just across New Mexico State Highway 4 from VALL in the late 1980s⁹⁶ that appeared quite similar to the Banco Bonito fieldhouse sites on the surface. Both of those excavated sites exhibited elaborate features and dense artifact scatters. From appearances, it would seem that most or all of the Banco Bonito sites would be *eligible* to the National Register under Criterion D if they had integrity.

Discussion

Much like the Obsidian Procurement and Tool Production theme, fieldhouses and agricultural sites appropriate for this theme could be nominated on a site-by-site basis. This would negate the advantages of a multiple-property nomination that pulls together historic context, property types, registration requirements, and other information that would be valuable to the preserve in future management decisions.

The fieldhouse property type was delineated as part of a multiple-property National Register nomination that I completed in 1989.⁹⁷

The property type description follows:

I. Name of Property Type: Fieldhouses

II. Description

The most common site type in the study area is what has been termed the fieldhouse. Fieldhouses are isolated small one to four room structures thought to have been associated with agricultural utilization in the area. Although such sites may have served a variety of functions, the term “fieldhouse,” with all its implicit assumptions, is so widely used and accepted that it will be used

⁹⁴ Jeremy Kulisheck, “Banco Bonito Hazardous Fuels Reduction Survey,” SFNF Report Number 2002-10-071A. VCNP Report R2003-015. NMCRIS 80388. Ms. on File, Valles Caldera National Preserve, Jemez Springs, NM, (2003);

Ann F. Ramenofsky, “UNM Archaeological Field School Report 2005: Lower Dome Mesa and Banco Bonito Survey,” Ms. on file at Valles Caldera National Preserve, Jemez Springs, NM. SFNF Report 2005-10-008B. VCNP Report R2006-007. NMCRIS Activity 95061 (2006);

Jeremy T. Decker, “VCNP-2008 Hazardous Fuels Reduction Survey in Banco Bonito,” Ms. on file at the Valles Caldera National Preserve, Jemez Springs. VCNP Report R2009-003. NMCRIS Activity 113473, (2010);

Jamie Civitello, “Banco Fuels 2011: Fuel Reduction and Prescribed Fire Treatments in the Western Banco Units,” VCNP Report R2011-018, NMCRIS Activity 122407, (2011);

Jacqueline L. Stark, “Banco Bonito Survey 2010,” VCNP Report R2011-007, NMCRIS Activity 120596, (2012a);

“Eastern Banco Bonito Survey 2010-2012,” VCNP Report R2012-009, NMCRIS Activity 122097, (2012b);

..Brody K. Norton, “Banco Moisture and Solar Radiation Monitor Installation Protocol,” VCNP R2014-017, (2015).

⁹⁵ Only on the preserve; the fieldhouse expression continues on the other side of the boundary fence on the Santa Fe National Forest for thousands of acres. Much of this area in the Forest has been surveyed, but not all of it.

⁹⁶ Elliott, “Jemez Falls Campground.”

⁹⁷ Elliott, “Jemez Culture Developments.”

generically herein as well. Over 5000⁹⁸ fieldhouses have been recorded in the study area. All but about twenty-five of these (some of the data are contradictory) appear to date to the Classic Period.

There is considerable variability among the fieldhouse type sites. At least two subtypes can be empirically defined. The more complex fieldhouse sites exhibit more than one room, dense and diverse artifact assemblages, and more subfloor features. The simpler fieldhouses exhibit one room only, often small in size, and are evidenced only by a low mound of rubble; few or no artifacts; and no hearths or other features. Some fieldhouses are also associated with check dams and other agricultural features.

III. Significance

Because of the great number of such sites, fieldhouses in the Jemez Culture Area obviously fulfilled a very important function in Jemez subsistence. They served a variety of possible functions, including temporary habitation, storage, hunting lodges, vacation homes, lookouts, and probably others that are not immediately obvious. It seems most likely that initially such sites were short-term residences for a single individual or family during the planting and harvesting seasons. The variability observable empirically in size, artifactual assemblages, and condition suggests that fieldhouses evolved during the period under consideration here into more than just temporary shelters.

As the most numerous type of site in the area, fieldhouses were obviously an important element in the unique Jemez style dispersed–aggregated settlement system. Such sites have the potential to yield important data for reconstructing Jemez agricultural technology, subsistence, social organization, and chronology. Previously excavated fieldhouses have exhibited intact features such as flagstone floors, hearths, ventilators, and benches. Such sites have yielded datable chronometric specimens, and preserved macrobotanical and microbotanical remains.

Locational and distributional information regarding fieldhouses and other agricultural sites is an important class of information in itself. Such data can be used to help characterize the relationships of the Jemez to their environment, how they organized themselves to take advantage of the opportunities their environment presented them, and how they buffered themselves from its challenges.

IV. Registration Requirements

- a) National Register criteria: d
- b) areas of significance: prehistoric archaeology, historic archaeology
- c) data requirements: a fieldhouse site must have the potential to yield data in one or more of the following categories in order to qualify for the National Register under criterion “d”.
 1. A site must contain undisturbed deposits sufficient to demonstrate culturally meaningful spatial relationships among artifacts, features, floral remains, and faunal remains.
 2. A site must contain structures, features, or artifactual materials that will permit inferences regarding human activities and site function.
 3. A site must contain structures, features, or artifactual materials that will permit inferences regarding settlement characteristics.
 4. A site must contain either macrobotanical, microbotanical, or faunal remains indicative of subsistence practices.

⁹⁸ This number is an update, originally it read “1300.”

5. A site must contain datable wood, charcoal, baked clay, or obsidian that will permit chronological placement.
6. A site must contain intact architectural features that permit analysis of floor space, floor features, and other spatial organizational characteristics.

This was based on 30-year-old data, and would require updating. The value of using an updated version of this is that it would emphasize the connectedness of the Banco Bonito fieldhouse sites with the other types of sites such as pueblos and much larger area in which they are commonly found.

There was also a property type defined in that same multiple-property nomination for agricultural sites and features like fields, terraces, grid gardens, irrigation ditches, and reservoirs. Several such sites, or features recorded as associated with fieldhouse sites have been noted on the Banco Bonito. A large number of such sites were recorded down the East Fork of the Jemez River in the 1970s by German geographer Dietrich Fliedner.⁹⁹ A number of the Banco Bonito fieldhouses are associated with such features. It would be useful to combine the known fieldhouse and agricultural features on the Banco Bonito into a single updated National Register multiple-property nomination. Since none have been excavated, a research project might be required to provide context and identify individual properties to nominate.

Other Sites

The three thematic themes described above encompass over 80% of recorded archaeological sites and components in VALL. Many of the remaining sites and components are historic (Table 3.9).

Table 3.9. Previously recorded historic components¹⁰⁰ by cultural affiliation at VALL

Historic Component Name	Count	Percent
Anglo–Euromerican	126	67.7%
Hispanic	7	3.8%
Historic Jemez	2	1.1%
Recent, Unknown, Other	51	27.4%
Total	186	100.0%

With few exceptions, these historic components represent archaeological remnants and features (see Table 3.4 for a breakdown of historic features by count), associated with the major historical themes described in later chapters of the study, e.g., ranching, logging, mining, military, geothermal.¹⁰¹ Many of the historic sites also have prehistoric components, or more than one historic component. Standing buildings and structures are not in the same category as artifact scatters, rockshelters, or

⁹⁹ Dietrich Fliedner, “Pre-Spanish Field Patterns in the Jemez Valley” Ms. on file, Santa Fe National Forest, (1972); “Pre-Spanish Pueblos in New Mexico,” *Annals of the Association of American Geographers* 65 (1975), 363–377.

¹⁰⁰ These are derived from keyword filtering the Excel spreadsheet site log dated June 4, 2020 for certain values in certain fields, and creating pivot tables along selected variables.

¹⁰¹ Just to be clear, a site may have one or components, or it may be coded as “unknown,” and a component may have one or more (or no) features.

fieldhouses in the National Register sense of things (*supra*). Groups of cabin remains (unroofed), mill remains, trash scatters, and linear features associated with logging have been recorded, but their context is best expressed in the chapter devoted to such activities. Many of those sites have been destroyed or affected by the recent wildfires in the area. Likewise, hundreds of carved aspens (also fire-prone) have been recorded at VALL—not necessarily as sites—but these are primarily associated with Hispanic sheep herders and other ranching activities whose context is fully presented later in this document. Recommendations for these historic archaeological sites and components are presented in the appropriate thematic sections of this report, beginning with Chapter 4.

The historic Jemez Pueblo components present opportunities to work with the tribe to understand their priorities regarding treatment and preservation of those sites. Other tribes also use locations within VALL for sacred purposes. National Register nomination might not be the tribes' preferred alternative for protection of such sites because they might be sacred traditional cultural properties. VALL is in the process of studying significant ethnographic landscape for protecting sacred and traditional use areas

Cultural Landscape Approaches

Given Anschuetz's apt description of VALL as "a multi-layered ethnographic landscape,"¹⁰² consideration should be given to a cultural landscape approach to certain cultural resources management issues. The National Park Service defines a cultural landscape as "a geographic area, including both cultural and natural resources and the wildlife or domestic animals therein, associated with a historic event, activity, or person, or exhibiting other cultural or aesthetic values."¹⁰³ Of the four types of cultural landscapes identified by the Park Service (designed, historic site, vernacular, and ethnographic), cultural resources at VALL represent at least two of them, vernacular and ethnographic. The National Park Service is in the process of preparing a cultural landscape inventory of the Ranch Headquarters area, a vernacular landscape with some designed elements. Much of the rest of VALL could be considered an ethnographic cultural landscape, defined by the national Park Service as:

A landscape containing a variety of natural and cultural resources that associated people define as heritage resources. Examples are contemporary communities such as that at the Martin Luther King, Jr. National Historical Site, New Orleans neighborhoods, the Timbisha Shoshone community at Death Valley, and massive geological structures such as Devils Tower. Small plant communities, animals, subsistence, and ceremonial grounds are included.¹⁰⁴

While this definition seems to fit much of VALL quite well, documentation of such large-scale resources as landscapes can be time-consuming and expensive, though the value of such documentation to a park for its educational and interpretive programs is very high. Nominating cultural landscapes to the National Register can be and has been done—there are two somewhat

¹⁰² Anschuetz, "A Sketch," 130.

¹⁰³ "Cultural Landscapes," National Park Service, accessed February 11, 2021, <https://www.nps.gov/subjects/culturallandscapes/understand-cl.htm>, (2021b).

¹⁰⁴ National Park Service, "Cultural Landscapes."

dated National Register Bulletins¹⁰⁵ devoted to the process—but the results are often duplicative to the actual documentation of the landscape itself through the cultural landscape inventory and report process. Part of this work could be done by adding a cultural landscapes checklist to archaeological site forms filled out on survey. It is preferable to consider the entire process as integrated when planning for this activity. Performing the cultural landscape report, then the inventory, then the National Register nomination as separate undertakings would be inefficient.

Management should consider applying cultural landscape principles to managing, protecting, and preserving cultural resources at VALL. The lithic landscape concept regarding the large lithic scatters in some sections of VALL represents a version of a cultural landscape approach. One could envision a Banco Bonito fieldhouse cultural landscape approach.

Caveats

It is also important to consider the management implications of the cultural landscape commitment, which could lead to unintended consequences. As with all of the possible management activities described above, tribal and community collaboration is important to obtaining a satisfactory result. The ancestors to people living today created many of these sites, and some contain significance to them that may not be obvious.

As an archaeologist, I tend to think that the cultural landscape paradigm and the archaeology paradigm are completely different. The fundamental purpose of archaeology is learning how people who used a landscape “made a living,” how they interacted with each other, and how cultures change through time. These are the kind of questions archaeological data can answer. We try to answer the basic questions of who, what, when, where, and how empirically from more of a positivist perspective. The fundamental purpose of a cultural landscape study is phenomenological, an impression of the static features of the landscape itself. The interpretations of the observer are paramount, but the lives of the people who created the landscape sometimes seem to be an afterthought. We consider the tiniest pollen grains, microflakes, or carbonized plant remains. The feature is the smallest unit of analysis in a cultural landscape approach, defined as, “The smallest element(s) of a landscape that contributes to the significance and that can be the subject of a treatment intervention. Examples include a woodlot, hedge, lawn, specimen plant, alley, house, meadow or open field, fence, wall, earthwork, pond or pool, bollard, orchard, or agricultural terrace.” (NPS 2021c) This is not a comprehensive viewpoint. Archaeologists consider and study all such features, but also the smallest remains of human use of an area, even a single artifact.

Archaeologists have long considered landscapes as integral to understanding regional patterns and differences in cultures. We tend to search the landscape for any clues we can find for understanding the “big picture,” not just as an end in itself. We are interested in cultural remains on the ground, but also what is below the ground. With respect to management issues, cultural landscape analysis is not a viable tool for compliance with Section 106 requirements, at least in New Mexico. Defining an

¹⁰⁵ “Guidelines for Evaluating and Documenting Rural Historic Landscapes,” National Park Service, Publications of the National Register of Historic Places, Bulletin 30, accessed February 7, 2021, <https://www.nps.gov/subjects/nationalregister/upload/NRB30-Complete.pdf> (1999c);

“Guidelines for Evaluating and Documenting Traditional Cultural Properties,” National Park Service, Publications of the National Register of Historic Places, Bulletin 38, accessed February 7, 2021, <https://www.nps.gov/subjects/nationalregister/publications.htm> (1992).

ethnographic cultural landscape associated with native Hispanics or Indigenous tribes presents many different consultation issues. Whose landscape is it, the land manager's and the analyst's, or the descendants of those who lived on it and created it who may still use it for sacred and confidential purposes? None of this is to say that the archaeologist and cultural landscape analyst cannot learn things from each other, but to point out that the priorities and emphases of the two kinds of studies are very different.

Ethnographic Resources

No amount of historic or archaeological research can identify all ethnographic resources, nor should they be expected to accomplish that. Landscapes, places, and resources with no visible indications can be of deep significance to certain native or local groups, who may not want to reveal information about how, why, or when they use such resources. VALL has not conducted an ethnographic overview and assessment, a tribal affiliation study, or a traditional use study. It would be beneficial for the preserve to consider such studies, which should be conducted by specialists in those fields, who have training, tools, and skills to engage in such work. The National Park Service Ethnography Program is a good source for expertise and advice on these kind of studies¹⁰⁶. These efforts would aid the preserve's planning, interpretation, and educational programs immensely, as well as aiding legal compliance for a variety of activities. Native voices should be heard, and their thoughts expressed by them in their own words, not filtered through some scientific paradigm. As has been mentioned above, National Register nomination may not be seen by descendent groups as a preferred preservation option for sites that are significant to them, but having the ethnographic information from the studies above could prevent wasted time and resources if an ethnographically sensitive site or sites were inadvertently selected for nomination.

Archaeological Properties Summary and Recommendations

At the beginning of Chapter 2, we described the purpose of the archaeological chapters, which was "to discuss known archaeological resources within a park, classify them by time period, historic context, or theme, and suggest or complete nominations to the National Register of Historic Places." The preceding sections have done just that, i.e., presented a brief outline of regional archaeology, a temporal/chronological breakdown of major cultural developments in the area, a discussion of the types of cultural resources already known and recorded at VALL, and suggestions and recommendations for National Register evaluations and nominations for archaeological sites. Other management recommendations are also presented. historic site recommendations are found in the following chapters.

Our basic recommendations for VALL's archaeological sites then are these:

- Prioritize and add an annual National Register evaluation and nomination element to the VALL cultural resources management program.
- Consider three thematic National Register nominations using Multiple Property Documentation Forms for archaeological resources:
 1. Obsidian Procurement and Tool Production:

¹⁰⁶ "Park Ethnography Program," National Park Service, accessed March 6, 2021, <https://www.nps.gov/ethnography/parks/approaches/index.htm>, (2021d).

- Consider non-site or lithic landscape approach for National Register purposes;
 - Consider NHL nomination for Cerro del Medio Rhyolite and other obsidian sources;
 - Consider “Sister Park” partnership with other parks;
 - Investigate World Heritage Site, or World Biopark inscription.
- 2. Rockshelters of the Valles Caldera;
- 3. Indigenous Agriculture on the Banco Bonito.
- Evaluation of sites appropriate for the three preceding multi-site nominations will require research and fieldwork. Explore internal (NPS) and external sources for partnerships and funding for such work.
- Consider nominations of individual sites with special or outstanding characteristics, like other obsidian sources, Cerro la Jara, or Old Fort (if found).
- Consider cultural landscape analysis as a way to enhance VALL’s cultural resource planning, its educational and interpretive programs, and for Section 110 compliance.
- Complete an Archaeological Overview and Assessment. This study is in progress, but should be completed as soon as possible., and will provide important research-based information and analysis to guide future archaeological studies at VALL that is complementary to the resource-based information in the current study.
- Consider Archaeological Identification and Evaluations Studies, particularly in areas relevant to the site themes identified in the present document, such as Cerro del Medio, Banco Bonito, and rockshelters.
- Complete an inventory and curation plan for collected artifacts. Some of these may be *eligible* for National Register nomination as objects, particularly if associated with sites to be nominated.
- Conduct an Ethnographic Overview and Assessment, a Tribal Affiliation Study, and a Traditional Use Study to identify ethnographic resources and issues that are important to indigenous and other local groups. Use the information in the preserve’s cultural resources management, planning, interpretation, and education programs. Consult with all associated Native American tribes regarding National Register nominations, National Historic Landmark nominations, cultural landscape studies, UNESCO inscriptions, and other cultural resource management decisions.
- Consult with the New Mexico SHPO regarding partnerships with their office for National Register Nominations.
- NPS recommends that VALL add appropriate data to the NPS CRIS-AR database. The CRIS (Cultural Resources Inventory System) is relatively newly integrated system within NPS that “replaces three legacy inventory systems, ASMIS (archaeology), CLI (cultural landscapes), and LCS (historic “classified” structures), and reinstates the ERI (ethnographic resources).”¹⁰⁷

¹⁰⁷ “Cultural Resources Inventory System,” National Park Service, accessed January 7, 2022, <https://apps.cr.nps.gov/CRIS/> (2021e).

- Enter missing GIS and tabular data from VALL projects into the NMCRIS, and upload digital copies of reports and forms. This should be done as a professional courtesy to compliance officials and researchers, and as archival backup for reports and forms. Although pandemic restrictions have created a somewhat unique situation vis-à-vis this report, the evaluation of archaeological resources done here would have been far easier and more thorough had the site data and site forms, and the survey reports been available from the NMCRIS. Working with the NMCRIS involves several steps, not just registration to get Activity and Site (LA) numbers. The New Mexico SHPO has for some time required that survey and site data be entered online, and that digital copies of survey reports and NIAF and LA forms be uploaded to the NMCRIS. The NMCRIS is a unique and world-class resource in which VALL should fully participate.

CHAPTER 4: INFRASTRUCTURE DEVELOPMENT (Norris)

Valles Caldera National Preserve contains a network of historic roads, trails, telephone lines, and pipelines, some of which date back scores or even hundreds of years. This chapter will discuss the history of each of many of these linear features, starting with those that date back several centuries and continuing on to those of more recent vintage. Those features will then be evaluated in light of their potential eligibility to the National Register of Historic Places. A variety of maps and documents was consulted in compiling the data for this chapter, including a 2009 map study completed by VALL archaeologist Jacqueline Stark.¹

Roads and Trails

Jemez Springs–Sulphur Springs Route

As noted in greater detail in Chapter 6, Native Americans have long been aware of various hot springs, located within the present-day preserve and also to its west and southwest. These included the hot springs adjacent to the San Antonio Cabin (see Chapter 5), plus Jemez Springs, Sulphur Springs, the hot springs immediately west of the preserve along San Antonio Creek, and the Abousleman Warm Springs on U.S. Forest Service land near the preserve's southwestern corner. During the early 1540s, members of the Coronado Expedition visited both Jemez Springs and Sulphur Springs, and by the end of the sixteenth century, Spanish friars and soldiers had built a small mission adjacent to the Jemez Indian pueblo of Giusewa. The Spanish, meanwhile, showed a continuing interest in Sulphur Springs, and at some point, Spanish miners dug out a 20-foot-long mine shaft at the site and extracted sulphur deposits.²

New Mexico became a U.S. territory in 1850, and less than thirty years later, the first railroad reached New Mexico from the east. With the railroad came development and speculation, and at Jemez Springs in 1880, prominent territorial businessman Miguel Otero built a hotel and new bathhouses, anticipating that the Santa Fe Railroad would build a branch to the springs from its main line at Bernalillo and thus open the area to tourism.³ But Otero's death, in May 1882, halted all new plans for further development, and Jemez Springs (see Figure 4.1) instead grew into a village that attracted some seasonal visitors from Albuquerque, Santa Fe, and adjacent areas.⁴

A major problem preventing further development at both Jemez Springs and Sulphur Springs was the lack of good access roads. As noted in a 1912 report, "The distance by government survey from Albuquerque to Jemez Springs is 62½ miles, and with the exception of about fifteen miles the road is heavy sand and rough mountain travel." For those in Albuquerque who wanted to visit Jemez Springs, a regularly-scheduled stage line required fourteen hours to cover the distance.⁵

¹ Jacqueline L. Stark, "Historic Routes of the Valles Caldera National Preserve from 1876 to 1953," Cultural Resources Report R2009-024 (NMCRIIS Activity #115974), 2009.

² Craig Martin, *Valle Grande; a History of the Baca Location No. 1, Background to Creation of the Valles Caldera National Preserve* (Los Alamos, All Seasons Publishing, 2003), 42; *Albuquerque Journal*, May 26, 1929, 44; <http://nmhistoricsites.org/coronado>; <http://nmhistoricsites.org/jemez/history>; *Santa Fe New Mexican*, May 22, 1903, 2.

³ Martin, *Valle Grande*, 41; Kurt F. Anschuetz and Thomas Merlan, *More Than a Scenic Mountain Landscape: Valles Caldera National Preserve; Land Use History* (United States Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fort Collins, Colorado, September 2007), 28.

⁴ Vernon J. Glover, *Jemez Mountains Railroads, Santa Fe National Forest, New Mexico* (Santa Fe, Historical Society of New Mexico, April 1990), 2-3.

⁵ *Albuquerque Morning Journal*, February 18, 1912, 6.



Figure 4.1. This photograph of the Soda Dam, taken in 1910, shows the Jemez Springs Road in the foreground. Photo courtesy of: New Mexico State University Library, Archives and Special Collections, Image 01030349.

The road segment between Jemez Springs and Sulphur Springs, moreover, was rough if not impossible for wagon travel. (A government map, with a survey date of 1887–1888, showed that only a portion of this route was considered a road, the remainder being either an unimproved track or a trail.) To improve the route, according to one news account, in 1889 “the county of Bernalillo made a road, for \$500, to connect [Jemez Springs] and the sulphur springs.”⁶ Even after the completion of that work, however, the route remained a challenge (see Figure 4.2).

Despite the difficulties of the Albuquerque-Sulphur Springs route, many preferred this route over any alternative route. It therefore aroused the envy of Santa Fe interests, who hoped to lure the Sulphur Springs traffic to a more northerly route. William Boone Douglass, who surveyed the Baca Location in 1911 and 1912, noted that of four possible access routes to the remote parcel, “the Bernalillo route” was one of two possible routes that were “most feasible for a wagon.”⁷

⁶ *Santa Fe New Mexican*, July 12, 1890, 2; *Albuquerque Morning Journal*, August 12, 1910, 3; USGS, Jemes NM Quadrangle 1:125,000, June 1890.

⁷ *Santa Fe New Mexican*, September 22, 1911, 4; William Boone Douglass and Hugh M. Neighbour, “Restorative Survey of the Baca Location No. 1,” in Anschuetz and Merlan, *More Than a Scenic*, 185.



Figure 4.2. The unimproved condition of the Jemez Springs Road is shown in this 1910 photograph. Photo courtesy of: New Mexico State University Library, Archives and Special Collections, Image 01030327.

With the dawn of the automobile age, improved access became ever more critical. As late as 1912, the Albuquerque–Jemez Springs route was “considered heretofore unfeasible for an automobile.” Recognizing that stage-line passengers required fourteen hours to cover the roughly 60-mile distance, one automobile company representative proudly noted that year that he had completed the uphill trip in slightly more than five hours and the downhill trip in just 4½ hours.⁸ A year later, booster organizations in both Albuquerque and Jemez Springs solicited several thousand dollars in road-improvement subscriptions. And by 1914, the new State of New Mexico had designated the road from Bernalillo to Jemez Springs as State Highway 7. Those efforts, however, did not result in substantial changes in the road’s condition.⁹ A 1916 article spoke pejoratively of “the route from Bernalillo through the sands to Jemez.” And as M.L. Fox of Albuquerque noted in 1917,

One of the reasons the Jemez country is so inaccessible is because it is located in Sandoval County ... which needs help from the rest of the state because of its lack of taxable resources. It is backward in road construction. ... the very instant you cross from Bernalillo [county] into Sandoval County [on the way to Jemez Springs] your troubles begin. Little expense would be required ... to put the road between here and Jemez Springs in splendid shape for automobiles. The sixty-five miles could be covered easily in three hours. Also a little work would make [the route to] Sulphur Springs ... a good road for automobiling.¹⁰

⁸ *Albuquerque Morning Journal*, February 18, 1912, 6.

⁹ *Albuquerque Morning Journal*, issues of February 21, 1913, 6; March 7, 1914, 5; Wallace, *Historic Highways in the NMDOT System*, 181–184; Anschuetz and Merlan, *More Than a Scenic*, p. 118.

¹⁰ *Santa Fe New Mexican*, March 13, 1916, 9; *Albuquerque Morning Journal*, July 18, 1917, 5.

By 1921, however, the road below Jemez Springs had evidently improved; a news article that year tacitly noted that “To Jemez from Albuquerque, the road is traversed daily by automobiles.” Later articles continued to note the good condition of that road segment. But “above Jemez,” the 1921 article noted, the route was “almost miserable.” “It takes an expert driver to make the ‘grade’ ... the road is not all perfection for comfortable automobile travel. Good drivers and light cars often make the trip, however, even in the wet season.”¹¹ By 1925, an ad for the resort at “the Famous Sulphur Springs” noted that the access road was “safe for careful drivers,” and by 1929, a news report cautioned that “the last few miles of the journey [to Sulphur Springs] is on a very narrow but good road in dry weather. There are places where two cars cannot pass so it is advisable to drive slowly.”¹²

The road segment just south of Sulphur Springs does not appear to have been materially improved since that time (see Figure 4.3). North from Sulphur Springs, early maps suggest two roads. By 1898, a map (see Figure 4.6) showed a route from Sulphur Springs north to the Valle San Antonio, in the same general corridor as present-day VC08.¹³ As noted on the 1910 Shelton map (see Figure 4.13), this “Road to Valle San Antonio” was most likely used primarily by ranch managers or shepherders, and use over this road has continued to the present day. Aerial photographs taken in 1935, however, show that this road was little used and barely visible. This road was used extensively during and after the early 1940s to haul logs from the ranch’s northwestern corner to Sulphur Springs and on south along State Highway 4. (See Chapter 7.) The other road, shown on the 1910 Shelton map as the “Road to Sulphur Springs,” headed east from present-day VC08 just north of Alamo Canyon and continued in an east-northeasterly direction until it intersected with present-day route VC02. This road, which first appeared on the Shelton map (1910), remained on maps as a road until the mid-1930s but by the 1940s was marked as a trail. It continued in that capacity until the early twenty-first century (see Figure 4.4).¹⁴

Historic Properties Summary and Recommendations

Four different routes have been outlined in this section.

- The segment between Albuquerque/Bernalillo and Jemez Springs is not relevant to this study, because it is entirely outside the boundaries of Valles Caldera National Preserve.
- Regarding the segment between Jemez Springs and Sulphur Springs, the great majority of this route is located outside the boundaries of Valles Caldera National Preserve. The segment located within the preserve (VC08), less than one mile long, is today a dirt road, and in all likelihood is along its historic footprint. This route was a trail during most of the 1880s, but it has been shown as a road on maps since the early 1890s. It is, therefore, potentially *eligible* to the National Register of Historic Places as a site, with statewide significance, under Criterion A (which pertains to activities or patterns of an area’s development).¹⁵

¹¹ *Santa Fe New Mexican*, August 19, 1921, 2.

¹² *Albuquerque Morning Journal*, July 1, 1925, 20; *Albuquerque Journal*, May 26, 1929, 44.

¹³ Jacqueline L. Stark, “Historic Routes of the Valles Caldera National Preserve from 1876 to 1953,” Cultural Resources Report R2009-024 (NMCRIIS Activity #115974, 2009), pp. 13–14 (Maps 3b and 3c).

¹⁴ Stark, “Historic Routes of the Valles Caldera National Preserve,” pp. 13–28 (Maps 3b through 3p); aerial photographs, dated 1935, in VALL Collection.

¹⁵ National Park Service, *How to Apply the National Register Criteria for Evaluation; National Register Bulletin* (Washington, the author, 1997), 5, 7; see https://www.nps.gov/subjects/nationalregister/upload/NRB-15_web508.pdf.

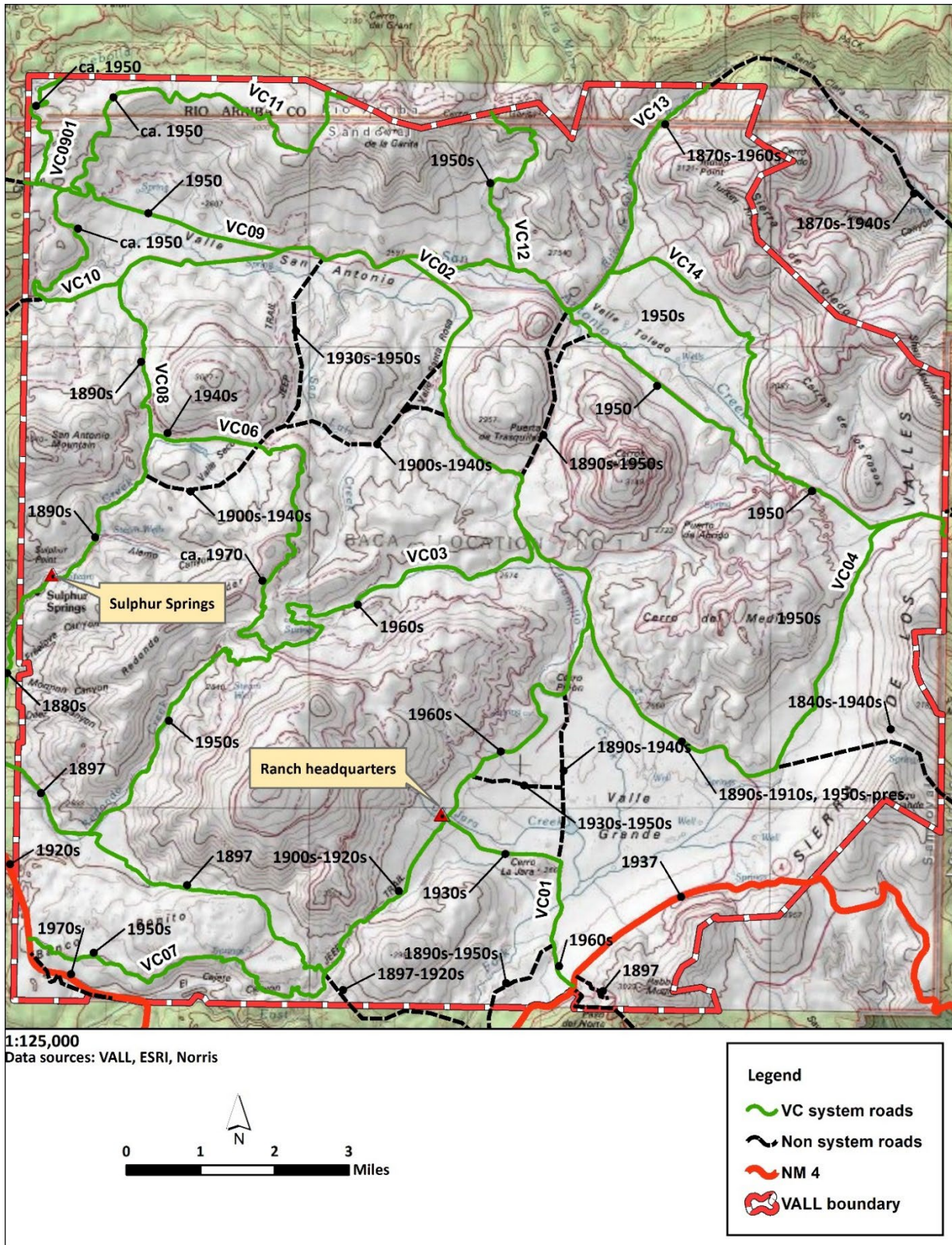


Figure 4.3. Road development within Valles Caldera National Preserve. Map shows present-day road numbers. GIS image produced by Michael L. Elliott.

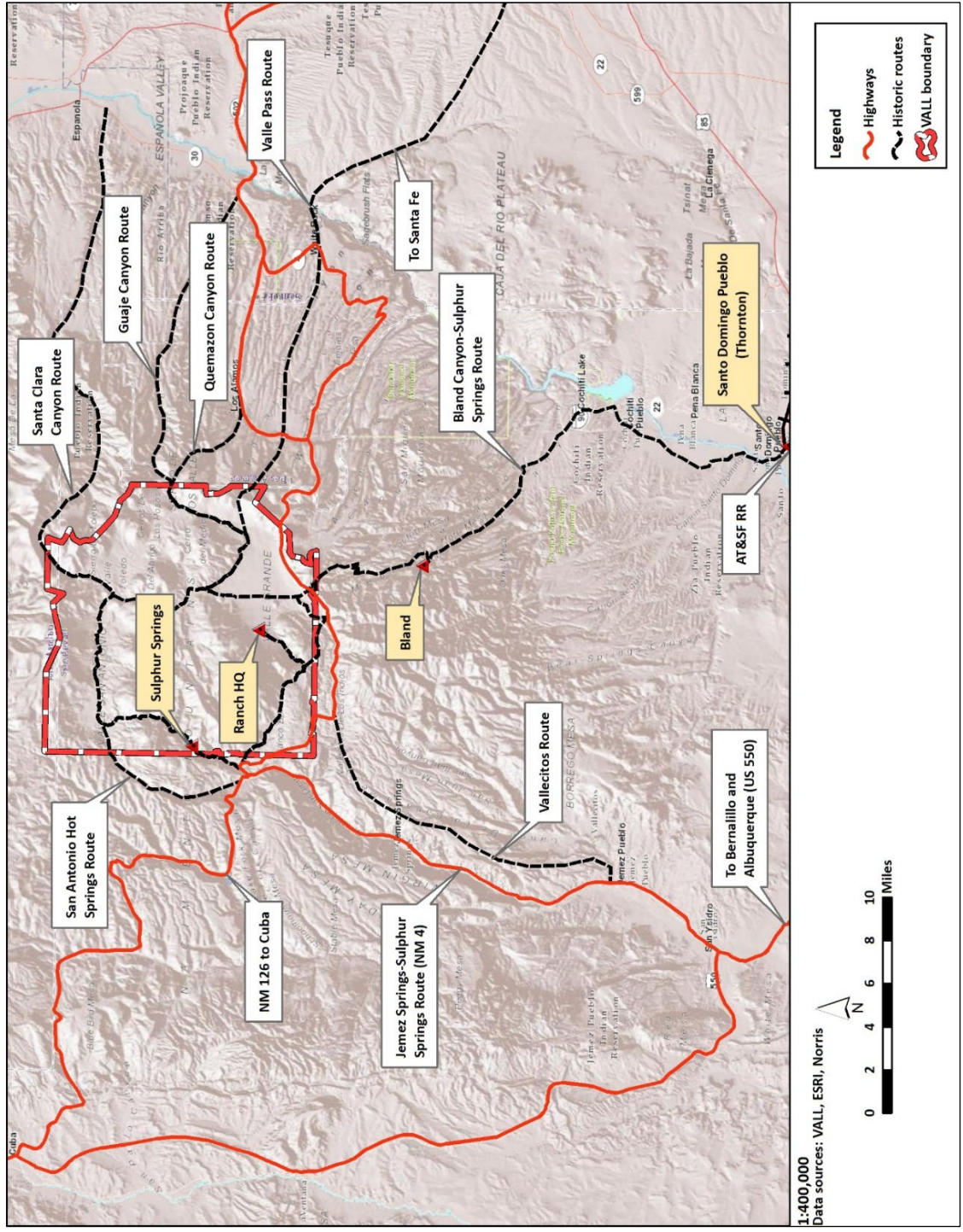


Figure 4.4. Road development: Valles Caldera National Preserve and vicinity. GIS image produced by Michael L. Elliott.

The road segment between Sulphur Springs and Valle San Antonio (VC08) has been identified on maps since the late 1890s and has long been used for purposes related to managing the Baca Ranch. The road, then as now, is a relatively narrow dirt road, and is potentially *eligible* to the National Register of Historic Places as a site, with local significance, under Criterion A. Further analysis of this route, however, is necessary to ensure that the historic route and the present route follow the same right-of-way.

- The historic road segment that leaves present-day VC08 just north of the Alamo Canyon mouth, and that continues east-northeast for several miles to present-day route VC02, does not appear to be part of any present-day road. Archaeological field investigations will be necessary to locate this route, after which it can be evaluated for its National Register eligibility. The potential eligibility of VC08, and similarly eligible preserve roads, may be diminished due to issues of integrity due to blading and possible realignments during the intervening years.

Valle Pass Route

The Valle Pass Route (see Figure 4.4) enters the Baca Location along its eastern boundary, just north of Cerro Grande. Heading from east to west, from the Pajarito Plateau this route ascends the Canon de Valle to Valle Pass, then gradually descends in a westward direction to the East Fork of the Jemez River.

This route has a long historical lineage, its use having been documented for a hundred years or more. Regarding its existence on the well-known Miera y Pacheco map of 1779, historians differ. Dorothy Hoard, in her discussion of the Valle Pass Road, notes that a trail on that map “cross[es] the mountain range and then drops into an area ringed by mountains and labeled *Valle de los Bacas*.” But Kurt Anschuetz, in his ethnographic overview of the preserve, stated that the map “shows no established routes providing access to the Valle de los Bacas.”¹⁶

Later sources verify that this route was well established by the mid-nineteenth century. In all probability, the route during this period was used, on a seasonal basis, to drive sheep between various ranches along the Rio Grande and the lush highland valleys.¹⁷ The eastern terminus of this trail was apparently Santa Fe, with a Rio Grande crossing at the mouth of Mortandad Canyon. In 1851, shortly after the U.S. government established New Mexico Territory, ethnographer Kurt Anschuetz noted that U.S. Army officials resolved to “improve the road between Santa Fe and the Valles Caldera ... to facilitate the transport of hay harvested in the Jemez Mountains.” Troops, therefore, were dispatched to this route, and within weeks, hay wagons based in Santa Fe had reached a hay camp located somewhere on the periphery of Valle Grande. This access route, as historian Craig Martin has noted, “crossed the Río Grande at what would later become Buckman, climbed Mortandad Canyon to the Pajarito Plateau, and used Cañon de Valle as passage over the crest of the Sierra de los Valles.”¹⁸

So far as is known, the army used this route just twice: during the summer of 1851, and at various times during the 1863-1864 period, in order to supply Camp Valles Grandes (the so-called Old Fort) against Navajo raiders (see Chapter 6). But by 1875, when the Wheeler Expedition visited the area,

¹⁶ Dorothy Hoard, “Valle Pass Road,” in *Documentation of Historic Routes over the Sierra de los Valles, Report to the Board of Trustees, Valles Caldera Trust* (VCNP CR R2002 018), unpublished mss., January 2002, p. 4; Anschuetz and Merlan, *More Than a Scenic*, 151.

¹⁷ Martin, *Valle Grande*, 45.

¹⁸ Anschuetz and Merlan, *More Than a Scenic*, 55; Martin, *Valle Grande*, 18.

this route was documented as the “Jemez Trail.” This route apparently ascended the Cañon de Valle as the army road had done, but it crossed the Pajarito Plateau in an east–west direction and crossed the Rio Grande near San Ildefonso, well north of the Buckman crossing. Surveyors Daniel Sawyer and William McBroom, in 1876, likewise identified a trail here, along the Baca Location’s eastern boundary (see Figure 4.5).¹⁹

After the 1870s, the Valle Pass route, in all likelihood, continued to be used as an annual transhumance route. During the late spring, sheep were driven up this trail to the rich pastures of Valle Grande and other highland valleys, only to return each fall to the lower-elevation grazing lands of the Pajarito Plateau and along the Rio Grande. In 1918, Frank Bond (see Chapter 5) bought the Baca Location, and in a simultaneous move purchased the Ramon Vigil Grant, a 31,000-acre expanse which covered much of the southern Pajarito Plateau.²⁰ As a result of that purchase, Bond’s shepherders used the Cañon de Valle to drive livestock between winter grazing grounds on the Ramon Vigil Grant and the summertime pastures on the Baca Location. This practice continued at least until the mid-1930s, when Bond sold the Ramon Vigil Grant to the U.S. government’s Soil Conservation Service, and according to one source livestock may have used the route until 1940.²¹ As a reflection of that use, area maps that were published between the 1890s and the 1940s consistently showed either an unimproved road or a trail along Cañon de Valle.²²

This route, however, does not appear to have been used much, if at all, for uses unrelated to stock driving. During the 1890s, the rise in popularity of Sulphur Springs as a health resort attracted Santa Feans (as well as other New Mexicans) westward through the Jemez Mountain high country. As shall be seen below, however, two other routes captured most tourist travel, primarily from Santa Fe and Albuquerque residents: one through Santa Clara Canyon, the other through Bland Canyon.²³ Development-minded Santa Feans were well aware that the route over Buckman bridge, if improved, would be an ideal way to tap into whatever economic potential lay in the Jemez Mountains, and beyond to the San Juan country. And to that end, several proposals were put forth to improve the “old military road” into the high country.²⁴ Highway authorities, however, ignored those proposals, and they instead focused on less topographically challenging routes that circumvented the Jemez Mountains either on the southwest (through Cuba) or on the northeast (through Abiquiú). By the late 1940s, the route along Canon de Valle had been effectively abandoned—and was no longer shown on maps—while portions of the route that crossed the Pajarito Plateau were likewise erased from maps and were fenced off within the newly-established Los Alamos Scientific Laboratory.²⁵

During the late 1970s, this historic route piqued the interest of two Los Alamos historians, Dorothy Hoard and Betty Lilienthal, and in early June 1979 the two women hiked the length of the trail between Valles Caldera and West Jemez Road, taking archival photographs along the way. More than twenty years later, in late October 2001, Hoard returned and hiked the western (caldera) portion of the trail—between the East Fork of the Jemez River and the east side of Valle Pass—

¹⁹ Hoard, “Valle Pass Road,” p. 4; Stark, “Historic Routes,” Map 3a (p. 12). Dorothy Hoard, *Historic Transportation Routes on the Pajarito Plateau* (Los Alamos National Laboratory, Environmental Stewardship Division, May 2006), 8.

²⁰ Anschuetz and Merlan, *More Than a Scenic*, 28, 42; Machen, et al., *Homesteading on the Pajarito Plateau*, 22–23.

²¹ Martin, *Valle Grande*, 59, 66. Sources differ as to when Bond sold the Ramon Vigil grant to the SCS; Machen, et al. (p. 22) says the purchase took place in 1934, while Martin (p. 66) says it was in 1937.

²² Stark, “Historic Routes,” Maps 3c through 3p (pp. 14–27).

²³ Martin, *Valle Grande*, 46; Anschuetz and Merlan, *More Than a Scenic*, 185.

²⁴ *Santa Fe New Mexican*, issues of May 18, 1906, 1; September 22, 1911, 4; and March 13, 1916, 9.

²⁵ USGS, Frijoles Quadrangle, 1:62,500, 1953.

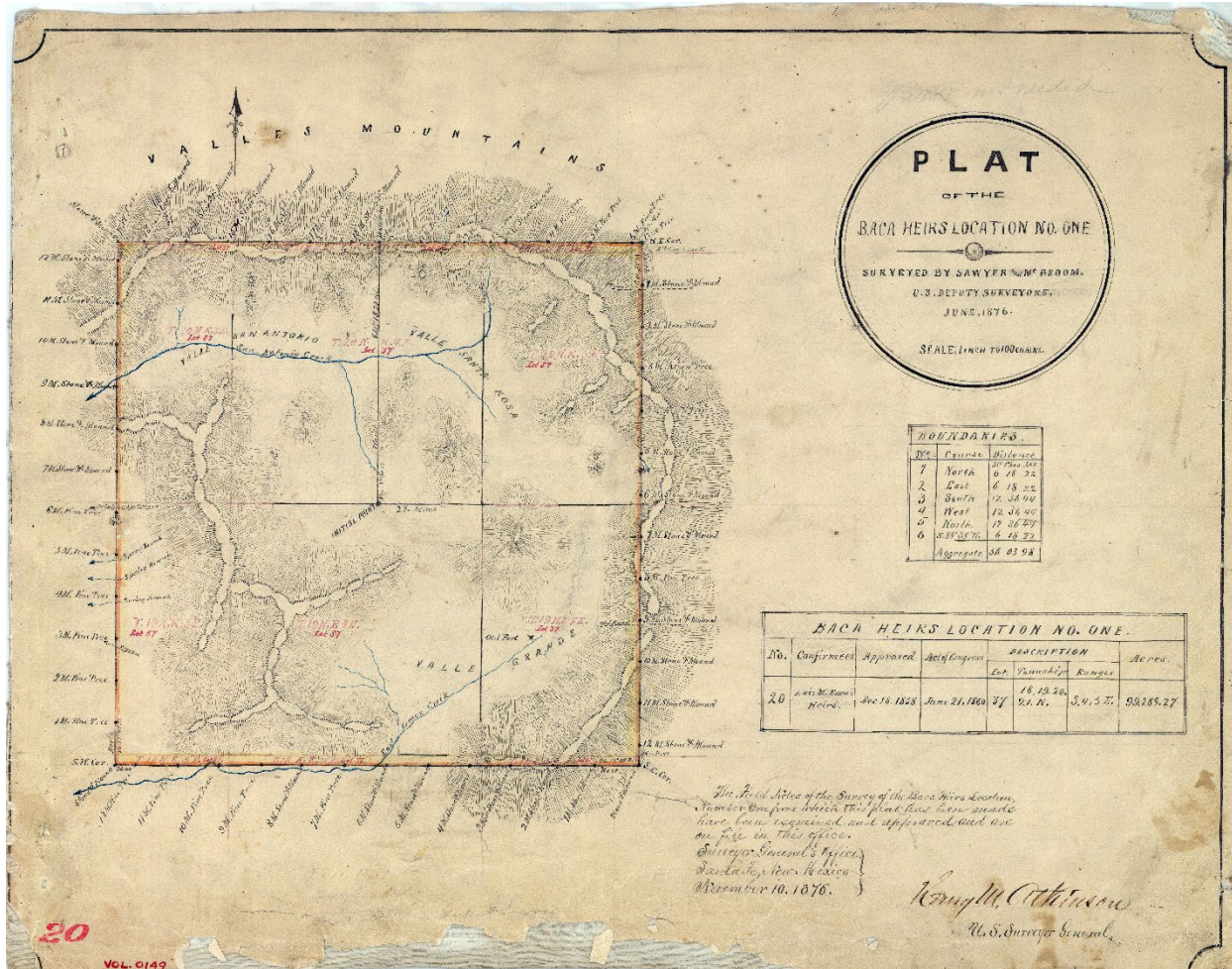


Figure 4.5. The first detailed map of Baca Location No. 1 was surveyed by Daniel Sawyer and William McBroom. The government approved a deed to the vast parcel after their 1876 reconnaissance. The map noted few roads or trails.
Downloaded on September 20, 2021, from https://glorerecords.blm.gov/ConvertedImages/Plat_149604_1.PDF.

with four other Los Alamos residents, taking notes as well as a plethora of photographs. The results of those field investigations appeared in a January 2002 report, written by Dorothy Hoard, which includes a three-page text summary of the trail along with a ten-page photographic compilation.²⁶ Hoard followed up that trip by conducting a third field trip—also accompanied by four others—in October 2002. This trip focused on the route between Valle Pass and West Jemez Road. Following those trips, she completed a Laboratory of Anthropology Site Record for the “Valle Pass, Valles Section” (for the route west of Valle Pass) on April 6, 2002, and a complementary site record for the “Valle Pass, Pajarito Section” (for the route east of the pass) on April 28, 2002.²⁷

²⁶ Dorothy Hoard, *Documentation of Historic Routes Over the Sierra de los Valles, Report to the Board of Trustees, Valles Caldera Trust* (January 2002), pp. 4–6, 9, 13–22.

²⁷ Laboratory of Anthropology (in Santa Fe, New Mexico), Site Record. Records of both October 2002 Valle Pass transects are included in site number LA Number 135432, April 6, 2002.

Historic Properties Summary and Recommendations

As noted in the discussion above, the Valle Pass Road includes considerable mileage east of Valles Caldera National Preserve. This included an extensive segment east of Valle Pass that was inventoried and photographed in 1979, then again in 2002. Inasmuch as the eastern boundary of the preserve is approximately one-half mile east of Valle Pass, most if not all of the inventory work undertaken in October 2002 (for the “Valle Pass, Pajarito Section”) is on U.S. Forest Service land and is, therefore, not relevant to this study. But what was inventoried in late October 2001 (for the “Valle Pass, Valles Section”) offers considerable information about this road. This inventory notes that a significant majority of the Valle Pass Route located within Valles Caldera National Preserve is visible. Because of its historical importance and its pristine condition, moreover, both this segment and its counterpart east of the preserve are potentially *eligible* to the National Register for Historic Places as a site, with statewide significance, under Criterion A (which pertains to activities or patterns of an area’s development).

Santa Clara Canyon Route

The Santa Clara Canyon route (see Figure 4.4), which archaeologist Jacqueline Stark called the “Española Route,” begins in the Tewa village of Santa Clara, near the Rio Grande. Heading westward, it ascends Santa Clara Canyon and passes the Puyé Cliff Dwellings on its way to its headwaters near Shiroma (Chicoma) Mountain. It then crosses a saddle and descends the valley of Rito de los Indios to its mouth in Valle Toledo (see Figure 4.6), where it met the northern terminus of the Vallecitos Route (see below).

Today, approximately 80 percent of this route is located on the Santa Clara Indian Reservation, leaving only about four miles (14 percent) of this route within Valles Caldera National Preserve and another 1.5 miles (6 percent) within Santa Fe National Forest. During most of the mid-to-late nineteenth century, however, most of the trail was on unclaimed federal land. The Santa Clara Pueblo Grant, confirmed by Congress in 1858 and patented in 1864, was a relatively small parcel covering only the eastern end of this route. In 1894, the Cañon de Santa Clara Grant added additional lands upstream from the pueblo, and the 1905 executive order establishing the Santa Clara Indian Reservation significantly enlarged the tribe’s land base. Despite those boundary expansions, as much as one-third of the route’s western end remained on the Baca Location for the remainder of the twentieth century.²⁸

The trail going through Santa Clara Canyon has been used for hundreds of years. Charles Carrillo and others, in a 1997 publication, noted that

Tewa populations in the seventeenth and eighteenth centuries used a trail that started in Santa Clara Canyon to reach Navajo and Hispanic communities to the west and north. Apparently used only during the warm season, this upland route allowed travelers to avoid flooded areas along the Rio Chama valley.²⁹

²⁸ Stark, “Historic Routes,” 4–5; Molly O’Hallaran, “Pueblo Lands Maps, New Mexico,” <https://www.behance.net/gallery/9882605/Pueblo-Lands-New-Mexico>.

²⁹ Charles M. Carrillo, Kurt F. Anschuetz, Richard D. Holmes, and Susan Perlman, “Historic Overview of the Project Area,” in John C. Acklen, ed., *OLE [Ojo Line Extension], Vol. 1, Context* (Albuquerque, Public Service Company of New Mexico, 1997), pp. 132–133, as noted in Anschuetz and Merlan, *More Than a Scenic*, 151, 179.



Figure 4.6. By 1898, the so-called Marmon map showed seven ranch access points, including routes to Santa Clara and Bland, but no development as yet along La Jara Creek.

Source: Map drawn by Walter G. Marmon, 1898, Exhibit Number 2, *Whitney v. Otero*, New Mexico District Court Case Number 3632. Copy from Jacqueline L. Stark, *Historic Routes of the Valles Caldera National Preserve from 1876-1953*, 2009, Map 3c.

Surveyors Daniel Sawyer and William McBroom, during the summer of 1876, noted a trail in Santa Clara Canyon as they followed the eastern boundary of Baca Location No. 1. Adolph Bandelier, who visited the area during the 1880s, recognized that this trail was a primary route connecting the Rio Grande with the Jemez Mountain high country. It was not, however, an easy route. He noted that “The descent to the east toward Santa Clara is through a long and rugged gorge, over a trail which beasts of burden must tread with caution.”³⁰

³⁰ Hoard, *Historic Transportation Routes on the Pajarito Plateau*, 8; A.F. Bandelier, *Final Report of Investigations Among the Indians of the Southwestern United States, Carried on Mainly in the Years from 1880 to 1885, Part II* (Cambridge, University Press, 1892), 200–201; Martin, *Valle Grande*, 47.

In July 1890, a traveler known only as “G.G.S.” was part of a group that ascended this route by wagon. He described the route realistically, but also hoped to see it improved and developed. After leaving Santa Fe, the group camped at an “old saw mill on the Santa Clara creek” west of Santa Clara. The author then noted that

Beyond this lie the only serious obstacles to travel by wagon. A rough trail on the steep declivity of the mountain presents such difficulties that nearly every one who has ridden over it without carefully scrutinizing the surroundings is ready to deny the possibility of making a wagon road through the canon without great expenditure of labor and money. The impression is erroneous. A good road can be made through even that part of the gorge, easily, and at comparatively trivial expense. A good road can be made all the way from the old saw mill to the sulphur springs, fifteen miles above the Jemez hot springs, at no greater cost than \$500. ... Santa Fe county and Rio Arriba ought to make a road to connect the saw-mill with the Sulphur springs. ...

Beyond the gorge lies not a single obstacle to easy construction of a road to connect with [Sulphur Springs]. The ascent to the divide, on this line, is very gradual and the travel lies in grassy meadows and glades, or through woods where the trees, although often very large and beautiful, do not stand very thick. On the other side, a short descent through woods and glades brings you by the valley of the LaJara, to the treeless valley of the San Antonio. ... The region made easily accessible by such an improvement is one of the most picturesque and wonderful, and may be one of the most productive of all that are comprised within the bounds of New Mexico.³¹

John W. Walton, who at that time owned the Sulphur Springs resort property, recognized the importance of improving the road, noting in 1891 “that when a wagon road is opened up Santa Clara canon [sic], the ‘sulphurs’ will prove an attractive spot for Santa Feans.”³² Six years later, the road was improved by two brothers, Frank and George Bond, who ran a general merchandise store in Española. In July 1897, a Santa Fe newspaper proudly proclaimed that

A good wagon road 44 miles long between Española and the famous Sulphurs has just been completed by G.S. Bond & Bro at Española, and teams for passengers, tourists and healthseekers, from Española to the Sulphurs can be furnished by the same firm. The road runs through a magnificent country covered with extensive spruce and pine forests. Fishing along the road is excellent.³³

This road, noted as the Española Road on an 1898 map, was consistently shown on area maps between the 1890s and the late twentieth century.³⁴ Historian Craig Martin has suggested that during the early twentieth century, Española-based shepherders may have driven their flocks along this route to access summer pastures on the Baca Location. Later, during the years in which the Bond family owned the ranch on the Baca Location, this road in all probability carried recently-shorn wool from the ranch’s various sheep-shearing camps to distant markets. Dan Scurlock, based on interviews he had made with ranch *vaquero* Clyde Smith in 1979, noted that “Approximately 500 pounds of wool were stuffed into large gunny sacks hung from a wooden support. Ten or twelve of these bags were loaded on a freight wagon drawn by four mules or horses, and hauled ... across the Baca, through Santa Clara [Reservation] and on to Bond’s store at Española.”³⁵

³¹ *Santa Fe New Mexican*, July 12, 1890, 2.

³² *Santa Fe New Mexican*, September 2, 1891, 8.

³³ *Santa Fe New Mexican*, July 8, 1897, 5.

³⁴ Stark, “Historic Routes,” Maps 3c through 3q (pp. 14–28).

³⁵ Dan Scurlock, “Euro-American History of the Study Area,” in Craig Baker and Joseph C. Winter, eds., *High Altitude Adaptations Along Redondo Creek; the Baca Geothermal Anthropological Project* (Albuquerque, UNM Office of Contract Archeology, June 9, 1981), 144.

In addition to witnessing stock drives and being a corridor for hauling wool, the Santa Clara Canyon route remained a viable route for general travel for the first several decades of the twentieth century. In 1900 James Leese and his wife, Katie, filed a homestead entry for land in upper Santa Clara Canyon, built a cabin, and began residing there. Five years later, the couple built a second cabin a mile downstream from the first and lived there for the next ten years.³⁶ In 1911 and 1912, William Douglass noted that of four routes that connected the Rio Grande with the Baca Location, the route through Española was one of two routes “most feasible for a wagon.” During that same period, Santa Fe commercial interests, recognizing a rivalry regarding the economic potential of the Jemez Mountains high country, glumly noted that

Española has a road to the Jemez country built up the Santa Clara canon [sic] by one merchant, who reaps as a fruit of his enterprise the marketing of practically all the wool from the Nacimiento country and the Valle Grande. Santa Fe is nearer to the Jemez country than either Albuquerque or Española and could have a much better road than either.

All that was needed, in response, was to improve the existing road through Buckman.³⁷

By the 1920s, the Santa Clara route had declined in importance because both Santa Fe and Española had long been economically stagnating while Albuquerque was prospering. Those who wanted to visit Sulphur Springs and other Jemez Mountain destinations, as a consequence, tended to travel by way of Jemez Springs or other southern points rather than through Española. And by the mid-1930s, the opening of new roads—by either the U.S. Forest Service or the Civilian Conservation Corps—meant that outside parties almost entirely avoided traveling the length of Santa Clara Canyon in favor of more southerly routes. Many tourists, to be sure, ascended the canyon as far as the remarkable Puyé Cliff Dwellings; a visit to these dwellings, for example, was a staple of various “Indian Detours” that were popular during the 1920s and 1930s.³⁸ Otherwise, however, the road winding through the canyon was used by the Bond Family, who may have used it as late as World War II. By the late 1950s, the western end of the road saw renewed use, due to the Los Indios Cabin which was built in 1959 for Ethel Huffman, Franklin Bond’s remarried widow, and also due to a “gyppo mill” (contract mill) that New Mexico Timber apparently operated in this vicinity (see Chapter 7). North and east of the Baca Location boundary, the road was used by Santa Clara tribal members, who have long used the canyon for agriculture, wood harvesting, and berry harvesting.³⁹

Historic Properties Summary and Recommendations

As noted above, only the westernmost four-mile segment of the Santa Clara Canyon route is located within present-day Valles Caldera National Preserve, that segment being within the valley of Rito de los Indios. This segment, however, has seen little recent use; a U.S. Forest Service map published in 2006 noted that this two-mile segment was closed to all motor vehicle use, and following the devastating 2011 Las Conchas fire, this road segment was severely damaged by post-fire erosion.

³⁶ Martin, *Valle Grande*, 50–52.

³⁷ Anschuetz and Merlan, *More Than a Scenic*, 185; *Santa Fe New Mexican*, September 22, 1911, 4.

³⁸ Diane Thomas, *The Southwestern Indian Detours* (Phoenix, Hunter Publishing, 2001), 118, 130, 146, 176, 182–183, 188.

³⁹ Cleto Tafoya, “Transcript of Testimony,” July 20 and July 22, 1953, pp. 9–14, in Pueblo of Santa Clara v. United States, Indian Claims Commission, July 20 and 22, 1953; Defendant’s Exhibit DX-CH, “US Exhibits from Jemez Trial, 1779–2000” from non-confidential trial exhibits, on file at VALL. Many of the sources gathered from the Jemez trial can be obtained by contacting the VALL Cultural Resources Program staff.

Perhaps as a result, a topographic map published in 2020 omits this route when on Santa Fe National Forest land.⁴⁰

As noted above, approximately 80 percent of the Santa Clara Canyon route is on the Santa Clara Indian Reservation, and approximately 6 percent of the route is on U.S. Forest Service land. For the purposes of this study, therefore, only the 14 percent of the route located on National Park Service land will be evaluated for its eligibility to the National Register of Historic Places. Along that four-mile segment, the existing unpaved road following Rito de los Indios, in all probability, follows the same approximate right-of-way that has been followed by wagons since the 1890s. It is, therefore, potentially *eligible* to the National Register of Historic Places as a site, with local significance, under Criterion A. Before a more definitive determination can be made, however, further map analysis and a field investigation is needed to both ensure the exact location of the historic route and the condition of the present road surface.

San Antonio Hot Springs Route

The San Antonio Hot Springs are located on U.S. Forest Service land just east of San Antonio Creek. A popular visitor destination from both Albuquerque and Santa Fe, it is most commonly reached by either hiking, or driving a rugged road, five miles north from New Mexico Highway 126. It can also be reached by descending the creek, by trail, from the western boundary of Valles Caldera National Preserve.

The present road crossing the length of Valle San Antonio, today numbered VC08, VC09, and VC10, was noted on the 1876 Wheeler map (see Figure 4.4); west of this valley, the map noted that forks of this route continued down the canyon carved by San Antonio Creek and—as the Nacimiento Trail—west across Coyote Valley and beyond Cañon Peñas Negras.⁴¹ More recently, the route’s use has been tied to the growth and success of operations at San Antonio Hot Springs, and also to the area’s ranching economy.

During the late nineteenth and early twentieth centuries, the success of San Antonio Hot Springs—and, by extension—the road heading to the springs from both the south and east was tied to the efforts of Hugh Murray, who arrived in Santa Fe during the early 1880s. Murray soon established himself as a contractor and builder in town, but by 1884 he had shown an interest in the Jemez country, and by 1889 he had staked a claim to a “mountain ranch” which included the San Antonio hot spring.⁴² He also owned property in Jemez Springs, which he leased for use as a hotel. In early 1893, he hired a contractor to build bath houses at his San Antonio Creek property, and for the next several years he moved back and forth between his hot springs parcel and Jemez Springs, where he reportedly owned “a good deal of property.”⁴³ His business interests at the San Antonio Springs property, however, included ranching as well as catering to hot springs patrons. During the summer of 1896, for example, a Santa Fe newspaper noted that Murray had

established a sheep dip below the spring, and constructed the necessary corrals, etc. for the convenience of sheep owners wishing to dip their sheep there. The water of the spring is said to be very excellent for that purpose and large numbers of sheep have been dipped there heretofore

⁴⁰ USGS, Polvadera Peak, NM Quadrangle, 1:24,000, issues of 2011, 2013, 2017, and 2020; U.S. Forest Service, “Santa Fe National Forest” (map), 1:126,720, 2004, reprinted 2006.

⁴¹ <http://www.davidrumsey.com/maps5880.html>; Stark, “Historic Routes,” Map 3a (p. 12).

⁴² *Santa Fe New Mexican*, issues of July 26, 1883, 4; July 24, 1884, 4; March 28, 1889, 8; July 12, 1890, 2; and April 20, 1915, 8.

⁴³ *Santa Fe New Mexican*, issues of May 4, 1891, 8; January 30, 1893, 8; September 19, 1893, 4; February 17, 1896, 4; and July 22, 1898, 4.

without any facilities being provided. The newly constructed arrangements are said to be the best in the territory and no doubt will attract a large patronage.⁴⁴

In 1898, Murray evidently moved to San Antonio hot springs, and for the next several years he worked there as a “ranchman” and also managed the hot springs facility, which by early 1900 boasted a sanitarium.⁴⁵ An August 1900 article stated the following about his property:

Hugh Murray ... is making a pronounced success at his San Antonio hot springs. ... He has spent much time and money building good wagon roads to his place from the Cueva, and has extended the road, by the help of others, to Española. He is very desirous of having all this road declared public road by the county commissioners.

The San Antonio creek is fed by numerous cold springs, and abounds in trout, while from beneath a rock on his place Mr. Murray has a large flowing hot spring where he has erected a commodious bath house. Nature has provided excellent camping grounds near the bath house, and Mr. Murray has erected several cabins for the accommodation of visitors. He also conducts a general store and provides fresh milk, butter, poultry, etc., for his guests. Before the next spring season opens he will add several more cabins and put up a commodious hotel, making the San Antonio springs ranch an attractive summer home for tourists and health-seekers.⁴⁶

Given these investments, area newspapers between 1900 and 1902 were sprinkled with anecdotes in the “personal mention” columns such as the following:

- V.V. Clark and wife ... have been spending some weeks at San Antonio Springs, in the Valle mountains. They return to their cozy home at Bland to-morrow.
- G.W. Hill and family have returned from a sojourn at San Antonio Springs in the Jemez Mountains.
- Addison Walker and Grant Hill returned last evening from a vacation spent at San Antonio Springs. They speak highly of the accommodations and the treatment they received during their enjoyable stay.
- Fred Lopez left this forenoon for a stay of 15 days at San Antonio Springs. He goes by way of Española.⁴⁷

To ease access to the hot springs, the Bland Transfer Company ran frequent advertisements in the *Santa Fe New Mexican*, offering a daily stage service from the railroad station at Thornton (later renamed Santo Domingo) to Bland, where passengers could make a “close connection ... for the Famous Sulphur and San Antonio Springs.” This advertised service ran from May 1901 through the following January.⁴⁸

After the summer of 1902, however, Murray apparently eased off on his efforts to promote San Antonio Springs. By 1903 he was living in Perea, near present-day Bernalillo, and two years later he sold his interest in the Spring property to his nephew, W.H. Greer, of Albuquerque.⁴⁹

Murray spent the remaining years of his life in Jemez Springs.⁵⁰ His nephew, meanwhile, hoped to further develop the San Antonio hot springs property. That desire apparently bore fruit in July 1907,

⁴⁴ *Santa Fe New Mexican*, August 3, 1896, 4.

⁴⁵ *Santa Fe New Mexican*, issues of December 17, 1898, 4; August 17, 1899, 4; March 10, 1900, 4; May 11, 1900, 4.

⁴⁶ *Santa Fe New Mexican*, August 10, 1900, 1.

⁴⁷ *Santa Fe New Mexican*, issues of June 16, 1900, 4; July 9, 1901, 4; July 16, 1901, 4; and August 20, 1902, 8.

⁴⁸ Examples are noted in *Santa Fe New Mexican* issues of June 5, 1901, 4, and January 21, 1902, 2.

⁴⁹ *Santa Fe New Mexican*, issues of March 18, 1903, 4; September 14, 1904, 11; October 23, 1905, 4.

⁵⁰ *Santa Fe New Mexican*, issues of January 5, 1909, 3; April 29, 1912, 6; and April 20, 1915, 8.

when a Santa Fe newspaper headlined a “big hotel for San Antonio Hot Springs.” The article noted that

A Chicago Company has taken over the springs and will at once begin the erection of a thirty-five-room modern hotel, small electric light plant and will make other improvements at the springs. ... The promoters ... intend to have the resort open by next season. An automobile line will be operated between this city and San Antonio to convey guests to and from the resort.⁵¹

Despite that enthusiastic announcement, however, hotel construction never began, and during the years that followed, interest in the San Antonio hot springs faded away. The road through Valle San Antonio, which had previously been used by hot-springs tourists, was instead used in conjunction with ranching operations on the Baca Location. And in support of that ranching operation, area maps consistently showed an unimproved road running the length of Valle San Antonio from 1900 through the 1970s.⁵²

Historic Properties Summary and Recommendations

The historical San Antonio hot springs route begins along present-day State Highway 126 and ascends San Antonio Creek, on U.S. Forest Service land, to San Antonio Springs. It then continues to ascend the creek bottom to where it crosses into the Baca Location, after which it trends in an easterly direction across Valle San Antonio to its junction with both the Santa Clara Canyon route (see above) and the Vallecitos route (see below). Most of the historical route between State Highway 126 and San Antonio hot springs is in the same general location as present-day Forest Service Road 376, while most of the historical route located within Valles Caldera National Preserve is encompassed by roads VC08, VC09, and VC10. Because the route within the preserve appears to be the same route that has been used since the late nineteenth century, and because it remains a dirt road, the entire route within the preserve appears to be potentially *eligible* as a site, of local significance, to the National Register of Historic Places.

Vallecitos Route

The Vallecitos Route (see Figure 4.4) is an important historic route that connected the Jemez River valley, near present-day Jemez Pueblo, to Valle Grande. It then continued north across the central portion of the Baca Location to the mouth of Rito de los Indios in Valle Toledo. The route is thus composed of two distinct sections: a southern segment between the Jemez River Valley and Vallecitos de los Indios, and a northern segment between Vallecitos de los Indios and Valle Toledo. At its northern end, the Vallecitos Route met both the San Antonio Springs route, that headed west, and the Santa Clara Canyon route, that continued generally east to Santa Clara Pueblo and Española. (See description above for both of these routes.)⁵³

The route acquired its name because, just a mile south of the Baca Location, it passed through a historic Native American settlement called Vallecitos de los Indios. According to a source that is available through the Jemez Springs Public Library, “the story is told that the priest that served the mission at Giusewa [adjacent to the Jemez Mission] also ministered to the Indians here.” By the late nineteenth century, however, most of its population had moved elsewhere, perhaps to Cochiti and

⁵¹ *Santa Fe New Mexican*, July 9, 1907, 1, 9.

⁵² Stark, “Historic Routes,” Maps 3d through 3q (pp. 15-28); USGS, Los Alamos Quadrangle, 1:100,000, 1978.

⁵³ U.S. Army Corps of Engineers, “Land Classification Map of Part of North Central New Mexico, Atlas Sheet No.69(D),” in *U.S. Geographical Surveys West of the 100th Meridian*, based on expeditions of 1873, 1874, 1875, and 1876. <https://www.davidrumsey.com/luna/servlet/workspace/handleMediaPlayer?lunaMediaId=RUMSEY~8~1~370~30077>.

Jemez pueblos; a map surveyed in 1887–1888 recorded just three buildings scattered along a creek just east of Jemez Falls.⁵⁴

By 1876, the Wheeler Expedition map (see Figure 4.7) showed a route connecting the Jemez Creek valley and Vallecitos de los Indios. From the Jemez Creek valley, the route ascended Vallecito Creek for one mile, then headed north and climbed a series of tablelands—Meseta Blanca, Mesa de los Datiles, and Cat Mesa—that lay just east of the Cañon de San Diego.⁵⁵ Various early maps suggest that until 1913, the so-called “Vallecito Road” was the primary route that connected the Jemez Creek valley to Vallecitos de los Indios.⁵⁶ Inasmuch as early twentieth century sheepherders from San Ysidro were known to have grazed their stock on Baca Location pastures, the Vallecitos Road may well have been used to drive their sheep back and forth between summer and winter pastures.⁵⁷ In addition, people from Jemez Pueblo grazed limited numbers of horses, sheep, and cattle on the Baca Location during this period, so they too would have been likely to use this road to drive their livestock back and forth.⁵⁸

By 1925, the forests in this area began to echo to the sound of loggers, and a Vallecitos de los Indios homesteader, Lew Caldwell, opened a sawmill on his property that year (see Chapter 7). Five years later, a new sawmill opened along the Vallecitos route at the Ponderosa lumber camp, just three miles southwest of Caldwell’s homestead. (The Ponderosa Camp remained through the 1930s and on into the 1940s, after which the mill was moved to the present-day site of Ponderosa.) In order to feed the new mills, several new roads were constructed in the mesas and canyons east of the Vallecitos Route, and the 1933 establishment of a Civilian Conservation Corps camp in Paliza Canyon may have resulted in even more roads in the area (see Figure 4.8).⁵⁹ Given these new roads, the sheepherders who worked for Baca Location owner Frank Bond drove flocks of sheep each fall south from the Baca Ranch along the San Juan Mesa and through the (old) village of Ponderosa to the grasslands on the plains northwest of Albuquerque.⁶⁰ Perhaps as a consequence, maps published in 1943 and 1944 showed that major portions of the older Vallecitos route’s southern segment were marked as a trail rather than as a road, and since the 1950s, several miles of this segment have disappeared from maps entirely.⁶¹

From Vallecitos de los Indios, the Vallecitos Route ascended east along an unnamed watercourse and then followed the Jemez River’s East Fork. From there, it paralleled the ascending creek as it

⁵⁴ Village of Jemez Springs, “Jemez Valley History; Vallecitos de los Indios/Sierra Los Pinos,” https://jemezvalleyhistory.org/?page_id=876; USGS, Jemez Quadrangle, 1:125,000, 1890.

⁵⁵ USGS, Jemez Quadrangle, 1:62,500, 1943; USGS, Jemez Springs Quadrangle, 1:62,500, 1944.

⁵⁶ Stark, “Historic Routes,” Maps 3a through 3e (pp. 12–16); Janie O’Rourke, *Jemez Forest Telephone Line; a Historic Communication Network Constructed by the U.S. Forest Service as a Key Strategy in their Fight Against Fire, 1906–1947* (Los Alamos, LANL), May 2006.

⁵⁷ Martin, *Valle Grande*, 45, 59.

⁵⁸ *Ibid.*, 66.

⁵⁹ Stark, “Historic Routes,” Maps 3f through 3k (pp. 17–22); USGS, Jemez Quadrangle, 1:62,500, 1943; Judith Isaacs, “Historic CCC Camp was in Paliza,” <https://jemezvalleyhistory.org/?p=536>; *Albuquerque Journal*, August 2, 1933, 8. The CCC camp remained until the fall of 1938. *Santa Fe New Mexican*, October 1, 1938, 8.

⁶⁰ Martin, *Valle Grande*, 66.

⁶¹ USGS, Jemez Quadrangle, 1:62,500, 1943; USGS, Jemez Springs Quadrangle, 1:62,500, 1944; USGS, Los Alamos Quadrangle, 1:100,000, 1978; USFS, “Santa Fe National Forest” (map), 2006.

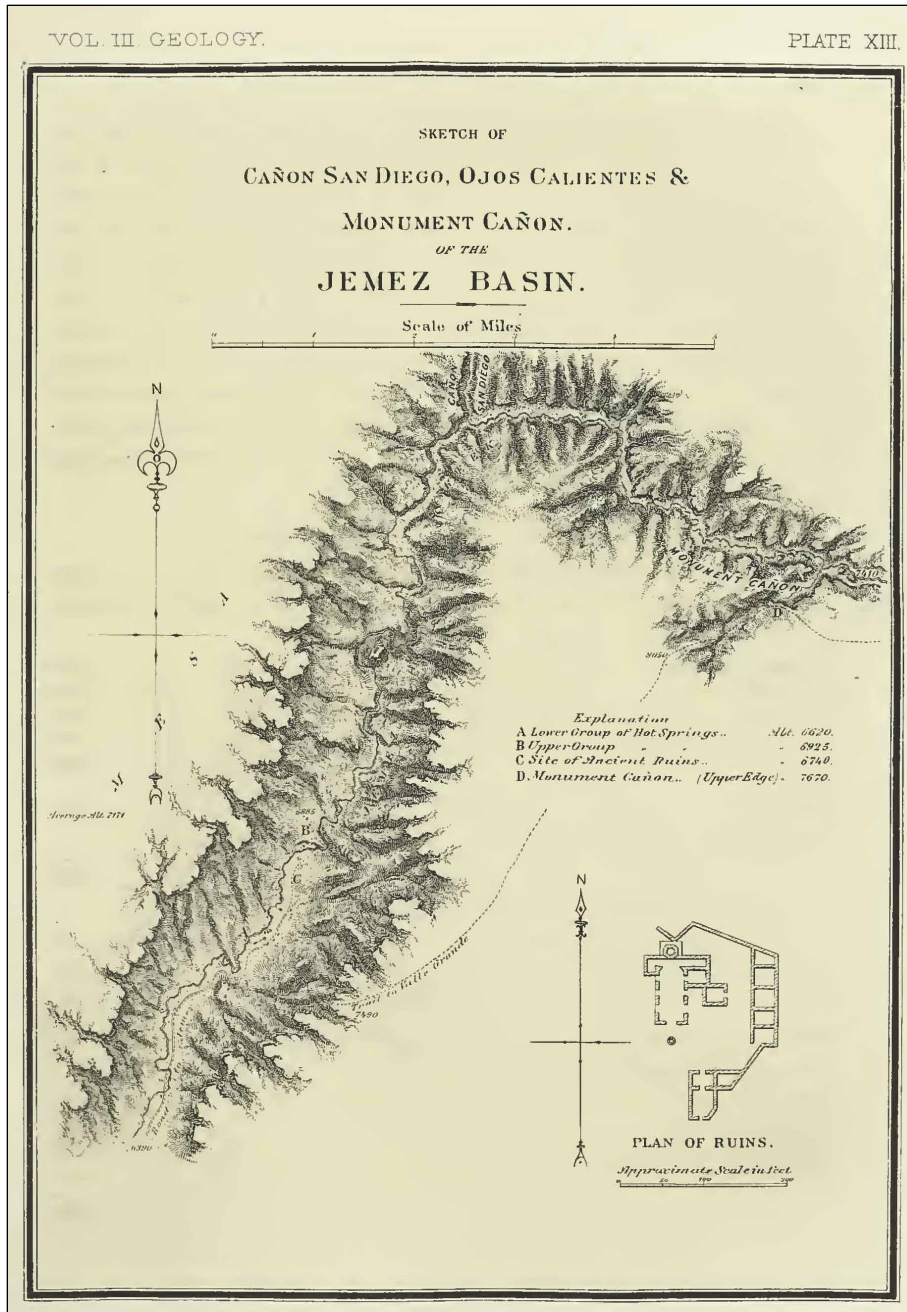


Figure 4.7. A map from Lt. George M. Wheeler's 1875 survey shows the Vallecitos Route ("Trail to Valle Grande") ascending the eastern ridge above the Jemez River Valley.

Source: George M. Wheeler, Report Upon Geographical Surveys West of the Hundredth Meridian; Volume 3, Geology, 1875, p. 617.

headed northeast, after which it entered Valle Grande. The route then headed due north across Valle Grande until it passed between Cerro Piñon and Cerro del Medio; it then followed the same general route as present day Road VC02 northward for several miles, but then departed from VC02 and wound through the Puerta de Trasquilar—east of Cerro Santa Rosa—on its way to Valle Toledo. The segment of road between Vallecitos de los Indios and Valle Toledo was noted on the Wheeler

Expedition map, published in 1876, and this north–south road remained a fixture of area maps until the 1940s. Several variations in this alignment are noted below.



Figure 4.8. In 1933, a Civilian Conservation Corps camp was established in Paliza Canyon, south of the Baca Ranch. Crews from the camp built and improved several roads in the nearby Santa Fe National Forest. Photo courtesy of: U.S. Forest Service, Kaibab National Forest.

- During the mid-nineteenth century, and perhaps for many years earlier, this route did not go north–south through the center of Valle Grande and continue on to the Puerta de Trasquilar. Instead, the route headed northeast across Valle Grande, closely following the Jemez River’s East Fork to its headwaters. It then continued north to Valle de los Posos and then angled northwest to Valle Toledo. This route, which the Navajo often used as part of their raids on various Rio Grande settlements (see Chapter 6), played a prominent role in the Hay Camp fight in July 1851 and also in U.S. Army actions during the early fall of 1863. This route segment appears to have been abandoned by the mid-1870s, given that the Navajo and other tribes were no longer conducting their raiding activities.
- Between 1898 and 1908, toward the northern end of the Baca Location, maps show that a road was established that followed the western (not eastern) side of Cerro Santa Rosa. This road continued to Valle San Antonio, where it terminated. For more than half a century, these two routes—on both the western and eastern sides of Cerro Santa Rosa—were unimproved dirt roads. But by the late 1970s, ranch management improved the western-side road, and since that time the western-side road has received significantly more traffic than its east-side counterpart.
- Between 1946 (when wool prices dropped dramatically) and 1953 (when extensive aerial photography was taken in the area), ranch managers decided to fence off several large pastures at the northern end of Valle Grande. They also constructed the so-called Black Corrals (near today’s Valle Grande Entrance Station) as part of the ranch’s transition from sheep to cattle ranching, and from stock driving to truck delivery. In order to provide access between the Black Corrals and ranch headquarters, they established a road that directly

connected these two points. During this same period, the ranch bladed a new road—which is still used today—between the ranch headquarters and the northern end of Valle Grande. The new road closely followed the vegetation boundary between Valle Grande and the adjacent upland forests.

- At the southern end of Valle Grande—between the Black Corrals and Highway 4—the Vallecitos Route’s alignment did not change between the 1870s and the mid-1950s. By 1963, however, aerial photographs indicate that the ranch management decided to move this route so that the main ranch entrance was approximately one mile farther east than before. The former road alignment, approximately 1.5 miles long south of the route’s East Fork crossing, was abandoned.⁶²

Historic Properties Summary and Recommendations

As was noted above, the Vallecitos Route—between Jemez Pueblo and Valle Toledo—is composed of two distinct sections: a southern segment between Jemez Pueblo and Vallecitos de los Indios, and a northern segment between Vallecitos de los Indios and Valle Toledo. Because none of the southern segment is on lands within Valles Caldera National Preserve, this study is not concerned with this segment regarding its eligibility to the National Register of Historic Places.

Regarding the Vallecitos Route’s northern segment, most of this segment is located within Valles Caldera National Preserve. As noted in the bullet points above, however, some portions of this route have been used for a longer period of time than others. Generally speaking, those portions of the road are most likely to be *eligible* for the National Register (with local significance) if they are proven segments of dirt road that were used for significant periods of time prior to 1970. The following portions of this segment appear to fit those criteria:

- That portion of Road VC02 between Cerro Piñon and the southern end of Cerro Santa Rosa,
- That portion of Road VC02 between the southern end of Cerro Santa Rosa and Valle San Antonio, and
- The segment of unimproved road through Puerto Trasquilar, between the southern end of Cerro Santa Rosa and Valle Toledo.

So far as is known, only a short segment of the northern segment of the Vallecitos Route between State Highway 4 and Cerro Piñon—specifically, the segment immediately south of the Valle Grande Entrance Station—is currently being used as a road, and the exact location of the remainder of that road within Valle Grande has not yet been relocated or surveyed. Map analysis and/or field investigation will be necessary in order to locate this road segment. Only after this segment has been located can an evaluation be made regarding its National Register eligibility.

Bland Canyon–Sulphur Springs Route

This two-segment route, which approaches the preserve from the southeast and continues across it to Sulphur Springs, has long been an important access route. It has several periods of significance, from the early nineteenth century to the 1930s. The southern segment of this route (see Figure 4.4), during this period, connected the American Indian communities of Santo Domingo and Cochiti—

⁶² Stark, “Historic Routes,” Maps 3a through 3q (pp. 12–28); USGS, Los Alamos Quadrangle, 1:100,000, 1978.

both in the valley of the Rio Grande—to the south end of Valle Grande by way of Bland Canyon, while the northern segment (which is not explicitly identified on Figure 4.4) continued northwest, through El Cajete and Redondo Meadow, to its intersection with the Jemez Springs–Sulphur Springs route (see above) just two miles south of Sulphur Springs.

The documented history of this route began in the waning days of Spanish New Mexico. Luis Maria Cabeza de Baca, born in Santa Fe during the 1770s, purchased a large ranch near the village of Peña Blanca from Cochiti Pueblo. By 1818, Cabeza de Baca and his family were living on the ranch, and despite pressure from the nearby Cochiti tribe to evict them, the family remained there until Luis Maria's death in the spring of 1827. Historian Craig Martin has noted that “the Cabeza de Baca family herded some of their sheep in the well-watered grasslands of the Jemez Mountains from as early as the 1820s.” This transhumance rotation, which operated over the southern segment of this route, continued into the 1830s. The practice remained for decades afterward, inasmuch as other sheepherders from the Peña Blanca area also grazed their stock, during the summertime, in the rich pastures of the Jemez Mountains.⁶³ The exact route of this stock-driving trail is not known; its condition, however, was deplorable. Perhaps because the route was used by stock, not wagons, Adolph Bandelier—who visited Valle Grande during the early 1880s—noted that while the trail through Santa Clara Canyon [*see Santa Clara Canyon Route, above*] was one “which beast of burden must tread with caution,” he warned that “toward Cochiti the parts are still more difficult.”⁶⁴

In 1881 the Bland Canyon area saw new life when prospectors made several discoveries of gold and silver deposits in the so-called Cochiti Mining District. “Colors” were found in several nearby canyons, but the most lucrative finds, located in 1899, were found in Bland Canyon and nearby Collie Canyon, and by 1894 two thriving towns—Bland and Albemarle (see Figures 4.9 and 4.10), respectively—served a floating population of several thousand miners and prospectors.⁶⁵ To provide access, a “rough road” was built from Cochiti to the mining camps and beyond them to the highland valleys. And in 1897, as noted above, Española merchants Frank and George Bond completed “a good wagon road” between Española and “the famous Sulphurs,” ideal for “passengers, tourists and healthseekers.”⁶⁶

The specific route of the Bland Canyon–Sulphur Springs route as completed in 1897 is not precisely known, but available historical maps⁶⁷ provide an approximate route. From Cochiti, this historical

⁶³ Martin, *Valle Grande*, 24–27, 45, 55.

⁶⁴ Martin, *Valle Grande*, 47.

⁶⁵ Village of Jemez Springs, “Bland,” https://jemezvalleyhistory.org/?page_id=1850; Judith Isaacs, “Mining Town of Bland,” <https://jemezvalleyhistory.org/?p=2377>; “Albemarle Mine, Cochiti Lake, New Mexico,” <https://thediggings.com/mines/3835>; <https://www.ghosttowns.com/states/nm/albemarle.html>; *Santa Fe New Mexican*, July 20, 2011; Anschuetz and Merlan, *More Than a Scenic*, 126. The town was named for a Missouri congressman, Richard P. Bland, who, according to one website, “fought against the demonetization of silver.” Village of Jemez Springs, “Bland,” https://jemezvalleyhistory.org/?page_id=1850.

⁶⁶ Martin, *Valle Grande*, 46; *Santa Fe New Mexican*, July 8, 1897, 5. Several sources (such as Martin, *Valle Grande*, 42–43 and Anschuetz and Merlan, *More Than a Scenic*, 126, 151) have noted that in June of 1902, associates of Mariano Otero solicited funds from various Santa Fe businessmen in order to improve the route between Santa Fe and Sulphur Springs. This successful fundraising campaign resulted in merchants underwriting almost two miles of new road; as a match, Otero apparently improved (rather than constructed) thirteen miles of road east and southeast of Sulphur Springs. *Santa Fe New Mexican*, issues of June 21, 1902, 4; July 2, 1902, 8; and July 30, 1902, 4. Martin is apparently incorrect in stating that Frederico Otero built the “narrow road from Sulphur Springs to the meadows along Redondo Creek over a low pass to El Cajete ... and then along South Mountain into the Valle Grande,” inasmuch as both the Bond Brothers (in Española) and Mariano Otero had worked on the road before Frederico Otero was in any position to improve it.

⁶⁷ See the USGS Santo Domingo Pueblo and Frijoles 1:62,500 quadrangles, both 1953, and maps published in Stark, “Historic Routes” in 1915 (map 3g) and 1923 (map 3i).

road ascended Bland Canyon to the old Bland townsite. Beyond Bland, the so-called Paso del Norte Road ascended Upper Horn Mesa before dropping down into Medio Día Canyon; it then followed



Figure 4.9. The Bland mining camp, which was most active between 1895 and 1905, was located along a primary access route to and from the Baca Ranch. Shown in the 2002 photo are a doctor's residence (left) and the Exchange Hotel.



Figure 4.10. Albemarle (above) was a mining camp adjacent to Bland. For a brief period, it was served by regular stagecoach service from Santo Domingo Pueblo to Sulphur Spring.

Both photos courtesy of: Nelson Welch-Tom Ball Collection, Sandoval County Historical Society.

Cañon del Norte to its headwaters before crossing over Paso del Norte and dropping down into Valle Grande. The route then proceeded west along the Baca Location's southern boundary until it crossed the East Fork of the Jemez River. It then continued to the west, skirting along the southern slopes of South Mountain until it reached El Cajete. West and northwest of this point, it followed along the same general path as present-day road VC02 to Redondo Meadows and on to its intersection with the Jemez Springs–Sulphur Springs route.

To serve both miners and health-resort patrons, the Sulphur Springs Stage Route in 1898 ran a thrice-weekly four-horse stage that connected the Thornton railroad stop (near the village of Santo Domingo) on the Santa Fe Railroad to Bland and continued on to Sulphur Springs. The entire one-way trip took ten hours. Two years later, the same company offered to take stage passengers from Santa Fe via Bland to Sulphur Springs on a trip scheduled to take 12½ hours. But in 1901, stage service had reverted to the Thornton–Bland route.⁶⁸ Soon afterward, the decline in output from the Bland-area mines forced a cessation of stage-line service, and by 1905, both Bland and Albemarle had collapsed into ghost towns.⁶⁹

Between 1905 and the 1930s, the Bland Canyon–Sulphur Springs Route witnessed less use than it had previously. Some traffic continued to drive the road between Cochiti and Bland. But on post-1915 maps, the Cañon del Norte route between Bland and Valle Grande was reduced to being marked as either a rough track or a trail, and new routes paralleling this route to the east began taking traffic between these two points. During this same post-1915 period, the former route segment between Valle Grande and El Cajete disappeared altogether. Maps show, however, that the route's northernmost segment—between El Cajete and its intersection with the Jemez Springs–Sulphur Springs Road—was marked as an unimproved road throughout this period. The poor condition of the road between Cochiti and Valle Grande is reflected in the notes that William Douglass wrote after his 1911–1912 boundary survey; the route through the village of Santo Domingo, he stated, was one of four access routes to the Baca Location, but it was not among the routes thought to be feasible for wagon travel.⁷⁰

During the early 1930s, the U.S. Forest Service inaugurated a program to improve the roads on the national forests in the Baca Location vicinity. (As a May 1933 newspaper article noted, “The whole of the Jemez country Santa Fe National Forest, including the Valle Grande country, is to be made a playground for motorists in Central New Mexico.”) Several new or improved roads were proposed, of which the first was “a new road being constructed from Valle Grande to Bland and Pena Blanca. Work on [this] road was started last fall [1932] by the forestry department.” It was originally hoped that the road would be completed by the spring of 1933. Project delays ensued, however, and it was not completed until late 1934 or 1935.⁷¹ In order to publicize the newly-completed road, U.S. Forest Service staff (as noted in Chapter 6) led well-publicized motorcades over the route during the summers of 1935 and 1936. In addition, Bond Ranch employees drove their breed-stock cattle down the Bland Canyon route each fall as they headed south to their winter range.⁷²

This road, however, was soon eclipsed in popularity by a new road—State Highway 4—that connected the Pajarito Plateau west to Jemez Springs. That road was completed in July 1937 (see below), and ever since that time, most Jemez Mountains traffic has followed the state-maintained

⁶⁸ *Santa Fe New Mexican*, issues of July 27, 1898, 4, June 8, 1900, 4; and May 24, 1901, 4.

⁶⁹ Village of Jemez Springs, “Bland,” https://jemezvalleyhistory.org/?page_id=1850

⁷⁰ Stark, “Historic Routes,” Maps 3d through 3p (pp. 15–27); Anschuetz and Merlan, *More than a Scenic*, 185.

⁷¹ *Albuquerque Journal*, issues of March 23, 1933, 8; May 24, 1933, 4; August 2, 1933, 8; and March 13, 1934, 4; Stark, “Historic Routes,” Map 3L (1936), p. 23.

⁷² *Albuquerque Journal*, issues of July 30, 1935, 3, and July 10, 1936, 2; Martin, *Valle Grande*, 66.

highway rather than the Bland Canyon Forest Service road. The road through Bland Canyon and Cañon del Norte remained in good condition until the 1970s, but in later years the northern part of this road was abandoned, and recent maps do not show this route in either Media Día Canyon or Cañon del Norte.⁷³

Historic Properties Summary and Recommendations

Today, only portions of the Bland Canyon-Sulphur Springs route can be easily identified. An overview of the various segments that comprise this route follow.

- Between Cochiti and the former Bland townsite, the historical route is now an unimproved road. This entire segment, however, is outside of the boundaries of Valles Caldera National Preserve, so its eligibility for the National Register of Historic Places is not a focus of this study.
- Between the former Bland townsite and the southern end of Valle Grande, most of this route has been abandoned. These abandoned segments are located on Upper Horn Mesa, in Medio Día Canyon, and in Cañon del Norte. The northern end of this segment—specifically, a short segment located on either side of Paso del Norte—continues to serve as a road. A minor portion of this segment, at its northern end, is on National Park Service land, and depending on further map analysis and field verification, it may be *eligible* to the National Register as a site of local significance. The remainder of this segment is on either U.S. Forest Service or private lands, and is not a focus of this study.
- Between the southern end of Valle Grande and El Cajete, the historical route was abandoned many years ago, and both map analysis and a field investigation may be necessary to locate this route more specifically. Some (possibly most) of this historical route segment appears to be located within Valles Caldera National Preserve. Small portions of this route segment, however, are probably located on U.S. Forest Service land.
- Between El Cajete and the route’s western terminus just south of Sulphur Springs, almost all of this historical route segment is on NPS land; and the entirety of the route segment on NPS land is still being used as a dirt road. Depending on further map analysis and field verification, the entire NPS-owned segment may be *eligible* to the National Register as a site of local significance.

Guaje Canyon and Quemazon Canyon Routes

From the Valle de los Posos, two routes ascend the Sierra de los Valles and then drop down to the Pajarito Plateau (see Figure 4.4). The first route, heading northeast, crosses a saddle and descends the length of Guaje Canyon, while a more southerly route heads due east and meets the Quemazon Trail, which descends a ridge just east and north of Quemazon Canyon.

The Guaje Canyon Trail has existed for hundreds of years. J.P. Harrington, in his *Ethnogeography of the Tewa Indians*, noted that this trail was “a trail much used by Tewa people when going [from San Ildefonso Pueblo] to Jemez Pueblo leads up the Guaje Canyon, over this mountain and across the Valle Grande to Jemez.” Early maps of this area—published in 1876 and 1892—show a trail going

⁷³ *Albuquerque Journal*, July 9, 1937, 5; Stark, “Historic Routes,” Map 3p (1946), p. 27; USGS, Frijoles Quadrangle, 1:62,500, 1953; USGS, Los Alamos Quadrangle, 1:100,000, 1978; USGS, Bland Quadrangle, 1:24,000, 2020.

in a generally east–west direction between Valle de los Posos and the Pueblo of San Ildefonso, but the inexact quality of these maps’ topography makes it difficult to determine the trail’s specific route. By 1898, area maps no longer showed a trail, a situation that continued for more than a decade.⁷⁴

In 1912, however, land records show that George White and his wife Lottie filed for a 157-acre parcel, in the Valle de los Posos, under the provisions of the Homestead Act. (This land, at the time, was thought to have been just outside of the Baca Location’s eastern boundary.) The Whites abandoned their claim less than a year later, but in June 1915, James and Katie Leese and their three children staked a claim to the Whites’ former homestead, and they lived at the homestead during the summers of 1916 and 1917.

Throughout the 1912–1917 period, the White and Leese families needed to access the outside world from time to time; the Leese family, in particular, also owned a home in Española. In order to travel between their summer and winter homes, therefore, the family took one of two trails across U.S. Forest Service land between their homestead and the Rio Grande Valley. First was the Guaje Canyon trail, which began as a steep trail leading northeast out of Valle de los Posos to the Sierra de los Valles drainage divide, then continued east all the way to the Rio Grande adjacent to San Ildefonso Pueblo. An alternative was the Quemazon Canyon Trail, which was reached by heading due east from Valle de los Posos to the Sierra de los Valles drainage divide. From there, the trail followed the north and east sides of Quemazon Canyon as it dropped down to the vicinity of the Harold H. Brook homestead, which in 1917 would become the founding parcel of the Los Alamos Ranch School, in the center of present-day Los Alamos.⁷⁵

Throughout this period, the Leese family expressed an interest in patenting their parcel. But legal complications intervened. Ever since 1912, their homestead entry had been one element of a much larger lawsuit that pertained to the exact geography of the Baca Location’s boundaries. In November 1918, an appeals court judge ruled that the Leese’s homestead parcel was located within the Baca Location, which at that time was owned by the Redondo Development Company. Leese, now in a legal limbo, continued the claim to his homestead parcel. But in July 1920, he opted to sell his parcel, via a quitclaim deed, back to the Redondo Development Company, and after that date, neither the White family nor the Leese family had any legal claim to land in Valle de los Posos.⁷⁶

After 1920, area maps consistently showed the Guaje Canyon route and the Quemazon Canyon route—both as trails, not as roads. (There is no evidence that wagons ever used either route.) Other documentary sources provide little supporting rationale regarding the purpose each trail served. Both trails may have been used by U.S. Forest Service personnel as part of periodic patrols, trips to fire lookouts or as part of telephone-line maintenance. The Quemazon Canyon Trail, prior to the 1950s, may have been used by Los Alamos Ranch School students as a roundabout way to reach Camp May, a recreation cabin located at the head of Los Alamos Canyon. And beginning in 1950, a gas pipeline was built along the approximate route of the Quemazon Canyon Trail, which suggests that gas-company personnel have used the trail in more recent years to monitor and maintain the gas pipeline. Both the Guaje Canyon trail and the Quemazon Canyon Trail remained on maps until the 1970s or more recently. Several of these maps, however, showed that the trails inexplicably

⁷⁴ Stark, “Historic Routes,” Maps 3a through 3d (pp. 12–15); Dorothy Hoard, *Historic Transportation Routes on the Pajarito Plateau* (Los Alamos National Laboratory, Environmental Stewardship Division, May 2006), 11.

⁷⁵ Martin, *Valle Grande*, 52; Stark, “Historic Routes,” Maps 3e to 3h (pp. 16–19); Machen, McGehee, and Hoard, *Homesteading on the Pajarito Plateau*, 45–49, 51, 56–59

⁷⁶ Martin, *Valle Grande*, 50–53.

terminated six or eight miles east of Valle de los Posos. This omission suggests that one or both of these trails may have been used sparingly during the years after World War II.⁷⁷

Historic Properties Summary and Recommendations

The western terminus of both the Guaje Canyon Trail and the Quemazon Canyon Trail are located in Valles Caldera National Preserve, but only a mile or less of each trail is located on National Park Service land. The vast majority of both trails are located east of the preserve, primarily on land owned by the U.S. Forest Service and the San Ildefonso Indian Reservation.

For the purposes of this study, those portions of the two trails that are located on non-NPS land are not under consideration for eligibility to the National Register of Historic Places. Of the relatively short sections of these trails that are located in Valles Caldera National Preserve, both have been the subject of a field investigation.

The Guaje Canyon trail, which Los Alamos historian Dorothy Hoard named as the San Ildefonso/Jemez Trail, was first investigated in October 1978. Then, in late November 2001, Hoard teamed with three other Los Alamos residents to conduct a detailed reconnaissance of this route from Valle de los Posos to the eastern Valles Caldera boundary (marked by a double fence line) and beyond to the drainage divide. Extensive notes and photographs were taken. The group was unable to find any evidence of the trail in the meadow near the trail's western terminus, but along the adjacent slopes the team found that "the tread of the trail is not apparent, but the route is well-marked by blazes its entire length."⁷⁸ Inasmuch as the team was able to locate the greater part of this route within Valles Caldera National Preserve, this route appears to be *eligible* as a site, of local significance, to the National Register of Historic Places.

Also in the fall of 2001—both in late October and late November—the team searched for evidence of the Quemazon Canyon Trail, but without success. A search was made both at its western terminus (in the Valle de los Posos), at the double fence line that separates Valles Caldera from U.S. Forest Service land, and along the Sierra de los Valles drainage divide. The team noted that "some old aspen writing and cut branches were found, but a route could not be traced." Given the fact that a gas pipeline had been built along this route in 1950, the team concluded that "It may be that the construction of the pipeline service road has obliterated any sign of the old route."⁷⁹ The lack of known evidence pertaining to this route suggests that the route may be *not eligible* to the National Register of Historic Places.

New Mexico Highway 4

New Mexico Highway 4, completed during the 1930s, gave the automobile traveler the first opportunity to motor along an improved road across the Baca Location. Highway 4 crossed in a generally east–west direction across the Baca Location's southern margins.

An east–west route through the Jemez Mountains had been established by the early nineteenth century, and may have existed during much earlier periods. José Antonio Vizcarra, a New Mexico governor during the early 1820s, carried out a military expedition against the Navajo during the summer of 1823. In late August of that year, he and his troops headed back toward Santa Fe. Several

⁷⁷ Stark, "Historic Routes," Maps 3h through 3q (pp. 19–28); USGS, Los Alamos Quadrangle, 1:100,000, 1978; Martin, *Valle Grande*, 66.

⁷⁸ Dorothy Hoard, *Documentation of Historic Routes Over the Sierra de los Valles, Report to the Board of Trustees, Valles Caldera Trust* (January 2002), pp. 6–7, 23–32. Hoard recorded the route as site LA 135433.

⁷⁹ *Ibid.*, p. 7.

miles east of present-day Cuba, his diary noted that he “spent the night where the roads to Jemez and El Valle [Valle Grande] separate.” (This intersection may have been near present-day La Cueva.) The party then headed east. Two days later, he and his men “traveled four leagues, stopping on the ascent from ‘El Valle de las Vacas,’ where I rested.” Perhaps taking the trail over Valle Pass, he then traveled another three leagues and halted at “La Madera” (the timbered country on the southeast side of the Jemez Mountains), and he eventually descended to the Rio Grande in White Rock Canyon, just south of present-day Buckman. In 1835, Captain Blas de Hinojos, a military commander based in Santa Fe, may also have taken this route—the exact location of which is unknown—when he led a punitive expedition to the Navajo country.⁸⁰

During the early twentieth century, this route attracted people heading from the Cuba area to the Bland mining camp. And with the dawn of the automobile age, the Santa Fe Chamber of Commerce touted the idea that the “best highway from Santa Fe to the San Juan country” passed over the Buckman bridge (see the Valle Pass Route, above) and through the Jemez Mountains high country. A 1916 news article noted that

It is known to old timers that by way of Buckman, the Valle Grande and Cuba, lies the most feasible route for a highway to connect central New Mexico with the fertile San Juan country. ... the old military road [over Valle Pass] can be rehabilitated and made a highway that would traverse the most interesting region of the southwest.⁸¹

The state’s highway authorities, however, made no response to the Chamber of Commerce’s proposal. In fact, there is no record, throughout this period, that wagons traveled between the Cuba area and the Jemez Mountains high country, and as late as 1930, the state highway system in this area got no farther east than Cuba nor farther north (from San Ysidro) than Jemez Springs. The Cuba area, to be sure, had several roads that extended east toward nearby Jemez Mountain communities, but none that extended all the way to the Jemez Springs–Sulphur Springs road.⁸²

On the Pajarito Plateau east of the Valle Grande, however, incremental road growth was taking place during the early twentieth century (see Figure 4.11). By 1912, a road climbing the hill west of Buckman had been completed up Pajarito Canyon to the steep base of the Jemez Mountains, and by 1915 another road a few miles south, along Water Canyon, reached west to the same general area as the Pajarito Canyon road terminus. A spur from the Water Canyon road, traveled by Bandelier National Monument visitors, angled south to the northern rim of Frijoles Canyon. Visitors during this period who wanted to visit the various ruins within the canyon needed to negotiate a trail down from the rim.)⁸³

The first road to ascend from the west end of the Pajarito Plateau into the Jemez Mountains was necessitated by the Santa Fe Railroad’s need for railroad ties, largely brought on by its announced program to double-track its rail lines through New Mexico. Several logging companies, in response to this new market, established mills on the Pajarito Plateau. But as noted in Chapter 7, lumberman

⁸⁰ David M. Brugge, “Vizcarra’s Navajo Campaign of 1823,” *Arizona and the West* 6 (Autumn, 1964), 241; McNitt, *Navajo Wars*, 65, 73; Anschuetz and Merlan, *More Than a Scenic*, 209.

⁸¹ *Alamogordo News*, August 3, 1901, 6; *Santa Fe New Mexican*, March 13, 1916, 9.

⁸² Laurel T. Wallace, *Historic Highways in the NMDOT System*, Cultural Resource Technical Series 2004-1 (Santa Fe, New Mexico Department of Transportation, October 2004), 181–185; Janie O’Rourke, *Jemez Forest Telephone Line; a Historic Communication Network Constructed by the U.S. Forest Service as a Key Strategy in their Fight Against Fire, 1906–1947* (Los Alamos, LANL, May 2006), 5.

⁸³ Machen, McGehee, and Hoard, *Homesteading on the Pajarito Plateau*, 23; Hoard, *Historic Transportation Routes on the Pajarito Plateau*, 15–17, 23, 78–79; *Santa Fe New Mexican*, May 15, 1913, 2.

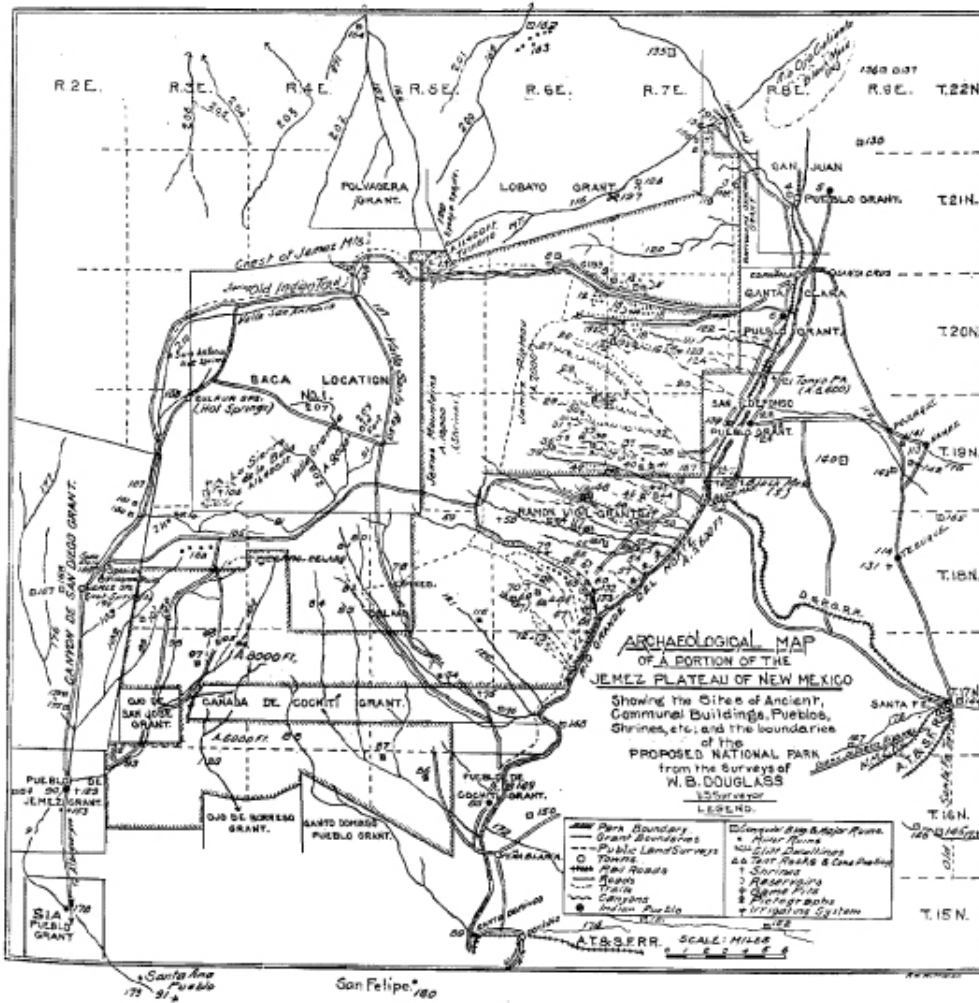


Figure 4.11. Surveyor William B. Douglass, in 1917, compiled this map of the Baca Location and vicinity. It shows various roads accessing the ranch, nearby Indian reservations, and the boundaries of Edgar Hewett’s proposed Pajarito National Park (see Chapter 9).
 Courtesy: Congress of Americanists.

Henry Buckman had logged off the Ramon Vigil Grant during the 1898–1902 period. Timber companies, therefore, had to go elsewhere to find new logging areas. By 1912, lumberman T.J. Sawyer had constructed a road from the western end of Pajarito and Water canyon roads up into the Jemez Mountains. Dorothy Hoard has noted that this road “climbed the scarp and crossed over to Apache Spring. This road [then] crossed upper Frijoles [Creek] below the present highway and proceeded to the present Dome Road to reach Alamo Canyon and Sawyer Mesa.” This road, which passed across the southeast corner of the Baca Location, is consistently shown on area maps dated 1915 or later.⁸⁴

New Mexico, as did states across the nation, witnessed a strong upsurge in roadbuilding during the 1920s. Relatively little of that roadbuilding took place in or near the remote Jemez Mountains. In 1928, however, officials at the New Mexico Highway Department reconfigured the existing system

⁸⁴ Hoard, *Historic Transportation Routes*, 26–27; Machen, McGehee, and Hoard, *Homesteading on the Pajarito Plateau*, 23; Stark, “Historic Routes,” Maps 3g to 3L (pp. 18–23).

of highway numbering, and—anticipating future roadbuilding projects—labeled as New Mexico Highway 4 two different existing road segments: 1) from route from San Ysidro north to Jemez Springs, and 2) on the Pajarito Plateau, the Water Canyon Road east to San Ildefonso Pueblo and continuing on to Pojoaque.⁸⁵

Those anticipated projects, by good fortune, were not long in coming. In April 1930, Congress passed a law authorizing a remarkable \$300 million for highway construction over the next three years, and in July 1932 it passed into law the Emergency Relief and Construction Act, which ensured even more federal dollars for road work.⁸⁶ Evidently, some of those funds were directed to be spent on New Mexico's U.S. Forest Service roads, because during the spring of 1933, the *Albuquerque Journal* announced that

The Jemez country will get new forestry roads that it has had on its program for two years or more. The work is to be done by the forest workers. The roads will be of benefit to Albuquerque motorists, opening new sections of the ... Jemez mountains. One road that will be built is from [the west end of the Pajarito Plateau], cutting off across the Valle Grande and connecting with Highway 44 [present-day U.S. Highway 550] at a point about 13 miles south of Cuba. This will give Albuquerque motorists a new circle drive either from Albuquerque up nearly to Cuba and across the Jemez mountains and back by way of Santa Fe or vice versa. It will make a most interesting drive through an interesting country that has plenty of mountain scenery. This road will give a connection with the present forest road to the Vallecitos [de los Indios via the Vallecitos Road], and a new road being constructed from Valle Grande to Bland and Pena Blanca [the Bland Canyon Road]. Work on the latter road was started last fall by the forestry department... With the present forest roads and those to be built by the civilian forest crews, the whole of the Jemez country ..., including the Valle Grande country, is to be made a playground for motorists in Central New Mexico.⁸⁷

Plans for the western end of the proposed highway soon changed; these changes pertained to both the route and the workforce. The Civilian Conservation Corps (CCC), a New Deal economic recovery agency, established a camp in the early summer of 1933 in Paliza Canyon, northeast of Jemez Pueblo, intending to build roads, range fences, erosion control structures, and other improvements. A news article published that August noted that “the C.C.C. is ... broadening and improving a connecting road from Cuba to the Jemez road along the Rio de Las Vacas.” It was also “engaged in building ... another road from Los [Alamos] that will connect with a proposed road from Bland to Valle Grande, an ancient crater and one of the most interesting sights in the state.”⁸⁸ Another CCC camp, established in Bandelier National Monument, was responsible for building a long-awaited road—constructed during 1933 and 1934—from the Frijoles Canyon's north rim down into the canyon bottom.⁸⁹

By 1935, the road segment from the Jemez Springs–Sulphur Springs road west to Cuba [present-day New Mexico Highway 126] had been completed, allowing motorists to drive a loop road from San Ysidro northwest to Cuba, east along the new road to the Jemez Springs–Sulphur Springs road

⁸⁵ Hoard, *Historic Transportation Routes*, 27.

⁸⁶ Wallace, *Historic Highways in the NMDOT System*, 8–9, 67; <https://www.fhwa.dot.gov/infrastructure/hwyhist05c.cfm>; <https://www.loc.gov/law/help/statutes-at-large/71st-congress/session-2/c71s2ch105.pdf>; <https://www.loc.gov/law/help/statutes-at-large/72nd-congress/session-1/c72s1ch520.pdf>.

⁸⁷ *Albuquerque Journal*, May 24, 1933, 4; *Albuquerque Journal*, March 23, 1933, 8.

⁸⁸ *Albuquerque Journal*, August 2, 1933, 8; Scurlock, “Euro-American History,” 144.

⁸⁹ Hal Rothman, *Bandelier National Monument, an Administrative History*, Southwest Cultural Resources Center, Professional Papers No. 14 (Santa Fe, NPS, 1988), Chapter 4 (https://www.nps.gov/parkhistory/online_books/band/adhi/adhi4a.htm).

intersection at La Cueva, then south along Highway 4 through Jemez Springs back to San Ysidro.⁹⁰ Also by 1935, the road project from Cochiti to Bland and Valle Grande—where it intersected with the Vallecitos Road—had been completed, as had a short, improved segment of logging road—first bladed out in the early 1920s—between Vallecitos de los Indios and the Jemez Springs–Sulphur Springs route.⁹¹ These roads arrived just in time for logging companies to use them to access the southwestern corner of the Baca Location (see Chapter 7); as one source has noted, the roads were completed “to free commercial loggers from the great capital investment of having to lay railroad tracks as a precondition to opening forests for timbering.”⁹² Given the completion of these road segments, the only remaining stretch of road needed to complete the State Highway 4 project was a ten-mile road segment between the Pajarito Plateau and Boyd Ranch (located just east of Vallecitos de los Indios).

Along the eastern side of the Jemez Mountains between the Pajarito Plateau and Valles Caldera, logging activities by the 1930s had long since ceased, which meant that the logging roads established during the 1910–1915 period had been partially if not totally abandoned. As historian Dorothy Hoard has noted, aerial photographs taken in 1935 verified that Apache Springs was the western road terminus. (Apache Springs was located just north of Rito de los Frijoles and approximately two miles west of the Pajarito Plateau.) And according to the recollections of Homer Pickens, who often traveled on horseback through the area during the 1930s, he corroborated the aerial photographs by noting that the road heading west from the Pajarito Plateau ended at Apache Springs (Figure 4.12).⁹³

In 1935, however, new activity sprang forth at the western end of the Pajarito Plateau when the CCC established a camp at the foot of the Jemez Mountains, near the present-day intersection of State Highway 4 and West Jemez Road (State Highway 501). Soon afterward, probably in May 1936, construction work began on a new road—in a separate alignment from the previous logging road—that headed west toward Valles Caldera. As Dorothy Hoard noted, “the CCC personnel worked on the present road up the cliff, leaving their fine stonework as legacy of a vital program in U.S. history. The 1935 aerial photos show new scars on the cliff resulting from road building.”⁹⁴ A news article about the road-construction effort noted that

The Forest Service has been planning and working on the project for several years. . . . It will employ 30 men to start. An allotment of \$35,000 has been made from regular funds for forest roads and trails. The work is under general direction of Supervisor Frank Andrews of the Santa Fe National Forest.⁹⁵

In May 1936, Forest Service officials had high hopes that the road would be finished that year, noting that “if the work can be carried into the late fall with the help of good weather, the road can be finished then, but otherwise will take until next spring.” The difficulty of the road work, however, forced the CCC crews to spend more than a year on the project, which was completed—and even included an elaborate opening ceremony—on July 9, 1937. As an Albuquerque newspaper noted,

⁹⁰ Wallace, *Historic Highways in the NMDOT System*, 185.

⁹¹ Stark, “Historic Routes,” Map 3i through 3L (pp. 20–23); *Albuquerque Journal*, May 18, 1936.

⁹² Anschuetz and Merlan, *More Than a Scenic*, 151.

⁹³ Hoard, *Historic Transportation Routes*, 27.

⁹⁴ Hoard, *Historic Transportation Routes*, 27; Martin, *Valle Grande*, 85; *Albuquerque Journal*, May 18, 1936, 5; Anschuetz and Merlan, *More Than a Scenic*, 28, 43, 118.

⁹⁵ *Albuquerque Journal*, May 18, 1936, 5.

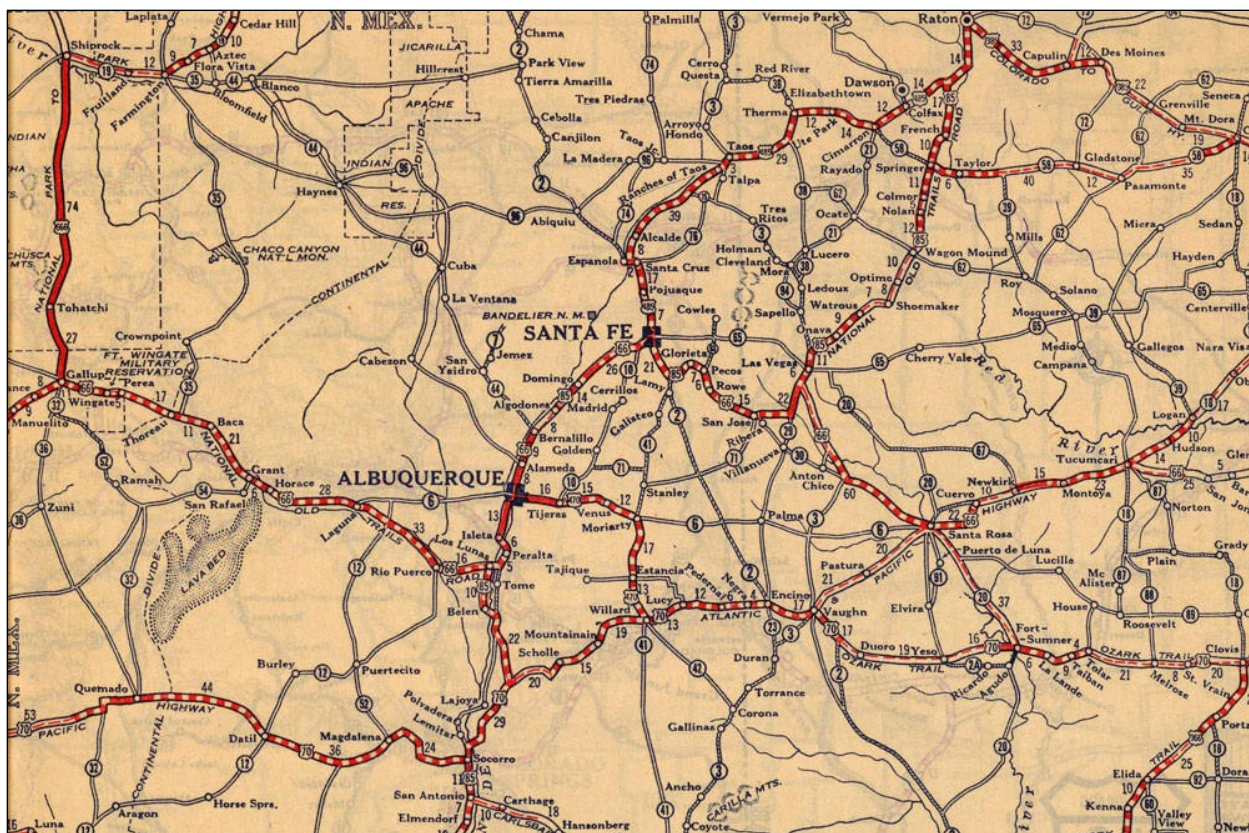


Figure 4.12. By 1927, a New Mexico highway map showed all-weather routes just south of the Baca Ranch (State Highway 7) and east of the ranch (U.S. 485). It would be another decade, however, before State Highway 4 would open across the south end of Valle Grande.

Source: davidrumsey.com/luna/servlet/detail/RUMSEY~8~1~33764~1171480:Arizona#

A quarter-century of planning and twelve years of blasting across mountainsides of the Jemez ranges will culminate Friday in the official opening of the last link of the trans-Jemez road, directly connecting the Cuba area to Santa Fe and adding another magnificent scenic drive to the many now available in the Albuquerque area. A basket-lunch picnic and a few brief talks by representatives of the U.S. Forest Service, Santa Fe Chamber of Commerce and Albuquerque Chamber of Commerce will comprise the ceremonies, to be held at the Valle Grande, beginning at noon. Coffee will be served by the sponsors. The public is invited to make the new drive, which can be completed easily in the afternoon.⁹⁶

The highway, once completed, was enjoyed by a wide range of New Mexicans for fishing, hunting, skiing and general touring as well as for various commercial purposes. But it was by no means in the same condition as it is today; in the early 1940s, in fact, it was described as being “unimproved, very rough, and closed by snow in winter, so it was not often used.” And as Dorothy Hoard noted. “It wasn’t until the late 1950s that the state began paving the road as a real highway. Long-time Los Alamos residents still tell tales of driving over the road prior to paving. They recalled each trip by the number of tires destroyed.”⁹⁷ Indeed, several aerial photographs taken in 1954 show that

⁹⁶ *Albuquerque Journal*, issues of May 18, 1936, 5 and July 9, 1937, 5.

⁹⁷ Edith Truslow, *Manhattan District History; Nonscientific Aspects of Los Alamos Project Y, 1942 through 1946* (Los Alamos, LANL, March 1973), 3; Hoard, *Historic Transportation Routes*, 27

Highway 4 was a dirt road crossing the ranch property, with no fences separating the highway right-of-way from the adjacent pastureland. Similar photos in 1963, however, show a paved road with fences paralleling both sides of the highway, although the newly-paved route did not, in all cases, go over the same alignment as its non-paved predecessor.⁹⁸ This pavement, however, did not stretch all the way west to the ranch's western boundary. Instead, Highway 4 was a broad, paved road only as far west as the highway's intersection with the road (currently Forest Road 10) that angles south to Vallecitos de los Indios. West of that intersection, Highway 4 remained a narrow, winding dirt road until it reached the Redondo Creek-Sulphur Creek area. This section of Highway 4 was not rerouted, widened, and paved until sometime between the mid-1960s and the mid-1970s.⁹⁹

Historic Properties Summary and Recommendations

New Mexico Highway 4 crosses approximately six miles of Valles Caldera: 3.5 miles in its southeast corner and another 2.5 miles in its southwest corner. As noted above, the mileage in the southeast corner was paved between 1954 and 1963, while that portion in the southwest corner was paved between the mid-1960s and the mid-1970s. Both of those paved segments resulted in realignments, leaving short segments of unpaved highway immediately adjacent to the paved highway in the southeast corner (just north of Rabbit Mountain, for example) and a substantial length of unpaved highway segment in the southwest corner. Some of the paved section of Highway 4 in the preserve's southwest corner is *not eligible* for the National Register of Historic Places because it has not yet reached the 50-year threshold for eligibility. But the remainder of the Highway 4 mileage, both paved or unpaved, has not yet been evaluated regarding its National Register eligibility, and these segments—along with associated features such as culverts and other drainage features—should be evaluated as part of future project work.

Other Preserve Routes

In addition to the routes described above, Valles Caldera has supported a number of additional routes: some currently in use, others of which have been abandoned. They include 1) the Bland Canyon spur route, 2) the Valle Grande–Scooter Pass route, 3) the Vallecitos eastern spur route, and 4) various routes established in more recent years.

The Bland Canyon Spur route is a northern offshoot of the Bland Canyon–Sulphur Springs route (see above). From a point just east of El Cajete, early maps show a spur route, perhaps two and one-half to three miles long, that angled northeast over a low saddle between Redondo Peak and South Mountain. This route is shown on a 1908 map, and perhaps on one as early as 1898. Given the Otero Family's decision to locate the Baca Ranch's headquarters along La Jara Creek at the western edge of Valle Grande, the Bland Canyon Spur route offered access to the new ranch headquarters. This route remained the lifeline to headquarters until about 1915, when the spur road was extended north for another mile or two until it intersected with the main north–south route through the ranch (see Vallecitos Route). After a few more years, maps suggest that by 1921, traffic accessed the ranch headquarters primarily via the Vallecitos Route, leaving as a trail that portion of the spur route located south of the headquarters area. That southern segment has remained as a trail ever since the 1920s, although in 1979 it was referred to as a “jeep track.”¹⁰⁰

⁹⁸ USGS, aerial photograph 11114, taken in 1954, and aerial photograph 17-266 and 18-31, both taken October 15, 1963; in VALL Collection.

⁹⁹ Aerial photographs 15-99 and 20-113, taken October 13–17, 1963; aerial photographs 38-33 and 38-85, both taken June 5, 1975; in VALL Collection.

¹⁰⁰ Stark, “Historic Routes,” Maps 3c through 3p (pp. 14–27); Martin, *Valle Grande*, 113.

The Valle Grande–Scooter Pass route initially appeared on area maps in 1898. As noted in the Valle Pass route discussion (see above), the east–west Valle Pass route had long existed from Pajarito Plateau west into Valle Grande via Valle Canyon. Most early maps showed that route as terminating near the East Fork of the Jemez River. Beginning in 1898, however, this Valle Grande route continued west over the East Fork and then looped south, recrossing the East Fork, before ascending the southern slopes of Valle Grande. A second segment of this route surmounted a pass—Scooter Pass—between Rabbit Mountain (9,938 feet) and Scooter Peak (9,701 feet). This route, on an 1898 map, is called the “Cañon de Cochiti Road,” while on a 1908 map it is simply labeled “To Pines.” (Pines was an early logging community located several miles south of Valle Grande.) This route continued to exist on maps, in somewhat truncated form, until 1936.¹⁰¹ In 2002, Los Alamos historian Dorothy Hoard investigated the background of the “Valle Grande Road”, and in early October of that year, Hoard led a three-person field team north from Highway 4 across the wooded portion of this route. (Her report noted that “the road was not surveyed beyond the forest interface [into the grassland] because past grazing activity and erosion obscures any historic evidence.”) One year later, Hoard undertook a similar investigation of “Scooter Pass,” which heads south from Highway 4 less than a mile west of the Valle Grande Road’s intersection with the highway. In late August 2003, she led field investigations of the Scooter Pass route on both the north and south sides of the pass. Hoard and her teams took copious notes, along with photographs, during each of these field outings.¹⁰²

The Vallecitos eastern spur route follows the southern base of Cerro del Medio, between the historical Vallecitos route and where the spur meets the East Fork of the Jemez River. It is thus the western leg of present-day road VC04. The spur route was first noted on an 1892 map, as part of a longer route (another part of road VC04) that followed the eastern base of Cerro del Medio. The eastern leg of VC04 (which is the north–south portion of this route, on the east side of Cerro del Medio) remained on maps until 1914, but it then faded away until it reappeared in the early 1950s. But the Vallecitos eastern spur route (i.e., the western leg of VC04) was consistently portrayed on maps through the 1940s, typically as the western extension of the Valle Pass route (see above). The eastern spur route disappeared for a brief period during the 1950s (it cannot be seen in a 1954 aerial photograph), but by October 1963 it was shown prominently in aerial photographs.¹⁰³

Other present-day routes within Valles Caldera National Preserve are of more recent vintage than those noted above.

- Road VC03, which follows the Redondo Creek and Jaramillo Creek drainages, was marked as a trail during the 1940s and early 1950s. But by 1954, an aerial photograph clearly showed a well-bladed road in Redondo Canyon in order to support logging activities. No equivalent route existed at this time in the Jaramillo Creek drainage, but by 1963, before extensive logging began in the area, an aerial photograph showed a road paralleling the length of the creek.¹⁰⁴

¹⁰¹ Stark, “Historic Routes,” Maps 3c through 3L (pp. 14–23); Judith Isaacs, “Mining Town of Bland,” <https://jemezvalleyhistory.org/?p=2377>.

¹⁰²; USGS, Frijoles Quadrangle Dorothy Hoard, Addendum to the Report to the Board of Trustees, Valles Caldera Trust; Documentation of Historic Routes over the Sierra de los Valles, Report VCNP CR R2002-019, October 2002, 1–8; Dorothy Hoard, “Addendum to the Report to the Board of Trustees, Valles Caldera Trust; Documentation of Historic Routes over the Sierra de los Valles,” Report VCNP CR R2003-026, September 2003, 8–15, 1:62,500, 1953.

¹⁰³ Stark, “Historic Routes,” Maps 3b through 3q (pp. 13–28); USGS aerial photograph 11116, taken in 1954; aerial photographs 17-270 and 18-29, both dated October 15, 1963, VALL Collection.

¹⁰⁴ Stark, “Historic Routes,” *passim*; Aerial photograph 11113, taken in 1954; aerial photograph 20-107, dated October 17, 1963; both in VALL Collection.

- Road VC06 goes east–west across the northern edge of Valle Seco before heading south to intersect with Road VC03. The northern leg of this road is seen on maps beginning in the mid-1940s, but its north–south leg appears to be a function of extensive logging in the area that took place during the late 1960s or early 1970s. It is clearly shown on a June 1975 aerial photograph.¹⁰⁵
- Road VC07, in the southwestern corner of the preserve, first appears on an aerial photograph in 1954.
- Road VC11, in the northwestern corner of the preserve, first appeared on a map in 1952. Also appearing for the first time on the same 1952 map is the sinuous, north–south portion of Road VC10, along with an unnumbered north–south road heading north from the gas pipeline adjacent to the preserve’s western boundary.
- Road VC12, in the north-central part of the preserve, first appeared on an aerial photograph in 1954.
- Road VC 14, in the northeastern part of the preserve, first appeared on a map in 1953.¹⁰⁶

Historic Properties Summary and Recommendations

Of the nine routes mentioned in this section, most have the potential for eligibility, as sites of local significance, to the National Register of Historic Places.

- Along the route of the Bland Canyon spur is presently a recreational trail. In order to determine National Register eligibility, a field investigation will be needed to determine the route of the historical road in comparison with the present-day trail, along with the amount of evidence located related to the historical road. (Note: the “Baca Ranch Headquarters Area” National Register nomination, first submitted in December 2015 and not yet finalized, lists the “Bland Route spur road” as a contributing element to that nomination.)
- Of the Valle Grande–Scooter Pass route, the wooded section of the Valle Grande road has been relocated, but no similar investigation has taken place in the grasslands north of the wooded section. Of the Scooter Pass road, the post-investigation evidence is inconclusive; as Dorothy Hoard noted, “Though the [field] team believes that a historic road came through Scooter Pass, not enough remains to definitively locate the route.”¹⁰⁷
- Regarding the Vallecitos eastern spur route (western leg of VC04), as well as the eastern leg of VC04, both present-day route segments may well be the same as their historical counterparts. If field investigations corroborate that association, Road VC04 has the potential to be *eligible* as a site of local significance to the National Register.
- Roads VC11 and VC14, along with roads VC03 and VC06, appear to be of sufficient vintage to be potentially *eligible* to the National Register. But roads VC07 and VC12, along with a

¹⁰⁵ Stark, “Historic Routes,” *passim*.; Aerial photograph 20-105, dated October 17, 1963; aerial photograph 38-23, dated June 5, 1975; both in VALL Collection.

¹⁰⁶ Stark, “Historic Routes,” *passim*.; aerial photographs 11052 and 11141, taken in 1954; both in VALL Collection.

¹⁰⁷ Hoard, Report VCNP CR R2003-026, September 2003, 9.

portion of Road VC06, were apparently constructed less than fifty years ago and thus do not qualify for the National Register.

Telephone Lines

During the years immediately before and after 1900, the U.S. government took the first steps toward managing the nation's forest. In 1891, Congress passed the Forest Reserve Act, which paved the way for the first forest reserves, to be administered by the Interior Department. No funds, however, were authorized for managing the reserves until 1897. In February 1905, Congress decided to move the administration of the forest reserves from the Interior Department to the Agriculture Department, and the U.S. Forest Service was established. That same October, President Theodore Roosevelt created the Jemez Forest Reserve by proclamation; it covered much of the Jemez Mountains, including lands that entirely surrounded the Baca Location.¹⁰⁸

Gifford Pinchot, the first Forest Service chief, observed that “Probably the greatest single benefit derived by the community and the nation from forest reserves is insurance against the destruction of property, timber resources, and water supply by fire.” And as Janie O'Rourke has noted, the success of Pinchot's campaign against fire hinged on the development of a reliable telephone system, which was the key to a comprehensive communication network.¹⁰⁹

The construction of the first telephone line on the Jemez Forest Reserve began in 1906, just a few months after the reserve was created. The new agency hired two brothers who lived on the Pajarito Plateau—Ben and George White—to hang a telephone line from Española west across the reserve. When completed, it would go seventy-seven miles to the Blue Bird Ranger Station, which was located five miles southeast of Cuba.¹¹⁰ The communication system that the White brothers were asked to install consisted of a single bare telephone wire hung on insulators. In wooded areas, these insulators were drilled into trees; elsewhere, lines of telephone poles had to be installed (see Figure 4.13).

The line that the White brothers established went from the Española area west to the vicinity of the Puyé Cliff Dwellings, then south and west across the many canyons of the Pajarito Plateau. Once the line reached the head of Water Canyon, at the western end of the Ramon Vigil Grant, the brothers built the line west up the mountain slope to Sawyer Mesa, at the southeast corner of the Baca Location, now part of Bandelier National Monument. From there, a short spur line led south to the former logging community of Pines, where the Forest Service had built a ranger station. The main line, however, wound west along the Baca Location's southern boundary, for the most part following the Bland Canyon–Sulphur Springs route segment, built in 1897 (see above) as it headed from the south end of Valle Grande to the Jemez Springs–Sulphur Springs road. Once back on Forest Service land, the line continued north and west to Seven Springs, the Rio de las Vacas crossing, and the Blue Bird Ranger Station (at the site of present-day Blue Bird Ranch). The brothers, working during both summer and winter, completed the line in 1907.¹¹¹

¹⁰⁸ Martin, *Valle Grande*, 45; Janie O'Rourke, *Jemez Forest Telephone Line; a Historic Communication Network Constructed by the U.S. Forest Service as a Key Strategy in their Fight Against Fire, 1906–1947* (Los Alamos, LANL, May 2006), 2–3; <https://www.u-s-history.com/pages/h1602.html>.

¹⁰⁹ O'Rourke, *Jemez Forest Telephone Line*, 3.

¹¹⁰ O'Rourke, *Jemez Forest Telephone Line*, 4, 7; <https://www.topoquest.com/place-detail.php?id=2038427>.

¹¹¹ O'Rourke, *Jemez Forest Telephone Line*, 4, 7-10, 34-35; USGS, Stark, “Historic Routes,” Map 3d (p. 15); USGS, La Ventana Quadrangle, 1:62,500, 1943.

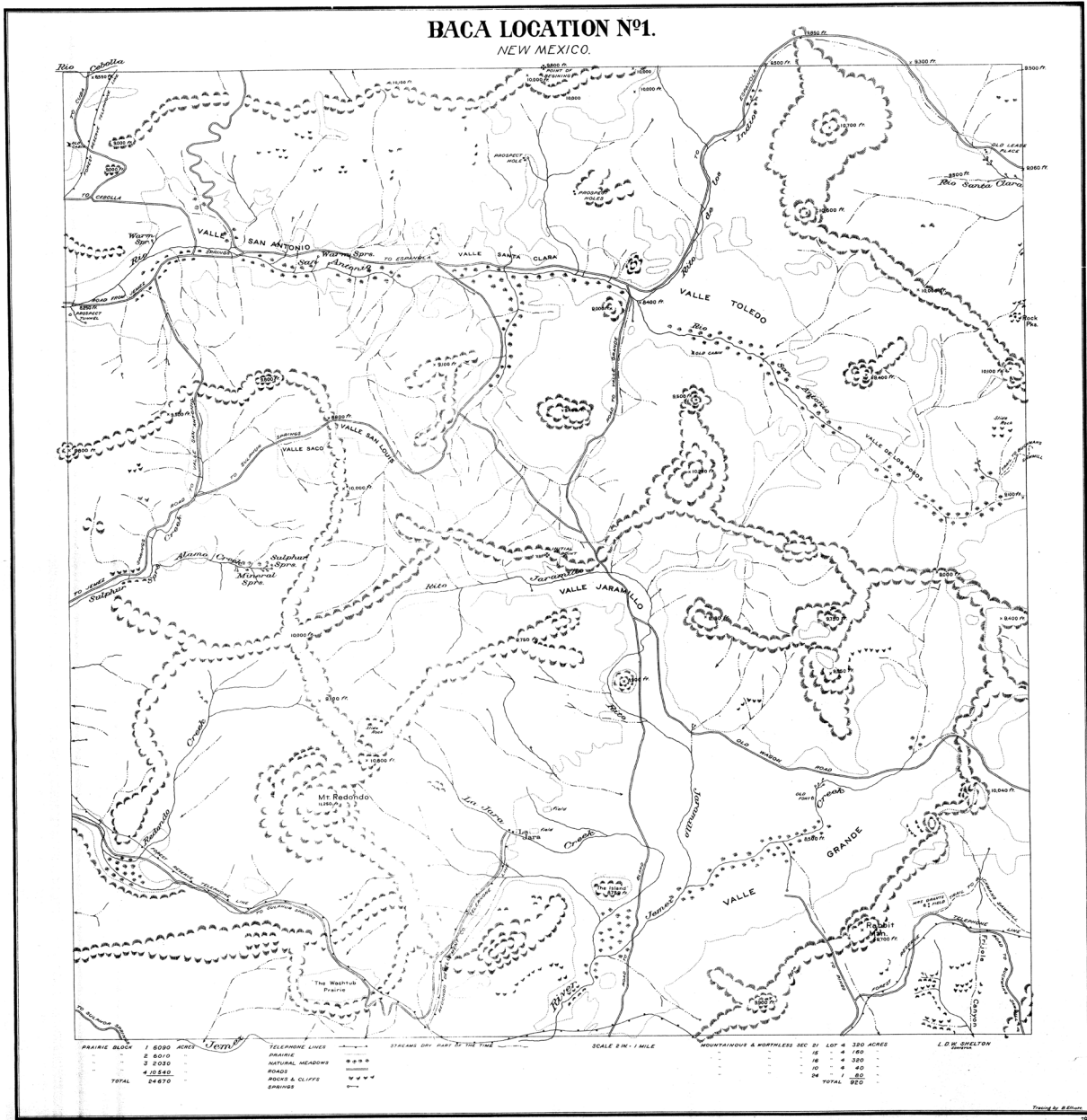


Figure 4.13. Lewis Shelton, in 1910, resurveyed the Baca Ranch and discovered that many original (1876) boundary markers had been inaccurately placed. Note the “Forest Service Telephone Line” that courses east to west across the southern end of the map.

Source: Jacqueline L. Stark, *Historic Routes of the Valles Caldera National Preserve from 1876-1953*, 2009, Map 3d.

During the next few years, the telephone line in this area grew and changed. By 1915, the need for a telephone line at the Baca Ranch headquarters resulted in the westbound line in Sawyer Mesa heading not southwest, as previously, but northwest in the Scooter Pass area and then across Valle Grande to the headquarters area. The line then headed southwest along the Bland Canyon spur route to the El Cajete area, where the line continued as it had previously.¹¹² But by 1921, the phone

¹¹² Stark, “Historic Routes,” Map 3g (p. 18).

line between Sawyer Mesa and the Baca Ranch headquarters had been abandoned. The remaining lines continued to operate through the 1920s, but by the mid-1930s, most of these lines had been taken away except for a single new line that connected Boyd's Ranch (east of Vallecitos de los Indios) north to the El Cajete area, after which the existing line continued northeast to the ranch headquarters.¹¹³ The line between El Cajete and today's Cabin District is still an active, operating power and telephone line; it largely parallels the South Mountain Trail (VC02) as it heads southwest from the Cabin District.¹¹⁴

As a result of the construction of these various telephone lines during the early-to mid-twentieth century, insulators and other artifacts related to the lines still exist on the Baca Location and its surrounding area. Los Alamos resident Janie O'Rourke, over a four-year period, painstakingly located many miles of former telephone line within the Jemez District of Santa Fe National Forest. In a 2006 report that describes the results of that search, she "documented over 1,300 sites containing artifacts associated with the Jemez Forest telephone line, including remnants of insulators, insulator hangers, and line wire that might still mark the tie trees along the telephone line corridor." O'Rourke mapped the location of those sites. The appendix of her report, moreover, provides "the GPS coordinates for the entire Jemez Forest ... for each of ... ten insulator types." O'Rourke's field research, however, was limited to U.S. Forest Service land. Evidence of the telephone lines, along with associated artifacts, are also extant on the preserve, as noted below.¹¹⁵

Historic Properties Summary and Recommendations

As noted above, much is known about the location of the historic telephone lines within the preserve, as evidenced by both historic maps and Janie O'Rourke's exhaustive field investigations along adjacent U.S. Forest Service land. Within the preserve, various cultural resource reports have recorded several sections of these lines and described the associated artifacts, but no general report similar to O'Rourke's study has focused on preserve lands. This study recommends the completion of such a report. Until such an effort takes place, however, any evaluation of the potential National Register eligibility of these telephone-line corridors would be premature.

Gas Pipeline

A gas pipeline crosses the northern end of the preserve from west to east. At its western end, it enters the preserve in Twin Cabins Canyon, and it leaves the preserve at its eastern end in Valle de los Posos.¹¹⁶

The line was built in order to ensure that Los Alamos would have a consistent, ample supply of natural gas. During World War II, the U.S. Army's Manhattan Engineer District was assigned the responsibility of supplying energy to Los Alamos, and the embryonic community obtained that energy through the use of fuel oil and coal. But soon after the war ended, the government decided to repurpose Los Alamos as a civilian scientific research center, and in December 1946 the Atomic Energy Commission became the town's new manager.¹¹⁷

Two other major events took place in 1946 that would affect the city's energy needs. First, the town's fuel delivery administrations changed on April 1, when a new contracting entity, called the

¹¹³ Stark, "Historic Routes," Maps 3h through 3p (pp. 19–27).

¹¹⁴ Aerial photograph 11114, taken in 1954; aerial photographs 11-107 and 11-146, both taken October 5, 1963; in VALL Collection.

¹¹⁵ O'Rourke, *Jemez Forest Telephone Line*, 1, 59–60.

¹¹⁶ The site number for the gas pipeline is LA 133452.

¹¹⁷ Truslow, *Manhattan District History*, vi, 37.

Zia Company, was formed as a municipal organization to take over a wide variety of services. On that date, the company entered into a cost-plus-fixed-fee contract with the government regarding the operation not only of utilities, but also the town's hospital, schools, transportation, housing, maintenance, and other functions.¹¹⁸ The other major action taken in 1946 was that the federal government, hoping to lessen its dependence on coal and fuel oil, investigated the possibility of installing a natural gas system. As historian Edith Truslow has noted,

The feasibility of such a plan was clear, and a contract was entered into with the Southern Union Gas Company of New Mexico and Texas, Dallas, Texas, to lay the necessary pipe to provide the Project three and a half million cubic feet of gas per day. This line consisted of 28 miles of 10-in. pipe additions to the main line and parallel existing lines near Farmington, New Mexico, approximately 130 miles distant, and the laying of 20 miles of 8-in. line from a point near Santa Fe to the [Los Alamos] Project—about nine miles of which was laid by [Robert E.] McKee [an El Paso-based general contractor] with the rest laid by the Gas Company.¹¹⁹

These gas-line improvements were completed by the fall of 1947. Problems, however, were soon manifested in the new gas delivery system. As Craig Martin noted,

During a cold snap in the winter of 1947-1948, the small gas line feeding Los Alamos from Santa Fe failed. To warm Los Alamos residents during the cold winter, the Atomic Energy Commission was forced to quickly reconvert the newly changed gas furnaces back to coal or oil.¹²⁰

AEC officials quickly recognized that an improved supply line was needed. The Commission, according to Martin, “worked with the Zia Company to plan a new pipeline to bring in gas from Farmington.” Pipeline planning began in 1949. The route chosen followed the main line southeast to Cuba, then cut almost due east across the central Jemez Mountains (see Figure 4.14).

Perhaps the most difficult aspect of pipeline construction, from a technical point of view, was the pipeline's crossing of Sierra de los Valles—on the east-central border of the Baca Ranch—between upper San Antonio Creek, in the Valle de los Posos, and upper Quemazon Canyon. Rather than having the pipeline ascend the roughly 500-foot ridge between the two watersheds, which would require the installation of expensive pumping equipment, the project engineers opted to bore a nearly mile-long tunnel under the ridge. Given the fact that Los Alamos-area development, at the time, was shrouded in secrecy (the town itself would not be open to the general public until February 1957), news about both the pipeline and the tunnel was likewise opaque. In late October 1949, a Clovis, N.M. newspaper published an Associated Press story stating that

a 4,500-foot tunnel through the Valle Grande mountains at Los Alamos is expected to be finished in about a year. ... Bids will be opened in January [and] prospective bidders should see the site by Nov. 1. A five-mile road leading to the tunnel also is contemplated, officials said, although bids on the project will be asked with and without the road. Purpose of the [8 to 10-foot diameter] tunnel, within the [AEC reservation] was not disclosed. ... An engineering spokesman, who declined use of his name, said “We're not ready to talk about it just yet.”¹²¹

¹¹⁸ Truslow, *Manhattan District History*, 40.

¹¹⁹ Truslow, *Manhattan District History*, 37–38.

¹²⁰ Craig Martin, *Los Alamos Place Names* (Los Alamos, Los Alamos Historical Society), 2012; <https://www.facebook.com/LosAlamosHistory/posts/10158617790264361>.

¹²¹ *Clovis News Journal*, October 30, 1949, 6; Kirby, *Just Crazy to Ski*, 67.



Figure 4.14. In 1949–1950, the Atomic Energy Commission constructed a gas pipeline across the Baca Ranch. Shown here is a maintenance road along its right-of-way, together with a small maintenance facility. Natural gas pipeline road and shack, Valle San Antonio, 2005. Photograph by Don J. Usner. From *Valles Caldera: A Vision for New Mexico's National Preserve*, 1st ed., William DeBuys and Don J. Usner (Museum of New Mexico Press, 2006). Courtesy of the publisher.

In order to cross the Baca Ranch, AEC officials in early 1950 negotiated an easement with owner Franklin Bond which granted pipeline access through Valle San Antonio and Valle Toledo. The line was built and owned by the AEC, but operated by the Zia Company. Work proceeded from both ends of the line, and construction of the pipeline was completed in one year. To facilitate construction and maintenance, AEC workers added a road across the Baca Ranch parallel to the pipeline for its entire length.¹²²

The Zia Company continued to operate the pipeline for more than a decade. But during the early to mid-1960s, the company gradually disposed of various aspects of town operations, and as part of

¹²² Martin, *Los Alamos Place Names*; Martin, *Valle Grande*, 68–69. In a deed signed in January 1950, the federal government paid the Baca Ranch owners \$6,300 for an easement “to construct, operate, maintain, repair, patrol, replace and/or remove a natural gas pipe line” along the ranch’s pipeline corridor. Warranty Deed of Easement, January 11, 1950, from Frank Bond & Son (Franklin Bond, president) to USA, document DX-BY, “US Exhibits from Jemez Trial, 1779–2000,” from non-confidential trial exhibits, on file at VALL.

that process, it sloughed off its operation of the gas pipeline between Cuba and Los Alamos.¹²³ For the next decade, the pipeline was both owned and operated by the AEC, but with the AEC's abolition in 1975 it was administered by the Energy Research and Development Administration, and after 1977 it was owned and operated by the U.S. Department of Energy. In August 1999, the Public Service Company of New Mexico (PNM) purchased the line from DOE, after which the New Mexico Gas Company, the present owner, acquired it. Despite its present ownership, authorities now call this pipeline the DOE Cuba to Los Alamos West Line.¹²⁴

Historic Properties Summary and Recommendations

As noted above, the gas pipeline across the northern end of the preserve, which is part of the 130-mile-long pipeline between Farmington and Los Alamos, was built in 1950. Since that time, the company's owners have periodically maintained it, but this maintenance has not required significant excavation activities along the pipeline right-of-way within the preserve. At present, only a small portion of the pipeline that crosses the preserve—located in Valle San Antonio—is above ground or otherwise visible. Various agencies, including the U.S. Forest Service, Valles Caldera Trust, and the New Mexico State Historic Preservation Office have evaluated the pipeline and have concluded that *no part of it* within the preserve is *eligible* for the National Register of Historic Places.¹²⁵

¹²³ New Mexico State Records Center and Archives, "Zia Company 1946–1986," <https://newmexicohistory.org/2013/11/19/zia-company-1946-1986/>.

¹²⁴ Quitclaim Deed and Transfer Agreement, between United States Department of Energy and PNM Gas Services, August 4, 1999, document DX-HW, "US Exhibits from Jemez Trial, 1779–2000," from non-confidential trial exhibits, on file at VALL; National Pipeline Mapping System, Public Viewer (<https://pvnpm.phmsa.dot.gov/PublicViewer/>) for Sandoval County, New Mexico.

¹²⁵ Allan Schilz, et al., "Cultural Resources Data Recovery Program at Selected Archaeological Sites Along the PNM-DOE Pipeline in the Santa Fe National Forest and the Valles Caldera National Preserve, New Mexico" (VCNP Report 2005_013; NMCRIS 87769), 2005, pp. 134, 228.

CHAPTER 5: SHEEP AND CATTLE RANCHING (Norris)

Since the early nineteenth century, and perhaps earlier, sheep have grazed over much of the present area of Valles Caldera National Preserve, and cattle grazing has taken place since the early twentieth century, if not before. Commercial grazing activities have continued to the present day. Following a brief historical overview, this chapter will focus on the physical artifacts that are associated with grazing activities, specifically ecological modifications due to overgrazing; boundary markers; sheep camps and culturally modified trees; buildings and structures; stables and corrals; fences and stock tanks.

Historical Overview

Both sheep and cattle have been an inextricable part of the Euroamerican settlement of New Mexico. In 1540, Francisco Vázquez de Coronado headed north toward present-day Arizona and New Mexico with nearly five thousand sheep, goats, cattle, and horses, and fifty-eight years later, Juan de Oñate initiated Euroamerican settlement in New Mexico, bringing with him thousands of sheep, pigs, goats, cattle, mules, and horses.¹ As Spaniards established themselves up and down the Rio Grande and elsewhere, their livestock accompanied them.

Before long the rich, verdant high-elevation pasturelands of the Jemez Mountains began to attract sheepherders and other stockmen. Beginning in 1818, Luis Maria Cabeza de Baca and his family settled on a ranch in Peña Blanca, and as early as the 1820s, the family herded some of their sheep each summer in Valle Grande or a nearby valley (see Figure 5.1). The family continued to do so for the next several decades. They found, however, that tending these upland herds could be dangerous, a fact underscored by the 1835 death—probably at the hands of the Navajo—of Juan Antonio, Luis Maria’s eldest son, while shepherding in the mountains.²

Just before 1820, Cabeza de Baca showed an interest in a new swath of land, perhaps fifty miles east of Santa Fe, on either side of Gallinas Creek called Las Vegas Grandes, and in late 1821 he petitioned the new Mexican government for a large land grant in that area. The family continued to show considerable interest in that area until 1833, when it abandoned the grant. Shortly afterward, a group of settlers occupied a small portion of that area, and under the assumption that the former grant had been abandoned, the government approved the Las Vegas Community grant.³ But in 1837, a Cabeza de Baca family member protested against the issuance of the Las Vegas grant; and in 1854, shortly after the U.S. government assumed control over New Mexico, the family hired legal counsel to lodge a formal protest over who owned the Las Vegas Grandes land grant.⁴

¹ Joseph P. Sánchez, Robert L. Spude, and Art Gómez, *New Mexico, a History* (Norman, University of Oklahoma Press, 2013), 17, 32.

² Craig Martin, *Valle Grande; a History of the Baca Location No. 1, Background to Creation of the Valles Caldera National Preserve* (Los Alamos, All Seasons Publishing, 2003), 24, 26–27; Kurt F. Anschuetz and Thomas Merlan, *More Than a Scenic Mountain Landscape: Valles Caldera National Preserve; Land Use History* (United States Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fort Collins, Colorado, September 2007), 32.

³ Martin, *Valle Grande*, 26–28.

⁴ Martin, *Valle Grande*, 28–29.

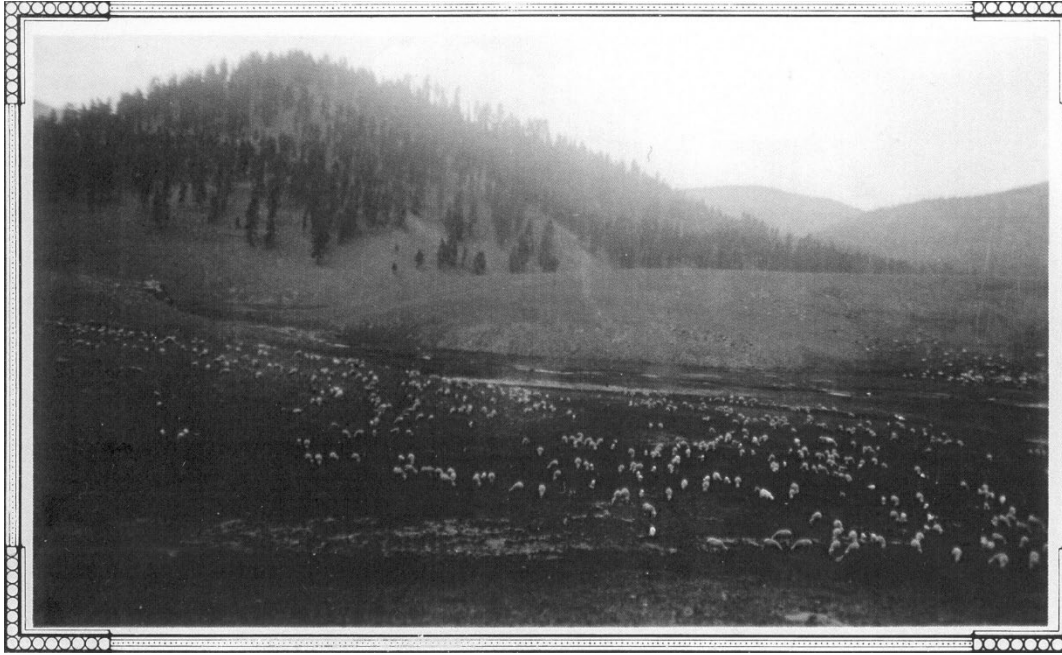


Figure 5.1. The Baca Ranch was primarily used as sheep pasture throughout the nineteenth century, and sheep predominated there until World War II and its aftermath. Courtesy of Valles Caldera National Preserve, donated by the Richard and Vera Boyd family.

Given the Cabeza de Baca family’s strong legal representation—but also recognizing that by the mid-1850s some two thousand people lived on the Las Vegas grant—the family’s lawyer suggested to the New Mexico surveyor general that the acreage within the Las Vegas grant, once measured, should be provided to the family in other locations that offered “an equal quantity of vacant land, not mineral, in the Territory of New Mexico, to be located by them in square bodies, not exceeding five in number.” The area within the Las Vegas grant turned out to be 496,446 acres. In response, the Cabeza de Baca family selected five different locations, or “floats,” each of which would measure 99,289.2 acres.

Given the family’s long association with the Peña Blanca area and the nearby upland areas, its initial selection—Baca Location 1—included most of the large Jemez Mountain pastures, surrounded by tens of thousands of acres of rich forests. Within months, the family’s lawyer chose the other four parcels, all of which were based on their potential for raising livestock. These were located near present-day Tucumcari, New Mexico; near Nogales, Arizona; near Alamosa, Colorado; and near Prescott, Arizona. Regarding Baca Location 1, the Surveyor General’s office in Santa Fe approved the family’s land application on December 11, 1860.⁵ But they would not be issued a formal title to the land until the parcel was surveyed (see below), a process that would take another sixteen years. Surveyors who visited the Baca Location in 1876 wrote that “there are no settlers living upon the

⁵ Martin, *Valle Grande*, 29–32.

Grant. Large herds of sheep are kept here during the summer, but not during winter as the cold is too severe.”⁶

During the late 1870s, soon after the Cabeza de Baca family gained title to the Baca Location, the first railroad arrived in New Mexico. Railroads provided far easier access to outside markets, with the result that the territory—and the Baca Location—saw an explosion in livestock numbers.⁷ Also, by this time, the U.S. Army’s campaign to place the Navajo, Apache, and other tribes on reservations had succeeded sufficiently that sheepherders could safely run flocks of sheep in the Jemez Mountains. In this area, the primary beneficiaries of the Army’s containment actions were Cabeza de Baca family members; they not only grazed their own flocks, but they permitted members of the Jemez Pueblo—and many non-Natives under the prevailing community land grant concept—to use the Baca Location’s rich pasturage. This acreage, all agreed, offered “the best grazing land in the state.”⁸

Throughout the late nineteenth century, the Baca Location’s ownership was splintered, contested, and ever-changing. Luis Maria Cabeza de Baca—who had died in 1827—had had 18 children who survived to adulthood, and by the 1870s the number of his descendants who shared in the ranch’s ownership numbered well over 80. This unwieldy situation invited several descendants—those who owned a larger percentage of the ownership total—to resolve the situation in their favor, by either dividing the grant into segments—clearly an untenable situation—or by unifying the ranch under a single, unified ownership structure. Members of the New Mexico Land Commission, asked to rule on the case, quickly recognized the folly of geographically dividing the ranch, so in January 1899, the territorial Supreme Court ruled that the ranch would be sold at public auction, with the sale’s proceeds to be divided among the various owners according to the amount of interest they held in the property. On March 13 of that year, the highest bidder at that auction was Frank W. Clancy, but a few days later he sold the ranch to Mariano S. Otero and his son, Frederico J. Otero.⁹

Once the sale was completed, both the Oteros and other area stockmen continued to graze their stock on the ranch each summer according to the community land grant concept. As one Santa Fe newspaper noted in the spring of 1900,

The Baca Location No. 1, that was sold some time ago, is covered with lambing ranches, and all the sheep men are happy, for never have they had such luck before. There is a feeling of contentment and confidence in the people that is never seen in hard times.¹⁰

This system, however, began to break down shortly after the turn of the century for three reasons. First, beginning by 1902 if not before, the Otero family began grazing cattle (see Figure 5.2) as well as sheep on their vast ranch. Second, Frederico Otero in 1904 became the ranch’s sole owner after the death of his father, Mariano S. Otero. The younger Otero quickly recognized the economic

⁶ Daniel Sawyer and William H. McBroom, “Field Notes of the Examination of Surveys in Baca Location No. 1 Grant, New Mexico, under contract dated June 1876,” Exhibit DX-AG, “US Exhibits from Jemez Trial, 1779–2000,” from non-confidential trial exhibits, on file at VALL.

⁷ Jared V. Harper and John R. Signor, *Santa Fe’s Raton Pass* (Midwest City, OK, Santa Fe Railway Historical and Modeling Society, Inc, 2010), 18–21, 28; Scurlock, “Euro-American History of the Study Area,” 140.

⁸ Scurlock, “Euro-American History of the Study Area,” 137; Martin, *Valle Grande*, 32–33, 45.

⁹ Martin, *Valle Grande*, 33–40.

¹⁰ *Santa Fe New Mexican*, May 25, 1900, 1.



Figure 5.2. Some cattle were grazed on the Baca Ranch shortly after 1900, but their heyday at the ranch was between 1950 and 2000.

Image courtesy of Valles Caldera National Preserve. Photo by Rourke McDermott of Valles Caldera Trust.

possibilities of renting out grazing rights to others. Then, in October 1905, President Theodore Roosevelt issued a proclamation establishing the Jemez Forest Reserve.¹¹ As Craig Martin has noted, Frederico Otero

brought his own flocks of sheep and cattle to the Baca Location, but he also made money by leasing summer grazing rights to the fertile valles. The timing was perfect for a new private grazing enterprise in the Jemez region. The Jemez Forest Reserve was established in 1905. Suddenly, local herders were forced to pay a fee for using the forest grazing lands on which they had always run their stock [for free]. The new fees established by the Forest Service seemed unreasonable, and many refused to participate in the new management system. Otero charged 25 cents per sheep and one dollar per cow for summer grazing rights, and he offered herders the opportunity to avoid dealing with the fledgling Forest Service.¹²

Each summer, therefore, herders from Santa Fe, Española, Cuba, San Ysidro, and Peña Blanca could be seen grazing their stock on the Baca Ranch. Frederico Otero gained handsome rental fees as a result.¹³

¹¹ Presidential Proclamation 603. See <https://www.presidency.ucsb.edu/documents/proclamation-603-establishment-jemez-forest-reserve-new-mexico>

¹² Martin, *Valle Grande*, 44–45.

¹³ Martin, *Valle Grande*, 45–48; *Albuquerque Morning Journal*, February 2, 1904, 4.

Throughout this period, the Baca Ranch remained remote, being accessible only by challenging wagon roads and being located more than ten miles away from the nearest railroad line. Despite that isolation, interests began to covet the ranch's rich timber resources. In October 1909, the Redondo Development Company—headed by banking interests in Warren, Pennsylvania—purchased the grant for \$300,000. The company soon sent out representatives to survey the land with an eye toward further development. But they had no interest in the ranch's grazing resources, so Frederico Otero continued to oversee its livestock operations.¹⁴ He did so from a newly-established headquarters area located along La Jara Creek on the western edge of Valle Grande. As early as 1898, the so-called Marmon map (see Figure 4.6) showed a two-mile long northern spur from the "Bland Road" (see Chapter 4, Section A, Route 6) that terminated near La Jara Creek. By 1910, Lewis Shelton's map of the ranch (see Figure 4.13) noted a spur road that terminated at the two-building community of "La Jara," located along La Jara Creek.¹⁵ Corroborating Shelton's map is a 1911 visit to today's headquarters area by several survey examiners, who noted that "the only improvements [are] two administrative buildings, a large log and a small frame cabin, valued at about \$400." Recent dendroarchaeological testing, however, has decisively concluded that today's Otero cabin (also known as the Otero Headquarters Cabin, Cupit Cabin, Bunkhouse (see Figure 5.3) was built approximately 1915 rather than any other earlier date, and that the adjacent Commissary Building (see Figure 5.4) was built in 1941.¹⁶ Thus, the two buildings shown in the 1910 Sheldon map and the 1911 description were apparently ephemeral, both having been demolished before 1920.

In 1916, Otero opted to not renew his grazing lease to the Baca Ranch, which would expire in the spring of 1917. Soon afterward, brothers Frank and George Bond—Española store owners who also owned vast sheep herds in northern New Mexico—got wind of Otero's decision and sent a letter of interest to a Redondo Development Company representative. The two soon agreed to a five-year grazing lease. Frank Bond and his partner Louis Nohl, however, soon expressed an interest in purchasing the property. The owners eventually agreed, but with a single key caveat: they wanted to retain a long-term (99-year) lease for timber rights. The deal was consummated in December 1918, but because the Bond and Nohl Company needed to make installment payments before completing the purchase, title to the property did not change hands until April 1926.¹⁷

¹⁴ Martin, *Valle Grande*, 47–49.

¹⁵ Stark, Jacqueline L., "Historic Routes of the Valles Caldera National Preserve from 1876 to 1953," Cultural Resources Report R2009-024 (NMCRIIS Activity #115974, 2009), Maps 3c and 3d (pp. 14–15); Martin, *Valle Grande*, 46.

¹⁶ Rebecca Renteria, Anastasia Steffen, Ronald Towner, and Galen McCloskey, "Dendroarchaeology of the Otero Cabin," paper presented at the 80th Annual Meeting of the Society for American Archaeology, San Francisco, April 2015. (The SAA paper is available by request from the VALL Cultural Resource Program staff.) Not surprisingly, documents written after this research became public (such as the NRHP Nomination, p. 7:10 and the CLI, p. 05:4) reflect the 1915 cabin construction date, while pre-2015 documents (Martin's history, 46 and the Dennison/SWCA report, vol. 1, p. 42) suggest cabin construction dates of 1907 and 1908, respectively.

¹⁷ Martin, *Valle Grande*, 53, 56–58.



File Name: DSCN0090.jpg

Figure 5.3. The oldest building on the Baca Ranch is the Otero Cabin, the northwest portion of which was erected in 1915. Photo taken in 2006.

Source: Dennison, et al./SWCA, *Documentation and Preservation of Historic Buildings*, Nov. 2007; Volume 2, Otero Cabin, Figure 9.

Inasmuch as Bond's partner, Louis Nohl, had died before the purchase was completed, Frank Bond was the ranch's sole owner and operator between 1918 and his retirement in 1936.¹⁸ Throughout the 1920s, Bond grazed primarily sheep on the ranch, but beginning in the 1930s (1937 was a watershed year), cattle became an increasingly important part of the grazing program. (During this period, cows and calves stayed in the *valles*, while sheep grazed in the high country.) This trend—toward cattle, and away from sheep—accelerated in the mid-1940s, because the demand for wool dropped dramatically as war-developed synthetics found their way into commercial uses. By the 1950s, therefore, cattle were grazed on the ranch almost exclusively.¹⁹

¹⁸ *Santa Fe New Mexican*, January 7, 1918, 8; *Albuquerque Journal*, June 22, 1945, 1, 3.

¹⁹ Martin, *Valle Grande*, 65–68.



Figure 5.4. Although the commissary stands near the 1915 Otero Cabin, it is of more recent vintage, having been built in 1941.

Source: Dennison, et al./SWCA, *Documentation and Preservation of Historic Buildings*, Nov. 2007; Vol. 1, p. 43.

Franklin Bond, Frank's only son, assumed the management of the family business upon his father's retirement in 1936, and he continued to manage the ranch after his father's death in 1945. After Franklin died in 1954, at age 50, control of ranch operations passed on to Frank's adopted son, Gordon Bond.²⁰ But by 1957, Gordon Bond found it increasingly difficult to operate the ranch. In 1959, therefore, the family issued a five-year lease on the property to Sam and Bruce King, ranchers from Stanley, New Mexico, which was valid through the 1964 grazing season.²¹ In the midst of that lease, in 1961, the Bond company said that it was "liquidating its holdings in New Mexico" and that, more specifically, it was considering the sale of the Baca Ranch to the federal government.²²

²⁰ *Albuquerque Journal*, March 29, 1954, 1; Martin, *Valle Grande*, 69.

²¹ Bruce King, in 1959, was serving his first term in the New Mexico House of Representatives; eleven years later, he would be elected for the first of three terms as New Mexico's governor.

²² Martin, *Valle Grande*, 76; *Albuquerque Journal*, October 3, 1961, 1; George W. Savage Testimony, July 19, 1968, vol. III, pp. 389–390, Exhibit DX-DS, "US Exhibits from Jemez Trial, 1779–2000," from non-confidential trial exhibits, on file at VALL.

Just over a year later, the Bond family did in fact sell the ranch, but the buyer was a group of Texas investors organized under the Baca Land and Cattle Company; heading the group was James Patrick “Pat” Dunigan, the head of a tool and supply business for oil and gas operations. The deed was transferred in early January 1963.²³ The new owners had high hopes for developing the property in a variety of ways, ranging from geothermal development to a ski area, home sites, a racetrack and a golf course. But by late June, Dunigan had made a major course correction and had told a local newspaper that all plans for recreational facilities had been abandoned, leaving the land’s main purpose as being a working cattle ranch. As Craig Martin has noted, “by the end of summer the Baca Land and Cattle Company settled down to emphasize the ranching aspect of its name.”²⁴ Pat Dunigan, tragically, died of a heart attack in February 1980, but in the years both before and after his death, the grazing of cattle—owned by various parties—was the economic mainstay of the ranch until it was sold to the U.S. government in July 2000.²⁵ Cattle continued to graze throughout the period in which the Valles Caldera Trust managed the ranch. Since the NPS assumed control in 2014, cattle grazing has taken place in two relatively small portions of the preserve: Rincon de los Soldados and Valle de los Posos. Plans call for continued grazing, based on a rotating system of grazing, fallowing, and burning.²⁶

Historic Properties Summary and Recommendations

The above historical overview, by design, is contextual in nature and is not directed toward the identification or description of specific resources. Instead, it provides a historical framework for resources that are identified in the remainder of Chapter 5. These resources, when encountered later in the chapter, will be described, and their National Register eligibility will be discussed on a case-by-case basis.

Ecological Modifications Due to Overgrazing

The section above clearly indicates that the land within the present-day preserve has witnessed documented stock grazing for more than two hundred years. As it pertains to the area’s resource management, however, a more critical question presents itself: how many sheep and cows have grazed within the preserve over the years? And given the ranch’s annual recommended carrying capacity, how have those stocking levels impacted the preserve’s resource base?

Only partial answers are available to these questions because, prior to the assumption of public ownership over the ranch in 2000, neither the government nor ranch managers felt the need to consistently tabulate stocking levels from one year to the next. Ranch management did, at times, write up annual contracts that specified the maximum number of animals that outside stockmen could bring onto the Baca Ranch. But the actual number of animals that grazed on the ranch in any given year is available, as noted below, only in scattershot fashion.

Key to this discussion is the recommended carrying capacity, typically measured in animal unit-months (AUMs). One model, suggested by the University of Arizona’s Cooperative Extension Service, stated that because the preserve offers “upper elevation native rangeland,” it required four

²³ Anschuetz and Merlan, *More Than a Scenic*, 113, 121; Martin, *Valle Grande*, 78–79.

²⁴ Martin, *Valle Grande*, 79–81.

²⁵ Martin, *Valle Grande*, 114, 122.

²⁶ Martin, *Valle Grande*, 130–131; Robert Parmenter, interview with Frank Norris, October 21, 2020.

to six acres for each AUM. This results in 14,666 to twenty-two thousand-AUMs for the eighty-eight thousand-acre preserve. Because the preserve is covered in snow each winter, grazing has historically taken place for only five months per year. As a result, the preserve has a historical carrying capacity of between 6,100 and 9,100 animals each year. But other calculations, including a model developed by Franklin Crider of the Soil Conservation Service during the 1950s, suggests that the preserve can support just eight thousand AUMs per year, or 3,300 animals being grazed for a five-month season.²⁷

Scattered figures that have been gathered since the late nineteenth century, however, suggests that the preserve's acreage has been overgrazed for much of its history. In 1876, before the railroad arrived, government surveyors optimistically noted that the Baca Grant was "finely adapted for stock growing, raising a fine rank growth of grass especially in the interior which is filled with several small valleys and fine streams containing myriads of trout." But after the Santa Fe Railroad arrived in New Mexico in 1880, the territory's stock was available to a far larger market, and as Craig Martin has noted, "Previously unexploited rangelands were suddenly jammed with stock." For example, from 1885 to 1898, the Ramon Vigil Grant—which occupied much of the Pajarito Plateau south of present-day Los Alamos—ran three thousand head of cattle. This, Martin noted, was "about 10 times the modern capacity." On the Baca Ranch west of the Ramon Vigil Grant, grazing pressure may have been more moderate, given Martin's description that during the late nineteenth century, "small family groups" on the ranch "established summer sheep camps. Utilizing the tall grasses of the valleys, the herders ran small flocks, probably no larger than several hundred animals apiece."²⁸

After the turn of the past century, however, grazing pressure increased due to two factors noted above: Federico Otero's assumption of the ranch ownership in 1904, and the 1905 establishment of the Jemez Forest Preserve. In the summer of 1907, for example, a timber cruiser noted that "this tract as a grazing proposition cannot be beaten. As a summer range there are now about 12,000 [sheep]; 700 cattle, 2,000 goats, and 300 horses being grazed on this tract."²⁹ A year later, an estimated ten thousand sheep populated the ranch. Martin notes that even after Otero sold the ranch, in 1909, to the Redondo Development Company, his main income "continued to be the leasing of grazing rights." As a result, "from May to September [during the 1909 to 1912 period?], the *valles* filled with about 20,000 sheep and 2,000 to 3,000 cattle."³⁰ Despite that grazing pressure, grazing examiners who visited the property in the fall of 1911 noted that its three main valleys—

²⁷ Derek Bailey, "How Many Animals Can I Graze on My Pasture? Determining Carrying Capacity on Small Land Tracts," *University of Arizona Cooperative Extension Bulletin* AZ1352 (Nov. 2004), <https://cals.arizona.edu/forageandgrain/sites/cals.arizona.edu/forageandgrain/files/az1352.pdf>; Franklin J. Crider, "Root-Growth Stoppage Resulting from Defoliation of Grass," *Technical Bulletin No. 1102* (Washington, US Dept. of Agriculture, February 1955), 20–21.

²⁸ Craig Daniel Allen, *Changes in the Landscape of the Jemez Mountains, New Mexico* (unpublished Ph.D. dissertation, University of California Berkeley, 1989), 145–146; Martin, *Valle Grande*, 32–33, 56.

²⁹ [unknown] to L.W. Dennis, August 14, 1907, Exhibit DX-AA, "US Exhibits from Jemez Trial, 1779–2000," from non-confidential trial exhibits, on file at VALL.

³⁰ *Santa Fe New Mexican*, July 15, 1908, 8; Martin, *Valle Grande*, 48.

Valle Grande, Valle San Antonio, and Valle Toledo—“have a luxuriant growth of native grass which extends in places to the crest of the mountains forming the finest of grazing lands.”³¹

Specific figures are available for selected years beginning in 1913. That year, according to a Forest Service range appraisal report, “a few sheep were ranged but the major lease was to a Colorado Cattle feeder dealing in Mexico Cattle. About 4500 head were summer ranged.” The report also noted that in 1915, “Crowley and Oliver rented the Grant from the owners. Some maintain range was sub-leased to sheep. This outfit ran somewhere between 3500 and four thousand big steers for a summer season.”³²

These grazing volumes doubtless continued for the next several years. In July 1917 a new lessee, from the Bond & Nohl Company, told a grazing examiner that

At the present time we have approximately 2500 head of cattle and 30,000 head of sheep. We estimate that [the grant] will carry in an ordinary season 50,000 head of sheep and 6000 head of cattle. Owing to the short duration of the dry season in the mountains this year we have much more grass than usual and can safely take care of 2500 head of cattle in addition to those already on it.³³

These numbers may have been even higher. Clyde Smith, a Jemez Springs-area resident who worked for the Otero family on the Baca Ranch as a young man, told an interviewer years later that over one hundred thousand sheep, or one animal per acre, grazed on the Baca pastures during the summers of 1917 and 1918.³⁴ Despite the overwhelming grazing pressure, surveyors who visited the ranch during the early 1920s were generally optimistic about its production possibilities:

There are large open valleys and benches inside the grant, making about one-quarter of the total area. This land and part of the mountain slopes is covered with a dense growth of grass, which reaches in many places any where from knee high to the height of the shoulders. A large proportion of these open places is swampy, but not too wet for grass.³⁵

The existing data—admittedly scant—suggests that during the 1920s and 1930s, the Baca Ranch continued to be overgrazed; some parties urged a reduction in the grazing volume, but the ranch’s ownership urged that additional livestock allowed. In 1927, for example, a detailed “List of Stock Grazed on the Baca Location” showed that the Bonds had signed contracts with more than thirty stockmen, many of whom were authorized to graze their stock from May 1 to October 31. During the summer grazing season, which began June 15, these stockmen pastured a total of 24,893 sheep and 1,862 cattle.³⁶ “Grazing experts” who visited the ranch, however, warned that too many stock

³¹ Sawyer and McBroom, “Field Notes of the Examination of Surveys in Baca Location No. 1 Grant, New Mexico, under contract dated June 1876,” Sept.–Oct. 1911; Exhibit DX-AG, “US Exhibits from Jemez Trial, 1779–2000,” from non-confidential trial exhibits, on file at VALL.

³² C.K. Cooperrider and R.W. Hussey, “Range Appraisal Report, Santa Fe National Forest,” September 17, 1924, in Exhibit DX-BA, “US Exhibits from Jemez Trial, 1779–2000,” from non-confidential trial exhibits, on file at VALL.

³³ Bond & Nohl Co. to Clarence L. Forsling, July 31, 1917, in Exhibit DX-AQ, “US Exhibits from Jemez Trial, 1779–2000,” from non-confidential trial exhibits, on file at VALL.

³⁴ Dan Scurlock, “Pastores of the Valles Caldera; Documenting a Vanishing Way of Life,” *El Palacio* 88 (Spring 1982), 4–5; Exhibit DX-FP, “US Exhibits from Jemez Trial, 1779–2000,” from non-confidential trial exhibits, on file at VALL.

³⁵ Anschuetz and Merlan, *More Than a Scenic*, 215.

³⁶ No author [Bond & Nohl Co.?], “List of Stock Grazed on the Baca Location, 1927,” Exhibit DX-BD, “US Exhibits from Jemez Trial, 1779–2000,” from non-confidential trial exhibits, on file at VALL.

were being grazed on it, so in the fall of 1928, one (and perhaps many others) of these stockmen were warned

That unless we make a large reduction in the number of sheep grazing on the Baca Location, the damage will be such that we will not be able to graze even one half the number we have allowed to go on there the past few years. We regret to have to reduce the number of sheep but under the existing conditions it is absolutely necessary. [Therefore] You are hereby notified that for the season of 1929 you will not be allowed to put any goats, yearling ewes or dry ewes on the Baca Location.³⁷

By 1933, the Bond family was working with just two outside stockmen regarding the annual ranch stocking process: W.P. Cook from Española, who evaluated and selected several subcontractors, and the Baca family in Bernalillo. In January of that year, a member of the Bond family provided both a description of the ranch's grazing volume and a personal opinion about the ranch's carrying capacity, in a note to W.P. Cook that read:

According to our records, you had 18,972 head of sheep on the Baca Location last year for lambing and summer grazing. ... [From you, we will allow] 15,456 head to go on the Baca Location this year, and in addition to that, the Bacas of Bernalillo will have 2800 head for lambing and summer grazing, or a total of 18,256 head.

It would seem to me that the Grant would carry quite a few more. We want to get all the revenue we can without injuring the Grant. Let us know about this, and we will have some of these other parties go on.³⁸

During the early 1950s, sheep were still commonly seen at the ranch, with the family reportedly grazing about five thousand cattle and as many as thirty thousand sheep on the ranch.³⁹ But in 1959, the King brothers—well-known cattlemen from Stanley, south of Santa Fe—leased the ranch for five years, and soon afterward the last of the Bond sheep were moved off the property. The brothers grazed 3,100 head of cattle in 1960. The language of the ranch's 1962 grazing lease—to be implemented in 1963 and 1964—stated that “It is understood that no more than 4,000 head [of cattle] per season will be grazed without the Lessor's written consent.”⁴⁰

In the fall of 1961, U.S. Forest Service personnel provided one of the most scientific critiques thus far for how many animals grazed on the ranch, as well as its grazing capacity. J. Morgan Smith, speaking on behalf of the agency's regional forester, noted that

Local information gives the present stocking at 4500 head of cattle and 10,000 head of sheep. This is equivalent to approximately 35,750 cow-months which even under good management is believed to be overstocked. It is estimated that 12,000 cow-months would be a proper carrying capacity with the season of use running from about July 1 to October 31. The grassland in Valle Grande, as well as that in the other valleys, shows evidence of excessive use and there is some sheet erosion. Even

³⁷ No author [Bond & Nohl Co.?] to Mr. Manuel C. de Baca, November 23, 1928, Exhibit DX-BE, “US Exhibits from Jemez Trial, 1779–2000,” from non-confidential trial exhibits, on file at VALL.

³⁸ No author [Bond & Nohl Co.?] to Mr. W.P. Cook, January 6, 1933, Exhibit DX-BI, “US Exhibits from Jemez Trial, 1779–2000,” from non-confidential trial exhibits, on file at VALL.

³⁹ Martin, *Valle Grande*, 69.

⁴⁰ “Grazing Lease ... between George W. Savage, Trustee, the Lessor, and Sam King, Bruce King and Don King, the Lessee,” December 17, 1962, Exhibit DX-DD, “US Exhibits from Jemez Trial, 1779–2000,” from non-confidential trial exhibits, on file at VALL.

though the more desirable grasses are not as abundant as they might be, there is still a fair ground cover over most of the area.⁴¹

During the period in which the Bond family owned the ranch, elk population had, at best, an insignificant impact on the carrying capacity of the sheep or cattle herds.

As noted in Chapter 6, a small number of elk were reintroduced into the Jemez Mountains in 1947. During the years that followed the elk herd slowly increased, and by 1961 the Jemez Mountain herd size had increased to 200. That increase, however, had little impact on the browse available to sheep and cattle.⁴²

After the Dunigan family assumed control over the ranch, in 1963, Pat Dunigan sought out the advice of his father-in-law, Clarence Bunch, who observed that over the years, the ranch's meadows and forests had been "hit hard." He also spent a number of days on the ranch with Bill Huey, a former head of the New Mexico Department of Game and Fish, who urged the new ranch owner to reduce the number of cattle grazed on the property.⁴³ Based on that advice, Dunigan—and later his sons—managed their herd sizes in a manner that they perceived to be relatively conservative, and they were also aware of the ecological impacts of the steadily increasing elk herd. Key to Pat Dunigan's new attitude toward grazing on the ranch was his 1972 decision to decrease his cattle operations in order to promote the growth of the reintroduced Jemez Mountain elk herd (see Chapter 6, Section G). As Pat Dunigan's son, Andy Dunigan, noted in 1997 to an *Albuquerque Tribune* reporter, "Over the last 35 years, we've sought to manage [the ranch] in a way that's environmentally sustainable." Federal officials who toured the ranch that fall, moreover, praised the Dunigans for restoring the land from past abuses brought about by overgrazing.⁴⁴

Available statistics suggest that the Dunigans, during their long tenure over the ranch, were fairly consistent in the number of cattle that grazed there each year. In 1968, for example, the owners ran about seven thousand yearling steers on the ranch. In 1986, ranch manager Joe Harrell stated, as part of an affidavit in a court case, that "It is my estimate that we have averaged approximately 5,500 head of cattle for a six-month period of each year during the past several years." And in 1999, a grazing agreement similarly specified that the lessee would be allowed to graze "up to 5,500 head of cattle" between May 1 and October 1 that year.⁴⁵ Leonard Atencio, who undertook some work for the Valles Caldera Trust in 2004, noted that "as recently as 1999, over 6,000 head of steers" grazed on the Baca Ranch, but subsequent to the Trust assuming control over the preserve, "less than 1,000 head of cattle" grazed on the preserve during the summers of 2002, 2003, and 2004.⁴⁶

⁴¹ Fred H. Kennedy to Chief, Forest Service, October 20, 1961, Exhibit DX-CY, "US Exhibits from Jemez Trial, 1779–2000," from non-confidential trial exhibits, on file at VALL.

⁴² Craig D. Allen, "Elk Response to the La Mesa Fire and Current Status in the Jemez Mountains," in *Fire Effects in Southwestern Forests; Proceedings of the Second La Mesa Fire Symposium* (Fort Collins, CO, U.S. Forest Service General Technical Report RM-GTR-286, 1996), 182.

⁴³ Martin, *Valle Grande*, 90–91.

⁴⁴ Anschuetz and Merlan, *More Than a Scenic*, 58; *Albuquerque Tribune*, October 17, 1997.

⁴⁵ Anschuetz and Merlan, *More Than a Scenic*, 113; "Affidavit of Joab B. Harrell, Jr.," June 26, 1986, Exhibit DX-FW; "Grazing Agreement," 1999, Exhibit DX-HT; both in "US Exhibits from Jemez Trial, 1779–2000," from non-confidential trial exhibits, on file at VALL.

⁴⁶ Leonard Atencio to Julie Grey, email, November 10, 2004, in "Stock Tank Inventory-2004" binder, VALL Collection.

Ranch managers and other observers have known, for many years, that the decades of overgrazing have had a number of detrimental effects to the ranch's vegetation and stream courses.⁴⁷ Craig Martin, for example, stated that

Sheep grazed on the Baca Location No. 1 for more than 75 years, and the lingering effects of the over 250 years of continuous use by sheep and cattle are visible throughout the property and the Jemez Mountains. The species composition of the grasslands was altered as preferred grasses were consumed and unpalatable species flourished. Importation of livestock also brought alien species such as dandelions, Kentucky bluegrass, and red clover to the grasslands. Most importantly, as sheep consumed grasses down to the roots, they changed the role of fire in the Jemez ecosystem. ... Without low-intensity fire, small trees growing in the grasslands or ponderosa stands matured. Aspens and conifers encroached into the south-facing meadows on many Jemez peaks, closing in the grasslands that had been there since the retreat of the Ice Age.⁴⁸

During the mid-1960s, the introduction of new grass species was a key part of the ranch's grazing program. Dunigan worked with partners at Texas Tech University and the U.S. Soil Conservation Service on ways to improve his rangeland. One outcome of that collaboration was an experimental plot with fifteen cool-season grasses, the idea being that introducing these grasses would reduce damage to pastures during grazing. It would also have the potential to lengthen the livestock season by producing useful grass earlier in the spring and later in the fall.⁴⁹

Grazing has also altered both the appearance and flow characteristics of the ranch's watercourses. Several streamside environments, due to grazing, had changed from fens to well-defined, open streams, while streams in other parts of the preserve had, in effect, reversed that process. Ongoing research, over time, will provide additional information about the degree to which grazing has altered the preserve's ecological processes.⁵⁰

Historic Properties Summary and Recommendations

This section has noted several examples of ecological modifications that have taken place on the Baca Ranch over the years and, based on a consistent pattern of overgrazing that appears to have taken place at the ranch during the early and mid-twentieth century, many more physical manifestations of overuse may well come to light by future researchers. As they apply to National Register of Historic Places criteria, however, these examples of ecological modifications do not fit the traditional definition of "historic places." While the National Register, among its criteria, allows for districts that are either "farms with large acreage" or "rural historic districts," the ecological modifications that have thus far been identified on this ranch appear to primarily affect integrity rather than eligibility.⁵¹

⁴⁷ Robert Parmenter, interview with Frank Norris, October 21, 2020.

⁴⁸ Martin, *Valle Grande*, 70–71.

⁴⁹ Anschuetz and Merlan, *More Than a Scenic*, 113–114.

⁵⁰ Robert Parmenter, interview with Frank Norris (after viewing before-and-after photographs showing changes to streamside environments since the 1930s and 1940s), October 21, 2020.

⁵¹ National Park Service, "How to Define Categories of Historic Properties," *National Register Bulletin; How to Apply the National Register Criteria for Evaluation* (Washington, D.C., the author, 1997), 6; https://www.nps.gov/subjects/nationalregister/upload/NRB-15_web508.pdf

Boundary markers

The Baca Ranch gained its first boundary markers in 1876. As was noted above, complications during the 1850s with the Las Vegas Grandes grant—namely, that some two thousand people were living on it—suggested that Luis Maria Cabeza de Baca’s heirs would need to consider other parcels as a substitute. Shortly after Congress passed a June 1860 act that sanctioned the family’s right to choose alternate parcels, the family—for years based in Peña Blanca—looked to the nearby Jemez Mountains for their first selection. And by the end of the year, the Surveyor General had approved the family’s application for Baca Location Number 1.⁵²

In order to finalize title to the land, a survey was required. This process, however, moved at a snail’s pace. The family lawyer’s initial request for a survey was renewed in 1870, but it was not until 1876 that U.S. Deputy Surveyors Daniel Sawyer and William H. McBroom conducted a survey of the grant’s boundary. The two set forth on June 12, and they claimed to have marked the entire perimeter—50 rugged miles—in four days. Circling the grant in a clockwise direction, they supposedly marked each mile of the four-sided parcel with either stone mounds or pine tree blazes.⁵³ This survey, as it turned out, would be the first of four to take place over the next forty-four years.

This 1876 boundary survey remained for more than thirty years. In October 1909, as noted above, Frederico Otero sold the Baca Ranch to the Redondo Development Company. The new firm, based in Pennsylvania, had questions about the ranch’s actual boundaries, so they hired a private, Seattle-based surveyor, Lewis D. W. Shelton, to survey the property. Shelton’s survey, apparently conducted in the spring of 1910, found a number of mistakes in the original (1876) survey. (As Shelton stated in his report, “From my experience as a surveyor, and from what I found on the ground, I would say that a complete survey of Baca Location No. 1 was never made.”)⁵⁴ Shelton and his crew located many of the boundary markers that Sawyer and McBroom (in 1876) had set out, but not as many as they expected, and a later court ruling noted that “in very few, if any, instances where the marks and monuments at the places indicated in [the 1876] report, and for long distances none whatever were found. It is quite apparent that a considerable part of the exterior lines was not traversed at all by the [1876] surveyors.”⁵⁵ Sawyer and McBroom’s most significant failings were along the grant’s eastern and western boundaries; in both cases, the boundary was marked more narrowly than the legal description called it to be. Instead of the markers enclosing a 99,289-acre grant, as Congress had decreed in 1860, Shelton concluded that the existing boundary markers enclosed only 90,425 acres—about 91 percent of Congress’s intent.⁵⁶ A later surveyor, William B. Douglass, stated that the errors in the previous survey were “apparently owing to defective instruments used by the surveyors.”

⁵² Martin, *Valle Grande*, 30.

⁵³ Martin, *Valle Grande*, 31–32; Hoard, *Historic Transportation Routes on the Pajarito Plateau*, 8; Sawyer and McBroom, “Plat of the Baca Heirs Location No. One,” June 1876, on file in VALL map collection.

⁵⁴ Stanley M. Hordes, *History of the Boundary Between the Baca Location No. 1 Grant and Santa Clara Pueblo*, unpublished mss., June 3, 1998, 46, in VALL Collection.

⁵⁵ “United States v. Redondo Development Co.,” Case 254, F. 656, *United States Court of Appeals, Eighth Circuit*, decided November 18, 1918; <https://cite.case.law/f/254/656/>.

⁵⁶ R.W. Stone (Redondo Development) to Fred Bennett (GLO), July 13, 1910, Exhibit DX-AE, “US Exhibits from Jemez Trial, 1779–2000,” from non-confidential trial exhibits, on file at VALL; Anschuetz and Merlan, *More Than a Scenic*, 232.

Shelton, in his role as a private surveyor, did not place any new markers in the ground as part of his survey.⁵⁷

Based on the results of Shelton's survey, Redondo Development Company officials, in a letter to the General Land Office, explained the deficiencies of the original Sawyer and McBroom survey, noting "that there is generally uncertainty, indefiniteness and error in so much of the [boundary] line as was run and marked."⁵⁸ In July 1910, therefore, it petitioned the Office of Surveyor General for a government-sponsored resurvey.⁵⁹ In response, Surveyor General John W. March directed William B. Douglass and Hugh M. Neighbor to perform a restorative survey of the grant boundaries. The two men, who surveyed the property in summer 1912, limited their survey to a retracement of portions of the northern and eastern boundaries, along the alignments that Sawyer and McBroom had established in 1876. Significantly, however, the two men noted that the parcel, as surveyed in 1876, was approximately eight thousand acres smaller than its legal definition." As a result, the men also "carefully set new monuments" along a new eastern boundary (see Figure 5.5) that, according to a Santa Fe Indian School official, was "two or three miles east of what the [Santa Clara] Indians understood originally as the western boundary of [their] reservation."⁶⁰

⁵⁷ Martin, *Valle Grande*, 48–49. Douglass submitted his report in April 1912.

⁵⁸ R.W. Stone (Redondo Development) to Fred Bennett (GLO), July 13, 1910, Exhibit DX-AE, as noted above.

⁵⁹ Hordes, *History of the Boundary*, 46-47.

⁶⁰ Hoard, *Historic Transportation Routes on the Pajarito Plateau*, 22; Martin, *Valle Grande*, 49; Hordes, *History of the Boundary*, 48, 50–51, Maps 8a and 8b. Hoard noted that "Although Douglass could not find all the mile-marker corners of the 12.5-mile square original survey, he surveyed the same lines as Sawyer & McBroom."



Figure 5.5. Shown is one of a series of U.S. Geological Society markers that, since 1876 in various forms, have denoted the Baca Ranch's exterior boundary. Photo taken in 2021 by co-author Frank Norris.

Soon after the two men completed their work, Redondo Development officers—thinking that the boundary-line location had been legally settled in their favor—arranged a contract with surveyor Lewis Shelton to install a fence along the boundary line that he, several years earlier, had decided was correct. Before long, more than four miles of fencing had been installed along the Baca Location's eastern and southern borders. Forest Service personnel, however, soon got wind of this bold move. Displeased with this extralegal action, the agency requested the U.S. Attorney for the District of New Mexico to file a suit to stop the fencing operation, and the fencing operation was suspended in June 1914.⁶¹ The lawsuit took several years to resolve, and it was not until November 1918 that a federal appeals court ruled in Redondo Development's favor, primarily based on Shelton's premise that the original (1876) survey was never satisfactorily completed. "It is quite apparent," the judge noted, "that a considerable part of the exterior lines was not traversed at all by the surveyors. They reported a completion of their work in about one-sixth of the time reasonably necessary for a faithful performance by the force they employed." Based on that decision, the judge

⁶¹ Martin, *Valle Grande*, 49–50; *Albuquerque Morning Journal*, June 19, 1914, 3; Hordes, *History of the Boundary*, 49–50.

instructed the GLO, via the Surveyor General's office, to make a correct resurvey of Baca Location No. 1.⁶²

After the court case had been resolved, it took more than a year before government surveyors were able to get to the Baca Ranch and conduct an independent resurvey of its boundaries, one that would “give to the claimants the acreage allotted to them.” In June 1920, three cadastral engineers—Lawrence A. Osterhoudt, Wendell V. Hall, and Charles Devendorf—arrived on the ranch and started working. They took more than a year to complete the resurvey, but by August 24, 1921, the men had correctly determined the location, in the field, of the grant boundaries. As a result of their work, the Baca Location's eastern boundary shifted east approximately one-half mile from the markers that Sawyer and McBroom had placed in 1876, and in addition, both the southern and western boundaries of the grant slightly shifted. The three surveyors, moreover, left physical evidence of their work—in the form of brass caps—that were placed at all four corners of the property and erected monuments at 1.5-mile intervals along each boundary line.⁶³

Since that time, U.S. Geological Survey have installed twenty-five or more brass-capped benchmarks adjacent to various roads and the gas pipeline within the preserve. These benchmarks are noted on various USGS topographic maps that were produced during the mid-twentieth century, and preserve staff have gathered descriptive information about some of them.⁶⁴ In 1977, a 3,076-acre parcel at the southeastern corner of the Baca Ranch was sold to the National Park Service as an addition to Bandelier National Monument, and that land transfer—plus several others effected in recent years—have also resulted in the placement of survey markers.⁶⁵ These markers, however, are not of sufficient vintage to be *eligible* to the National Register of Historic Places.

Historic Properties Summary and Recommendations

The Baca Location boundary, as noted above, was surveyed four times: in 1876, 1909, 1912, and 1920–1921. Three of those surveys—all except the 1909 effort—were by federal government surveyors, and all three government surveys involved the placement of new markers (stone mounds, tree blazes, or brass capped poles) along what the surveyors perceived as the ranch's exterior boundary. For various reasons, the number of markers physically placed along the boundary is not known, but the best way to account for them is to utilize the reports and maps associated with each survey effort and to search for each marker in the field. Of those that were placed at one time, those marked by tree blazes are most likely lost, but of the remainder, many if not most of these markers may still exist. Locating these exterior boundary markers, and getting an accurate GPS reading for each, is an important part of a comprehensive inventory of cultural sites associated with the preserve. Also important to the inventory process is obtaining a descriptive listing of the various U.S. Geological Survey benchmarks that are located within the preserve.

⁶² *Santa Fe New Mexican*, September 28, 1915, 15; Exhibits DX-AK, DX-AO, DX-AP, and DX-AR, all in “US Exhibits from Jemez Trial, 1779–2000,” from non-confidential trial exhibits, on file at VALL.

⁶³ Martin, *Valle Grande*, 50, 53; Anschuetz and Merlan, *More Than a Scenic*, 214; Hordes, *History of the Boundary*, 54–55, Maps 9a and 9b.

⁶⁴ Benchmarks are noted on the following USGS 1:24,000 quadrangles: Valle San Antonio, 1970 (10), Bland, 1953 (9), and Valle Toledo, 1952 (6). See <https://geodesy.noaa.gov/NGSDDataExplorer/>

⁶⁵ Martin, *Valle Grande*, 106.

Regarding the eligibility of these features to the National Register of Historic Places, the established criteria recognize “boundary markers,” “mileposts,” and “monuments” as “objects.” The guidelines, however, caution that “small objects not designed for a specific location are normally *not eligible*.” These boundary markers physically resemble thousands of similar objects that have been placed by USGS survey personnel over the years. Neither the exterior boundary markers nor the various interior benchmarks, however, have been comprehensively inventoried. These various markers have not yet been evaluated for their eligibility to the National Register of Historic Places.⁶⁶

Sheep Camps and Culturally Modified Trees

As has been noted previously in this chapter, people have been grazing flocks of sheep on the Baca Ranch for two hundred years or more. Beginning in the early 1820s, members of Luis Maria Cabeza de Vaca’s family, from their home in Peña Blanca, grazed flocks of sheep each summer in the high-elevation valleys of the Jemez Mountains. By 1876, moreover, government surveyors who visited the ranch noted that although there were “no settlers living on the Grant ... large herds of sheep are kept here during the summer.”⁶⁷

During the nineteenth century, and well into the twentieth, sheep grazing on the Baca Ranch operated according to the age-old *partido* system. Dan Scurlock, in a 1981 publication, compiled a partial list of the *pastores* (Hispanic sheepherders) who have lived and worked on the Baca Ranch (see Figure 5.6), some as early as 1912, others as late as 1953.⁶⁸ In a follow-up article, Scurlock provided many details about the lifestyles of the *pastores* and the appearance of their camps. He noted, for example, that the herds

came from winter pastures and ranches at or near towns such as Peña Blanca, Bernalillo, Cuba, Jemez Springs, Española, Santa Fe, Algodones, and Cordova. The *pastores* and *camperos* [camp tenders], on foot or mounted on saddle horses, herded their sheep with the aid of dogs. ... Camps were moved on the average of once a week following depletion of available grass for the flocks. ... Burros and mules carried the camp equipment and supplies in wooden boxes and water in five-gallon wooden kegs. ... Herders often would burn off pasture to promote rapid new growth of grasses and forbs.

⁶⁶ National Park Service, “How to Define Categories of Historic Properties,” *National Register Bulletin; How to Apply the National Register Criteria for Evaluation* (Washington, D.C., the author, 1997), 5; https://www.nps.gov/subjects/nationalregister/upload/NRB-15_web508.pdf.

⁶⁷ Martin, *Valle Grande*, 32.

⁶⁸ Scurlock, “Euro-American History,” 147.



Figure 5.6. This photo appears to show a typical Baca Ranch sheepherders' camp. Courtesy of Valles Caldera National Preserve, donated by the Richard and Vera Boyd family.

Camps were set up in areas protected from predominant winds but away from solitary trees or small groves of trees that sometimes were struck by lightning during frequent afternoon thunderstorms. The sites were picked for proximity to good pasture and water for the stock. Tents were erected on a slight grade for drainage of runoff during rains. A ridgepole tent was used to store supplies of food and equipment, and a single, center-pole, tepee tent, about seven-by-seven feet, served as sleeping quarters for two men. Eight wooden stakes secured the bottom of the canvas tents. Shallow trenches, dug with shovels around each tent, prevented flooding of the interior. ... A firepit for cooking meals was dug about two meters from the door of the sleeping tent. The firepit was about a foot deep, rectangular in shape (two by three feet) with dirt mounded along one side as a windbreak. Rocks were sometimes placed around the interior of the pit on which the coffee pots, skillet or Dutch oven rested during cooking. ... Scattered around the majada (bedding ground for the sheep) were canoas (troughs) of salt.⁶⁹

Scurlock further noted that the diet of those who herded sheep each year included lard (in ten-pound pails), canned tomatoes, canned condensed milk, and coffee—of which Arbuckle's was a favorite. Many carried tins of tobacco, of which Prince Albert was a preferred brand. In order to provide a modicum of protection from coyotes, bears, and gray wolves, many *pastores* had either .44 Special rifles or pistols, while others carried .32-.20 caliber pistols (designed primarily for "small game and varmints").⁷⁰

Historian Craig Martin, in describing typical sheep camps, noted an additional feature. "In frequently used camps," he stated, "herders built small rock shelters from the available countryside rock," and

⁶⁹ Scurlock, "Pastores of the Valles Caldera," 3-5.

⁷⁰ Scurlock, "Pastores of the Valles Caldera," 5-7; <https://www.foggymountain.com/hunting-guide-articles/bear-loads-hunt-black-bear/>; <https://americanhandgunner.com/gear/the-32-20/>.

on occasion they built log corrals for their animals.⁷¹ Scurlock noted the following about the location of sheep camps. He stated that

In general, these camps were located near good bedding areas for the sheep, i.e., usually near a protected (from the wind) hillside and on dry, well-drained sites located away from trees that “drew lightning.” A tipi type, two-man tent was placed on a well-drained, slight grade with the door facing east or west.⁷²

A key feature associated with the various sheep camps are culturally-modified trees (CMTs), otherwise known as arbor glyphs or dendroglyphs. Martin suggests the connection between sheep camps and CMTs in this way:

Despite camp chores, tending to pack stock, and minding the flocks, sheepherders had many lonely hours on their hands. One universal way to pass some time was to serrate the bark of aspen trees with a knife. ... As the tree expanded around such a scar, the outer bark turned black, creating a sharp contrast with the milky white bark on the undamaged trunk. The art was often cut at shoulder height, but many carvings stand six to eight feet above the ground.⁷³

So far as is known, sheepherders grazed their flocks in and around the preserve’s high-elevation valleys for well over a hundred years, from the early 1820s to the late 1950s or early 1960s. Each sheepherder would occupy ten or more camp locations during the course of a summer, and during many summers, numerous flocks populated the preserve at one time. (Lessee Frank Bond, for example, had seventeen sheep camps at one time during the summer of 1918.)⁷⁴

For all of these reasons, it is to be expected that the *pastores* and *camperos*, over the years, used hundreds of sheep camp locations. Existing cultural resource records maintained by the NPS have identified relatively few known sites that are expressly related to either sheep camps, primarily because these camps were relatively ephemeral, and also because little above-ground physical evidence is associated with these former campsites. The preserve’s site log does, however, identify and describe two sheep pens.⁷⁵

Fortunately, however, there is a far more comprehensive record of where culturally-modified aspen trees are located in the preserve. The existence of these CMTs on the Baca Ranch has intrigued cultural resource professionals since 1978, when their importance was recognized in a separate section of a survey report.⁷⁶ As Jonathan Knighton-Wisor has noted, subsequent surveys have followed a similar methodology. Current standard procedure at Valles Caldera, established after the preserve was established in 2000, is to document every modified tree encountered during each archaeological survey.⁷⁷ Indeed, since 2001 any survey undertaken on the preserve—be it by the Valles Caldera Trust, the NPS, or the UNM Office of Contract Archaeology—has incorporated the

⁷¹ Martin, *Valle Grande*, 67.

⁷² Scurlock, “Euro-American History of the Study Area,” 144.

⁷³ Martin, *Valle Grande*, 60–61.

⁷⁴ Martin, *Valle Grande*, 59–69.

⁷⁵ Historic Site Log (Appendix E, Table E1), Valles Caldera National Preserve, Sites LA137061 and LA161923.

⁷⁶ James L. Moore, Bradley J. Vierra, Gale M. McPherson, and Mark E. Harlan, *An Investigation into High Altitude Adaptations: the Baca Geothermal Project* (Albuquerque, Office of Contract Archeology, University of New Mexico), 1978, as noted in Scurlock, “Euro-American History,” 144.

⁷⁷ Jonathan Knighton-Wisor, “Carved Aspens in the Valles Caldera National Preserve,” unpublished mss., University of New Mexico, 2012. 13.

need to create and compile a database related to these trees. Since 2008, a member of the preserve staff has organized and encouraged a Volunteer Aspen Survey Team to fan across the preserve and collect CMT-related data. Using standardized information sheets, professional and volunteer teams that have visited each CMT have noted 1) the tree’s exact location, 2) a wide variety of information about each carving, 3) the size and condition of the tree, and 4) the height off the ground of the carving. The volunteer group, during the decade-plus of its existence, has remarkably gathered information on a total of 1,340 aspen carvings (see Figure 5.7). The larger database, moreover—which includes research gathered in 1978, 1980, and every year from 2006 to 2017, inclusive—includes a total of 2,767 arbor glyphs located on 2,162 trees, the glyphs ranging in age from the 1890s to the early 2000s. Thus far, more than 35 percent of the preserve has been surveyed for CMTs; as a result, the total number of documented arbor glyphs to date includes hundreds more that have been recorded since 2017.⁷⁸

Historic Properties Summary and Recommendations

Because of the longstanding interest in aspen arbor glyphs in Valles Caldera National Preserve, preserve staff have amassed a large, sophisticated database of information related to these trees. These trees, which have significant cultural value due to their longtime associations with New Mexico’s *pastores* and *camperos*, potentially qualify for the National Register of Historic Places. Individual CMTs would potentially qualify as sites, of statewide significance, inasmuch as one site category recognizes the importance of a “natural feature (such as a rock formation) having cultural significance.” The preserve’s site log, moreover, has recorded that one of its inventoried aspen carvings sites (see Appendix E, Table E1) is *eligible* to the National Register for Historic Places. Given the large number of identified CMTs, preserve staff may wish to work with the New Mexico Historic Preservation Office on the proper type of nomination to submit. (A previous nomination for a group of CMTs, approved in 2000, took place at Indian Grove, which is within Great Sand Dunes National Park and Preserve in Saguache County, Colorado—NRHP ID 00000237.)

The large number of CMTs, moreover, combined with the proven association between CMTs and sheep camp sites, suggests that the location of these CMTs should be incorporated into future research efforts that are focused on locating sheep camp sites. As noted above, those who stayed in sheep camps may well have made minor improvements to these sites (firepits, trenches, rock

⁷⁸ Knighton-Wisor, “Carved Aspens,” 11; Anastasia Steffen, “Aspen Carvings on the Valles Caldera National Preserve: Summary of Results, 2006–2017,” VCNP Cultural Resources Report R2018-005, March 23, 2018, on file at VALL. Craig Martin, *Valle Grande*, 61 states that the earliest known carving on an VALL aspen tree dates from 1875.



Figure 5.7. A culturally modified tree. Staff and volunteers at the preserve have inventoried more than two thousand of these carved aspen trees. Courtesy of Valles Caldera National Preserve.

rings, or rock shelters), and these short-term residents may also have discarded miscellaneous camp debris along with metal items (lard pails, coffee cans, tobacco tins, etc.) that a metal detector would be able to locate. Therefore, the existing data sheets pertaining to CMTs should be reexamined to see whether any notes were compiled about nearby surface features. Regardless, the location of existing CMTs offers a significant potential for future researchers to discern and describe scores if not hundreds of sheep camp sites.

Buildings and Structures

Within Valles Caldera National Preserve, dozens of buildings and structures have been built over the years. Many of these were related to logging camps or mills, and are no longer standing. But others either directly or indirectly supported ranching operations. Most in the latter category are still standing (see Figure 5.8).



Figure 5.8. The Bond Cabin served as the headquarters for ranch operations from 1918 until the 1960s. Courtesy of Valles Caldera National Preserve, donated by the Richard and Vera Boyd family.

Many are located in the immediate headquarters area (Table 5.1, “Headquarters-Area Buildings in Valles Caldera National Preserve and their National Register Eligibility”), but the remainder are scattered elsewhere around the preserve (Table 5.2, “Backcountry Buildings in Valles Caldera National Preserve and their National Register Eligibility”).

Table 5.1. Headquarters-area buildings in Valles Caldera National Preserve and their National Register eligibility

Building Name(s)	Date(s)	HSD (Dennison, et al./ SWCA, 2007), Vol. 1	Zook/SHPO (2014)	Draft NRHP Nomination (2015)	Draft CLI (2020, 7:5 to 7:7)
Cabin Area:					
Otero Cabin (Otero Headquarters, Cupid Cabin)	1915	<i>eligible</i> (pp. 41–43)	<i>eligible</i>	<i>contributing</i>	<i>eligible</i>
Commissary Cabin	1941	<i>eligible</i> (pp. 43–45)	<i>eligible</i>	<i>contributing</i>	<i>eligible</i>
Greer/Cowboy (Hill) Cabin	1951	<i>eligible</i> (pp. 45–46)	<i>eligible</i>	<i>contributing</i>	<i>eligible</i>
Bond Cabin (Headquarters Cabin)	1918	<i>eligible</i> (pp. 47–48)	<i>eligible</i>	<i>contributing</i>	<i>eligible</i>
Ranch Foreman’s House (Manager’s Cabin)	1918	<i>not eligible</i> (pp. 49–50)	<i>not eligible</i>	<i>contributing</i>	<i>eligible</i>
Red Office Building	1951	<i>not eligible</i> (p. 51)	<i>eligible</i>	<i>contributing</i>	<i>eligible</i>
Cowboy Pole Barn	1964	not evaluated	not evaluated	<i>noncontributing</i>	<i>contributing</i>
Commissary Pole Barn	1964	not evaluated	not evaluated	<i>noncontributing</i>	<i>contributing</i>
Cabin District Contact Station (Bunkhouse)	1991	not evaluated	not evaluated	<i>noncontributing</i>	<i>not eligible</i>
Detached Wood Shed	unknown date	not evaluated	not evaluated	<i>noncontributing</i>	<i>contributing</i>

Building Name(s)	Date(s)	HSD (Dennison, et al./ SWCA, 2007), Vol. 1	Zook/SHPO (2014)	Draft NRHP Nomination (2015)	Draft CLI (2020, 7:5 to 7:7)
Recreation-Commercial Area:					
Kiva Lodge (Dunigan Lodge, Casa de Baca)	1963	<i>eligible</i> (pp. 59–63)	<i>eligible</i>	None	<i>eligible</i>
Upper A-Frame	1963	<i>not eligible</i> (p. 59)	<i>eligible</i>	None	<i>eligible</i>
Lower A-Frame	1963	<i>not eligible</i> (p. 59)	<i>eligible</i>	None	<i>eligible</i>
Skinning Shed (Cabin)*	1970	not evaluated	not evaluated	None	<i>contributing</i>
Skinning Shed (Barn)*	1970	not evaluated	not evaluated	None	<i>contributing</i>
Grasslands Area:					
Old Barn (Salt Barn)	1941	<i>eligible</i> (pp. 53–54)	<i>eligible</i>	<i>contributing</i>	<i>eligible</i>
Saddle/Tack Shed	1963,1970s	<i>not eligible</i> (p. 46)	<i>eligible</i>	<i>contributing</i>	<i>contributing</i>

Table 5.2. Backcountry Buildings in Valles Caldera National Preserve and their National Register Eligibility

Building Name(s)	Date(s)	HSD (Dennison et al./SWCA, 2007)	Zook/SHPO (2014)
San Antonio Cabin	ca. 1947	<i>eligible</i> (pp. 55–58)	<i>eligible</i>
Lightning Shed (Lightning Shack)	ca. 1954	<i>eligible in 2002, but no longer</i> (pp. 64–65)	<i>not eligible</i>
Los Indios Creek Cabin (Huffman Cabin)	1959	<i>not eligible</i> (pp. 68–69)	<i>eligible</i>
Horse Paddocks Barn	1979	<i>not eligible</i> (pp. 71–72)	<i>not eligible</i>
Union Building (admin complex)	ca. 1979	<i>not eligible</i> (p. 65)	<i>not eligible</i>
Sergeant’s Bluff Cabin	ca. 1980	<i>not eligible</i> (p. 66)	<i>not eligible</i>
Hilton Cabin	ca. 1990	<i>not eligible</i> (pp. 67–68)	<i>not eligible</i>
“Fight Before Christmas” / “Troublemakers” Movie Set*	1993	not documented or evaluated	
“Buffalo Girls” Movie Set (<i>collapsed</i>)*	ca. 1993	<i>not eligible</i> (pp. 69–71)	<i>not eligible</i>
“The Missing” Movie Set Barn*	2003	not documented or evaluated	
Valle Grande Entrance Station	2009	not documented or evaluated	
San Antonio Cabin Ancillary Buildings (Barn, Bunkhouse, and Springhouse)	Unknown	not evaluated (pp. 56–58)	<i>eligible</i>

*These buildings are discussed in greater detail in the “Film-Set Construction” section of Chapter 8.

Historic Properties Summary and Recommendations

As has been noted in Table 5.1 and Table 5.2, most of the ranching-related buildings and structures still standing within Valles Caldera National Preserve have been described by historians and architects and have been evaluated—sometimes several times—for their eligibility to the National Register of Historic Places. Some of these efforts have focused on the ranch’s headquarters area, while others have gone farther afield. They are listed below.

- In 2003, A. Abbott and T. Cordua from the Jemez Ranger District, Santa Fe National Forest, U.S.D.A. Forest Service, submitted a Headquarters Area Heritage Resources Survey which described and evaluated, for the National Register, various Baca Ranch headquarters-area buildings. The New Mexico State Historic Preservation Office reviewed the buildings in this report for National Register of Historic Places eligibility.
- In November 2007, SWCA Environmental Consultants completed a three-volume report, Documentation and Preservation of Historic Buildings on the Valles Caldera National

Preserve, Sandoval County, New Mexico. This HSD (historic structure documentation) has generally functioned as a historic structures report for the preserve.

- In September 2014, Barbara Zook, an architect in New Mexico’s State Historic Preservation Office (SHPO), reviewed the recommendations in the SWCA report and provided an independent evaluation.
- In December 2015, James Wright Steely of SWCA Environmental Consultants, along with others, completed a 90% draft version of the “Baca Ranch Headquarters Area” National Register of Historic Places (NRHP) district nomination. This document has not been finalized.
- In 2020, Helen Erickson and Crystal Dillahunty from the University of Arizona, as part of a National Park Service task agreement, completed a draft *Cultural Landscape Inventory* (CLI) for the Baca Cabin Area. This document has not yet been finalized.
- At the time of this printing, a contractor is working on an adaptive reuse plan and a revised historic structures report for VALL’s cabin-area historic district.

Most of these buildings and structures have also been inventoried and described in the preserve’s ongoing site log, historical items of which are summarized in Appendix E. The site log also provides National Register eligibility recommendations for some of the inventoried sites.

Because one or more of the above reports has already described and evaluated most of the preserve’s buildings, buildings that have been previously evaluated will not be reexamined in the present study. As noted in the tables above, however, there are significant discrepancies in determinations of eligibility (DOE’s) between the various sources, particularly between HPD’s 2014 evaluation and 2020 Cultural Landscape Inventory. These resources, as needed, should be reexamined and reevaluated (see Figure 5.9).

The only buildings in the preserve that have not been thus described and evaluated are two movie-set structures in the Valle Grande and the Valle Grande Entrance Station. These buildings were erected within the last thirty years and are thus unlikely, at this time, to be *eligible* for nomination to the National Register. In addition, the Skinning Shed and Skinning Shed Barn, along with the Union Oil-era “guard/entrance station” in the southwest corner of Redondo Meadows, have not yet been evaluated for National Register eligibility. Most of these buildings, however, have been inventoried and evaluated in the preserve’s site log, as noted above.

Stables and Corrals

As noted above, either sheep or cattle have been grazed on the Baca Location for more than two hundred years. To ensure the health of sheep herds, it is necessary that all sheep be sheared at least once each year, either before lambing takes place or in the spring before the onset of warm weather. Sheep with long fleeces, however, are sometimes sheared twice a year. A corral is necessary to control a sheep so that it can be sheared. As a further control measure, shearing is often undertaken

inside a closed room.⁷⁹ A discussion of fencing and stock tanks, also related to stock raising, is noted below.



Figure 5.9. The Ranch Foreman's House, also known as the Manager's Cabin, was (like the Bond Cabin) built in 1918. This photo was taken before the south wing was added.

Courtesy of Valles Caldera National Preserve, donated by the Richard and Vera Boyd family.

At the Baca Location, sheep shearing was done slightly differently than elsewhere. As noted elsewhere, the ranch's snowbound winters demanded that all sheep be driven up one of several stock driveways into the high valleys each spring, a process that was reversed each fall (see Figure 5.10).

Perhaps as a result, shearing was done in the spring shortly after the lambing season, not beforehand, at various shearing camps scattered about the ranch. (A July 15, 1908 article from a Santa Fe newspaper spoke of an Estancia Valley sheep raiser who had "just completed the shearing of ten thousand sheep" at the Baca Location.) One major shearing spot was near the ranch headquarters, more specifically at the Old Barn (built in 1941) or at the adjacent Sheep Barn (built in 1953 and demolished during the 1990s). Sheep were also sheared near San Antonio Spring; at El Cajete; along Paso del Norte Road, at the southern end of the ranch just south of State Highway 4; along Redondo Creek near the south end of Redondo Canyon; and perhaps elsewhere. During the early years, the corrals for shearing operations were constructed with conifer or aspen logs, but later operations used milled lumber in place of native materials. Shearing for many years was done with and shears or blades, but with the advent of electricity the shearers used electric shears, which allowed the operation to proceed more quickly.⁸⁰

⁷⁹ "You Need a Haircut," <http://www.sheep101.info/shearing.html>; "Shearing," <http://www.sheep101.info/201/shearing.html>; Martin, *Valle Grande*, 62.

⁸⁰ Martin, *Valle Grande*, 62; <http://www.sheep101.info/201/shearing.html>; *Santa Fe New Mexican*, July 15, 1908, 8; Scurlock, "Euro-American History," 142; SWCA, *Documentation and Preservation of Historic Buildings*, vol. 1, 53–54; NPS, *Draft Cultural Landscape Inventory*, p. 07_3_2.



Figure 5.10. This photograph shows a Baca Ranch sheep-shearing operation. Courtesy of Valles Caldera National Preserve, donated by the Richard and Vera Boyd family.

Cattle grazing on the ranch, which became prominent during the first decade of the twentieth century, was at first handled much the same as sheep grazing. Each spring, cattle herds were typically driven up one of several routes onto Baca Ranch land; consistent with the *partidário* system, cowboys from a neighboring community paid the ranch owner a set fee for each head grazed, after which they remained with the herd—just as the sheepherders did—for the duration of the season. These cattle herds had little or no reason to use corrals while grazing at the Baca Ranch.⁸¹ Beginning in the 1950s, however, the ranch owner switched over to hiring its own cowboys to tend to the stock; and in addition, after 1949, cattlemen switched over to trucking their herds to and from the ranch—often from fairly distant locations—rather than driving them along stock driveways from areas adjacent to the ranch. Given the transition over to trucking, ranch employees built large, steel-pipe stock corrals in several places on the ranch where the stock was branded and where cattle transporters could drop off and retrieve their herds. These stock corrals were located adjacent to Cerro La Jara (the so-called Black Corrals), just east of the San Antonio cabin, a half-mile west of the San Antonio Cabin, in Redondo Meadows, and in various locations near the ranch headquarters.⁸²

Aerial photographs, combined with historical documentation, can provide approximate construction dates for the various extant Baca Location corrals. A fall in wool prices, combined with records provided through aerial photography, suggests that the Black Corrals were built between 1946 and 1954. (As stated on a descriptive site form, “the pipe corral was constructed, at the earliest, in the 1960s ... and possibly as late as the 1980s. A wooden corral existed in the same place prior to the metal pipe corral construction.”)⁸³ The corrals adjacent to the San Antonio cabin and in Redondo

⁸¹ Martin, *Valle Grande*, 63–67; Anschuetz and Merlan, *More Than a Scenic*, 111.

⁸² Martin, *Valle Grande*, 67, 70, 129.

⁸³ Site Form LA 152304, July 26, 2004 and July 12, 2006, on file at VALL.

Meadows were built between 1954 and 1963, and the corrals located a half-mile west of the San Antonio Cabin were not erected until after 1975.⁸⁴ In addition, preserve staff have identified and inventoried a number of small, wooden corrals scattered around the historic ranch (see Chapter 3).

Another set of corrals on the ranch had another purpose entirely. During the late 1970s the ranch owner, James P. “Pat” Dunigan, became intrigued with the idea of stabling racehorses on his ranch, thinking that training them at high altitude could improve their ability to run at elevations closer to sea level. Acting on that notion, he built a large stable for thoroughbreds about a mile north of the headquarters and on the western border of the Valle Grande, near Jaramillo Creek. The stable, which came complete with a one-bedroom apartment for the hostlers, was under construction during the summer of 1979. Nearby, ranch personnel constructed a wide array of paddocks. Before long, however, it became clear that boarding horses in this high-altitude environment was proving to be costly, and furthermore it did not substantially improve the horses’ racing speed. Then, in February 1980, Dunigan tragically died of a heart attack. As a result of these two events, racehorses were no longer stabled on the ranch, and since that time the paddocks have seen little use.⁸⁵

Historic Properties Summary and Recommendations

At Valles Caldera National Preserve, it has been more than sixty years since an appreciable number of sheep have grazed its valleys and hill slopes. Cattle, however, have grazed each year at the preserve since the early twentieth century and still return each spring, summer, and fall. As noted above, there were at one time corrals used for sheep in at least six different locations on the preserve, and compiled site records note that two sheep pens have been identified.

In addition, there is considerable evidence of corrals that hearken back to the ranch’s century-old cattle grazing tradition (see Figure 5.11). Today, the Old Barn in the headquarters area, built in 1941, has long been surrounded by a milled-wood corral, and extensive steel-pipe corrals are found adjacent to the San Antonio Creek cabin, the Black Corrals near the present-day Valle Grande Entrance Station, and in scattered other locations. In addition, a set of corrals—adjacent to a large horse paddock—remains from “Pat” Dunigan’s ill-fated attempt to establish, on this ranch, an experimental training facility for thoroughbred horses.

Based on a compilation of corrals in VALL’s site log (see Appendix E, Table E1), nine corrals on the preserve have been inventoried and considered for nomination to the National Register of Historic Places. The wooden corral adjacent to the Old Barn (Salt Barn) has the potential to be an excellent candidate for nomination because of its age and its relationship to a structure that has also been judged, in multiple publications, as being National Register *eligible*. Three of the nine inventoried corrals have been evaluated as being *eligible*, but the Black Corrals, due to their relatively modern metal piping, have been determined to be *not eligible*. Other corrals on the preserve, not yet inventoried, will need to be evaluated as part of future cultural resource work.

⁸⁴ USGS, aerial photograph 11141, taken in 1954, and photograph 63-20-101, taken on October 17, 1963; both in VALL Collection.

⁸⁵ George B. McDonald to U.S. Forest Service, July 20, 1979, Exhibit DX-EP; “US Exhibits from Jemez Trial, 1779–2000,” from non-confidential trial exhibits, on file at VALL; Martin, *Valle Grande*, 104, 114.



Figure 5.11. This photo shows a cattle branding operation at the Baca Ranch. Courtesy of Valles Caldera National Preserve, donated by the Richard and Vera Boyd family.

Fences and Stock Tanks

The chronology of fences and stock tanks on the Baca Ranch shows that the first of these improvements were built when the Bond family owned the ranch. After its sale to the Dunigan family, however, a dramatic rise in fence building was witnessed as well as the excavation of scores of stock tanks.

As noted above, the Baca Location did not formally fall into the ownership of the Cabeza de Baca family until 1876, after U.S. land agents had surveyed the property. A key part of that survey was the placing of physical markers—stone mounds and tree blazes—at regular intervals along the parcel’s perimeter. As noted previously in this chapter, these markers were revised and updated in 1920 when a three-person survey crew walked the boundary and placed brass caps or other monuments at periodic intervals along the way. But throughout the pre-1920 period, few if any fences marked the boundary between the Baca Location and its neighbors. As an NPS document has noted, the owners

managed the land under a ... relaxed communal strategy. Baca Location No. 1 enjoyed various natural barriers and segmentation provided by caldera rims and mountains, and the meadows and drainages did not need fences to mark the grant boundaries. For decades before and after the 1860 [judicial] ruling, several Baca family branches and their extended kin grazed sheep upon undivided tracts in the generous valles of the caldera. Before and after receiving the 1876 title they allowed neighboring Jemez Pueblo herders [as well as those from other adjacent pueblo lands] to continue grazing the property as well.⁸⁶

As has been noted in the “Boundary Markers” section of this chapter (see above), the first fencing erected along the ranch’s perimeter took place in 1917. It was an indicator that the landowner felt that the parcel was becoming sufficiently valuable that it needed to protect its land from outside herds. The Redondo Development Company, which had owned the Baca Location since 1909, had

⁸⁶ NPS, *Cultural Landscape Inventory, Baca Ranch District, Valles Caldera National Preserve* (draft), 2020, p. 05-9.

initially leased the ranch to Frederico Otero. But Otero's lease expired in April 1917, after which the Bond and Nohl Company signed a five-year lease to graze stock on the property. When the new lease took effect, the exact location of the boundary line was still in dispute, based on the fact that two recent surveys—in 1910 and 1912—placed substantially more land in the Baca Location than the first (1876) government survey had done. Despite the lack of a legal consensus, the Redondo Development Company was anxious to demarcate its land, so it inserted a clause in its 1917 lease agreement demanding that the Bond-Nohl interests erect a fence around the property.⁸⁷

Bond's workers, in response, followed the instructions laid out in Lewis Shelton's relatively generous 1910 survey. They started building a fence along the southern boundary (adjacent to where "several Mexican families" lived on homestead claims) and also along the eastern boundary (where Baca Ranch land abutted against the Santa Clara Indian Reservation). In response, as Craig Martin has noted, "storms of protests developed from the local pueblos and the surrounding private landowners" along the southern boundary.⁸⁸ Along the eastern boundary, Santa Clara Reservation residents fulminated "that the Bond interests have built a fence on their land and they [the reservation residents] intend to cut it."⁸⁹ After hearing the protests, Frank Bond told his men to stop their fence-building; instead, he called upon Lewis Shelton to return to the ranch and oversee the fence construction. Even with Shelton's intervention, however, minimal additional fencing was installed in either 1917 or 1918, and for the next two decades the Baca Location's fence remained largely uncompleted.⁹⁰

Fencing at the ranch, in various forms, revived during the late 1930s. Frank Moulton Bond, part of the family that owned the ranch from 1918 to 1963, noted in an interview that fencing at that time went up around the headquarters-area houses, and many fence lines were also installed in the Valle Grande.⁹¹ (An investigation of various aerial photographs backs up what Bond had noted in his interview; 1935 photographs show no internal fencing within the ranch, but by 1954—the next photographs available—show two roughly-parallel fence lines crossing Valle Grande between the headquarters area and State Highway 4, plus a smaller fenced pasture located just south of Jaramillo Creek, toward the north end of Valle Grande.) During the early 1940s, moreover, the quick conversion of nearby Los Alamos from a ranch school to a highly protected, top-secret weapons laboratory had the ancillary effect of the Baca Location being fenced all along its perimeter.⁹²

In the immediate aftermath of the World War II, and on into the 1950s, sheepherding remained active (if less important) on the ranch, but both the personnel and logistics related to the practice

⁸⁷ Martin, *Valle Grande*, 56–57.

⁸⁸ Martin, *Valle Grande*, 57. Martin's sources are Frank Bond letters to Edward Wetmore, June 22, 1917 and July 20, 1917, Frank Bond & Son Records, Center for Southwest Research, General Library, University of New Mexico, vol. 96, pp. 216, 557.

⁸⁹ Anschuetz and Merlan, *More Than a Scenic*, 110, 175, 215.

⁹⁰ NPS, *Draft Cultural Landscape Inventory*, p. 07_2_10; "Baca Location No. 1 Grant, General Description," Sept.–Oct. 1911, Exhibit DX-AG, "US Exhibits from Jemez Trial, 1779–2000," from non-confidential trial exhibits, on file at VALL.

⁹¹ Frank Moulton Bond interview, by Ramona L. Caplan, August 30, 2010, in Anastasia Steffen, Valles Caldera Oral History Project Summary and Interview Abstracts, 2010–2014 (2015). Ms. On file at VALL (VCNP CR Report R2015-010; NMCRIS Activity 148486.

⁹² USGS, Aerial photograph 11114, dated 1954, in VALL Collection; NPS, *Draft Cultural Landscape Inventory*, pp. 06_15 and 07_1_15.

began to change. Most of the Hispanic residents from northern New Mexico's small towns who had previously engaged in sheepherding had been able to land more lucrative jobs in the larger cities. In response, the Bond family hired Basque sheepherders—many of whom had been working for years in other corners of the west—to work at the ranch.⁹³ These sheepherders, moreover, no longer fanned out across the ranch and moved their camps as they had done for decades. Instead, the ranch managers assigned sheepherders specific locations for their stock, often within fenced enclosures (see Figure 5.12).⁹⁴ Sheepherders also changed their migration patterns; they moved their flocks more than the traditional once-per-week rotation in order to ensure an even use of the range. As the agency's draft *Cultural Landscape Inventory* for the preserve has noted, the increase in fencing, and the compartmentalization of herd movements, signaled changes in the organizational structure of sheep grazing, from the cooperative Mexican/Southwestern model to a more restrictive use of range by Anglo ranchers.⁹⁵ Cattle ranching, which soon became the predominant activity on the ranch, went through a similar metamorphosis; under the new model, a small number of cowboys, hired by the Bond family, typically overnights in the headquarters area and spent the summer moving the herds from one fenced area to another.⁹⁶ The idea behind a reliance on fencing within the *valles* was to control pasture rotation, to enforce herd separation, to prevent the loss of stock, and to permit pastures to lie fallow in rotation.⁹⁷ As a result, the amount of fencing gradually increased.

The use of fencing increased during the years shortly after the Dunigans purchased the ranch from the Bond family. Dunigan had specific ideas on how he wanted to manage the cattle yields on the ranch, and fencing was a key part of his plans. As he noted in 1967, four years after he acquired the ranch,

Collectively, when the partners and representatives of Dunigan Tool & Supply Company [met] in a management capacity, [we] took a look at the ranch and decided upon a course of fencing, developing water, creating areas in which to put our cattle, and we had committed ourselves at this point to a steer operation.⁹⁸

As part of his overall range enhancement plans, Dunigan's employees ran an ambitious fencing program. Specifically, by 1968 they had run fences along the north side of the Valle San Antonio to help direct the movement of steers into the high country. They had rebuilt fences along the north and east boundaries of the Baca Location to reduce losses resulting from livestock wandering onto

⁹³ Martin, *Valle Grande*, 68. His Basque reference came from a 1991 lecture that Frank Moulton Bond (Franklin Bond's son) gave in Los Alamos. Basques, from northern Spain and southwestern France, first arrived in the U.S. during the California gold rush, but before long they began to work as sheepherders throughout the Great Basin. As one website notes, "by the early 20th century, Basque-owned sheep operations were ubiquitous in the West." See Iker Saitua, "How Basques Became Synonymous with Sheepherders in the American West," www.ZocaloPublicSquare.org, July 10, 2019. A more complete history of Basques in the west is provided in William A. Douglass and Jon Bilbao, *Amerikannak: Basques in the New World* (Reno, University of Nevada Press), 1975.

⁹⁴ This figure was created by co-author Frank Norris and VALL GIS Specialist Mike Shelley, by comparing and contrasting various aerial photographs in the preserve collection – from 1954, 1963, 1966, and 1975, with supplemental information provided by the text of this study.

⁹⁵ Martin, *Valle Grande*, 67–68; NPS, *Draft Cultural Landscape Inventory*, p. 07_2_10.

⁹⁶ Martin, *Valle Grande*, 69; NPS, *Draft Cultural Landscape Inventory*, p. 07_3_2.

⁹⁷ Anschuetz and Merlan, *More Than a Scenic*, 113; NPS, *Draft Cultural Landscape Inventory*, pp. 07_2_10 and 07_3_2.

⁹⁸ Anschuetz and Merlan, *More Than a Scenic*, 113.

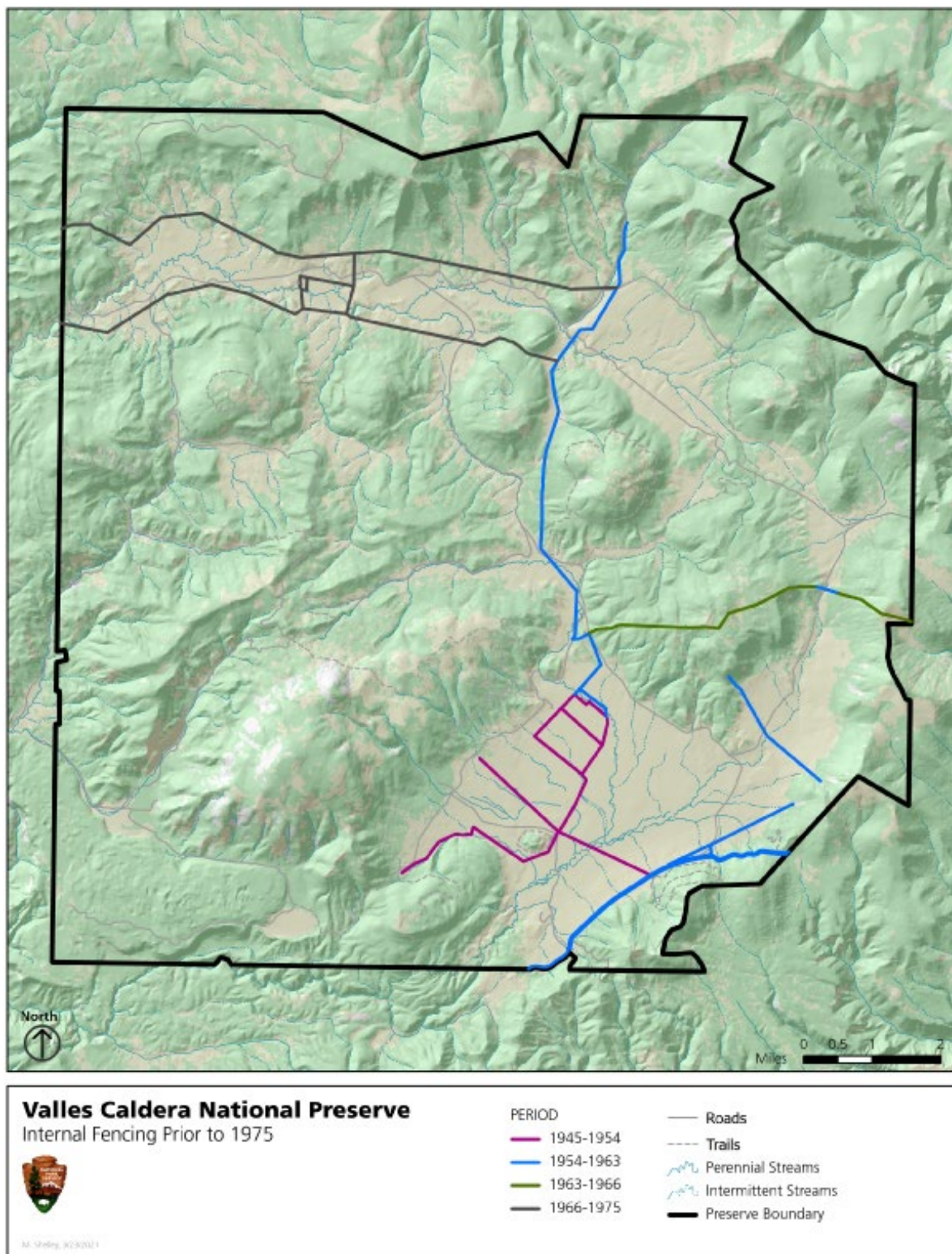


Figure 5.12. Internal fencing at VALL prior to 1975.
GIS image produced by Valles Caldera National Preserve.

the Santa Fe National Forest. They had also fenced the south side of the Valle San Antonio to hold cattle in the valley-bottom pasture when the livestock returned from the uplands. Dunigan, in 1968 testimony, indicated that his ranch planned to build other cross fences throughout the Baca Location to allow implementation of pasture deferral and rotation to improve range conditions over the long term. Dunigan's goal was to allow individual pastures to lie fallow about once every four years.⁹⁹ Fencing, moreover, was sufficiently important to Dunigan that when he negotiated with the National Park Service during the mid-1970s about selling a 3,076-acre parcel in the ranch's southeastern corner to Bandelier National Monument, he stated that installing a fence along the new boundary would be a precondition of the transaction.¹⁰⁰ Existing aerial photographs reflect Dunigan's changing range management objectives and his dependence on increased fencing. By the spring of 1975, miles of fencing had been added just north of State Highway 4; in addition, fences were installed on both the southern edge and the northern edge of Valle San Antonio, in places stretching east into Valle Toledo.¹⁰¹ Additional fencing was installed after the mid-1970s.¹⁰²

This fencing, both along the ranch's boundary and within the ranch as well, remained until the summer of 2000, when Congress established Valles Caldera National Preserve. Given the reduction of grazing under the new regime, Valles Caldera Trust staff recognized that the many miles of internal fencing—which one author hyperbolically noted was “enough fence to enclose the entire state”—needed to be curtailed.¹⁰³ In 2009, therefore, the trust completed an environmental assessment implementing the “multiple use sustained yield” concept. The document, among its other provisions, provided a factual basis for trust staff to proceed with the removal of any and all fences in the preserve.

Since 2009, a substantial proportion of the park's internal fencing has been removed. Some advocates have welcomed the move, feeling that the fencing was an encumbrance to wildlife and a relic of a bygone era, while others opposed any fence removal, stating that it impinged on the integrity of the historic ranch.¹⁰⁴ The removal of fencing, however, had no immediate impact on the vegetation's health or species composition, and today's visitors to the *valles* still see the close juxtaposition of contrasting vegetation patterns that quickly reveal the location of long-existing fence lines.¹⁰⁵

Stock tanks, like fences, are another ranch improvement that has a relatively long history on the Baca Location. The earliest documentation of stock tanks,¹⁰⁶ known elsewhere as stock ponds or

⁹⁹ James P. (Pat) Dunigan Testimony, July 19, 1968, vol. III, pp. 423–424, Exhibit DX-DS, “US Exhibits from Jemez Trial, 1779–2000,” from non-confidential trial exhibits, on file at VALL; Anschuetz and Merlan, *More Than a Scenic*, 113.

¹⁰⁰ Martin, *Valle Grande*, 106.

¹⁰¹ Aerial photographs 75-38-19, 75-38-97, 75-39-83, 75-39-166, 75-40-84, 75-48-206, 75-48-216, 75-52-159, and 76-70-32; all photographed in June 1975 and October 1976; in VALL Collection.

¹⁰² Valles Caldera Trust, *Valles Caldera National Preserve, Environmental Assessment, Multiple Use and Sustained Yield of Forage Resources* (April 7, 2009), p. 45.

¹⁰³ Martin, *Valle Grande*, 132.

¹⁰⁴ Valles Caldera Trust, *Valles Caldera National Preserve, Environmental Assessment, Multiple Use and Sustained Yield of Forage Resources* (April 7, 2009), pp. 4, 7, 45.

¹⁰⁵ NPS, *Draft Cultural Landscape Inventory*, pp. 07_1, 07_1_15, and 07_2.

¹⁰⁶ William Booth, “Texas Primer: the Stock Tank,” *Texas Monthly*, May 1, 1986; <https://www.texasmonthly.com/culture/texas-primer-the-stock-tank/>. As used in this chapter, “stock tanks” are simple earth-lined ponds – not plastic, or galvanized metal, containers filled with water.

watering holes, dated from the years in which the Bond family owned the ranch (see Figure 5.13).¹⁰⁷ After Dunigan's purchase of the ranch in the early 1960s, however, the number of stock tanks dramatically increased. As Dunigan himself remarked in 1967, "At the time we came to the Baca Location [in early 1963] there was a total of six tanks. . . , besides the running water in streams and natural springs." These tanks were located in treeless areas along the ranch's major watercourses. They included 1) the northwestern end of Valle de los Posos, 2) the center of Valle Grande, and 3) the northern end of Valle Seco. Another was located on upper Santa Clara Creek, just beyond the ranch's eastern boundary.¹⁰⁸

As noted above, however, Dunigan and his team had a number of creative ideas on how he wanted to maximize cattle yields on the ranch, and in order to obtain water for the cattle herds, the construction of stock tanks was one of several improvement plans. As he noted in 1967, four years after the ranch acquisition, he and his team

took a look at the ranch and decided upon a course of fencing, developing water, creating areas in which to put our cattle, and we had committed ourselves at this point to a steer operation. . . . We felt that we'd get a movement of our steers up into the high country with the proper techniques of salts and minerals and with the development of spring tanks, and we purchased a D-8 Caterpillar and in accordance with plans, proceeded to build sixty-five earthen stock tanks on the ranch.¹⁰⁹

Dunigan noted that these stock tanks captured flows from intermittent springs, streams, and draws. Some of these tanks, moreover, were placed in high country grassland areas that previous ranchers had not used. The idea behind the stock-tank construction was to develop high-elevation grasslands for range use so that cattle could graze throughout the ranch, not just in the grass-covered *valles* and surrounding areas (see Figure 5.14).

After 1967, Dunigan and his team apparently continued to excavate new stock tanks, because by 2004—several years after Dunigan's team had sold the ranch to the U.S. government—a member of the Valles Caldera Trust staff counted 131 earthen stock tanks as part of a preserve-wide inventory. Most of these tanks ranged from six to thirty feet in height. Of these tanks, eighty-nine were deemed "functional," and eighty-eight of them held some water. The trust, by this time, had set goals calling for much reduced grazing pressure in the preserve, and those goals likewise called for future grazing to be limited to specific pasturelands. As a result, the staff recognized that many of these stock tanks could well be abandoned, and that others needed maintenance so as not to damage the preserve's roads or other resources.¹¹⁰ The preserve, however, has not yet taken large-scale action to either eliminate stock tanks or to remediate the problems associated with them.

¹⁰⁷ This figure was created by Frank Norris and VALL GIS Specialist Mike Shelley, by comparing and contrasting various aerial photographs in the preserve collection – from 1954, 1963, and 1966, with supplemental information provided by the text of this study.

¹⁰⁸ Anschuetz and Merlan, *More Than a Scenic*, 113; aerial photographs 7-75, 11-30, 12-20, and 16-160, all taken in September and October 1963, in VALL Collection.

¹⁰⁹ Anschuetz and Merlan, *More Than a Scenic*, 113.

¹¹⁰ Leonard Atencio, "Watershed Restoration Projects" (draft), Valles Caldera National Preserve, November 12, 2004; Leonard Atencio, "Valles Caldera National Preserve, draft "Earth Tanks, Roads, Head-cuts, Fences, 2004 Recommendations," both unpublished manuscripts in *Stock Tank Inventory – 2004* binder, VALL Collection.

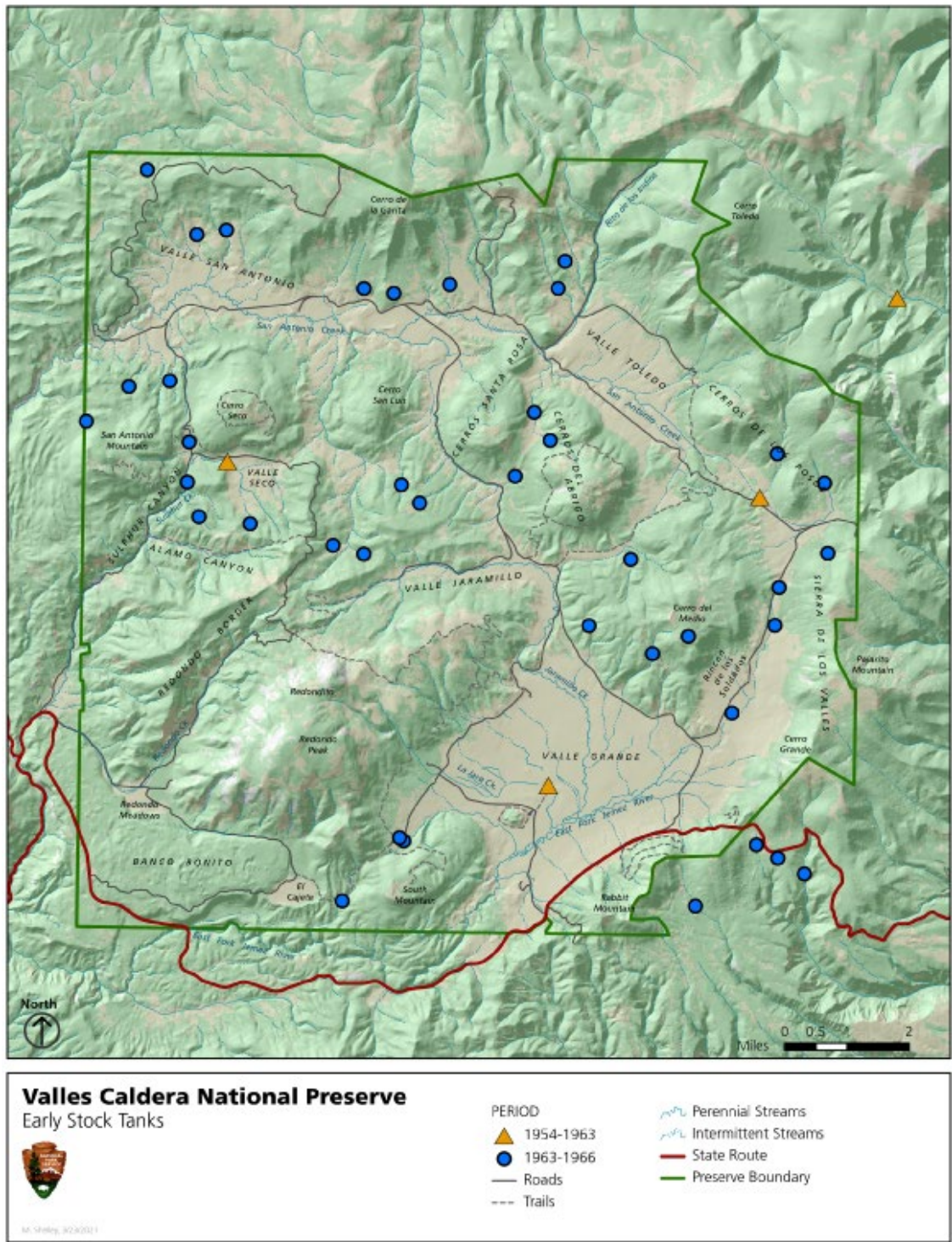


Figure 5.13. Stock tanks excavated at VALL prior to May 1966. GIS image produced by Valles Caldera National Preserve.



Figure 5.14. The Baca Ranch has more than one hundred stock tanks, only a few of which predate the Dunigan family's tenure. The stock tank shown in this 2020 photo is located adjacent to Road VC06, just southeast of Valle Seco.

Photo by co-author Frank Norris.

Historic Properties Summary and Recommendations

Based on the historic narrative above, various individuals—associated with both the Bond and Dunigan families—were responsible to installing scores if not hundreds of miles of fence on the Baca Ranch property, both along its exterior boundaries and also to create various interior paddocks. In 2009, midway through the period in which the Valles Caldera Trust managed the Baca Ranch property, the trust's staff completed an environmental assessment that, among its other recommendations, advocated that a substantial portion of the ranch's internal fencing should be removed. (This report, dated April 7, 2009, was titled *Environmental Assessment, Multiple Use and Sustained Yield of Forage Resources*.) During the years that followed the completion of this report, most of the fencing recommended for removal was in fact taken down. Of the remaining mileage of fencing, only one segment of fence (see Appendix E, Table E1) has been inventoried in the preserve's site log; it was recommended as *not eligible* to the National Register, but New Mexico's State Historic Preservation Office did not concur and instead recommended that LA136371 should be considered undetermined until evaluated in the context of ranching and grazing at the caldera

(HPD log 106804). (Other fence segments have been evaluated as elements of either a “historic artifact scatter” or part of “structure remains,” both without a National Register determination.) Still other fence segments in the preserve have yet to be inventoried and evaluated.

Scattered about Valles Caldera National Preserve are more than a hundred stock tanks, also known as stock ponds or watering holes. The three oldest within the present preserve boundaries date to between the mid-1950s and the early 1960s. More than thirty additional stock tanks, most of them smaller than the oldest three, date from the 1963–1966 period (see Figure 5.13). Scores more were excavated more recently. Although many of the earlier (pre-1972) stock tanks are of sufficient age to qualify for the National Register of Historic Places, only seven of these “historic hydro features” have thus far been examined for their National Register eligibility (see Appendix E, Table E1). Of these, most have been determined to be *not eligible*. As survey efforts continue, other tanks will be evaluated for their National Register eligibility.

CHAPTER 6: MILITARY, MINING, AND TOURISM (Norris)

The land within Valles Caldera National Preserve has witnessed several episodes related to U.S. Army activity and sulphur mining. In addition, this area has attracted tourists—including skiers, fishers, and sport hunters—for well over one hundred years, many of whom have focused on specific sites within the preserve. This chapter will examine the following themes and sites: the Valle Grande hay camp, Camp Valles Grandes (the “old fort”), Sulphur Springs, Valle Grande tourism, skiing, sport fishing, and sport hunting.

Valle Grande Hay Camp

In 1846, shortly after the Mexican-American War had been declared, American General Stephen Watts Kearny and his Army of the West left Fort Leavenworth, in present-day Kansas, and headed for Mexican-controlled California. As part of that march, he invaded present-day New Mexico and, that August, entered both Las Vegas and Santa Fe without firing a shot. While Kearny and much of his army continued west toward southern California, he left behind a small force in Santa Fe. These troops were asked to keep order, to protect the residents of the newly-captured lands, and to reduce the number of Indian raids that had long plagued the Rio Grande settlements. As a base of operations, Kearny’s quartermaster, Captain Randolph Marcy, constructed a small fort—Fort Marcy—on a ridge that overlooked the Santa Fe plaza. That fort was completed in 1847. From this base, Missouri volunteers under the command of Colonel Alexander Doniphan found themselves charged with the monumental task of trying to check the frequent raids by Navajos and Apaches on the settlements along the Rio Grande and in other parts of New Mexico.¹

Given its location at the western end of the 800-mile-long Santa Fe Trail, the village of Santa Fe was a difficult spot for which to obtain provisions for both man and beast. In order to supply fodder to the army’s many horses and mules, the fort’s quartermaster, Alexander W. Reynolds, typically made casual purchases from whomever, in the immediate vicinity, offered feed for sale.²

That system worked well enough for the first several years. But in the spring of 1851, the cumulative impacts of overgrazing, plus drought conditions throughout the Southwest, made it increasingly difficult for the quartermaster to obtain sufficient hay for their numerous stock animals. Given the dwindling supply of fodder, the Army post turned to contractors to cut and dry native grass and deliver it to the fort. In one of the first contracts, the quartermaster hired two local residents, Robert Nesbit and Hiram R. Parker, to cut hay for the Army livestock. With the going price for hay hauled over twenty-five miles at \$50 per ton, the two men hoped to make what, at the time, could become a small fortune.³

Having few alternatives, Nesbit and Parker looked to the high-elevation valleys of the Jemez Mountains as their source of grass and bought a train of mule wagons from Santa Fe businessman

¹ Craig Martin, *Valle Grande; a History of the Baca Location No. 1, Background to Creation of the Valles Caldera National Preserve* (Los Alamos, All Seasons Publishing, 2003), 17.

² Kurt F. Anschuetz and Thomas Merlan, *More Than a Scenic Mountain Landscape: Valles Caldera National Preserve; Land Use History* (United States Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fort Collins, Colorado, September 2007), 55.

³ Anschuetz and Merlan, *More Than a Scenic*, 27; Martin, *Valle Grande*, 18.

Pinckney Tully for the upcoming trip.⁴ Recognizing the potential value of the hay enterprise in the Valle Grande, the Army provided material and labor to improve portions of the road (see Chapter 4) between Santa Fe and the Valle Grande. The road crossed the Rio Grande at what would later become Buckman, and climbed Mortandad Canyon to the Pajarito Plateau. The road then ascended Cañon de Valle to ascend to a pass that the Pueblo Indians called “water reservoir gap,” through the so-called Sierra de las Valles, before it dropped down into Valle Grande.⁵

In early summer, Nesbit and Parker, along with several employees, set up camp on the east side of Valle Grande, near several springs at the head of the East Fork of the Jemez River. Their hay camp sat on a “gentle hill” on the west flank of the Sierra de las Valles below the pass. The camp was located in a grassy alcove surrounded on several sides by huge ponderosa pines; a stand of trees was less than fifty yards from the fort, but to the west stretched the unlimited grasses of the Valle Grande. The partners built a small fort, or blockhouse, of “bottom wood” logs. On the side of the fort that faced the pines, they also constructed a 30-by-50-foot corral “of large, green cottonwood logs” to hold the sizable mule train that would haul the abundant hay cuttings back to Santa Fe. Nesbit and Parker stacked four or five cottonwood logs to build four-foot-high walls. As part of the fort’s construction design, Nesbit and Parker left no openings in three of its four walls; more specifically, there were no loopholes from which guns might have been fired. The only opening was on the side facing the corral. Kurt Anschuetz and Thomas Merlan have described the fort as a “log bunkhouse, massively constructed but poorly sited for defense.”⁶

The hay cutters set to work, and they were soon in the midst of cutting a rich harvest. Others in the area, however, objected to their presence, and before long a party of between thirty and forty Navajos attacked the newly-built camp. In the predawn darkness of either July 2 or July 3 (sources differ), an arrow whistled out of the darkness and pierced the neck of one of the two guards that had been assigned to watch the corral. The injured man cried out, fired his gun, and instantly a shower of arrows was unleashed from the darkness into the fort. A moment later, the entire camp was awake and the men ready to fight for their lives. For more than two hours the few men outside the fort fought the Navajos. Just before dawn the raiders tore down part of the corral and left the area, taking with them forty-three mules and six horses. The only human casualty was the slightly wounded camp guard, who (as noted above) had been shot at the beginning of the attack.⁷

A group from Jemez Pueblo, who had been encamped nearby, agreed to pursue the Navajo raiders shortly after the attack. Catching up with the raiders on the border of Navajo country, they attacked them; they killed two men, recaptured five mules, and returned the mules to Nesbit and Parker.⁸ Perhaps fearing for their safety from future depredations, the hay cutters soon abandoned the camp and returned to Santa Fe. But given their short-term stay at the hay camp—and the fact that their draft animals ate most of the hay that had been cut in Valle Grande—the two men had little profit

⁴ Frank McNitt, *Navajo Wars; Military Campaigns, Slave Raids, and Reprisals* (Albuquerque, UNM Press, 1972), 184.

⁵ Martin, *Valle Grande*, 18; Anschuetz and Merlan, *More Than a Scenic*, 55. The pass was named for the small but persistent natural ponds located near where the trail crossed over the divide.

⁶ Martin, *Valle Grande*, 18; Anschuetz and Merlan, *More Than a Scenic*, 27, 55.

⁷ Martin, *Valle Grande*, 19; McNitt, *Navajo Wars*, 184.

⁸ Martin, *Valle Grande*, 19.

to show for their months-long effort. The army, however, was well aware of the area's abundant pasturage, an opportunity that would attract troops to the area in the future.⁹

Neither Nesbit and Parker reoccupied or even revisited the site of the 1851 hay camp. Given its quick construction, and their use of green cottonwood logs (a softwood), the bunkhouse and corral eventually decayed into the grassy, damp vegetation. Later maps and descriptions of the area generally ignored this site. Craig Martin, who published a book about Valles Caldera in 2003, included a photograph that was purportedly in the hay camp's general vicinity. He did not, however, specifically locate the site.¹⁰

The hay camp site, even today, is not definitively known. Answers about the site, however, may be in the offing. During the summer of 2020, a group of University of New Mexico archaeologists, as part of a long-standing agreement with the National Park Service, conducted a surface survey in the eastern portion of Valle Grande. This crew was well aware that their survey covered an area generally thought to be the hay camp. In that vicinity, the archaeologists found numerous prehistoric as well as historic artifacts, including ceramics that appear to date to 1851.¹¹ Future surveys of that area, combined with possible subsurface investigations, will be necessary before any determination can be made as to whether the recently-discovered artifacts are thematically related to the 1851 hay camp.

Historic Properties Summary and Recommendations

As noted in the previous paragraph, the actual site of the Valle Grande hay camp is the focus of considerable speculation. Several authorities have postulated its location, but as yet, its location has not been verified. During the summer of 2020, archaeologists in an area thought to have been historically associated with the hay camp located several historic artifacts, including ceramics that appear to date to 1851. Further testing and analysis of this area, however, is needed to both verify the actual hay camp location and, if verified, to determine its extent and complexity. Only at that time can further steps be taken to evaluate the hay camp for eligibility to the National Register of Historic Places.

Camp Valles Grandes (Los Valles, Old Fort)

As has been explained elsewhere in this study (see Chapter 4), a variety of travel routes have passed through present-day Valles Caldera National Preserve since the early nineteenth century, if not before. And as noted elsewhere in the Hay Camp portion of this chapter, one of those routes wound north-south across the east side of Valle Grande, extending north into Valle de los Posos and Valle Toledo, during the early 1850s.

The residents of villages along the Rio Grande, in New Mexico, were well aware of the Navajo, whose had long lived in present-day northwestern New Mexico and northeastern Arizona. These tribal members, along with those in various Apache and Comanche bands, were semi-nomadic peoples who periodically raided and traded with settlers along the Rio Grande. These activities had been occurring for hundreds of years; initial interactions had been with Pueblo villagers, followed by

⁹ Martin, *Valle Grande*, 19–20.

¹⁰ Martin, *Valle Grande*, 20.

¹¹ Stephanie Bergman, interview with Frank Norris, October 21, 2020, included in compiled field-trip notes.

Spanish, Mexican, and then American settlers. While some of these interactions were mutually-beneficial trading expeditions, in other instances Navajo raiders killed local residents, enslaved others, and stole thousands of sheep and other livestock.¹²

The American army, which assumed administrative control over present-day New Mexico in 1846, recognized that for orderly, non-Native settlement to take place, the Indian raids that had long plagued the Rio Grande settlements had to be either reduced or eliminated. As a result, the American army conducted an increasingly aggressive campaign, aimed at either defeating or pacifying the Navajo. This campaign involved the establishment of army forts well within Navajo territory: These included Fort Defiance (near present-day Window Rock, Arizona) in 1851, and Fort Fauntleroy (near present-day Gallup, New Mexico) in 1860.¹³

Throughout this period—in fact, for hundreds of years prior to the early 1860s—small groups of Navajo ranged far and wide across present-day Arizona and New Mexico as they traveled between their homelands and distant points to the east and south. One of those routes, used consistently over the years, led in a north–south direction across cool, well-watered Valle Grande and several adjacent valleys.

In early 1862, during the Civil War, Colonel Edward Canby, who commanded the Union military forces in New Mexico Territory, declared that the army’s policy was to relocate the Navajo from their longtime homes in the Four Corners area. He and his men, however, were unable to implement that policy to any great extent before the Confederate invasion of New Mexico forced Canby to direct his energies to fighting General Henry Sibley and hundreds of Texans under his command.¹⁴

That summer, Union troops based in Santa Fe were ordered to Valle Grande—at that time called Los Valles de la Sierra de San Ildefonso—in order to protect a group of hay cutters who had a government contract. This action was thus similar to what had taken place in the summer of 1851, when the hay camp had been built; but in 1862, the troops camped in tents rather than erecting a permanent structure. The contractors working at Valle Grande gathered four hundred tons of hay, but as one soldier at the scene noted, “almost every day we had encounters with [the Navajos], taking away the animals that they had stolen, but they never offered us battle, contenting themselves only with running away and leaving the animals.”¹⁵

In the late summer of 1862, Col. Canby was ordered east and was replaced by Brigadier General James H. Carleton. Soon after assuming the command of the army’s Department of New Mexico, Carleton decided that the solution to the longtime Navajo raiding problem was to adopt and expand

¹² Raymond Friday Locke, *The Book of the Navajo*, 6th edition (New York, Kensington, 2010), 190–191; Trudy Griffin-Pierce, *The Columbia Guide to American Indians of the Southwest* (New York, Columbia University Press, 2010), 58; McNitt, *Navajo Wars*, 70.

¹³ “Fort Defiance,” [encyclopedia.com](https://www.encyclopedia.com/history/dictionaries-thesauruses-pictures-and-press-releases/defiance-fort); <https://www.encyclopedia.com/history/dictionaries-thesauruses-pictures-and-press-releases/defiance-fort>; NPS, “Fort Wingate Historic District, Fort Wingate, New Mexico,” https://www.nps.gov/nr/travel/route66/fort_wingate_historic_district.html

¹⁴ McNitt, *Navajo Wars*, 428–429.

¹⁵ Jacqueline Dorgan Meketa, ed., *Legacy of Honor; the Life of Rafael Chacon, a Nineteenth-Century New Mexican* (ABQ, UNM Press, 1986), 205–207.

upon Canby's idea by relocating the entire Navajo nation east to a large tract along the Pecos River—the Bosque Redondo.¹⁶

That plan would not begin in earnest, however, until late 1863. In the meantime, in mid-August of that year, the Santa Fe-based Carleton assembled a detachment commanded by Lieutenant Erastus W. Wood and ordered them to set up a camp in the Valle Grande, along a well-known Navajo travel route. Accompanying Wood were five noncommissioned officers and thirty-one privates from Company A, 1st Infantry, California Volunteers. Carleton's orders were simple, direct, and brutal. The soldiers were to head to the Valles “and there,” in the words of Carleton's adjutant, “to lie in wait for thirty days, to kill every Navajo or Apache Indian who attempts to go through that noted thoroughfare. No women and children will be harmed; these will be captured.”¹⁷ General Carleton, in a separate posting, also hoped via that action “to prevent stock being driven through that noted thoroughfare.”¹⁸

By August 19, Lt. Wood and the men in his command had arrived at “the Valles” (Los Valles) and established Camp Valles Grandes. Just five days later, Wood notes that the soldiers had arrived and had set up a camp, but “the nights were so extremely cold that I ordered huts to be erected and the men are now comfortably housed.”¹⁹ Capt. Cutler, the adjutant in Santa Fe, agreed, asking Wood to

make the huts you are building for your men as substantial and as comfortable as you possibly can, and lay up a good supply of wood, and if possible have a supply of hay cut and stacked up for, say, eighteen government animals, in case your own party or any other party of troops are obliged to remain during the winter at Los Valles. . . . Having this object in view, the general leaves it all to your own good judgment as to the place where, and the manner in which, you shall put up these huts, so that the men may be comfortable.²⁰

Just a week later, on September 4, authorities in Santa Fe changed their mind regarding the length of the troops' encampment. Instead of having the troops stay for only thirty days, the decision was made for them to remain at Camp Valles Grandes throughout the upcoming winter. Carleton, in a letter to Lt. Philip A.J. Russell, who was stationed at the camp, noted, “As troops may stay in the Valles all winter, you will make timely preparation to this end. A storehouse to contain three months' supply for forty men, and an oven, will be built.”²¹

That decision to remain proved prescient. On September 27, the soldiers began trailing a band of Navajos who had stolen considerable stock from the Pueblos; they caught up with them at Jemez

¹⁶ Hampton Sides, *Blood and Thunder; an Epic of the American West* (New York, Doubleday, 2006), 403–404, 516–517; Martin, *Valle Grande*, 20.

¹⁷ Ben C. Butler, Assistant Adjutant General, Special Orders No. 40, August 17, 1863, in U.S. Congress, *Condition of the Indian Tribes – Report of the Joint Special Committee, Appointed Under Joint Resolution of March 3, 1865, with an Appendix* (Wash., GPO, 1867), 239; William A. Keleher, *Turmoil in New Mexico* (Albuquerque, UNM Press, 1982), 314; Martin, *Valle Grande*, 21.

¹⁸ James H. Carleton, Brig. General, Commanding, to Brig. Gen Lorenzo Thomas, Adjutant General, Washington, D.C., August 23, 1863, in U.S. Congress, *Condition of the Indian Tribes*, 130–31; also Item DX-E, “U.S. Exhibits from Jemez Trial, 1779–2000,” from non-confidential trial exhibits, on file at VALL.

¹⁹ Lt. Erastus W. Wood to Capt. Ben Cutler, August 24, 1863; Item DX-F, “U.S. Exhibits from Jemez Trial, 1779–2000,” from non-confidential trial exhibits, on file at VALL.

²⁰ Capt. Ben Cutler (Asst. Adjutant General, in Santa Fe) to 1st Lt. Erastus W. Wood (Commanding at Los Valles, NM), August 27, 1863, in U.S. Congress, *Condition of the Indian Tribes*, 131–32; also Item DX-G, “U.S. Exhibits from Jemez Trial, 1779–2000,” from non-confidential trial exhibits, on file at VALL.

²¹ Carleton to Russell, September 4, 1863, in U.S. Congress, *Condition of the Indian Tribes*, 132–133.

Springs and had a hostile encounter with them, one that resulted in the killing of eight Navajos and the capture of twenty women and children. A month later, on October 30, some 200 Navajos attacked the camp and made off with its beef herd.²² And on November 4, ten head of cattle belonging to the command at Valles Grandes “were driven off by the Indians.”²³

As the fall segued into winter, the soldiers—having little recourse—adjusted to the changing conditions. By the end of October, Lt. Charles Curtis noted that the camp had “a foot of snow upon the ground except in a few spots along the margins of the creek.” The soldiers, by this time, had built a guard house, by which sentries could see far out across the valley. Curtis, however, noted that the camp was hampered because it had

no means of defense whatever. The cabins are comfortless, with no windows, which makes it necessary to keep the doors open during the day for light. This causes cold feet and much discomfort. . . . A strong palisade fort with blockhouses might be made here without much trouble. I only regret I did not get here a month earlier, I would have had one before this.²⁴

After early November, the camp encountered few hostile forces. In late December, the camp’s leader, Lt. Curtis, wrote to the command in Santa Fe so that “the Commanding General may know we are always prepared for the Indians.”²⁵ And they continued on through the remainder of the winter, a time when Col. Christopher “Kit” Carson and various U.S. Army units under his command were forcibly removing many members of the Navajo Nation east to Bosque Redondo.²⁶ Troops—forty-seven of them, including three officers and thirty-seven enlisted men—were still at Camp Valles Grandes during the spring of 1864. The camp continued on for several more months until early June, when it was abandoned. Its men were then sent to Fort Wingate, which at that time was located just south of present-day Grants, New Mexico.²⁷

The whereabouts of Camp Valles Grandes have puzzled modern researchers. Maps from 1876 through the 1930s have indicated an “old fort” near the springs at the head of the East Fork of the Jemez River. (As noted elsewhere in this report, the 1851 Hay Camp was also located near the East Fork of the Jemez, in the vicinity of several springs, leading some researchers to suggest that the Hay Camp and Camp Valles Grandes are in the same location.) John Davenport, ranch manager for the Bond family in the first half of the twentieth century, saw the remains of the fort—which to him consisted of a single building—when he worked the ranch in the 1920s. At that time Davenport could see that the structure was solidly built with logs three feet in diameter. But by 1959, according

²² Lt. P.A.J. Russell to Capt. Ben Cutler, October 1, 1863, in U.S. Congress, *Condition of the Indian Tribes*, 252, also Item DX-J, “U.S. Exhibits from Jemez Trial, 1779–2000,” from non-confidential trial exhibits, on file at VALL; Martin, *Valle Grande*, 21.

²³ Capt. Ben C. Cutler, General Orders No. 3, February 24, 1864, in U.S. Congress, *Condition of the Indian Tribes*, 254.

²⁴ Lt. Charles Curtis (at Camp Valles Grandes) to Capt. Ben Cutler, October 30, 1863, in Item DX-K, “U.S. Exhibits from Jemez Trial, 1779–2000,” from non-confidential trial exhibits, on file at VALL.

²⁵ Lt. Charles Curtis to Capt. Ben Cutler, December 27, 1863; Item DX-M, “U.S. Exhibits from Jemez Trial, 1779–2000,” from non-confidential trial exhibits, on file at VALL.

²⁶ National Park Service, *Long Walk National Historic Trail Draft Feasibility Study / Environmental Impact Statement* (Denver, the author, 2009), 25–27.

²⁷ Lt. Samuel Barr to Capt. Ben Cutler, May 31, 1864; Item DX-O, “U.S. Exhibits from Jemez Trial, 1779–2000,” also Lt. Samuel Barr to Asst. Adjutant General, June 4, 1867; Item DX-P, “U.S. Exhibits from Jemez Trial, 1779–2000,” both from non-confidential trial exhibits, on file at VALL.

to Davenport, all overt evidence of the fort was “long gone.” Today, the camp’s location is only approximately known.²⁸

Based on the location of the “Old Fort” on numerous maps over the years, researchers have long thought that Camp Valles Grandes was in the vicinity of the “Lightning Shack,” which is a small, deteriorating shed-roof building that, according to local lore, was used by herders and cowboys as a shelter in case of storms.²⁹ To locate the camp, recent LiDAR³⁰ information taken of that area has revealed several north–south roads coursing through that area. Based on that data, one longtime preserve employee has suggested that the fort is less than six hundred feet north or northwest of the Lightning Shack.³¹ In addition, NPS staff members anticipated a visit during the summer of 2021 by a group of geophysicists known as SAGE (Summer of Applied Geophysical Experience). That group was slated to conduct investigations in the vicinity of the “old fort” site, and it is hoped that the location of the fort may be ascertained based on the geophysical data obtained during those investigations.³²

Historic Properties Summary and Recommendations

As noted in the previous paragraph, the actual site of Camp Valles Grandes is the focus of considerable speculation. Several authorities have postulated its location, but as yet, its location has not been verified. During the summer of 2021, a group of student geophysicists was scheduled to conduct investigations in an area thought to have been historically associated with Camp Valles Grandes. That and perhaps other investigations, however, are needed to both verify the actual camp location and, if verified, to determine its extent and complexity. Only at that time can further steps be taken to evaluate the camp for eligibility to the National Register of Historic Places.

Sulphur Springs

Sulphur Springs, located along Sulphur Creek in the west-central part of Valles Caldera National Preserve, has long been known to area residents both because of its hot springs and because of its sulphur³³ content. As noted—perhaps apocryphally—in twentieth century promotional material, the springs were “long known to the Indians as the Valley of the Magic Medicine Waters.” “The Indians,” noted another source, “used these springs as cure-alls.”³⁴

The first known non-natives to visit the area were aware of the area’s springs. In 1540, according to one source, men from the Coronado Expedition “mined Sulphur for gun powder here and carried

²⁸ Martin, *Valle Grande*, 21–22; Anschuetz and Merlan, *More Than a Scenic*, 27.

²⁹ This building dates from approximately 1954; it may have been built onsite, but others have suggested that it was hauled to the site from elsewhere. SWCA Environmental Consultants, *Documentation and Preservation of Historic Buildings on the Valles Caldera National Preserve, Sandoval County, New Mexico*, November 2007, Vol. 1, 64.

³⁰ LiDAR, which stands for Light Detection and Ranging, is a remote sensing method – commonly used by archaeologists – that uses light in the form of a pulsed laser to measure ranges (variable distances) to the earth.

³¹ Anastasia Steffen to Frank Norris, email, November 20, 2020.

³² Robert Parmenter (VALL), interview with Frank Norris, October 21, 2020.

³³ Although the term “sulfur” is generally accepted in American usage (“sulphur” is commonly used in Great Britain), this study will consistently use “sulphur,” primarily because it is consistent with historical usage. As the website www.grammarist.com has noted, “Both modern spellings have been in use for many centuries, but *sulphur* prevailed by a wide margin until the Americans adopted *sulfur* around the start of the 20th century.”

³⁴ *Albuquerque Journal*, May 26, 1929, 44; *Albuquerque Tribune*, September 24, 1963, 13; *Albuquerque Journal*, May 11, 1965, 11.

[it] to Bernalillo [Kuaua Pueblo?] to be manufaced [sic].”³⁵ As Craig Martin has noted, “the Spanish colonizers of New Mexico knew of these springs along the western edge of Valles Caldera and named them Los Azufres [the sulphurs].” Corroborating evidence for a Spanish presence came into view in 1903, when sulphur miners working for Mariano Otero stumbled upon a 20-foot-long shaft that, to them, appeared to be unmistakably Spanish in origin.³⁶

Spanish explorers returned to the area in 1581, and just north of Jemez Springs (see Figure 6.1), the Spanish built a small mission in 1598 and a far larger church—named San José de los Jémez—in 1621.³⁷ Although the church was abandoned by 1640, the Spanish settlers—later followed by their Mexican counterparts—were familiar with the Jemez Springs area and maintained a semi-permanent presence there until the mid-nineteenth century.³⁸



Figure 6.1. The Jemez Springs area, about 1910, looking south.

Courtesy New Mexico State University Library, Archives and Special Collections, Image 00941283.

In 1856, only a decade after New Mexico had fallen under U.S. jurisdiction, Manuel Abrego established a ranch at Sulphur Springs.³⁹ Four years later, as noted elsewhere, the U.S. government awarded the heirs of Luis Maria Baca a large grant—nearly one hundred thousand acres in size—known as Baca Location No. 1. The springs were doubtless known to the Baca family at that time. But in mid-June 1876, when U.S. Deputy Surveyors William H. McBroom and Daniel Sawyer marked the tract’s boundaries with stone mounds and tree blazes over a four-day period, they

³⁵ *Albuquerque Journal*, May 26, 1929, 44; <http://nmhistoricsites.org/coronado>.

³⁶ Martin, *Valle Grande*, 42; *Santa Fe New Mexican*, May 22, 1903, 2.

³⁷ New Mexico Historic Sites, “Jemez Historic Site History,” <http://nmhistoricsites.org/jemez/history>.

³⁸ <http://www.jemezpuablo.com/History.aspx>; https://jemezvalleyhistory.org/?page_id=870.

³⁹ Anschuetz and Merlan, *More Than a Scenic*, 109.

determined that the Sulphur Springs area was located outside of the tract, just beyond its western boundary.⁴⁰ Based on that survey, therefore, the area surrounding the springs was still open for claims and settlement. Government expeditions during the mid-1870s, led by Lt. George M. Wheeler, mapped the area and noted a hot spring at the site. At that time, and continuing until the early 1890s, the only access to the site was a trail that wound up from Jemez Springs.⁴¹

Sulphur springs and other hot springs, during the nineteenth century, played a key role in maintaining health and curing various diseases. The science of balneotherapy—that is, the treatment of disease by bathing, usually in the mineral-containing waters of hot springs—was widely accepted in Europe as well as the United States, and “taking the waters” was reputed to cure many illnesses.⁴² Based on the status of medical science at that time, hundreds of hot springs resorts flourished throughout the country, and several western hot springs became major destination resorts, including Manitou Springs, Colorado; Banff Hot Springs, in Alberta, Canada; Castle Hot Springs, Arizona; and Hot Springs [later Truth or Consequences], New Mexico. These and other high-end hot springs resorts were centers of what was termed “elitist thermalism,” because only the well-to-do were financially able to spend extended periods away from the workaday world.⁴³

The key role of balneotherapy among the medical profession created a heightened interest in New Mexico’s various hot springs, particularly those near the larger population centers. During the late 1870s, shortly after the first railroad had arrived in the territory, Miguel Antonio Otero and his nephew, Mariano S. Otero, moved to develop hot springs for both tourists and residents. At Jemez Springs in 1880, Miguel Otero purchased the bathhouses that a man named Archuleta had built during the mid-1850s, and the following year the elder Otero built a hotel, began advertising for tourists, and advocated for a railroad to be built connecting the springs to the AT&SF’s main line (see Figure 6.2).⁴⁴

Both Miguel Otero and his nephew, at the time, also had their eye on Sulphur Springs, hoping to develop that site into a resort in due time. But the elder Otero’s death in May 1882—at Las Vegas, New Mexico due to complications from pneumonia—resulted in all plans for either the railroad or any Sulphur Springs development to be dropped.⁴⁵

⁴⁰ Martin, *Valle Grande*, 31–32; BLM, Survey Plat Details and Plat Image for Baca Location No. 1, DM 149606.

⁴¹ U.S. Army Corps of Engineers, “Land Classification Map of Part of North Central New Mexico, Atlas Sheet No.69(D),” in *U.S. Geographical Surveys West of the 100th Meridian*, based on expeditions of 1873, 1874, 1875, and 1876. <https://www.davidrumsey.com/luna/servlet/workspace/handleMediaPlayer?lunaMediaId=RUMSEY~8~1~370~30077>; USGS, Jemez Springs Quadrangle (1:125,000), 1892.

⁴² Oxford Reference, “Balneotherapy,”

<https://www.oxfordreference.com/view/10.1093/oi/authority.20110803095443859>; “The History of Bathing and Balneotherapy,” <https://puresource.co.nz/the-history-of-bathing-and-balneotherapy/>.

⁴³ Cindy S. Aron, *Working at Play; a History of Vacations in the United States* (New York, Oxford, 1999), 15–100; Billy M. Jones, *Health-Seekers in the Southwest, 1817–1900* (Norman, Univ. of Oklahoma Press, 1967), *passim*; Serena Gianfaldoni, et al., “History of the Baths and Thermal Medicine,” *Macedonian Journal of Medical Sciences*, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5535692/>.

⁴⁴ Martin, *Valle Grande*, 41.

⁴⁵ Anschuetz and Merlan, *More than a Scenic*, 125–126; “Miguel Antonio Otero,” *Hispanic Americans in Congress, 1822 to the Present*; <https://history.house.gov/People/Detail/19218?ret=True>



Figure 6.2. Overview of Jemez Springs, about 1910, looking southwest from near San José de los Jémez Mission. Courtesy New Mexico State University Library, Archives and Special Collections, Image 01040353.

On June 25, 1884, Daniel C. Dare applied for a 20-acre homestead entry at Sulphur Springs.⁴⁶ Dare was apparently a newsman who, in the early 1880s, had lived near Las Vegas, and by 1890 he worked for an Albuquerque newspaper.⁴⁷ Dare made no known moves to develop the property. Others, however, recognized the site's economic potential, so on September 6, 1887, John W. Walton⁴⁸ filed an abandonment motion for the property at the General Land Office (GLO) in Santa Fe. That motion, which was adjudicated on November 7 of that year, allowed Walton to file his own patent claim to the property, and in December 1889 Walton formally applied for a patent "for 1,238 linear feet on the Sulphur Bank placer mining claim" in the Jemez Mining District. The GLO issued the patent to Walton on July 27, 1895.⁴⁹

Walton apparently began constructing facilities at the property right away⁵⁰, and by the summer of 1890, a traveler visited "Walton's Sulphur springs ... which will some day make that region

⁴⁶ GLO, Homestead Entry 2236, dated June 25, 1884, as noted in *Santa Fe Weekly New Mexican Review And Live Stock*, October 20, 1887, 2.

⁴⁷ *Las Vegas Daily Optic*, June 10, 1881, 4; *Santa Fe Sun*, December 6, 1890, 4.

⁴⁸ There is some confusion regarding Mr. Walton's middle initial; GLO index sheet refers to John M. Walton, while various newspaper accounts (and Walton's 1895 patent) consistently note a John W. Walton.

⁴⁹ *Santa Fe Weekly New Mexican Review And Live Stock*, October 20, 1887, 2; *Santa Fe New Mexican*, December 26, 1889, 8; General Land Office Patent 25904 (Mineral Certificate No. 36), issued 3/5/1890, courtesy of Valerie A. Chavez, BLM-New Mexico State Office, Santa Fe.

⁵⁰ To judge by the *Albuquerque Journal* article of July 31, 1931, 1, which noted that the hotel was "a landmark for 50 years," Walton may have built a two-story hotel as early as 1887, or as late as 1891.

famous.”⁵¹ The following year, a Santa Fe newspaper referred to “the famous Sulphur springs [in the] Valle mountains, a resort that is coming rapidly into popularity with health seekers.” The resort, during the summer of 1891, had had “a very prosperous season,” and Walton felt “that when a wagon road is opened up Santa Clara canon the ‘sulphurs’ will prove an attractive spot for Santa Feans.” (This wagon road, as noted in Chapter 4, was completed in the summer of 1897.)⁵² Walton, over the next few years, acquired several bureaucratic trappings: he became a territorial fish warden and a notary public, and beginning in 1893, the “Hot Sulphur Springs” became one of the territory’s twenty-two regular weather-reporting stations.⁵³ In addition to operating the “resort,” Walton was known as a “mining man of the Sulphurs district,” although no information has surfaced regarding how much mining he undertook at his placer claim.⁵⁴

By early 1898, Walton had apparently given up his interest in the springs.⁵⁵ That summer, the new owners ran a series of ads in Santa Fe newspapers offering “first class hotel accommodations” at the site, and they further noted that they had “reconstructed the Baths and employs [sic] competent attendants.” The owners coordinated their operations with the W.L. Trimble and Company’s four-horse stage line, which took passengers on a ten-hour “scenic stage route of New Mexico” that started in Thornton (a railroad stop adjacent to Santo Domingo pueblo) and accessed the springs via Bland, which at that time was a booming mining town.⁵⁶

The Sulphur Springs property changed hands during the late 1890s. Mariano Sabine Otero, the nephew of the late, politically influential Miguel Antonio Otero, had owned a sizable and growing stake in the Baca Location No. 1 during the early- to mid-1890s. In March 1899, Otero had assumed sole ownership of the entire tract.⁵⁷ Looking for even greater opportunities, Otero purchased the 20-acre mining claim—located just west of the tract—once owned by John Walton; in addition, he patented a similar parcel, 19.22 acres in size, immediately south of Walton’s former parcel.⁵⁸

By 1900, the springs property was successfully serving a wide clientele. As the *Santa Fe New Mexican* noted in May,

Crowds are this early flocking to the Sulphur Springs, twenty miles north of Bland. W.L. Trimble & Co’s stage line is rendering excellent service. Every house and cabin is crowded, and a city of tents has sprung into existence. Scores of people from the Cochiti [mining] district have gone in thus early in order to avoid the rush which is sure to follow next month. As it is, the capacity for bathing is

⁵¹ *Santa Fe New Mexican*, July 12, 1890, 2.

⁵² *Santa Fe New Mexican*, issues of September 2, 1891, 8, and July 8, 1897, 5.

⁵³ *Santa Fe New Mexican*, issues of June 8, 1892, 8; November 17, 1893, 8; June 26, 1894, 8; and May 22, 1896, 4; *Las Vegas Daily Optic*, May 25, 1893, 3.

⁵⁴ *Las Vegas Daily Optic*, August 23, 1899, 3.

⁵⁵ Walton moved to Gallup, where he worked for the Gallup Coal Company. In August 1899, he headed west to the San Francisco Bay area “on a trip combining business and pleasure.” The trip turned tragic, however; he drowned in the bay near Oakland, a probable suicide. *Las Vegas Daily Optic*, August 23, 1899, 3; *Alamogordo News*, August 24, 1899, 8.

⁵⁶ *Santa Fe New Mexican*, issues of June 17, 1898, 4; July 27, 1898, 4; September 1, 1898, 4; etc.

⁵⁷ Martin, *Valle Grande*, 35, 40.

⁵⁸ GLO, Patent 31,902, to Mariano S. Otero, December 18, 1899; *Santa Fe New Mexican*, June 2, 1900, 4. By 1900, these two parcels – Walton’s and Otero’s – were sharing a common ownership. Known twentieth century records suggest that while the hot springs were managed by a diversity of people, many of whom did not own the property, the owners of the northern (Walton) parcel would remain the same as those who owned the southern (Otero) parcel.

taxed, and will have to be increased. ... Truly, here is the Carlsbad of America, and the wonder is that some railway corporation hasn't long ago secured control of them.⁵⁹

Shortly afterward, the newspaper was even more effusive after hearing from Sulphur Springs resident S.S. McKibbin, who had just traveled to Santa Fe. He noted that "there are about twenty persons at the Sulphurs now. If the waters were properly advertised there would doubtless, he thinks, be as many hundred spending the summer there."⁶⁰ Many people reached the springs that summer via the Santa Fe, Bland, and Sulphur Springs Stage and Express Line, which took slightly more than twelve hours to connect Santa Fe with the resort.⁶¹

In the spring of 1901, William Myers became the Sulphur Springs Hotel's manager, although Otero still owned the site. Early that year, Otero constructed new bath houses over the largest springs. A mid-May news item noted that

Under the new management of William Myers, the Sulphurs are certain to be very popular this summer. A commodious hotel accommodating 40 people, new bath houses, one for men and the other for women, splendid camping grounds, all offer attractions for a summer vacation. There is good fishing and hunting in the vicinity. ... Good board can be had at the hotel for \$10 a week. ... The main attractions at the Sulphurs however are the mineral springs which are specifics for various ailments from catarrh to rheumatism. Here can be found hot springs only a few feet from ice cold springs, all strongly mineralized. Sulphur, iron, seltzer and a curiosity known as the electric spring are side by side with mud springs and alum springs. The bath houses are erected over the Sulphur springs, fifteen in number. ... More picturesque surroundings could not be imagined. Several cottages have been erected in that section and delightful side trips can be taken. ... Those who can spend a vacation of a week or two or more should certainly spend part of it at the Sulphurs.⁶²

Throughout the summer of 1901, a Santa Fe newspaper ran this advertisement:

<p>Nature's Sanitarium in the Heart of Nature Hot and Cold Mineral Springs Amidst Glorious Surroundings An Ideal Summer Resort – Fishing and Hunting Good Table Board and Hotel Accommodations Bath Houses. Hotel Rate \$10 a Week Hot Sulphur Springs, Sulphur Postoffice</p>
--

The stage company changed that year—to the Bland Transfer Company, run by Mert Wagner. The company ran the following ad:⁶³

⁵⁹ *Santa Fe New Mexican*, May 22, 1900, 1. Carlsbad is an iconic German hot-springs resort, located near Stuttgart.

⁶⁰ *Santa Fe New Mexican*, June 1, 1900, 4.

⁶¹ *Santa Fe New Mexican*, May 22, 1900, 4.

⁶² *Santa Fe New Mexican*, May 16, 1901, 1.

⁶³ *Santa Fe New Mexican*, May 18, 1901, 4; Martin, *Valle Grande*, 44. These ads ran numerous times between mid-May and early September. The San Antonio Springs is located just west of the Baca Ranch, in the NW¼ of Sec. 29, T20N, R3E.

Best Equipped Stage Line In West

Two six-horse Concord Coaches run daily between Thornton and Bland, carrying U.S. Mail, Passengers and Express, making close connection at Bland for the Famous Sulphur and San Antonio Springs. The finest scenic Stage route in New Mexico. Best of service and absolute safety guaranteed.

In the years that immediately followed, the hotel's proprietors no longer advertised on a regular basis, having apparently attained a regular clientele. The newspapers' "personal" columns bore witness to the hotel's popularity. For example,

- Sheriff H.C. Kinsell has returned from the Sulphur springs, where he has been for the past fortnight in search of pleasure and recreation
- C.W. Dudrow has returned from a visit to the Sulphur Springs in Sandoval County, greatly improved in health.
- General Manager W.S. Hopewell of the Santa Fe Central, who has spent the past ten days at the Sulphur Springs, Sandoval County, returned to Santa Fe this evening. His trip relieved him of his inflammatory rheumatism, but he is still suffering with sciatica.⁶⁴

The springs themselves remained active as well; as noted in a May 1902 news clip, a Sulphur Springs resident "reported that the Sulphur Springs are much more active than usual, the water bubbling up much higher and in greater quantities than he had ever seen it before."⁶⁵

William Myers, the resort's proprietor since the spring of 1901, was doubtless pleased with the streams of visitors to the springs, many of whom remained there for two to four weeks at a time.⁶⁶ But Mariano Otero, owner the nearly 40-acre mining claim, saw a commercial opportunity in extracting the site's sulfur deposits. The United States, at this time, imported almost all of the sulfur it consumed, the lion's share of it from Sicily. Therefore, as one contemporary news article noted, "He who discovers a really good Sulphur deposit in the country should be considered by his fellow men twice a benefactor."⁶⁷

Based on that need, Otero decided to build the facilities necessary to mine and process the sulphur on his property. In June 1902, a reporter noted that "Hon. M.S. Otero has erected at the Sulphurs a small experimental mill to prepare the Sulphur found in large quantities for market. If this experiment is successful a large mill will be erected and the product hauled to Buckman's siding on the Denver & Rio Grande."⁶⁸ Late the following month, a Sulphur Springs visitor hyperbolically noted that Otero was

⁶⁴ *Santa Fe New Mexican*, issues of September 1, 1903, 8 and September 16, 1903, 5.

⁶⁵ *Santa Fe New Mexican*, May 14, 1902, 4.

⁶⁶ *Santa Fe New Mexican*, issues of June 6, 1900, 4 and September 4, 1900, 4.

⁶⁷ *Santa Fe New Mexican*, April 2, 1901, 1.

⁶⁸ *Santa Fe New Mexican*, June 21, 1902, 1.

prosecuting vigorously the work of exploiting the large sulphur deposits of the Jemez country. Whole mountains of the crude sulphur exists [sic] and Mr. Otero has found a good market for it. This will result in the upbuilding of quite an important industry in that section.⁶⁹

Given a newly-improved road from Buckman's Crossing to the site—a project supported in part by Santa Fe's merchants—Otero was able to order the promised “large mill” for processing the site's sulfur deposits. The mill, capable of processing up to fifteen tons of ore per day, was hauled to the site in late August (see Figure 6.3).⁷⁰



Figure 6.3. The abandoned Otero Sulphur Mill at Sulphur Springs, which was active from 1902 to 1904. Photo taken in early 1920s.

Source: Ranch School Album, Los Alamos Historical Society Archives.

As noted in the August 28 *New Mexican*,

A car-load of machinery for the sulphur mill of Hon. M.S. Otero, of Albuquerque, at the Sulphur hot springs, ... has arrived at the [railroad] depot here, where on yesterday and today it was loaded on ten wagons to be freighted over-land to the Sulphurs, the road from Santa Fe to that locality being the easiest and best, although a few miles longer than from Thornton. It is understood that the Sulphur, when milled, will be brought to this city, and shipped east from here. This will establish quite a freight service between the Sulphurs and this town.⁷¹

By November 1902, a Santa Fe newspaper reported that “The Hon. M.S. Otero is still working on his Sulphur plant and has the necessary buildings nearly completed.” F.G. Park, noted another news item, was the “superintendent of construction of the Otero Sulphur mills at Sulphur Springs.” The

⁶⁹ *Santa Fe New Mexican*, July 30, 1902, 4.

⁷⁰ Martin, *Valle Grande*, 43; *Santa Fe New Mexican*, issues of June 21, 1902, 1; July 2, 1902, 8; and July 30, 1902, 4.

⁷¹ *Santa Fe New Mexican*, August 28, 1902, 7.

mill was completed soon afterward, and Otero's crew was able to mine some sulfur that year before snow shut down operations for the year.⁷²

When operations resumed the following spring, digging was initially easy, because much of the sulfur was located in cracks just a few feet below the surface.⁷³ In May 1903, workers at "the new Sulphur mines of M.S. Otero near Sulphur Springs ... made a peculiar find." A news report provided the details:

Men at work ... had attained a depth of about ten feet when they struck the mouth of an old shaft that is evidently a relic of the days when the Spaniards occupied this territory prior to the Pueblo revolution of 1680. It was covered over with rotten timbers and the entrance was clear, but for a distance of 20 feet the wood was so rotten that it crumbled at the touch of the workers. There is no record to show that a mine was ever worked there by Americans or natives and there is little room to doubt but that the Spaniards dug this shaft centuries ago. Many mines were covered by the Indians at the time of the revolution and this was probably one of them. The men who made the discovery were unable to go to any great depth on account of the extreme heat which is also evident in all of the Sulphur mines, the Sulphur itself being responsible for it. The only relief from the heat is obtained through air shafts and air tunnels. Mr. Otero's workmen are now unable to work at a greater depth than 100 feet, but additional air shafts and tunnels will soon be added when it is hoped to obtain a much greater depth. These mines are situated just a few miles from Sulphur Springs [?] and the Sulphur is said to abound in unlimited quantities. Hundreds of pounds of pure Sulphur have been taken out and quite a force of men is employed there, but it is expected that much more Sulphur can be removed daily when everything is in working order and a larger force of men will then be employed.⁷⁴

Soon afterward, however, the miners got back to work, and by September of that year, the *Santa Fe New Mexican* reported that

Twenty-five wagons loaded with Sulphur from M.S. Otero's Sulphur mill at the Sulphurs in Sandoval County are scheduled to arrive in Albuquerque tomorrow. Mr. Otero has organized the Otero Sulphur company with headquarters in Albuquerque. A good market for Sulphur is found in New Mexico as it is extensively used in sheep dip.⁷⁵

On into the fall, reports from the sulphur mines continued to be optimistic. In November 1903, a news report noted:

The Otero Sulphur mills at Sulphur, Sandoval County, about fifty miles west of Santa Fe, are running at their full capacity. About twenty men are employed. Orders have been given for additional machinery to increase the capacity of the plant. ... The Sulphur deposits in Sandoval County ... ought to be of great commercial value.⁷⁶

Later that month, the "additional machinery" arrived at the property. The *Santa Fe New Mexican* reported that "a new retort has been installed at the Sulphur works of M.S. Otero at Sulphurs, Sandoval County. The weight of the retort is 4,600 pounds, and six horses were required to freight it from Albuquerque to Sulphurs."⁷⁷

⁷² Martin, *Valle Grande*, 43; *Santa Fe New Mexican*, November 20, 1902, 4, and November 21, 1902, 4.

⁷³ Martin, *Valle Grande*, 43.

⁷⁴ *Santa Fe New Mexican*, May 22, 1903, 2.

⁷⁵ *Santa Fe New Mexican*, September 18, 1903, 10.

⁷⁶ *Santa Fe New Mexican*, November 4, 1903, 6.

⁷⁷ *Santa Fe New Mexican*, November 14, 1903, 4.

George R. Mansfield, a government geologist who spent a day at the site, noted that the sulphur deposit:

occurs in rhyolite, a volcanic rock. The rocks at this locality are at some places still warm to the touch, and there are numerous vents in them from which hot acidulated waters and sulphurous vapors are now being emitted. Some of these vents are being utilized for the hot water and vapor baths that make Sulphur Springs a local health resort. ... The deposit occupies about 9 acres in a small basin eroded in the rhyolite. ... [In 1902] M.S. Otero ... built at Sulphur Springs a mill equipped with a boiler, engine, pump, and two retorts of about 1-ton capacity each, for producing sulphur. The retorts were filled with ore and steam under pressure of about 30 pounds was led into them and the melted sulphur was drawn off below. ... the ore treated ran about 50 per cent sulphur and the total production amounted to about 200,000 pounds, of which 150,000 pounds were sold at Albuquerque, the rest being sold in small lots to local purchasers. The ore used by the mill had been taken from an entry, now caved, on a low ridge that forms the southeastern extension of the deposit. A shallow cut, 4 feet 10 inches long, made on the side of this tunnel, showed seams of good sulphur in cracks.⁷⁸

Otero's crew continued its work in early 1904. But as Craig Martin has noted, by this time "the sulfur was far more difficult and required tunneling. Operations came to an abrupt halt when it was found that poisonous hydrogen sulfide gas was collecting quickly in the mine shafts." And given the younger Otero's death—on February 1, 1904, of apoplexy while at home in Albuquerque—no one remained with either the funds or the interest to continue. And if the above was not sufficiently bad news, sulfur prices dropped dramatically in 1904, which largely removed any incentive to mine further. The operation was over.⁷⁹

Geologist George Mansfield offered a similar account, giving both economic and personal reasons for the mine's demise, noting that

the material [sulphur deposit] as a whole did not run so well and seemed poorer toward the bottom. ... All the sulphur at Sulphur Springs was apparently deposited in vents, cracks, and pores within a few feet or a few inches of the surface. The available sulphur in this area is apparently not large in quantity and is irregularly distributed. [It] is relatively thin, being only 2 feet 4 inches thick at four measured cuts ... the quantity of available sulphur is too small to be of commercial importance, especially in view of the inaccessibility of the deposits. ... Upon the death of Mr. Otero, ... the mill was closed and the property passed into the hands of his sons.⁸⁰

Photos taken on May 20, 1905—just a year after the operation shut down—noted several site improvements: a hotel, a mill building, bath houses, and a mining shaft (see Figure 6.4).⁸¹

⁷⁸ George R. Mansfield, "Sulphur in Jemez Canyon, Sandoval County," *Mineral Resources of the United States, 1918, Part II, Nonmetals* (Washington, GPO, 1921), 368.

⁷⁹ Martin, *Valle Grande*, 43–44; *Albuquerque Morning Journal*, February 2, 1904, 4; *Santa Fe New Mexican*, February 1, 1904, 10; "Mariano Sabino Otero," *Biographical Directory of the United States Congress*, <https://bioguideretro.congress.gov/Home/MemberDetails?memIndex=O000124>; Anschuetz and Merlan, *More Than a Scenic*, 126.

⁸⁰ Mansfield, "Sulphur in Jemez Canyon," 368–69.

⁸¹ NMSU Library Archives Photograph Collections, <http://archphotos.nmsu.edu/moreinfo.cfm?op=1&imageNo=1040347> and <http://archphotos.nmsu.edu/moreinfo.cfm?op=1&ImageNo=1040348>.



Figure 6.4. Hotel and bath houses at Sulphur Springs, 1905.
Courtesy New Mexico State University Library, Archives and Special Collections, Image 01040348.

In the years and decades after Otero's death and the cessation of mining operations, a fairly low-key health resort continued to operate at Sulphur Springs, with a fairly regular clientele of both hotel guests and campers. Management consisted of a series of short-term proprietors. Guests could not always rely on a regularly-scheduled stage route to access the springs. In July 1905, for example, a Santa Fe newspaper noted that four men had "left the city this morning for Sulphur Springs, where they will remain for two weeks on a camping trip."⁸²

One company took quantities of the spring's mineral waters and sold them retail to Santa Fe residents. Their advertisement read:

⁸² *Santa Fe New Mexican*, July 8, 1905, 7.



Figure 6.5. Photo of Sulphur Springs hotel and bath houses, April 16, 1918. The photographer noted that “the little ravine [in the foreground] has numerous vents emitting sulphurous vapors and waters.” USGS photo from USGS Denver Library Photographic Collection, Photo ID mgr00426.

Ho! For the Sulphurs. Any doctor in New Mexico will tell you there is no mineral water in the world to compare with it. We are sole dealers and after many experiments at considerable cost have found a way to bottle in natural state. A laxative—a tonic—a nerve builder and blood purifier. Saves a trip to the springs. Mail orders solicited. Akers and Townsend, Sole Distributors.⁸³

In 1906, the hotel was described in flowery terms:

J.W. Malette [is] manager of the hotel and hot springs at Sulphur Springs. ... These springs are among the most celebrated in the United States and by the use of their waters, many wonderful cures have been effected. ... The hotel accommodations offered by Mr. Malette are of the very best and will be found pleasing to guests. P.H. Lease, the well known Española gardener ... speaks in the highest terms of Mr. Malette as a hotel manager and of the care and attention he pays his guests. The waters used there by Mr. Lease did him great good and have completely restored him to health.⁸⁴

During the summer of 1906, the resort advertised for hotel guests, as follows:⁸⁵

⁸³ *Santa Fe New Mexican*, September 29, 1905, 6.

⁸⁴ *Santa Fe New Mexican*, July 14, 1906, 5.

⁸⁵ *Santa Fe New Mexican*, issues of May 16, 1906, 8, and September 13, 1906, 8. Three years earlier, in 1903, James W. Malette had been an Albuquerque-based dealer in china and glassware. *Albuquerque Morning Journal*, October 13, 1903, 5. In April 1907, “Sulphur” became a new post office location, and Malette served as its first postmaster. *Santa Fe New Mexican*, April 19, 1907, 8.

Ho for the Best Springs on Earth
Good Road via Española, NM
All Hotel Accommodations
Sulphur Springs, N.M.
J.W. Malette, Manager

Access to the spring via Española, however, proved problematic in later years. As noted in a July 1909 article, a small group of vacationers had:

returned home yesterday morning from a sixteen days' outing at the Sulphur Springs, where they availed themselves of the baths. They report having had a very delightful time, but endured quite a hardship going to and coming from the Springs. They traveled via the Santa Clara canon, and the road in some places is very dangerous, especially to heavily loaded wagons. Quite a number of Santa Feans have visited the Sulphur Springs this month. ... A great number of people from all over the country visit these Springs every year, and it is strange that the roads are not placed in good condition. If these Springs had railway facilities, they would be world famous, and a bonanza for their owners.⁸⁶

Federal surveyors who visited the property in the fall of 1911 offered the following:

Mineral springs are found near the center of the west boundary. The waters are sulphur, iron, magnesium, soda and alum, the different springs predominating in some areas [illegible] of the minerals mentioned, giving a variety of mineral waters. The [grant's western] boundary line divides the area of these springs. To the west of the boundary line, at this point, is a hotel and store, operative under [illegible] lease from the owners of this grant.⁸⁷

And in 1912, a news report noted that “Mr. E.D. Finke is the proprietor of the Sulphur springs and reports that his patronage was good the past season. He harvested a crop of potatoes, turnips and beets of unusual size at the Sulphurs, at an altitude of over 8,000 feet, as well as many very fine oats.”⁸⁸

By the spring of 1914, the resort was undergoing major improvements, and an Albuquerque newspaper published an ad showing a photo of the hotel and surrounding improvements. The ad noted that

Sulphur Springs Hotel, Sulphurs, N.M. Was Opened for Business May 1st. Fully equipped for accommodation of guests. General store in addition where camping outfits can be purchased as reasonable as in Albuquerque. Hot Sulphur Baths, Good Fishing, Fine Saddle Horses, Etc. E.A. Hall, Proprietor⁸⁹

But the road to the resort from Santa Fe still presented problems. S.S. McKibbin, who had spent a month at the springs before returning to Santa Fe, noted that

⁸⁶ *Santa Fe New Mexican*, July 31, 1909, 8.

⁸⁷ Daniel Sawyer and William H. McBroom, “Examination of Surveys in Baca Location No. 1 Grant, New Mexico, under contract dated June 1876,” Sept.–Oct. 1911, Exhibit DX-AG, “US Exhibits from Jemez Trial, 1779–2000,” from non-confidential trial exhibits, on file at VALL.

⁸⁸ *Albuquerque Morning Journal*, October 23, 1912, 7.

⁸⁹ *Albuquerque Morning Journal*, May 24, 1914, 6.

Proprietor Ball [Hall] has fixed all the bathing facilities up in first class shape, while new roofs have been put on the cabins and the boarding and lodging accommodations are better than ever before. "If the road were fixed just a little, Santa Fe would be the gateway to this resort, which can be made one of the greatest in the country," said Mr. McKibbin today. "It is only 18 miles distant via Buckman, and only a few miles of the road need attention. Mr. Ball [sic] declares himself ready to meet the people of Santa Fe half way in any measure taken to improve the road. The work could be done at small expense and the healing waters of these Sulphur springs could be advertised as one of Santa Fe's best attractions."⁹⁰

The difficulty of accessing Sulphur Springs continued, and during this period, those who operated the resort began advertising in Albuquerque rather than Santa Fe newspapers. This switch in markets was due to a combination of factors; while differing road conditions doubtless constituted one factor, the change in market orientation was also a belated recognition that in 1910, Albuquerque had more than twice as many residents as its northern neighbor. Furthermore, in the quarter century after 1890, Albuquerque had consistently enjoyed a healthy population growth, while Santa Fe's population had stagnated.⁹¹

E.A. Hall continued to operate the resort in 1916, a year which featured weekly entertainment under the stars. In late July, an Albuquerque paper noted that

Last night was the scene of a merry gathering of campers and hotel guests when a huge bonfire was built on the brow of the hill just in front of Hotel Hall. Perfecto Armijo, of Albuquerque, was master of ceremonies. . . . The Sulphur springs are well patronized this summer, and while there are a number of campers around the resort, Hotel Hall keeps pretty well crowded with satisfied guests. About once a week, campers and hotel guests get together and "make merry" for several hours in the evening.⁹²

In April 1917, the property—with new management—issued the following advertisement:

See America. However, you should visit Sulphur Springs first. Mounted on a horse, each mile traveled unfolds new beauties of nature and more enchanting scenes. . . . Marvelous cures have been wrought by the waters. Come and be convinced. T.J. Prairie, Proprietor Hotel and Baths.⁹³

Three months later, M.L. Fox provided perhaps a detailed description of Sulphur Springs (see Figure 6.5). As part of a larger article on the Jemez country, Fox noted that

. . . the Jemez hot springs are overshadowed by that marvel of nature, the Sulphur springs, sixteen miles away. They are called the Sulphur springs because Sulphur predominates, but there are iron and alum springs in abundance, hot springs and cold springs—all of them side by side and some of them, different as day and night, within a few feet of each other.

At "The Sulphurs," as that locality is familiarly known, you can take baths in mud so hot that forty gallons of cold mountain water must be poured in before human flesh can stand the temperature. A ham let down into one of these boiling springs will cook as quickly as in any other sort of boiling water. You can take baths in rich, yellow Sulphur pools where the temperature is not too hot for

⁹⁰ *Santa Fe New Mexican*, September 16, 1914, 8.

⁹¹ U.S. Census, *1910 Decennial Census, Supplement for New Mexico* (Washington, GPO), 568.

⁹² *Albuquerque Morning Journal*, issues of May 28, 1916, 5, and July 23, 1916, 5.

⁹³ *Albuquerque Morning Journal*, issues of April 15, 1917, 8, and April 28, 1917, 2.

comfort, and you can take a swim in the big electric bath from which a good sized stream of hot water flows all the time.⁹⁴

Fox went on to describe the curative powers of the Sulphur Springs waters.

Also you are expected to drink all you can stand of the hot “sour water,” believed to be a specific for all sorts of kidney [sic] and liver trouble, and you may snuff a strong “alum water” up your nose if you are bothered with catarrh.

People twisted with rheumatism, and with enlarged joints and swollen muscles and aching nerves, come to “The Sulphurs” and are apparently cured before your eyes in less than a week. Furthermore, the cures last for a long time—sometimes for five or ten years without recurrence.⁹⁵

Finally, Fox described the resort as seasonal, with a come-as-you-are atmosphere.

I am told by experts that nowhere else in the United States are such curative springs found. Yet, because of the difficulty of getting to them, there are only a few people there at any time during the summer—and in the summer one must take the baths if they are taken at all, for the snows fall deep and early and the weather becomes cold and stays cold for fully eight months in the year.

While the “hotel” is a rough structure of hewn logs, its rooms are clean, its beds comfortable and the food good for a place so inaccessible—and the total cost, baths, room and board, is only \$2.50 a day.⁹⁶

The following year, the resort’s management placed the ad below in an Albuquerque newspaper:⁹⁷

Spend Your Vacation At the Right Place
Sulphur Hot Springs (Altitude 8,660 Feet)
Automobile road all the way – Stage for the Sulphurs leaves
every Tuesday and Saturday. Write for particulars to –
T.J. Prairie, Proprietor Sulphur Springs Hotel,
Sulphurs, via Jemez Springs, New Mexico

In 1921, correspondent Hy Schneider offered high praise for the resort, but—as others had before—he was highly critical of the difficulty in reaching the site. Speaking of the Jemez country and its natural beauty, he noted that:

Everything is as God made it, except for the neighboring Indian settlements and the almost miserable trail that leads from the village of Jemez ... and on to Sulphur Springs the jumping off place.

... the route from Jemez Springs to Sulphur Springs [is] a trail leading over the roughest of roads to the site of the old Otero Sulphur mill. This plant was erected during the Spanish-American war period [sic], but was active only a short time. It was discovered, say the Sulphur residents [sic], that the Sulphur could not be milled in paying quantities. The plant, now rotting and rusting in the vaporized sulphur atmosphere, representing a big cash outlay—perhaps \$50,000—is now little more than worthless.

⁹⁴ *Albuquerque Morning Journal*, July 18, 1917, 5.

⁹⁵ *Ibid.*

⁹⁶ *Ibid.*

⁹⁷ *Albuquerque Morning Journal*, July 7, 1918, 8, and July 14, 1918, 8; November 8, 1920, 7. As late as the fall of 1920, T.J. Prairie continued to “conduct the hotel at Sulphur Springs.”

... Up at Sulphur Springs they have the Sulphur mud baths and the “electric” baths, also said to be second only to the famed Carlsbad in curative properties.

... To Jemez from Albuquerque, a distance of nearly 60 miles, the road is traversed daily by automobile. Above Jemez, it takes an expert driver to make the “grade.” For it is a “grade” from here [Jemez] to Sulphur, a climb of about 2,000 feet in about 14 miles.⁹⁸

In April 1922, the resort came under new management, an event that was viewed cautiously by its competitors at nearby Jemez Springs: “The Sulphurs also begin to take on new life, new blood being infused into that resort so sadly neglected in the past. As a medicinal aid they rank with the [Jemez] Springs, even if the accommodations are not so up-to-date.”⁹⁹ The resort soon launched a major advertising campaign to attract visitors to the site. All summer long, from mid-May to late August, Albuquerque readers saw the following announcement:¹⁰⁰

Famous Sulphur Hot Springs
Now under new management who assures
better accommodations than ever before.
Hotel has been thoroughly renovated.
Stage Leaves Every Other Day
Round Trip Sulphur Springs \$18.00 ...
C. Tartaglia, Proprietor, Sulphur Springs Hotel

A travel article published that year noted was enthusiastic about the springs and their healthful properties:

The Sulphur country has within an area of two or three acres mineral springs of almost every imaginable kind—every sort of water that Manitou [Springs, Colorado] has and enough left over to make a wonderful resort in themselves. Then there are the Sulphur springs, boiling hot that steam up out of the ground. Without about forty gallons of cold water poured into a tub, the water would soon boil the flesh from your bones. No germ or microbe can live in that water ten minutes after you stop pouring cold water in with the hot. There is no possibility of contagion or infection from these baths.¹⁰¹

Tartaglia continued to manage the property the following year, as suggested by the following advertisement:

Sulphur Hot Springs Open. Permanent Relief for Sufferers of Rheumatism, Kidney Troubles, Eczema and all Blood Diseases. If you want to throw away your crutches, pay a visit to the famous HOT WATER and MUD SPRINGS. Only 15 miles above Jemez Springs. Grocery store run in

⁹⁸ *Santa Fe New Mexican*, August 19, 1921, 2. A 1923 article was even more blunt about the condition of the Jemez Springs–Sulphur Springs road, noting that Sulphur Springs was “now inaccessible by auto.” *Albuquerque Morning Journal*, January 18, 1923, 3.

⁹⁹ *Albuquerque Morning Journal*, issues of April 9, 1922, 12, and May 21, 1922, 22.

¹⁰⁰ *Albuquerque Morning Journal*, July 23, 1922, 13. In August 1922, the stage fare was lowered from \$18.00 for a round trip to \$7.00 for a one-way trip.

¹⁰¹ *Albuquerque Morning Journal*, March 16, 1922, 3.

connection with Springs to accommodate campers. For information see Chas. Tartaglia, Phone 907-J, 203 S. Second¹⁰²

In 1925, the hotel management undertook another summerlong ad campaign to attract health-seekers from Albuquerque to Sulphur Springs. The ad read:¹⁰³

The Famous Sulphur Springs, Open After July 1st
Clean, Comfortable Beds. Plain Wholesome Food.
Camp Service – no Frills. Rates, \$4 per day - \$25
per week (2 in one room, \$45), single meals, \$1.25.
Baths one dollar each. Patrons must provide their
own blankets, etc.
Address: Sulphur Springs Hotel, Jemez Springs, N.M.
The road is safe for careful drivers.

Two years later—under yet another new operator—the resort advertised for tourists in an Albuquerque newspaper’s classified section. Off and on during 1927 and 1928, the ad read as follows:¹⁰⁴

The Sulphur Springs Hotel
is now open for business. This property
has been leased by M. Maurin, otherwise
known as “Frenchie.” The road to the
Sulphurs is in good condition. Reasonable
rates. Address Sulphur Springs Hotel, c/o
Jemez Springs, New Mexico

During the summer of 1929, the lessee published a new ad, in the personals section of an Albuquerque newspaper:

CONVALESCENTS—Spend the summer at Sulpher [sic] Springs, mineral water, Sulphur baths, two hour drive from the city. Good hotel, excellent meals. M. Maurin “Frenchy,” manager.¹⁰⁵

That same year, an Albuquerque reporter visited the site. He noted that

It is a spot that would possibly be beautiful if it were not for its rather unreal aspect. . . . Sulphur Springs of varying quality are everywhere and have great medicinal and healing power for various human afflictions. There are always a few people at the hotel primarily for this natural remedy which comes from vents from the underlying volcanic structure. . . . Sulphur Springs still is popular with those seeking the curative remedies of Mother Nature or for those who wish to study the activity of volcanic structures.

¹⁰² *Albuquerque Morning Journal*, issues of June 27, 1923, 3, and July 29, 1923, 7.

¹⁰³ *Albuquerque Morning Journal*, July 1, 1925, 20. Similar ads that year ran in the *Morning Journal* from June 25 to July 7, 1925, and also the following June (specifically June 1, 1926, 15).

¹⁰⁴ *Albuquerque Journal*, issues of July 3, 1927, 15, and May 26, 1928, 18. Similar ads ran throughout June and July 1927, as well as throughout May and June 1928.

¹⁰⁵ *Albuquerque Journal*, August 5, 1929, 12. Also June 29, 1929, July 29, 1929 and August 21, 1929.

That visit produced several site photos: pinpointing the location of the hotel, the main bath house, one of the sulphur springs, the old mill building, and various cabins.¹⁰⁶

The Sulphur Springs Hotel burned to the ground on the morning of July 30, 1931. A news article reporting the blaze stated that it had been

a landmark for 50 years. ... [The fire] was discovered in the dining room of the log structure [and] was believed to have been caused by a defective flue. The dining room, with the kitchen, occupied a wing off the main building of the two story structure. The blaze was discovered by Mrs. Bethel Elliott, cook at the hotel, who was sleeping next to the dining room with her two small children ... Guests were forced to flee in their nightdress. ... All the personal effects of the six or eight guests were destroyed. ... The hotel was owned by Neill B. Field, Albuquerque attorney, and managed by M. Maurin.¹⁰⁷

The property's manager, however, vowed to stay in business, and less than two weeks after the fire, Maurin frankly noted that "The fire which damaged Sulphur Springs Hotel did not damage our bath houses and cabins. Our baths are open to the public with the same service as we have always offered."¹⁰⁸ By the late 1930s, the resort had changed hands yet again, and by the late fall of 1937 new ads had appeared, this time advertised to Farmington residents:¹⁰⁹

Sulphur Springs Health Resort, "Where the World Gets Well"
NOW you can get the Winter Rate, \$25 per month –
190 miles from Farmington – Road will be kept open all winter.
Can use Hogs, Beef, Cows or other farm products
at better than market price. W.E. Culler, Mgr.,
Sulphur Springs, via Jemez Springs, New Mexico

The following year, the owners constructed a new hotel at the property. As noted in a June 1938 *Albuquerque Journal* article,

A new 16-room hotel at Sulphur Springs, famous for years for the curative powers of its mineral waters, will be opened by July 3. ... The hotel is being built by W.E. Culler of Santa Fe, who has leased the property. He is also building new bath houses for both men and women. ... The hotel there burned about eight years ago. Since that time, hotel accommodations have been lacking and bath houses facilities [sic] have become run down. Hundreds of persons, however, have continued to visit the springs each year. Culler has been operating the resort for two years. ... Springs of the region contain many minerals, according to bulletins published by University of New Mexico scientists. Chief among the minerals are calcium, Sulphur, and radium, the last especially valuable in the treatment of skin diseases and arthritis.¹¹⁰

William Culler, who first managed the property in 1936, continued its management through the 1938 season.¹¹¹ After that date, however, Sulphur Springs was no longer advertised until the end of World

¹⁰⁶ *Albuquerque Journal*, May 26, 1929, 44.

¹⁰⁷ *Albuquerque Journal*, July 31, 1931, 1.

¹⁰⁸ *Albuquerque Journal*, August 11, 1931, 10.

¹⁰⁹ *Farmington Times Hustler*, December 17, 1937, 7. The resort's owner was now the Neill Field estate, the Albuquerque attorney having died in October 1932. *Albuquerque Journal*, October 29, 1932, 4.

¹¹⁰ *Albuquerque Journal*, June 19, 1938, 7.

¹¹¹ *Albuquerque Journal*, July 15, 1938, 12.

War II. In August 1945, longtime manager W.E. Culler and his son purchased the property from the Mary Fields Corporation, and the new owners announced their intention “to remodel and build additional cabins at the resort.”¹¹² By 1947, the Sulphur Springs Health Resort was back in operation, and a 1952 news item confirmed that the resort was still active, and with W.E. Culler remaining as its operator.¹¹³ But by 1955, a visitor to the site, Mrs. Louis Rosen was complaining that

We were very much disappointed to find that there has been no more improvement than of twenty years ago [1935]. The healing waters is there [sic], but there is not any kind of facilities to add to the attraction of the place. ... I am writing this, because I only used a little of the water to use for sinus and it gave me relief like nothing has before. ... This is a great spot which has apparently been overlooked somehow.¹¹⁴

By 1958, Culler was back in business, and the hotel was once again in open to visitors. A personal ad in an Albuquerque newspaper suggested that the business was marginal:

Your health and ailment leave it [at] Sulphur Springs Health Resort. Open by owner W.E. Culler. Patients staying at hotel must make reservations. Would suggest come early, may not be open all season. Sulphur Springs, New Mexico. Roads good.¹¹⁵

Four years later, Culler was still running the resort, as suggested by the following ad:¹¹⁶

<p>You haven't tried the best for your health Until you try Sulphur Springs Health Resort Excelled by None Hut Sulphur Mud Bath W.E. Culler, Proprietor Sulphur Springs, New Mexico</p>

In 1965, a site map showed the Sulphur Springs Hotel, along with smaller buildings at nearby Electric Spring, Footbath Spring, and Men's Bath House Spring.¹¹⁷ That same year, however, Culler's resort either closed or was preparing to close, given the June 1965 advertisement that Culler placed in an Albuquerque newspaper: “For Sale: Sulphur Springs Health Resort ... consists of three cabins and bath house, 40 acres. Offered for sale due to advanced age. See at Sulphur Springs, 13 miles north of Jemez Springs.” Culler, through an Albuquerque real estate firm, tried again in 1969 to sell his property (“forty acres, fine for health resort”), but was unsuccessful (see Figure 6.6). In April 1970, he sold the entire 40-acre parcel to Donald and Jeannette Cosper from Irving, Texas.¹¹⁸

¹¹² *Santa Fe New Mexican*, July 31, 1945, 3; *Albuquerque Journal*, August 22, 1945, 7.

¹¹³ *Albuquerque Journal*, issues of May 21, 1947, 8, and October 24, 1952, 4.

¹¹⁴ *Albuquerque Journal*, June 19, 1955, 12.

¹¹⁵ *Albuquerque Journal*, June 1, 1958, 44.

¹¹⁶ *Albuquerque Journal*, May 6, 1962, 26; also see July 8, 1962, 6.

¹¹⁷ W.K. Summers, *Catalog of Thermal Waters in New Mexico*, New Mexico Bureau of Mines & Mineral Resources, Hydrologic Report 4 (Socorro, the Bureau, 1976), 33.

¹¹⁸ *Albuquerque Journal*, June 17, 1965, 9; *Albuquerque Tribune*, September 29, 1969, 30; Real Estate Contract No. 32351, April 21, 1970, Sandoval County Records, courtesy of Robert Parmenter (VALL), email to the author, November 16, 2020. The 91-year-old Culler died in Albuquerque in June 1974. *Albuquerque Tribune*, June 21, 1974, 36.



Figure 6.6. Sulphur Springs Hotel in 1971, not long before it was destroyed.
Courtesy Sandoval County Historical Society Archives.

The new owners continued Culler's previous efforts to sell the property as a health resort. In 1972, for example, the property again appeared in a newspaper ad ("Old Health Spa, Old West Sulphur Springs Hotel"), but apparently there were no takers.¹¹⁹ In December 1974, a hydrologist visited the site, afterward compiling a history of the various springs at the property and their chemical properties; he did not, however, chronicle the site's cultural history¹²⁰

In 1976, a site visit from a Los Alamos reporter-photographer revealed that the remaining structures were in ruins. The reporter noted that the site was "once quite popular for mineral baths, but the level of the liquid has dropped considerably, leaving only a pungent, bubbling muck." Published photographs showed the remains of "an old bath house," a "deserted house," and scattered debris.¹²¹

Despite that deterioration, efforts continued to market the property as a health resort. In 1978, a Jemez Springs realtor produced the following ad:

Famous "Sulphur Springs"—Almost 40 Acres—Imagine boiling hot springs, steam holes, and many other types of springs. Creeks all over the place! Develop this property back to its past use as a health resort. What a money-maker! See this investment today.¹²²

The ad, however, went unanswered. More recent owners of the property have had no known interest in developing the site for tourists, and since the 1970s, the various remaining site improvements have largely disappeared. Since the establishment of Valles Caldera National Preserve in 2000, various studies have produced maps showing the location of the various springs within this

¹¹⁹ *Los Alamos Monitor*, August 13, 1972, 7.

¹²⁰ Summers, *Catalog of Thermal Waters in New Mexico*, 32-36.

¹²¹ *Los Alamos Monitor*, September 14, 1976, 5.

¹²² *Los Alamos Monitor*, June 2, 1978, 10.

approximate 40-acre parcel.¹²³ None of these maps, however, showed—to the extent of W.K. Summers’ 1976 map—where the various buildings that constituted the historical hot-springs complex were located.

In November 2016, shortly after Valles Caldera National Preserve fell under National Park Service jurisdiction, Heritage Partnership Trust (HPT) purchased this 40-acre tract—the last private inholding in the preserve—from five different landowners. The purchaser had no interest in developing the land; instead, this entity’s sole purpose was to hold the parcel in trust until the federal government could muster up the funds to buy it. Three years later, with funds from the Land and Water Conservation Fund, that opportunity presented itself; in early December 2019, the NPS completed the purchase of this parcel.¹²⁴

Historic Properties Summary and Recommendations

At Sulphur Springs, over the years, various entrepreneurs have erected a broad range of structures: some for mining, others for the health and tourist trade. The principal mining-related structures have been 1) a twenty-foot-deep timbered mine shaft, purportedly dating back to the era of Spanish occupation, and 2) a sulphur processing mill that was built in 1902 under the direction of Mariano S. Otero.

In order to serve the tourist and health-resort client, at least two hotels have been built adjacent to Sulphur Springs Road, along with several nearby tourist cabins and at least two bath houses. The first known tourist-related structures apparently dated from the early 1890s, and new (replacement) structures continued to be built until 1938 if not later. Several of these structures, moreover, were still standing as late as the early 1970s, although they were in ruins just a few years later.

By the dawn of the twenty-first century, however, the last of these structures—related to both mining and the tourist / health resort trade—had either deteriorated into insignificance or had disappeared entirely. Today, moreover, virtually no historical structural remains are still visible, either at the remaining fumaroles (steam vents) or in the vicinity of Sulphur Springs Road. The lack of visible remains, to be sure, does not suggest that evidence of their presence is entirely lacking. An archaeological survey at the site, perhaps with concurrent subsurface investigations, will be necessary in order to determine whether any remains are *eligible* to the National Register of Historic Places.¹²⁵

¹²³ Perhaps the most descriptive map is located in the W.K. Summers study, *Catalog of Thermal Waters in New Mexico*, New Mexico Bureau of Mines and Mineral Resource, Hydrologic Report 4 (Socorro, the Bureau, 1976), 33, included in the Elvado Environmental, LLC report, *Phase 1 Environmental Site Assessment, Valles Caldera National Preserve, NPS Tract Nos. 101-03, 101-04, 101-05, 101-06, and 101-07, Sulphur Springs, New Mexico*, October 22, 2018; Vol. 2, p. 108. Also valuable is a USGS, “Site Location Topographic Map,” noted in Vol. 3 of the above report, p. 13; and a “Generalized Site Map” in the Graham Geosciences study, *Preliminary Report – Phase 1 Environmental Site Assessment, 40-acres, Placer Claim No. 2 and Placer Claim No. 1, Santa Fe National Forest, Sandoval County, New Mexico*, 2008, p. 12. Both reports are available from VALL cultural resources staff.

¹²⁴ As one newspaper article noted, HPT “held the property pending the sale to the National Park Service.” <https://apnews.com/78805cbad35c5403fec9dd5ec5ea3a40>, January 17, 2020; Deputy Chief Real Estate Officer, Serving Interior Regions 6, 7, and 8 (DOI) to Superintendent, VALL, January 14, 2020, attached to Robert Parmenter (VALL), email to Frank Norris, November 16, 2020.

¹²⁵ National Park Service, *National Register Bulletin; How to Apply the National Register Criteria for Evaluation*, https://www.nps.gov/subjects/nationalregister/upload/NRB-15_web508.pdf, 21-24.

Valle Grande Tourism

Many historical accounts suggest that Valle Grande and the surrounding area were initially of tourist interest as a byproduct of the remarkable archaeological resources available on its periphery. Starting in 1888, followed by a series of proposals for a Pajarito National Park between 1900 and 1918, Edgar Lee Hewett and others sought to protect as park units the Native American village sites at Bandelier, Otowi, Puyé, and elsewhere. Hewett was unsuccessful in pushing through a large-acreage national park; his advocacy did, however, result in the February 1916 presidential proclamation that established Bandelier National Monument.¹²⁶ Hewett tried again in the mid-1920s, this time for a newly-revamped Cliff Cities National Park—which again encompassed a sweeping amount of acreage—but due primarily to local opposition, his proposals failed. Then, in 1938, an NPS proposal briefly surfaced to establish a million-acre Jemez Crater National Park; that proposal, however, was doomed to failure and never reached Congress.¹²⁷

These proposals, though premature, reflected that Valles Caldera and its vicinity had considerable appeal to tourists, and has been noted elsewhere, visitors since the early 1890s have frequented the hotel, cabins, and campgrounds at Sulphur Springs, despite the poor roads that often stood in their way. (See the Sulphur Springs section.) While Albuquerque visitors, by and large, accessed this health resort by way of Jemez Pueblo and Jemez Springs, Santa Fe-based visitors often gazed upon Valle Grande as they traveled to and from the springs.

Many others, who had little or no interest in the area's hot springs, have opted over the years to visit Valle Grande and the surrounding area. Area newspapers have noted that this travel began in the late nineteenth century, when the area's road system was rudimentary at best. As early as July 1891, the *Santa Fe New Mexican* stated that "Arthur Seligman ... and a party of friends ... left this morning for a six weeks' trip to the Valle Mountains." In 1908, an Albuquerque newspaper noted that two men—one from Albuquerque, the other from Roswell—successfully took "a week's trip through the Valle Grande section of Sandoval County." In 1923, a teacher at the nearby Los Alamos school took its "junior group" to the Valle Grande, where they encountered "a bear cub which made its escape amid great excitement." And in 1926, an item in the *New Mexican's* personals section noted that "L.E. Fletcher has returned from a five-day pack trip to the Valle Grande. He acted as guide for a party of easterners."¹²⁸

Tourist travel to the area increased during the 1930s. As noted in Chapter 4, present-day State Highway 4 was not completed until the summer of 1937; several years before that, however, other roads were bringing visitors to area. In the fall of 1934, Santa Fe resident A.J. Taylor drove to Valle Grande via Cochiti and Bland. He noted that "One of the beauty spots of northern New Mexico is Valle Grande ... The lovely aspens turning various shades of gold, the mountains and the view make the trip one to be remembered." Two years later, in October 1936, Southwest Tours—a Santa Fe-

¹²⁶ Martin, *Valle Grande*, 73–74.

¹²⁷ Martin, *Valle Grande*, 74–75.

¹²⁸ *Santa Fe New Mexican*, issues of July 20, 1891, 4; October 11, 1923, 6, and June 6, 1951, 16; *Albuquerque Morning Journal*, June 27, 1908, 8.

based tour guiding service—advertised that “the fall coloring is at its best [by taking] the Valle Grande Circle Tour, including Cochiti.”¹²⁹

During the same period, staff from the Santa Fe National Forest—bent on showing the public recent work conducted by both Forest Service and CCC crews—organized several annual motorcades (see Figure 6.7). These Albuquerque-based auto caravans, which attracted scores of visitors each year, followed the “circle tour” route that came north from Jemez Springs; it included the Paliza CCC camp (northeast of Ponderosa), Hughes’ Sawmill (several miles north of the CCC camp), Boyd’s Ranch (near today’s Las Conchas day use site), “a point overlooking the Valle Grande” (probably near the intersection of Highway 4 and Forest Road 36 to Paso del Norte), and “the ghost town of Bland” before the tour left the national forest and descended to Peña Blanca and U.S. 85, the “main highway.” At the Valle Grande overlook, visitors were told that “this area is the floor of one of the largest extinct volcano craters in the world ... from rim to rim, the distance is estimated at 30 miles.”¹³⁰



Figure 6.7. Both before and after the 1937 completion of State Highway 4, U.S. Forest Service officials led well-advertised car caravans on summer weekends through the Jemez Mountains. National Museum of Forest Service History, forestservicemuseum.org/on-the-road

In July 1937, Forest Service crews opened the new, improved highway between the Pajarito Plateau and Jemez Springs, which made Valle Grande easily accessible to the ordinary automobile tourist. Not surprisingly, local newspaper columns occasionally noted the following: “Mr. and Mrs. Eleuterio J. Martinez spent Sunday in the Jemez mountains, driving through the Valle Grande and returning by way of Jemez Springs.”¹³¹ Local tour companies, meanwhile, continued to advertise tours to the area. One outfit, for example, stated in early October that

There’s no time like right now for taking trips, that is if you love New Mexico in its golden fall costume, or if you want to learn it. Andy Rich, with his Southwest Tours, is featuring a one day trip

¹²⁹ *Santa Fe New Mexican*, issues of May 24, 1933, 2; October 8, 1934, 1; and October 19, 1936, 3.

¹³⁰ *Albuquerque Journal*, issues of July 30, 1935, 3; July 10, 1936, 2; and April 30, 1940, 71.

¹³¹ *Santa Fe New Mexican*, July 5, 1938, 6, and August 28, 1940, 2.

up to the Valle Grande, making a complete circle by way of Los Alamos and San Ildefonso, coming back by Cochiti, going through the chill country [sic], and having a box lunch in an aspen grove.¹³²

Española, hoping to take advantage of the newly-completed road, noted in a travel piece that

The hunter will not be disappointed in the abundance of game in the country surrounding Española. ... the Valle Grande and Jemez [offer] grouse and band tailed pigeons, as well as deer. A fine new road has now opened up the beautiful Valle Grande to the winter sportsman and the hunter. The sweep of the lush valley, an old crater of several hundred miles extent, is one of the most gorgeous sights in the west.¹³³

World War II brought thousands of people to Los Alamos, and while the work schedule there was hectic, authorities were adamant that on Sunday, people “get off the mesa” and enjoy rest and relaxation. Deanna Morgan Kirby noted that

Whether by car, on horseback, or afoot, people left the site for some part of the day, summer and winter. ... Those fortunate enough to own a vehicle had the opportunity to escape the mesa top and their neighbors, but instead they usually invited friends or singles from the dorms to fill the empty spaces and share the trip planned for the day. “Eight in the car was considered the minimum patriotic load,” wrote [Jean] Bacher.

There were picnics at the Valle Grande replete with tablecloths, cocktails, hot food, coffee, and cigarettes. Sturdier souls stuffed sandwiches into their pockets and hiked to the tops of mountains such as ... Redondo, Tschicoma, Caballo, and Pajarito.¹³⁴

During the post-World War II period, Valle Grande was most often advertised as a key component of a scenic auto tour. A “Where to Go” guide to the Jemez Mountain area, published in the summer of 1951, notes that west of Frijoles Creek,

the road climbs to an elevation of over 9,000 feet, then down into Valle Grande (big valley), which is known as one of the largest extinct volcano craters. Following the rim of this scenic valley you come to the East Fork of the Jemez river which has excellent rainbow and loch leven [sic] fishing along with public campground facilities.¹³⁵

Three years later, a veteran travel writer heading east along State Highway 4 noted that “Forests of stately pine and aspen flank the road to Valle Grande, a mighty treeless valley so vast its immensity is deceiving.”¹³⁶

Throughout the 1960s, the American Petroleum Institute—which recommended that people “see America best by car”—sponsored the publication of a long-running series of automobile loop trips. One of these trips, based in Albuquerque, included a drive through Valle Grande. Heading east from the intersection of Highway 126 and Highway 4, the route proceeded

¹³² *Santa Fe New Mexican*, October 2, 1937, 6.

¹³³ *Albuquerque Journal*, October 2, 1938, 3, 5.

¹³⁴ Deanna Morgan Kirby, *Just Crazy to Ski; a Fifty-Year History of Skiing at Los Alamos* (Los Alamos, Los Alamos Historical Society, 2003), 15.

¹³⁵ *Santa Fe New Mexican*, July 8, 1951, 35.

¹³⁶ *Albuquerque Journal*, August 2, 1954, 23.

eastward, beneath 11,254-foot-high Redondo Peak, through the woods and meadows of Valle Grande. Though the Spanish called it “Great Valley” and cattle and sheep graze on its pastoral expanse, this 176-square-mile area is actually the world’s largest extinct volcanic crater.¹³⁷

Historic Properties Summary and Recommendations

Visitors, arriving either by wagon or automobile, have been attracted to Valle Grande and surrounding areas ever since the 1890s. Despite that long period of visitation, this study has identified no specific sites that are thematically related to the topic of Valle Grande tourism. (Many early rubber-tired visitors, as noted above, stopped at an informal viewpoint to gaze out on Valle Grande. That viewpoint, in all probability, was located near the intersection of present-day State Highway 4 and U.S. Forest Service Road 36, but its specific location is not known.) Because there are no known sites thematically related to early tourist visitation, none can be considered for evaluation to the National Register of Historic Places.

Skiing

The sport of skiing got an early start in the area surrounding Valles Caldera. During 1922 and 1923, the staff and alumni at the Los Alamos Ranch School (LARS) worked with the Forest Service to build the Camp May cabin at a leased site just east of a saddle between the Pajarito Plateau and Valle Grande. As one historical account notes, “The large cabin with its stone fireplace soon became a popular base camp for weekend trips into the mountains and for skiing and hunting trips for the older LARS boys.” Ski trips, at that time, were cross-country affairs based at the Camp May cabin; the primary improvement was “a long ski trail [that] has been cleared beginning in the vicinity of the shelter cabin.”¹³⁸ This ranch-school skiing was some of the earliest recorded skiing activity in New Mexico.

By the mid-1930s, New Mexico could boast two downhill ski runs: Ski Cloudcroft just east of Cloudcroft, the other in the Sandia Peak Ski Area east of Albuquerque.¹³⁹ Soon afterward, the Camp May area received its own ski improvements when Herbert “Hup” Wallis, a master at the school between 1938 and 1940, created the first runs on Pajarito Mountain for the senior boys to use during their weekends at the Camp May cabin.¹⁴⁰

The 1937 completion of the road from Los Alamos into Valle Grande provided other opportunities for skiing. In December of that year, a news article noted that “Skiing is reported excellent in the Valle Grande by President A.J. Connell of the Los Alamos Ranch School. The U.S. forest service is keeping open the scenic highway into the Valle Grande, which presents a magnificent winter

¹³⁷ *Albuquerque Tribune*, September 24, 1963, 13. Also *Albuquerque Journal*, issues of May 11, 1965, 11 and September 17, 1969, 25.

¹³⁸ Sharon Snyder, “Camp May Offers Fresh Air, Scenery, Bit of History,” *Los Alamos History*; <https://www.losalamoshistory.org/history-blog/camp-may-offers-fresh-air-scenery-bit-of-history>.

¹³⁹ *Santa Fe New Mexican*, Dec. 21, 1936, 5.

¹⁴⁰ Snyder, “Camp May Offers Fresh Air,” <https://www.losalamoshistory.org/history-blog/camp-may-offers-fresh-air-scenery-bit-of-history>.

panorama at this time.”¹⁴¹ Santa Fe residents enjoyed the area as well, as noted by the following January 1938 news clip:

With the lack of snow making skiing impossible in Hyde Park [just northeast of Santa Fe], the Forest Service is sending winter sports enthusiasts to the Valle Grande where there is plenty of snow for all kind of sports. Some 30 Santa Feans motored to the Valle Grande for skiing Saturday ... and about 40 persons from this city made the trip on Sunday. All were enthusiastic over winter sports conditions in the Valle Grande.¹⁴²

Before long, Forest Service personnel evidently decided to make modest improvements in the Sawyer Mesa area—just outside of the Baca Ranch boundaries—to assist skiers (see Figure 6.8). In early 1939, a Santa Fe newspaper noted “a ski trip to Valle Grande for a large group of the boys from the school. ... They reported finding about a foot of new snow on the ski hill, and all conditions were favorable for an excellent day of skiing.”¹⁴³

The following year, these improvements were more formalized, with “Sawyer Mesa” being listed as one of the Santa Fe area’s designated ski destinations. A typical January 1940 newspaper posting read as follows:

Sawyer Mesa, Santa Fe National Forest, 9 miles west of Bandelier National Monument, 3 inches of new snow, 10 inches of old, Dry, Crust firm, skiing good. Road icy, chains needed. Visitors last weekend, 60. Ski trail served by Valle Grande road at top and bottom. Accommodations at hotel at Bandelier.¹⁴⁴

The U.S. Forest Service continued to advertise Sawyer Mesa skiing during the winters of 1940–41 and 1941–42.¹⁴⁵ During the war, an instant city came to life at Los Alamos, and inevitably, some of the new residents wanted to try out the “novelty sport” of skiing. They soon learned about the improvements on Sawyer Mesa. Deanna Morgan Kirby noted that

In the summer of 1944, a few folks volunteered their Sundays to help widen the existing slope at Sawyer’s Hill, just west of Los Alamos on the road to the Jemez Mountains. These slopes were originally cut by Herbert (Hup) Wallis, an instructor at the Ranch School. The plan was to clear trees for a new tow path higher up on the north edge of the slope. ... As pressure to complete the war project intensified, progress at Sawyer’s Hill slowed. It wasn’t until October that [John] Rogers persuaded a couple of working cohorts ... to share in his enterprise. “We all wanted to ski, so we set out to build the rope tow.”¹⁴⁶

Rogers and his friends, working within military regulations, organized a private club among Los Alamos residents. Club leaders then drove south to Albuquerque, where they bought a 1932 Chrysler engine from a junk yard and fashioned it into a rope tow, using several spliced lengths of

¹⁴¹ *Santa Fe New Mexican*, December 17, 1937, 12. Given the paucity of wintertime activity on the Baca Ranch property, it appears that Frank Bond cooperated with state and federal authorities in allowing portions of the ranch as a winter sports area.

¹⁴² *Santa Fe New Mexican*, January 17, 1938, 6.

¹⁴³ *Santa Fe New Mexican*, February 8, 1939, 2.

¹⁴⁴ *Santa Fe New Mexican*, issues of January 12, 1940, 11, and February 16, 1940, 3.

¹⁴⁵ *Santa Fe New Mexican*, January 17, 1941, 2 and *Clovis News-Journal*, March 6, 1942, 5.

¹⁴⁶ Kirby, *Just Crazy to Ski*, 23, 29.



Figure 6.8. Skiing was a popular area activity starting in the 1930s. Sawyer Mesa, with its primitive rope tow, became a popular downhill area for Los Alamos residents during the immediate postwar years. From Los Alamos Scientific Laboratory, *This Enchanted Land: the Jemez Mountain Wonderland* (1960), p. 2.

manila rope. The engine was by no means reliable, and the rope used for the tow broke every now and then. Despite those challenges, however, skiing took place on Sawyer's Hill starting in January 1945 and continued for the remainder of the winter. The more adventurous skiers moved beyond Sawyer's hill and took ski trips to several places in and near today's national preserve: Rabbit Mountain, Redondo Peak, and Pajarito Mountain.¹⁴⁷

In the wake of World War II, the Sawyer Mesa ski area continued to operate; it had an improved, reliable rope tow, operated by the Los Alamos Ski Club.¹⁴⁸ In the summer of 1948, club members built a 20' x 40' ski lodge at the base of Sawyer's Hill, and they continued to use the hill—snow permitting—for the next several years. But as Deanna Kirby has noted, “as the year passed ... poor snow conditions damped the initial excitement of skiing at Sawyer's Hill. ... Frustration with skiing conditions peaked during the winter of 1956–57. Sawyer's Hill was opened only seven days that year.”¹⁴⁹

¹⁴⁷ Kirby, *Just Crazy to Ski*, 24–33.

¹⁴⁸ Kirby, *Just Crazy to Ski*, 39; *Albuquerque Journal*, December 12, 1947, 11.

¹⁴⁹ Kirby, *Just Crazy to Ski*, 52–53.

Given that frustration, attention turned to the Camp May area, where Hup Wallis during the 1930s had cleared a small hill for skiing. Club members drove up the gas pipeline road that had been built in 1950 (see Chapter 4) as far as “Sawyer’s Saddle,” at the head of Quemazon Canyon. They found snow conditions there to be far preferable to those on Sawyer’s Hill. Convinced, club members scraped together \$1,200 to have a 4.3-mile road built up to Camp May, and work parties that summer and fall fashioned ski runs at the new Pajarito Ski Area, which opened on November 12, 1957.¹⁵⁰ The ski area was an instant success. In order to expand the area’s ski runs, the Los Alamos Ski Club (which owned the ski area) in early 1975 purchased 165 acres from the Baca Ranch. The ski area is still active.¹⁵¹

Historic Properties Summary and Recommendations

The existing literature is not particularly specific regarding the actual locations where early recreational skiing took place in the Valles Caldera vicinity. Two general locations are mentioned: areas surrounding the hut at Camp May, and Sawyer Mesa. In all probability, any improvements that may have been made in the Camp May area are now located on U.S. Forest Service land or are located on the 165-acre parcel that the Los Alamos Ski Club, in 1975, purchased from the Baca Ranch. The skiing area on Sawyer Mesa, including the area surrounding the former rope tow, was also located on U.S. Forest Service land. There are no skiing-related sites, therefore, that should be considered for evaluation in this study to the National Register of Historic Places.

Sport Fishing

Based on the many opportunities that anglers enjoyed in other portions of the Santa Fe National Forest, many recognized that the waters of the Baca Location offered excellent fishing prospects as well. During the early twentieth century, however, the ranch’s isolation—and its status as a privately-owned ranch—prevented its fisheries resource from being exploited.

Beginning in 1928, however, the ranch’s fisheries gained attention when New Mexico Game Department staff planted trout in streams within the ranch. By 1932, the Game Department was hauling ninety-two thousand trout from its hatchery near Pecos to Jemez Mountain streams. The following year, a new hatchery opened at Seven Springs, located just west of the Baca Location. From that new base of operations, Game Department staff sprinkled more than 225,000 trout into Jemez Mountain streams. Of that number, tens of thousands were placed in the East Fork of the Jemez River, Valle Grande Creek and upper San Antonio Creek, while smaller numbers of trout went to Redondo, Toledo, Jaramillo, Los Posos, and Santa Rosa creeks.¹⁵² Frank Bond, the ranch’s owner, initially cooperated with the state’s action, and the state’s game warden touted the program’s success, noting that “the fishing up there is so much enjoyed by citizens of this state, and particularly

¹⁵⁰ Snyder, “Camp May Offers Fresh Air,” <https://www.losalamoshistory.org/history-blog/camp-may-offers-fresh-air-scenery-bit-of-history>; Kirby, *Just Crazy to Ski*, 60–65.

¹⁵¹ Martin, *Valle Grande*, 105–106.

¹⁵² *Albuquerque Journal*, April 7, 1933, 4. Valle Grande Creek, according to a well-known fishing guide, is an eight-mile stream segment located at the “head of East Fork of the Jemez on the private Baca Location, in high mountain meadow country and flows through the Valle Grande; cutthroats.” Ti Piper, *Fishing in New Mexico* (Albuquerque, UNM Press, 1989), 284. Now properly termed the headwaters of the East Fork, Valle Grande Creek was used primarily by newspapers during the 1930s.

residents of Albuquerque.”¹⁵³ Bond, however, apparently felt nervous about fishermen driving through his ranch, so in 1934 he closed his ranch to sportsmen. That closure proved short-lived, however, because by 1937—the year the new highway was completed through the area—Bond once again allowed fishing within the ranch, although he may have charged anglers a fee to enter the ranch and drive its roads (see Figure 6.9).¹⁵⁴

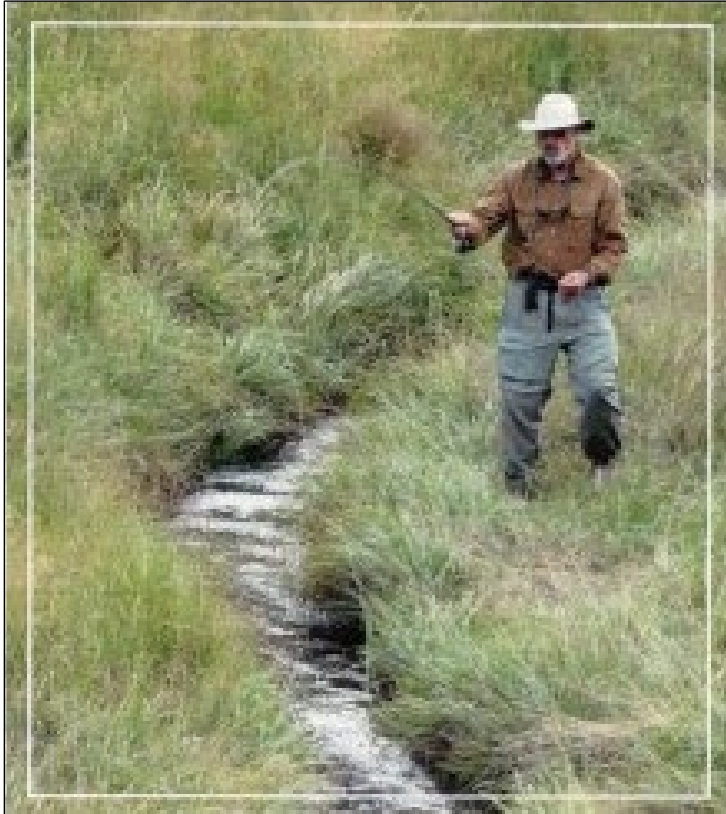


Figure 6.9. Since the 1930s, fishing—primarily for rainbow trout—has been a popular pastime on the Baca Ranch, primarily along the East Fork of the Jemez River.

Source: NPS, *Foundation Document, Valles Caldera National Preserve*, p. 48.

During the years after World War II, occasional fishing reports provided information about streams within the Baca Location. A 1951 news item, for example, noted the rainbow trout along the East Fork of the Jemez River. A report ten years later offered gear suggestions for San Antonio Creek, while a 1972 report provided the fishing prospects for both Upper San Antonio Creek and the East Fork of the Jemez River.¹⁵⁵ More often, however, the state’s fishing reports were likely to provide generalized information about “Jemez Streams” without providing further geographical details.

¹⁵³ State Game Warden (Elliott Barker) to Frank Bond, June 3, 1933; Item DX-BJ, in “DOJ Files Historic Docs” folder, Index to “U.S. Exhibits from Jemez Trial, 1779–2000,” from non-confidential trial exhibits, on file at VALL.

¹⁵⁴ *Santa Fe New Mexican*, issues of June 6, 1934, 2, and August 6, 1937, 6. In response to Bond’s closure order, State Game Warden Elliott Barker frankly stated that “there is nothing the state can do about it.”

¹⁵⁵ *Santa Fe New Mexican*, May 20, 1951, B-8; *Hobbs Daily News Sun*, Sept. 29, 1961, 6; *Alamogordo Daily News*, May 26, 1972, 6.

Given this relative paucity of published information, and the Baca Location's longtime status as a private ranch, it is unlikely that many fishermen during the post-World War II years fished along streams within the ranch's borders.

Historic Properties Summary and Recommendations

The narrative above suggests that many anglers have fished along the East Fork of the Jemez River, along San Antonio Creek, and along other waterways within the Baca Location. The literature, however, does not note specific fishing "hot spots" or other named locations. It does not appear, therefore, that any fishing-related locations are under consideration in this study for the National Register of Historic Places.

Sport Hunting

Prior to the mid-twentieth century, little or no sport hunting took place on the Baca Location. The Rocky Mountain elk, which had numbered in the thousands in New Mexico during the mid-1870s, were hunted to extinction by 1909. Soon afterwards, renewed efforts began to reintroduce elk into various New Mexico habitats, but these efforts brought only incremental success. As noted above, a 1938 guide to hunting opportunities in the Jemez Mountains noted deer, grouse, and band-tailed pigeons, and a 1945 news article noted the area's opportunities for bear hunting. But not elk.¹⁵⁶

In 1947, the New Mexico Department of Game and Fish released forty-seven elk from the Yellowstone region into the Rio de las Vacas drainage west of the Baca Location. The herd fared well in the grasslands of the Jemez Mountains, and by 1961 the herd had grown to a population of about two hundred. Then, in 1964 and 1965, fifty-eight elk from Jackson Hole, Wyoming were brought to the Jemez (see Figure 6.10).¹⁵⁷

Thereafter, the elk population—having no natural predators—increased at a slow, steady rate. By 1972, ranch owner Pat Dunigan had become sufficiently worried about the ever-growing elk population that he reduced the annual number of cattle that he stocked to the four thousand–six thousand range. Occasional fires in the vicinity of the Baca Location served to increase the amount of browse available to the elk, and as Craig Martin has noted, "by the mid-1990s, signs of elk overpopulation were plentiful."¹⁵⁸

The primary way by which Dunigan sought to keep the elk population in check was to allow regulated, guided hunts on his land through a private operator. These hunts were definitely underway by the late 1960s—with Homer C. Pickens being in charge of elk management—but they may have begun earlier, just a few years after Dunigan and his associates purchased the ranch. By

¹⁵⁶ New Mexico Game and Fish Department, "Rocky Mountain Elk," *Wildlife Notes*, <http://www.wildlife.state.nm.us/download/education/conservation/wildlife-notes/mammals/elk.pdf>; *Albuquerque Journal*, October 2, 1938, 3, 5; *Santa Fe New Mexican*, July 31, 1945, 3.

¹⁵⁷ Anschuetz and Merlan, *More Than a Scenic*, 58; *Santa Fe New Mexican*, June 27, 1966, 14.

¹⁵⁸ Martin, *Valle Grande*, 104–105.



Figure 6.10. Elk, which had been hunted to extinction in the Jemez Mountains shortly after 1900, were re-introduced to the range during the late 1940s. Before long, the herd began to prosper. Courtesy of Valles Caldera National Preserve.

good fortune, Dunigan had contracted with architect James Tittle of Abilene to design, and with Bob Brown of Albuquerque to build, a large lodge on the ranch shortly after he bought it. That lodge was variously called the Kiva Lodge, the Dunigan Lodge, and Casa de Baca. (See Chapter 5.) Dunigan had the lodge built, in 1963, in order to comfortably accommodate friends from Texas who visited the ranch.¹⁵⁹ A few years later, however, the availability of the Kiva Lodge provided an excellent base camp for hunting clients. The building's themes of masculinity and primitivism, moreover, appear to suggest that its use as a hunting lodge was entirely consistent with its original design themes.¹⁶⁰

Starting in 1978, Dunigan's contractor for elk hunting trips was North Country Outfitters, in Jemez Springs, a family-run outfit headed by Richard P. (Ric) Martin. (The company was later renamed Ric Martin's Trophy Adventures.) Charles K. Thompson, one of Martin's clients in October 1981, offered a glimpse of what it was like to take part in one of the Baca Ranch hunts:

¹⁵⁹ Anastasia Steffen, email to Frank Norris, November 30, 2020.

¹⁶⁰ SWCA Environmental Consultants, *Documentation and Preservation of Historic Buildings on the Valles Caldera National Preserve*, November 2007, Vol. 1, 59–63; Homer C. Pickens, *Tracks Across New Mexico* (Portales, NM, Bishop Publishing Co., 1980), 116–117; Martin, *Valle Grande*, 80, 105.

I met Ric at the Baca Ranch for our 5-day elk hunt. The ranch is a ... private ranch with fantastic scenery, fabulous facilities and a tremendous elk herd. All ten of the hunters took good trophy 6 x 6 elk. One of the trophies ... was absolutely outstanding, and at least one hunter ... [just] missed another record book head.¹⁶¹

A Baca Ranch hunter from 1986, John Brandt, added the following:

The first exploratory hunt in which only seven elk were shot produced [Safari Club International] Record Book bulls for myself [and several others]. ... Only bulls of five points or larger are permitted to be shot and 90% of all elk taken are in the 6 x 6 class. Thirty rifle hunters per year are taken with a guaranteed New Mexico license being made available. ... At present, a basic charge of \$5,000 is made for the hunt with a trophy fee of an additional \$2,500 when a bull has been killed. ... Archery hunts, of six days duration, are conducted here, too, during the bugling season in September. The archery hunts have a basic fee of \$3,250. ... Clients on all hunts at the Baca Ranch are housed in a plush lodge with private rooms, separate baths, gourmet food and a huge central lounge. Most hunts are conducted from 4 x 4 vehicles scouting the numerous old logging roads, stalking and calling during bugling season. Horses are available but rarely necessary for a successful hunt.¹⁶²

The ranch's elk hunting concession continued on into the late 1990s. In 1992, Ann Dunigan Wilson (Pat Dunigan's widow) noted that the ranch outfitter sponsored a bow hunt (with approximately forty permits) in September, followed by a gun hunt (with approximate sixty permits) in October. For a five-day hunt that resulted in harvesting a trophy bull elk, the outfitter charged \$8,000 for a five-day hunt.¹⁶³ In 1998, hunters visiting the ranch were issued 265 elk permits. By the following year, the company operating the elk-hunting concession was Baca Outfitters, who were allowed a maximum harvest of sixty-five bull elk and 180 cow elk during that fall's hunting season.¹⁶⁴

With the ownership transfer to the Valles Caldera Trust, the ranch's lodge and cabins were no longer used by sport hunters. Elk hunting during the 2001 and 2002 fall seasons was regulated by the trust itself. In subsequent years, the state's Game and Fish Department has assumed control over the elk hunt.¹⁶⁵

Historic Properties Summary and Recommendations

As suggested above, the primary property related to sport hunting on the preserve is the Kiva Lodge, also known as the Dunigan Lodge or Casa de Baca (see Figure 6.11). This building, erected in 1963–64, served as the headquarters and base camp for more than thirty years of Baca Location sport hunting parties. In addition, as noted in the "Hunting Agreement Between Baca Land & Cattle

¹⁶¹ Jackie Hofheins Interview, September 23–24, 2010, p. 6, in Anastasia Steffen, Valles Caldera Oral History Project Summary and Interview Abstracts, 2010–2014 (2015). Ms. On file at VALL (VCNP CR Report R2015-010; NMCRIIS Activity 148486); Charles K. Thompson, "Top-Notch Hunting," *Trophy Times* (San Diego Chapter, Safari Club International), vol. 14 (Sept. 1992), 3; Item DX-GA in "U.S. Exhibits from Jemez Trial, 1779–2000," from non-confidential trial exhibits, on file at VALL.

¹⁶² John H. Brandt, "Special Report," *Hunting Report* 7, April 1987, 4; Item DX-GA, as above.

¹⁶³ Ann Dungan Wilson Testimony, June 5, 1992, p. 46, in Public Service Co. of New Mexico, Case No. 2382 "Before the New Mexico Public Service Commission," File DX-GO in "U.S. Exhibits from Jemez Trial, 1779–2000," from non-confidential trial exhibits, on file at VALL.

¹⁶⁴ Martin, *Valle Grande*, 105; "Hunting Agreement Between Baca Land and Cattle Company, Inc. and Baca Outfitters, Inc.," 1999; Item DX-HP, as above.

¹⁶⁵ *Taos News*, November 26, 2003, 14.



Figure 6.11. The Dunigan family built Kiva Lodge shortly after it acquired the Baca Ranch. By the late 1960s, the so-called Casa de Baca had become a headquarters each fall for hunters in search of trophy-sized elk. Photo taken in 2020 by co-author Frank Norris.

Company, Inc. and Baca Outfitters, Inc.” drafted in 1999, the ranch ownership stated that “outfitters may use the Huffman Cabin [Los Indios Cabin], the trailer houses, the Cupid House [Cupit Cabin or Otero Cabin], the movie set [Skinning Shed Cabin], the barn and skinning shed near the movie set [Skinning Shed Barn], [as well as] the kiva throughout the Term of this Agreement” (see footnote 12, Chapter 10).

Of the various buildings that have been used for sport hunting on the preserve, all have been evaluated previously for the National Register of Historic Places. The Kiva Lodge and the Otero Cabin are considered *eligible* for the National Register in the report, completed by SWCA in 2007. The Skinning Shed Cabin and the Skinning Shed Barn have been recommended as being “contributing” elements to the proposed Baca Ranch National Register District in the preserve’s *Cultural Landscape Inventory*, a draft of which was completed in 2020.¹⁶⁶ The Los Indios [Huffman] Cabin, according to the 2007 SWCA report, “retains all seven aspects of integrity ... defined by the

¹⁶⁶ SWCA Environmental Consultants, *Documentation and Preservation of Historic Buildings on the Valles Caldera National Preserve, Sandoval County, New Mexico*, November 2007, Vol. 1, 41–42 and 59–64; National Park Service, *Cultural Landscape Inventory, Baca Cabin Area, Valles Caldera National Preserve* (2020 draft), 4, 7.

National Register ... [but] it *does not exhibit* sufficient architectural or historical significance to be considered *eligible* for NRHP nomination.”¹⁶⁷ Preserve staff have indicated, however, that they will recommend that this cabin is *eligible* to the NRHP. Finally, the trailer houses have been removed from the headquarters area and are therefore no longer under consideration.

¹⁶⁷ SWCA, *Documentation and Preservation*, Vol. 1, 69.

CHAPTER 7: COMMERCIAL LOGGING ON THE BACA RANCH (Norris)

According to one survey, more than two-thirds of the Baca Location is forested; in rank order, its forests are mixed conifer (38 percent), ponderosa pine (19 percent), spruce-fir (13 percent), and aspen (1 percent).¹ This chapter will describe how these forests have been utilized over the years, with an emphasis on the physical reminders of that utilization: roads, camp and mill sites, slash piles, and erosion control measures.

Commercial Logging Before 1935

Prior to 1900, the ranch's timber resources were of little interest, because while sheepherders and their flocks could readily access the high elevation grasslands, anyone hoping to benefit from the area's timber resources required both large amounts of capital and the construction of either a road or railroad. None of these requirements were readily available during this period. For that reason, the first brief survey of the ranch—undertaken in June 1876—was specific in the economic benefits of the ranch's grasslands (“finely adapted for stock growing”), but its description of the area's forests simply noted that “the Grant contains an abundance of pine and aspen timber.”²

For the remainder of the nineteenth century, the value of the Jemez Mountain's timber resources continued to be a function of the area's remoteness. Between 1878 and 1880, New Mexico's first railroad (the Atchison, Topeka, and Santa Fe) entered the territory along a route that reached from Las Vegas and Lamy south to Albuquerque and Socorro. No sooner had that line been completed than another railroad—the Atlantic and Pacific Railroad—cast its eyes on a new, east–west route from the Rio Grande valley to southern California that skirted the Jemez Mountains. Specifically, this proposed route—which a few years later would become part of the AT&SF Railroad—was planned to go “northwest from Bernalillo up the Jemez River, then west around the north side of the San Mateo Mountains.”³ (The San Mateo Mountains are located just northeast of present-day Grants.) That proposed route was soon abandoned, however, in favor of a more southerly route that headed west from Albuquerque to Grants and Gallup. The Jemez River valley, for the time being, remained isolated.⁴

In the mid-1880s, Midwesterners Winfield Smith and George Fletcher purchased the Ramon Vigil Grant, just east of the Baca Location on the Pajarito Plateau. For the next decade or more, grazing was the only commercial activity on the grant, just as it was on the Baca Location. In 1898, however, lumberman Henry S. Buckman leased the Vigil Grant, after which he built a railroad depot (called Buckman) along the Denver and Rio Grande's “Chili Line” near the mouth of Sandia and Mortandad canyons. He then built a bridge and road from the depot up onto the Pajarito Plateau, erected a sawmill on the plateau, and proceeded to log off virtually all of the grant's commercial-

¹ U.S. Forest Service, *Report on the Study of the Baca Location No. 1, Santa Fe National Forest, New Mexico* (August 1993), 16. “Mixed conifer, as the report notes on page 15, “consists variously of ponderosa pine, Douglas-fir, white fir, and Engelmann spruce.” It is typically located midway between the lower elevation ponderosa pine type and the upper elevation spruce-fir type.

² Craig Martin, *Valle Grande; a History of the Baca Location No. 1, Background to Creation of the Valles Caldera National Preserve* (Los Alamos, All Seasons Publishing, 2003), 32.

³ Vernon J. Glover, *Jemez Mountains Railroads; Santa Fe National Forest* (Santa Fe, Historical Society of New Mexico, April 1990), 2.

⁴ David F. Myrick, *New Mexico's Railroads; a Historical Survey* (Albuquerque, UNM Press, 1990), 228, 230, 269.

grade timber. As historian Hal Rothman observed, “Buckman’s timber enterprise destroyed what remained of the native ecosystem on the Vigil Grant.” Buckman’s operations were over by 1902, but just north of the Vigil Grant, additional small-scale lumbering took place on the Pajarito Plateau over the next several decades.⁵

During the period in which Buckman was conducting his logging operation, the ownership of the Baca Location passed from the Cabeza de Baca family’s heirs to the Mariano Otero and his son, Frederico Otero. The sale price was approximately \$16,500. The Oteros represented the Valles Land Company, and their similar interest in the Cañon de San Diego Grant suggests that their primary interest at both grants was sheep grazing.⁶ National events, however, soon intervened. In a series of actions taken in 1903, 1904, and 1905, the federal government withdrew hundreds of thousands of acres from the public domain surrounding the Baca Location and designated these lands as the Jemez Forest Reserve. This action increased the value of privately-owned timberlands.⁷

As one byproduct of these withdrawals, as noted above, Frederico Otero was now able to handsomely profit by leasing his pasturage to local herders. At the same time, however, he began actively advertising the Baca Location to prospective buyers, many of whom lived in states along the eastern seaboard. Some of those buyers, in response, sent timber “cruisers” (surveyors and appraisers) to assess the area. One cruiser’s report estimated that the property had more than 425 million board feet of “New Mexico white pine” and another 15–25 million board feet of spruce. Another report suggested that the tract had a total of 403 million board feet, of which 5/8 was yellow pine and 3/8 was red and white spruce, which together with nearby timber “would give six to eight mills about 35 to 40 years’ work manufacturing this timber into lumber.” One attorney, who had browsed through several of these reports, noted that “if anything, the reports underestimate the value of the property.” These reports cautioned, however, that to gain access to these timber stands demanded a railroad, the most likely of which would be a 32-mile line along Peralta Canyon that would require a steep (3½ percent) grade.⁸

By 1909, Otero’s years-long marketing effort had resulted in a sale that yielded a handsome if not extraordinary profit. That October, he transferred the Baca Location to the Redondo Development Company, a Warren, Pennsylvania firm that speculated in natural resource development. (The company’s president, moreover, described himself as a capitalist in the lumber industry.) Though not explicitly stated at the time, the company’s primary interest in purchasing the parcel was its timber resources, an intention that was underscored when—shortly after purchase was concluded—the company leased its grazing rights back to Frederico Otero, who continued as before to profit by subleasing those rights to local sheepherders. Although the parcel, at the time of purchase, had an appraised value of \$53,000, the Pennsylvania purchasers evidently thought so highly of the Baca

⁵ Judith Machen, et al., *Homesteading on the Pajarito Plateau, 1887–1942* (Los Alamos, Dept. of Energy, September 10, 2012), 12–13, 22–23; Kurt F. Anschuetz and Thomas Merlan, *More Than a Scenic Mountain Landscape: Valles Caldera National Preserve; Land Use History* (United States Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fort Collins, Colorado, September 2007), 41.

⁶ Anschuetz and Merlan, *More Than a Scenic*, 40; Martin, *Valle Grande*, 40–41.

⁷ Martin, *Valle Grande*, 40, 45; Anschuetz and Merlan, *More Than a Scenic*, 117; *Santa Fe New Mexican*, April 15, 1904, 2.

⁸ Martin, *Valle Grande*, 44–45; [unknown] to L.W. Dennis, August 14, 1907, Exhibit DX-AA, “US Exhibits from Jemez Trial, 1779–2000,” from non-confidential trial exhibits, on file at VALL.

Location's timber resources that they agreed to lay out \$300,000 for the 99,289-acre grant, which was some 18 times the value that Otero and his father had paid for the ranch ten years earlier.⁹

The new owners, hoping to develop the property in the short term, hired Lewis D.W. Shelton to survey the property (see Chapter 5). But as one historian has noted, the company's plans "came up against the realities of the rigors of the Jemez Mountains." The parcel was at least ten miles west of the nearest railhead, and poor dirt roads—on all sides of the ranch—constituted the only access routes. Legal problems pertaining to the parcel's exterior boundary, moreover, posed additional obstacles. These problems, taken together, prevented company officials from taking further action.¹⁰

Promises of new developments, meanwhile, were taking place south of the Baca Location. In August 1920, Albuquerque promoter Sidney Weil announced the incorporation of the Santa Fe Northwestern Railway (SFNW), a line whose stated purpose was the development of coal, copper, timber and gypsum deposits in various places—between Bernalillo and the Cuba area—along the same approximate route as present-day U.S. Highway 550. The primary purpose of the proposed line, at this point in time, was to tap into the area's mineral deposits.¹¹

Before construction began, however, Weil learned that the Jemez Mountains had a sizable timber stock: an estimated 425 million board feet of ponderosa pine on the Cañon de San Diego Grant, two billion board feet in the adjacent Santa Fe National Forest (the successor to the Jemez Forest Reserve), and 500 million board feet on the Baca Location. Weil, in response, requested a timber cruise (or timber survey) of the national forest lands located nearest to the Cañon de San Diego grant. That survey concluded that logging in that area would not be a promising commercial venture. Weil, meanwhile, met with a Santa Fe Railroad representative about the area's economic prospects, and was told that developing the area's lumber resource in the Jemez River watershed (not farther west) would be preferable to any of the various mineral-related proposals. During 1921 the Porter Lumber Company—a West Virginia concern—purchased the timber on the Cañon de San Diego grant, and the railroad obtained a right-of-way through the grant.¹²

Construction of the SFNW began at Bernalillo in November 1922; less than two years later, almost fifty miles of rail had been built past San Ysidro and Jemez Pueblo and on up the Rio Guadalupe to the Deer Creek confluence, where timber cutting could begin.¹³ Beginning in the mid-1920s, rail trackage was built up the Rio Guadalupe and its tributaries—Rio Cebolla, Lake Fork Canyon, Rio de las Vacas, and others—so that the White Pine Lumber Company, and later the New Mexico Lumber and Timber Company, could harvest the timber resource. This activity continued until the fall of 1941, when the railroad was abandoned.¹⁴

Elsewhere in the Jemez Mountains, as Craig Martin has noted, small timber firms had begun to log commercially in the late nineteenth century (see Figure 7.1). "Sawmills," he noted, "were scattered

⁹ Martin, *Valle Grande*, 47–48.

¹⁰ Martin, *Valle Grande*, 47.

¹¹ Glover, *Jemez Mountains Railroads*, 3.

¹² Glover, *Jemez Mountains Railroads*, 4. Glover, on pp. 13 and 46–56, noted that Weil's original route proposal was later built as the San Juan Coal and Coke Company RR, or the "Cuba Extension Railway." It ran from 1926–1927 to late 1932, but the line hauled mineral products, not timber.

¹³ Glover, *Jemez Mountains Railroads*, 6–13.

¹⁴ Glover, *Jemez Mountains Railroads*, 14–43; Anschuetz and Merlan, *More Than a Scenic*, 118.

throughout the mountain meadows.” They included small-capacity mills at Battleship Rock, begun by Jim Smith in the late 1800s; on San Antonio Creek, just west of the Baca Location boundary, begun about 1912 by brothers Roy and Harry Freelove; at Vallecitos de los Indios, begun by Lew Caldwell in 1925; and at the Ponderosa lumber camp, begun by the Hughes Brothers in 1930. (Ponderosa, at the time, was located just three miles southwest of Vallecitos de los Indios; the mill did not move to its present location until after World War II.)¹⁵ Several of these logging companies, Martin noted, talked of building a railroad beyond Jemez Springs into the central Jemez Mountains, because only a railroad could support a large-scale timber operation. And if such a railroad were built, the Redondo Development Company, which owned the Baca Location, stood to profit by logging the grant’s vast timber stands. But no railroad ever made it past the proposal stage. Redondo Development, clearly frustrated by its inability to sell its timber, sold the Baca Location to Frank and George Bond. The company, however, insisted on retaining timber rights to the property.¹⁶



Figure 7.1. Early logging (circa 1914) near Sulphur Springs.
Courtesy Los Alamos Historical Society Archives.

These small-scale loggers, who were poorly capitalized, could do little but wait for access to the area to improve. As noted in Chapter 4, the advent of the Civilian Conservation Corps, and the establishment of nearby camps, eventually provided that access, which came from two directions. First, by 1929 the route north from Jemez Springs to Sulphur Springs was described as “a very narrow but good road in dry weather.” In addition, the rougher Vallecitos Route—from the Jemez Creek valley (near Jemez Pueblo) up to Vallecito de los Indios—had supported logging and lumber-mill traffic since 1925. Both of these routes carried traffic to within two miles of the Baca Location. A road connecting Vallecito de los Indios and the north end of the Jemez Springs–Sulphur Springs

¹⁵ Martin, *Valle Grande*, 84; Anschuetz and Merlan, *More Than a Scenic*, 118; USGS, Jemez Springs Quadrangle, issues of 1937 (1:48,000), 1944 (1:62,500), and 1952 (1:62,500); Robert Julyan, *Place Names of New Mexico* (Albuquerque, UNM Press, 1996), 273, 369; *Albuquerque Morning Journal*, March 29, 1912, 4; *Albuquerque Journal*, March 25, 1942, 5.

¹⁶ Martin, *Valle Grande*, 84.

Road, moreover, had been bladed out during the early 1920s; that road ran for several miles within the Baca Location, near its southwestern corner.

New Mexico Lumber and Timber, 1935–1940

By the summer of 1935, therefore, two roads provided access to the Baca Location. That July, the Redondo Development Company—the speculator that had held the timber rights to the ranch for more than twenty-five years—felt that it would be profitable to sell its timber rights to an entity which might immediately begin timber cutting. In July, as a result, Redondo sold those rights to Firesteel Lumber for \$150,000, and immediately afterward, Firesteel transferred those rights to New Mexico Lumber and Timber, the same company that—since the summer of 1931—had been harvesting the timber on the nearby Cañon de San Diego Grant.¹⁷ It was an easy matter, therefore, for NML&T to move the necessary logging equipment to the Baca Location, where the company’s initial harvesting efforts—in the late fall of 1935—focused on the Redondo Border and the Banco Bonito lava flow area. (Indeed, maps from that period show that timber harvesting began on either side of the road that connected Vallecito de los Indios with the north end of the Jemez Springs–Sulphur Springs Road, as well as Redondo Creek both upstream and downstream from Redondo Meadow.¹⁸) The company installed a new sawmill in Redondo Meadow, and a logging camp at the meadow’s northern end, adjacent to Redondo Creek. The company worked quickly and kept active on into the winter months. By the end of the 1935, therefore, much of the ranch’s southwestern corner—42 million board feet of ponderosa pine—had been harvested, processed, and moved via flatbed trucks down the Jemez Springs–Sulphur Springs road to the village of Cañones, seven miles south of Jemez Springs. Here, at the confluence of Rio Guadalupe and the Jemez River, the lumber was transferred to the Santa Fe Northwestern Railway’s flat cars, which were shuttled down the 35-mile line to NML&T’s Bernalillo mill.¹⁹

For the remainder of the decade, NML&T, which was largely controlled by Abram I. Kaplan, continued its lumbering operations at the Baca Location.²⁰ Thomas P. Gallagher, the company’s president and a longtime Kaplan associate, decided to continue logging in the same general area that it had in 1935. As Kurt Anschuetz and Thomas Merlan have noted, Gallagher

decided to log the stands of ponderosa pine, white fir, and Douglas fir that had been growing largely untouched on Redondo Border and Banco Bonito, and between Redondo Creek and Vallecito de los Indios for countless generations. According to Gallagher, the logging focused exclusively on this

¹⁷ Martin, *Valle Grande*, 85; Glover, *Jemez Mountains Railroads*, 31.

¹⁸ D. [Duncan] M. Lang, Memorandum to File, June 25, 1936, Exhibit DX-BO, “US Exhibits from Jemez Trial, 1779–2000,” from non-confidential trial exhibits, on file at VALL.

¹⁹ Martin, *Valle Grande*, 85–86; D.M. Lang, “Report on the Baca Location Logging Operations,” May 1936, Exhibit DX-BM, “US Exhibits from Jemez Trial, 1779–2000,” from non-confidential trial exhibits, on file at VALL.

²⁰ Kaplan was a successful New York businessman (in hotels, real estate, and other enterprises) who, through his association with promoter Sidney Weil, became interested in New Mexico’s lumber and mining operations. In 1929 he purchased both the Santa Fe Northwestern Railway (SFNW) and the White Pine Lumber Company, of which the latter, in 1931, was absorbed into a new firm: the New Mexico Lumber and Timber Company. Glover, *Jemez Mountains Railroads*, 24–25, 31; Mike Hartshorne, “Abram and Ray Kaplan Foundation Provides a Timely Grant,” *New Mexico Steam Locomotive and Railroad Historical Society*, July-August-September 2013, p. 1; <http://www.nmslrhs.org/Sidebar/NewsLetters/Library/Vol-XII-No-3.pdf>.

timber because it could be cut “in high grade because of economic reasons [specifically, ‘the great size of the trees and the comparatively flat terrain’] and because it could be sold in the market.”²¹

Expanding on logging methods during the 1930s, Craig Martin noted that

The easiest, least expensive logging centered on the ponderosa stands. Limitations of equipment and the difficulty of moving logs on steep terrain kept sawyers off steep slopes. The company constructed rough roads through the grasslands that reached the quality pine stands without requiring extensive engineering plans. Sawyers made their cuts with two-man saws that were most easily used at chest height. . . . (The tall stumps left by the sawyers are distinctive of this era.) . . . Lacking cranes to lift the logs onto the backs of trucks, the loading areas often were flat landings excavated into hillsides.²²

Despite the fact that NML&T’s early cutting operations supposedly “kept sawyers off steep slopes,” outside parties in the spring of 1936 criticized the company for being ecologically wasteful. John Collier, the U.S. Commissioner of Indian Affairs who joined a tour to the harvesting area, protested that “the lumber operators are fast destroying the protecting forest [and will] pave the way for destructive floods and more silt to clog the canals and ditches below,” and another official complained that “if the [remainder of the] Baca Location is denuded in the same manner as nearby Redondo Canyon, there undoubtedly will be harmful results.” A Forest Service report similarly admitted that “some criticism of the heavy cutting on the Grant has developed, both in the Service and from outside sources.”²³

The company, in response, agreed to make several changes in its logging practices. Hoping to avoid further negative publicity about their harvesting methods, NML&T officials in 1939 coordinated with USFS-sponsored consultants on a new, more conservative “light cutting plan” or “lighter marking system.”²⁴ Those plans, which stated that “30% of the merchantable volume of the stand, including trees measuring 12 inches or over in diameter at a point 5.6 feet from the ground of all species found on the area, shall be reserved,” helped steer the company’s harvesting practices in upcoming years.²⁵ U.S. Forest Service officials agreed, however, that even the “light cutting plan” was unsustainable over the long run. Instead, they observed that “the effect of the light selection

²¹ Anschuetz and Merlan, *More Than a Scenic*, 118; Martin, *Valle Grande*, 85.

²² Martin, *Valle Grande*, 86–87. As NMT chief executive Thomas P. Gallagher noted in an April 1961 letter to Bond Ranch estate trustee George Savage, “When the company first acquired cutting rights on the Baca location, white fir and Douglas fir in the quality existent on the Baca could hardly be considered merchantable timber. A lot of it was bypassed. We also bypassed lower grades of pine trees and considered spruce timber as worthless as weeds (although he later stated that “I am certain that it [spruce] could have been made into railroad ties.”) That situation has changed considerably in the past twenty-five years.” Thomas P. Gallagher, in “Record on Appeal, U.S. court of Appeals, Tenth Circuit,” vol. III, July 18, 1968, pp. 335–336, Exhibit DX-DQ, “US Exhibits from Jemez Trial, 1779–2000.” from non-confidential trial exhibits, on file at VALL.

²³ D.M. Lang, “Report on the Baca Location Logging Operations,” May 1936, Exhibit DX-BM, “US Exhibits from Jemez Trial, 1779–2000.” from non-confidential trial exhibits, on file at VALL; *Albuquerque Journal*, issues of June 17, 1936 and June 18, 1936, 7.

²⁴ *Albuquerque Journal*, June 22, 1939, 1, 9; Duncan M. Lang, “Re-Appraisal Report, Unit 6, Santa Fe National Forest, June 1945,” Exhibit DX-BX, “US Exhibits from Jemez Trial, 1779–2000,” from non-confidential trial exhibits, on file at VALL.

²⁵ D.M. Lang to File, June 25, 1936, Exhibit DX-BO, “US Exhibits from Jemez Trial, 1779–2000,” and Lang to File, November 22, 1940, Exhibit DX-BS, “US Exhibits from Jemez Trial, 1779–2000,” both from non-confidential trial exhibits, on file at VALL.

marking seems to be to materially shorten the length of life of the Bernalillo [mill] operation as it now exists.”²⁶

By the end of the 1930s, company employees had logged off—via clear cuts—the commercial-grade timber from both Redondo Border and Banco Bonito. This amounted to approximately sixty million board feet of timber. By this time, a U.S. Forest Service representative—who by now was familiar with the numerous timber stands elsewhere on the Baca Location—had soberly concluded that “the bulk of the best timber on the Grant has been harvested.” That official further noted that “It is evident that the Baca Location will not yield a heavy volume of timber.”²⁷

The company’s initial (1935) logging camp, called either Camp Redondo or Redondo Camp, housed about twenty-five employees and their families. It consisted of 12-by-16-foot log cabins, skid-mounted frame houses, sheds, stables, a mess hall, a log schoolhouse, along with assorted other huts and tents. Some Mexican employees, it was noted, built their own huts at the main camp, but others lived in tents near the active tree cutting sites. The remnants of some of the camp structures, particularly those of the log cabins and the old schoolhouse, remained visible long afterward. Redondo Camp, as with most lumber camps, was intended to be temporary, and in 1939 the company, having completed its clearcuts in the area, closed it.²⁸

New Mexico Timber, 1940–1962

On April 30, 1940, the harvesting company changed its name from the New Mexico Lumber and Timber Company to New Mexico Timber (NMT), Inc. The newly-named company, still led by Thomas Gallagher, operated not only on the Baca Location and the Cañon de San Diego grant, but also had a stake on smaller holdings in Sandoval, Valencia, and McKinley counties.²⁹ In 1940, NMT moved its primary Baca Location operations to the Sulphur Creek drainage upstream from the Sulphur Springs resort. In a larger move, logging that year also shifted to the northwest part of the Baca Location, on either side of San Antonio Creek west of Rito de los Indios. A 1940 Forest Service letter noted that timber cutting operations consisted of “stringers of ponderosa pine on south and east exposures, with spruce, Douglas fir and white fir, with an occasional pine, making up the stand on north and west exposures.” Along both Sulphur Creek and San Antonio Creek, the company initially operated without a sawmill; instead, “their main hauling road extends from Sulphur Springs up Sulphur Springs Canyon and over the divide into the San Antone drainage [via present-day road VC08].”³⁰

The company, meanwhile, did not abandon the timber-rich Redondo Creek area; small-scale, intermittent logging continued there. Until the winter of 1940–1941, company trucks continued to haul lumber from both parts of the Baca Location to SFNW’s Cañones railroad station. But after

²⁶ Morton Cheney (Acting Regional Forester) to Forest Supervisor, Santa Fe, November 28, 1940, Exhibit DX-BT, “US Exhibits from Jemez Trial, 1779–2000,” from non-confidential trial exhibits, on file at VALL.

²⁷ Cheney to Forest Supervisor, November 28, 1940, Exhibit DX-BT.

²⁸ Anschuetz and Merlan, *More Than a Scenic*, 57, 119; Site Numbers LA017141 through LA017146, VCNP Site Log, June 4, 2020, on file at VALL.

²⁹ Martin, *Valle Grande*, 87; *Albuquerque Journal*, March 25, 1942, 5.

³⁰ Lang to File, August 21, 1940, Exhibit DX-BR, “US Exhibits from Jemez Trial, 1779–2000,” and Lang to File, November 22, 1940, Exhibit DX-BS, “US Exhibits from Jemez Trial, 1779–2000,” both from non-confidential trial exhibits, on file at VALL.

storms washed out the rail bed and effectively destroyed the line, the company's logging trucks took on an extended role, carrying logs from Baca Location all the way to the Bernalillo mill.³¹

In 1942, immediately after the onset of World War II, the company undertook very little logging other than to pick up blown down timber. But for the remainder of World War II, NMT conducted what Kurt Anschuetz and Thomas Merlan called "intensive, large-scale operations" on the Baca Location. Primary harvesting sites during the war and postwar years included the margins of Redondo Peak, El Cajete, and the north side (south-facing slopes) of the Jaramillo drainage.³² The company continued to harvest timber on the Baca Ranch until 1962, during these years concentrating on the base of the eastern and northern caldera rims, the lowermost slopes of Cerro del Medio, Cerros del Abrigo, and the Cerros de Trasquilar.³³ (No logging took place on the steep upper slopes.) This harvesting resulted in considerable roadbuilding, as aerial photographs from both 1954 and 1963 clearly show; these access and haul roads were typically laid parallel to one another, between one-quarter and one-half mile apart.³⁴ It also resulted in the establishment of a series of short-term mill sites. The preserve's cultural resource staff has thus far identified seven mill sites: two in the preserve's northwestern corner, three near its northern border north of the San Antonio cabin, one along Rito de los Indios, and one in Alamo Canyon, near the Sulphur Springs health resort. Other mill site locations, however, may also exist that have not yet been identified.³⁵

During this period, NMT employees directed the Baca Location's harvests to sawmills in a variety of locations. According to historian Craig Martin, NMT shortly after 1940 "operated several small sawmills in the meadows of this remote [northwestern] corner of the property." How long these mills lasted—and even whether mills were established in this area—has yielded no definitive answers. But during the later war years, no logs were being milled on the Baca Location itself; instead, some processing took place at NMT's former Hughes Brothers mill at (old) Ponderosa, while the remaining logs were trucked all the way to the Bernalillo sawmill.³⁶ Then, in 1948, NMT built a sawmill at Gilman (along the Rio Guadalupe west of Jemez Springs), and after that point milled lumber was hauled, from there, south and east to Bernalillo. But by 1958, various of NMT's "gyppo mills" (contract mills) were operating at various undisclosed ranch locations, and by 1961, NMT executive Thomas P. Gallagher, Jr. (the son of the man who ran the company during the 1930s) was contemplating the construction of a new sawmill on the Baca Location, specifically on the margins of Valle Grande.³⁷

³¹ Anschuetz and Merlan, *More Than a Scenic*, 119–120.

³² Anschuetz and Merlan, *More Than a Scenic*, 120; Martin, *Valle Grande*, 87; U.S. Forest Service, *Report on the Study*, 22; Thomas P. Gallagher, in "Record on Appeal, U.S. court of Appeals, Tenth Circuit," July 18, 1968, vol. II, p. 288, Exhibit DX-DQ, "US Exhibits from Jemez Trial, 1779–2000," from non-confidential trial exhibits, on file at VALL.

³³ Martin, *Valle Grande*, 87.

³⁴ Anschuetz and Merlan, *More Than a Scenic*, 121.

³⁵ Site Numbers LA134418, LA140140, LA140141, LA140142, LA156541, LA161539, and LA162493, all in VCNP Site Log (see Appendix E, Table E1), June 4, 2020, on file at VALL.

³⁶ Glover, *Jemez Mountains Railroads*, 7, 40; Martin, *Valle Grande*, 87; Duncan M. Lang, "Re-Appraisal Report, Unit 6, Santa Fe National Forest, June 1945," Exhibit DX-BX; and Thomas P. Gallagher, in "Record on Appeal, U.S. court of Appeals, Tenth Circuit," July 18, 1968, vol. II, p. 321, Exhibit DX-DQ; both in "US Exhibits from Jemez Trial, 1779–2000," from non-confidential trial exhibits, on file at VALL.

³⁷ Glover, *Jemez Mountains Railroads*, 44; T.P. Gallagher to Gordon Bond, June 29, 1959, Exhibit DX-CS, "US Exhibits from Jemez Trial, 1779–2000," and Thomas P. Gallagher, in "Record on Appeal, U.S. court of Appeals, Tenth Circuit,"

Throughout this 22-year period (1940–1962), the company—consistent with state law—engaged in selective rather than clear-cut logging operations; as Thomas Gallagher noted in 1962, his firm harvested only the largest trees (specifically, only those that were over twelve inches in diameter), and that his crews left standing at least four trees per acre for seed-propagation purposes.³⁸ But U.S. Forest Service officials, with some justification, remained wary over the years whether NMT field crews would actually harvest timber according to plans that followed state law and were consistent with the 1939 “light cutting plan” that the company had worked out with its Forest Service counterparts.³⁹

In the fall of 1961, a U.S. Forest Service official summarized the Baca Location’s harvest history as follows:

Cutting began in 1936 [sic] with the more accessible sites being initially harvested. Pine stands have been heavily cut and reproduction varies from light to moderate stocking. Some of the spruce-fir type has been practically clear cut while other areas have good residual young stand and appear to have been cut to a diameter limit. No orderly system of logging has resulted but most of the Grant has been partially logged except for virgin stands around the headquarters, and in the northeast corner in the Sierra de Toledo. . . .

Logging roads have not always been properly located or constructed to minimize erosion. Many of the roads not recently used have washed out and are impassable. Skid trails coming down steep slopes have never been treated to turn out the water or rehabilitated in any way. As a result, these trails have become gullied and are causing deep scars in the landscape.⁴⁰

Despite the many years of harvesting, however, most of the ranch’s forested area still appeared relatively unmodified. James “Pat” Dunigan, in 1968 court testimony, gave the following impressions of the ranch’s highland area when he first visited it in the summer and fall of 1962:

Even in the area that had been timbered there were substantial stands of green trees, the effect even in areas where there had been considerable timber removed, the effect was one of seeing a covered green mountain or area; whether it was a mountain or not, you had the effect of looking into a stand of trees, even though there were dead trees and downed trees. But the overall effect was one of a stand of trees.⁴¹

By the end of 1962, NMT and its predecessor, over a 27-year period, had logged a total of 25,641 acres of the Baca Location’s forests; this included 16,290 acres of ponderosa pines, 7,150 acres of mixed conifers, and 2,201 acres of spruce-fir forests. (The company had harvested almost 92 percent of the ranch’s total ponderosa pine acreage, but less than half of the ranch’s mixed-conifer and

July 18, 1968, vol. II, p. 321, Exhibit DX-DQ, “US Exhibits from Jemez Trial, 1779–2000,” both from non-confidential trial exhibits, on file at VALL; Martin, *Valle Grande*, 77.

³⁸ Martin, *Valle Grande*, 88.

³⁹ See, for example, Lang to File, November 22, 1940, Exhibit DX-BS, and Cheney to Forest Supervisor, November 28, 1940, Exhibit DX-BT, “US Exhibits from Jemez Trial, 1779–2000,” from non-confidential trial exhibits on file at VALL.

⁴⁰ Fred H. Kennedy to Chief, Forest Service, October 20, 1961, Exhibit DX-CY, “US Exhibits from Jemez Trial, 1779–2000,” from non-confidential trial exhibits, on file at VALL.

⁴¹ James P. “Pat” Dunigan Testimony, July 19, 1968, vol. III, p. 440, Exhibit DX-DS, “US Exhibits from Jemez Trial, 1779–2000,” from non-confidential trial exhibits, on file at VALL.

spruce-fir acreage.) The total amount of acreage that had been logged between 1935 and 1962 was 34 percent of the ranch's forested acreage and 26 percent of the ranch's total acreage.⁴²

The Chain Logging Era, 1962–1972

As noted above, New Mexico Timber by the early 1960s had been actively harvesting forest products on the Baca Ranch for more than twenty years. Their harvesting techniques during that time, consistent with state law, had been relatively conservative; specifically, the company harvested only those trees that were over twelve inches in diameter, and crews left standing at least four trees per acre for seed-propagation purposes.

That situation changed, however, in 1961. In March of that year, the state legislature enacted “an act relative to forest conservation” that replaced the previous 12-inch harvesting minimum with a new minimum of between five and sixteen inches, depending on the species. This action meant that the company could now legally cut smaller-sized spruce, fir, and pine species, of which there were prevalent stands on the Baca Ranch.⁴³ At the moment the bill passed, the company had no market for small logs. But just two years later, in 1963, a pulp mill opened in Snowflake (near Holbrook), Arizona. That mill gladly accepted trees of both small and large diameter, regardless of whether they were pine, spruce, fir, or aspen.⁴⁴

As a result of these events, the remaining Baca Ranch forests were newly valuable, and in early 1963, NMT official Thomas Gallagher inked a contract with the Snowflake mill to cut “millions of dollars’ worth of pulpwood” from the ranch. His enthusiasm about the ranch’s timber resources was such that, before long, he announced that he “intended to log it all.” He immediately ramped up production. Indeed, in 1963 NMT crews harvested almost eight million board feet from the ranch, which was more than the company had logged in the three previous years combined.⁴⁵

Given the relaxed logging rules, and the new demands brought forth by the Arizona pulp mill, NMT (as noted by historian Craig Martin)

radically changed its logging techniques. Because timber of any diameter could be used for pulpwood, the company abandoned selective harvest and began clearing large areas of timber. The company used cable-logging⁴⁶ methods. It built and graded parallel roads every 250 to 300 feet up the hillsides. Cables were tossed from the roads [between logging trucks on adjacent roads] and dragged along the slopes, effectively knocking down all the timber. Once the trees were stripped from the soil, swampers lopped off the branches. Heavy equipment piled the trunks. A convoy of

⁴² U.S. Forest Service, *Report on the Study*, 21.

⁴³ Martin, *Valle Grande*, 88; New Mexico Legislature, *Session Laws of 1961*, Chapter 221, pp. 714–715; Paul Weber Deposition, April 9, 1965, p. 57, Exhibit DX-DI, “US Exhibits from Jemez Trial, 1779–2000,” from non-confidential trial exhibits, on file at VALL.

⁴⁴ Martin, *Valle Grande*, 88; Christina Tetreault, Heather Jackson, and Ximena Camarena, “Snowflake/Taylor & the Paper Mill Closure,” *Cronkite News* (Arizona State University), December 2012; http://cronkitenews.asu.edu/assets/Interactive/12/10/103012_snowflake/index.html.

⁴⁵ Anschuetz and Merlan, *More Than a Scenic*, 120–121; Martin, *Valle Grande*, 87.

⁴⁶ This harvesting method has also been called chain logging, jammer logging, and chain-and-boom logging. Anschuetz and Merlan, *More Than a Scenic*, 121; Jeff Balmat and John Kupfer, *Assessment of Timber Resources and Logging History of the Valles Caldera National Preserve* (unpub. mss, Dept. of Geography and Regional Development, University of Arizona, December 28, 2004), 12.

trucks carried off the valuable logs. Left behind were three- to six-foot high piles of jumbled limbs, brush, and debris.

Pat Dunigan, in 1968 court testimony, commented about the dramatic changes in the appearance of the Baca Ranch in the previous six years:

In the areas cut it doesn't even resemble the conditions that I saw when I first went to the Baca Location in '62, and others can only be described as being an ugly mess is the only way I can properly describe it and completely without appeal to the eye. No esthetic value was ever—can be contributed to these areas. They look like a picked chicken.⁴⁷

One observer who saw the impact of cable logging noted that “It looked like a giant tornado has passed through the area (see Figure 7.2). It is one of the biggest messes I have ever seen.”⁴⁸ What made the “messes” most poignant were the many piles of slash and other logging debris. Martin noted that logging crews, in the wake of their clear cuts, typically left slash piles that “were formidable barriers to livestock and wildlife.” For economic reasons, however, the company was unwilling to clean up its slash and debris piles.⁴⁹

The ranch's new owner, Pat Dunigan, who represented the Baca Land and Cattle Company, knew that NMT—not he—owned the logging rights to the ranch. Even so, due to his conservationist leanings, he sought a way to either restrain or stop these destructive timber methods. At first, he publicly demanded that the logging company reevaluate its techniques and halt the wholesale clearing of tree stands. Having not received a satisfactory response, in May 1964 he filed a suit in federal court for damages stemming from NMT's logging practices, arguing that the company had failed to take adequate care of the land that was under its lease. The lawsuit, which would first be heard in the U.S. District Court in Albuquerque and later in the Tenth Circuit Court of Appeals in Denver, would drag on for the remainder of the 1960s and on into the early 1970s.⁵⁰

Despite Dunigan's consternation at NMT's activities, logging on the Baca Ranch actively continued while the lawsuit wound its way through the courts. In 1963, the company—working on steep slopes for the first time—harvested spruce stands on the north sides of Cerros del Abrigo and Cerro del Medio. Over the next few years, the hardest-hit areas would be these hills, along with others surrounding the Valle Toledo such as Cerros de los Posos and Cerro Toledo, all of which were covered with a spaghetti-like network of interlocking roads.⁵¹

⁴⁷ James P. “Pat” Dunigan Testimony, July 19, 1968, vol. III, p. 439, Exhibit DX-DS, “US Exhibits from Jemez Trial, 1779–2000,” from non-confidential trial exhibits, on file at VALL.

⁴⁸ Martin, *Valle Grande*, 89–90.

⁴⁹ Anschuetz and Merlan, *More Than a Scenic*, 122.

⁵⁰ Martin, *Valle Grande*, 90–91; Anschuetz and Merlan, *More Than a Scenic*, 121–123; *Albuquerque Journal*, issues of May 14, 1964, A-6, January 9, 1969, 7; May 25, 1970, 3; and December 7, 1970, 2; *Los Alamos Monitor*, June 4, 1964, 2; *Santa Fe New Mexican*, July 17, 1968, 2; and *Albuquerque Tribune*, January 8, 1969, 8.

⁵¹ Anschuetz and Merlan, *More Than a Scenic*, 121; U.S. Forest Service, *Report on the Study*, 22. Martin, *Valle Grande*, 93. A map in Martin (p. 89) shows the hundreds of miles of logging roads on the ranch – most of them built since 1963 – and an aerial photograph in Martin (p. 92) is a detailed view of road impacts on Cerro del Abrigo.



Figure 7.2. This aerial photograph, taken of Cerro del Abrigo in 1977, shows a network of logging roads that had been bulldozed out during the 1960s and early 1970s.

Source: USGS Aerial Mosaic Photo, from Craig Martin, *Valle Grande* (2003), p. 92.

Most of the areas harvested between 1963 and 1969 took place either at the Baca Location's north end or were on the north slopes of the ranch's central hills. These areas were thus invisible to the general public, whose only views of the ranch (and its logging) were limited to what they could see from State Highway 4. This all changed, however, in 1968, when logging activities (according to Craig Martin) first "curled around the mounds [mountains] and was visible from the highway." Then, in the fall of 1970, a Los Alamos newspaper provided new details about the company's ramped-up logging activities, begun earlier that year, that were plainly visible to highway travelers. In addition, the newspaper at that time splashed several large aerial photos showing "barren, desolate" areas on the ranch that had been logged off during the mid-to-late 1960s.⁵²

On the heels of these 1970 events, the public—particularly Los Alamos residents—began to protest against logging operations in the Valles Caldera, and it also pushed the state's legislature to adopt a new set of regulations that (according to one news article) "would cause drastic changes in the handling of slash and formalize a requirement for seeding" recently clear-cut areas. But the timber company—perhaps recognizing that it might not be able to continue its Baca Ranch logging

⁵² Anschuetz and Merlan, *More Than a Scenic*, 122–123; Martin, *Valle Grande*, 91; *Los Alamos Monitor*, November 26, 1970, 1.

activities for many more years—halted its work at other New Mexico sites and put three hundred employees to work on its Baca Ranch harvesting projects so that it could ratchet up its production there. Before long, NMT was cutting twenty-four million board feet of lumber per year. Harvesting, during this period, was primarily focused on a continuation of the hill-slope activity surrounding the Valle Toledo, along with new cutting along the north-facing slopes of Redondo Peak, and slopes that “encroached ... on the huge Valle Grande.” (During this period, a short-lived camp was established at the Redondo Creek headwaters.) The timber, once logged, was trucked to mills in Gilman and Albuquerque.⁵³

In March 1971, the Tenth Circuit Court of Appeals handed down its decision in Dunigan’s case against New Mexico Timber. In that decision, Dunigan won several relatively minor restraints on logging, as well as limited damages. He was not, however, satisfied with the court’s decision. He therefore adopted a two-pronged approach. On the one hand, Dunigan directed his attorneys to file suits for damages against New Mexico Timber, and was partially successful with that approach.⁵⁴ But he also approached the timber company to negotiate the sale of its timber rights. One year later, his latter action bore fruit. On June 25, 1972, Dunigan’s Baca Land and Cattle Company agreed to purchase NMT’s Baca Ranch logging rights for \$1.25 million. The agreement went into effect on July 1, 1972, and for the first time in thirty-seven years, logging activities on the Baca Location stopped.⁵⁵

During the previous decade, the company had clear cut 10,589 acres on the Baca Location, which was slightly more than 40 percent of what the company had harvested (via both clearcutting and selective-cutting methods) between 1935 and 1963. And in order to access that acreage, the ranch—for better or worse—had approximately 1,400 miles of roads (see Figure 7.3), the great majority of which NMT had opened up as logging roads. Significantly, the species that were cut during those two periods were dramatically different; while more than 60 percent of the early (pre-1963) harvesting had been ponderosa pine (see above), virtually no ponderosa pine had been cut during the 1963–1972 period. Instead, more than half (55%) of the 1963–1972 harvesting had come from spruce-fir stands, with the remaining acreage (45%) coming from mixed conifer forests.⁵⁶

Timber Harvesting Since 1972

For the remainder of the 1970s, no commercial logging took place on the Baca Location. There was, however, marginal logging-related activity related to erosion control measures. Ranch ownership had complained about the lack of erosion control measures as early as the summer of 1959, and throughout the height of NMT’s harvesting activities in the 1960s, the company—though well aware

⁵³ Anschuetz and Merlan, *More Than a Scenic*, 122–123; Martin, *Valle Grande*, 92–93; *Los Alamos Monitor*, June 29, 1972, 1; Glover, *Jemez Mountains Railroads*, 43–44; Deposition of Paul Weber, April 9, 1965, p. 8, Exhibit DX-DI, “US Exhibits from Jemez Trial, 1779–2000,” from non-confidential trial exhibits, on file at VALL.

⁵⁴ *Los Alamos Monitor*, June 9, 1971, 1.

⁵⁵ Martin, *Valle Grande*, 93; Anschuetz and Merlan, *More Than a Scenic*, 123; *Albuquerque Tribune*, June 30, 1972, D-16.

⁵⁶ U.S. Forest Service, *Report on the Study*, 21; Martin, *Valle Grande*, 89, 93.

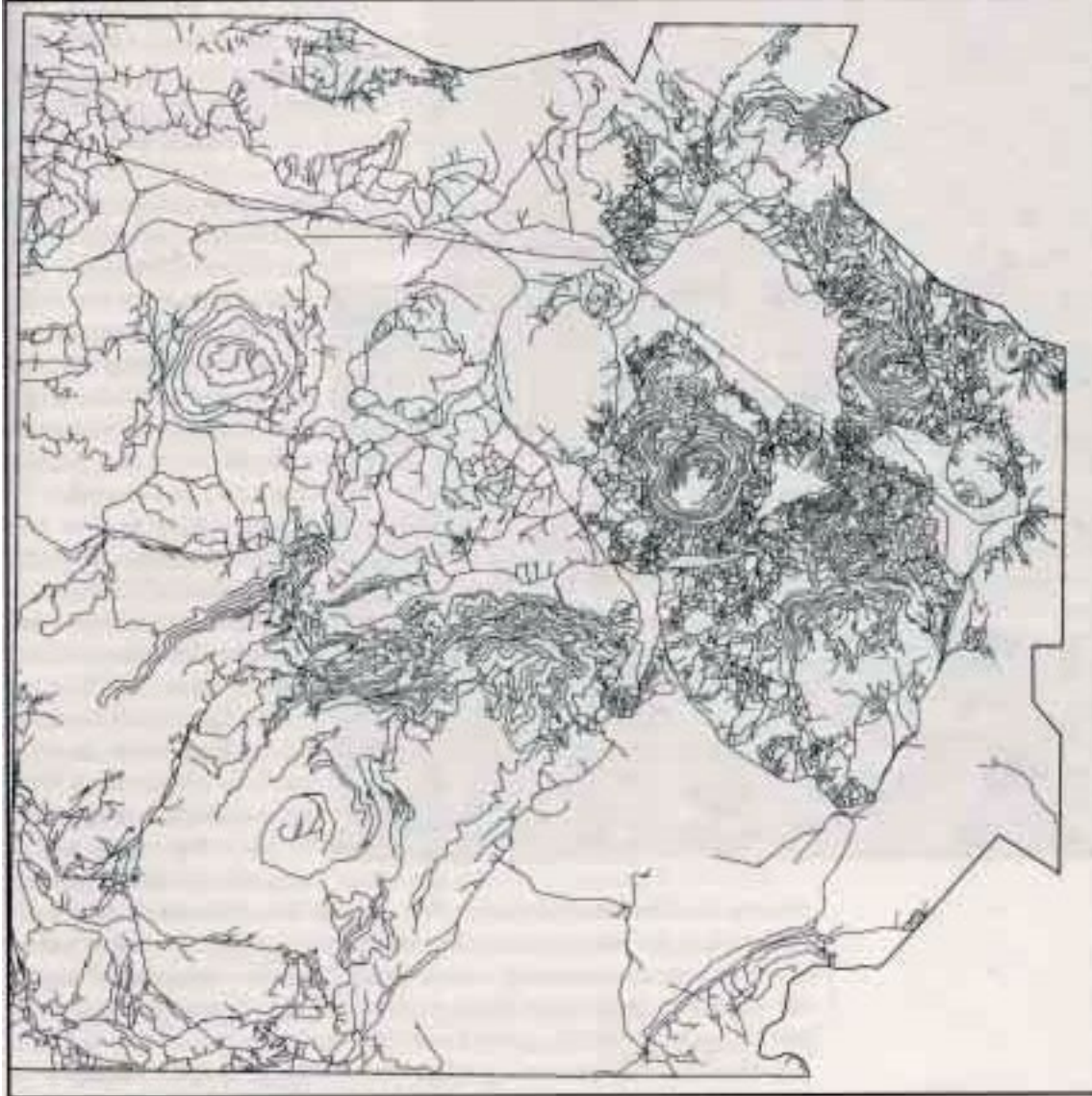


Figure 7.3. Ecologist Craig Allen drew this map showing that more than one thousand miles of logging road had been built on the preserve between 1961 and 1973.

Source: Craig Allen, *Changes in the Landscape of the Jemez Mountains, New Mexico* (unpublished Ph.D. dissertation, UC Berkeley, 1989), p. 222.

that carving out logging roads had significant, negative impacts on erosion—had shown a noted lack of willingness to spend more than a minimal amount of money on erosion-control road berms. (Those in the industry called these berms “thank-you-ma’ams.”)⁵⁷ A year after NMT left the scene, however, Dunigan—hoping to ensure the long-term viability of these logging roads—directed his

⁵⁷ As lumberman Paul Weber has noted, a “thank you, ma’am is simply a pile of dirt thrown across a road to prevent erosion, or to slow up the drainage of water down that road, to keep it from cutting a deep trail.” Deposition of Paul Weber, April 9, 1965, p. 36, Exhibit DX-DI; Thomas P. Gallagher, in “Record on Appeal, U.S. Court of Appeals, Tenth Circuit,” July 18, 1968, vol. II, pp. 325–326, Exhibit DX-DQ; and James P. “Pat” Dunigan Testimony, July 19, 1968, vol. III, pp. 416–418, Exhibit DX-DS; all three in “US Exhibits from Jemez Trial, 1779–2000,” from non-confidential trial exhibits, on file at VALL.

employees to install erosion control berms throughout the ranch, both within and below the timbered areas.⁵⁸

Pat Dunigan, a self-proclaimed conservationist and the driving force behind purchasing NMT's timber rights, died in February 1980. The subsequent ranch ownership, however, was apparently less antithetical toward lumbering, so in late 1980, logging resumed on the Baca Location. As Jeff Balmat and John Kupfer have noted,

From 1980 until the sale of the Baca to the U.S. government in 2000, logging proceeded at a more conservative pace under the guidance of the New Mexico State Forestry Office. Approximately ... 2,739 acres were harvested between 1980 and 1992 [more than 90 percent of which was mixed conifer acreage]. Most harvest employed selection cutting [harvesting a portion of mature trees]. ... Some patch cutting [small clearcuts] took place. Logging was carried out in many areas of the Baca including the Cerros de Abrigo, Cerro del Medio (much of which had been previously harvested), and the Sierra de los Valles on the eastern caldera rim.⁵⁹

Between 1992 and 2000, an additional two thousand to three thousand acres of timber harvesting took place, all in three areas. These were 1) the southwestern corner of the preserve (Redondo Corner), where logging had previously taken place during the 1935–1940 period, 2) the forests at the northeastern margins of Valle Toledo, a site of previous logging during the 1950s or early 1960s, and 3) South Mountain and the forest east of El Cajete, where no previous commercial logging had taken place.⁶⁰

After July 2000, the Baca Ranch was managed by the Valles Caldera Trust. This new management arrangement did not prevent additional timber harvesting from taking place. Instead, as noted in the Trust's 2005 *Framework and Strategic Guidance* document, the broad goals for the preserve included “multiple use and sustained yield of renewable resources” and “renewable resource utilization,” and as a specific forest-related goal, “the trust will seek to restore the resilience, and particularly the fire hardiness, of the preserve's pine and mixed-conifer forests.”⁶¹ Based on that philosophy, the Trust during its tenure undertook various small thinning projects (each less than a thousand acres) to reduce fuel loads, but it did not initiate any efforts to log new areas.⁶² Of far greater consequence to the preserve's forest resources during this period were several major wildland fires. These included the Las Conchas fire between June and August 2011, which burned thirty thousand acres on the central and eastern parts of the preserve (and more than 156,000 acres total); and the Thompson

⁵⁸ Martin, *Valle Grande*, 93; Anschuetz and Merlan, *More Than a Scenic*, 44, 121–122.

⁵⁹ Balmat and Kupfer, *Assessment of Timber Resources and Logging History*, 12, 14; USFS, *Report on the Study*, 21.

⁶⁰ U.S. Forest Service, *Report on the Study*, 22; Balmat and Kupfer, *Assessment of Timber Resources and Logging History*, 34.

⁶¹ Valles Caldera Trust, *Valles Caldera National Preserve Framework and Strategic Guidance for Comprehensive Management* (n.p., The Trust, 2005), 49–50, 89.

⁶² Robert Parmenter, telephone interview with Frank Norris, February 2, 2021. As an example of the Valles Caldera Trust's attitude toward logging, the Trust's *Report to Congress* for Fiscal Year 2013 (Jemez Springs, NM, the author, 2013) (<https://www.nps.gov/vall/upload/VALLAnnualReportCongress2013.pdf>), p. 22, notes that “This year we finalized thinning and removal of 372 acres of ponderosa pine forest along with the closure and decommissioning of old logging roads. ... We also awarded a new contract for thinning and biomass disposal on 531 acres of ponderosa pine forest in the southwestern corner of the preserve.”

Ridge fire between May and July 2013, which burned almost twenty-four thousand acres, the vast majority of which was on the preserve.⁶³

In December 2014, the administration of Valles Caldera National Preserve was transferred from the U.S. Forest Service to the National Park Service. The law that authorized the administrative transfer made no specific provisions about logging; it did, however, state that the Interior Secretary “shall undertake activities to improve the health of forest, grassland, and riparian areas within the Preserve.”⁶⁴ By 2018, when the NPS had issued its foundation document for the preserve, the agency’s goal was implementing “ongoing forest and wetland restoration projects,” including thinning and burning, in order to “influence and change wildlife presence and habitats throughout the preserve.” Since the NPS assumed management of the area, the agency has continued the forest-related policies that the Valles Caldera Trust had begun, specifically those related to thinning and prescribed burning. Thinning projects, intended to reduce the fuel load, have taken place at several areas in the preserve, including Cerro Seco, the North Rim, South Mountain, San Antonio Mountain, and the Banco Bonito area west of State Highway 4.⁶⁵

Historic Properties Summary and Recommendations

Industrial logging took place on the Baca Ranch for more than sixty years, from 1935 until the mid-to-late 1990s, and it was a major, economically-profitable activity from 1935 until 1972. Roads are the most easily visible remnant related to the ranch’s logging period. Various maps and aerial photographs show the location of these roads.⁶⁶ Closely related to these roads is the issue of erosion control devices.

As has been noted above, logging on the ranch can be divided into four periods. The period between 1935 and 1940 was one of intensive logging activity, in which most of the timber resource in the southwestern corner of the ranch was subject to clearcuts. Logging at that time was carried on with relatively rudimentary equipment, roads were widely spaced on the relatively level ground, and most trees were cut with hand saws located several feet off the ground. Based on this activity, it is possible that physical evidence of both the roads and tree stumps still remain. Most of this evidence, however, has probably disappeared, for two reasons: the intervening 80-plus years has brought sufficient regrowth to cover up this evidence, and much of the acreage subjected to timber harvesting during this period was the focus of another round of logging during the mid-to-late 1990s.

Between 1940 and 1962, the New Mexico Timber Company (NMT) annually harvested a variety of timber species on the Baca Ranch. The company, in accordance to state regulations and U.S. Forest Service policies, pursued a “light cutting plan” that resulted in only relatively large trees (twelve

⁶³ Southwest Fire Consortium (USFS/Santa Fe National Forest), “Las Conchas Fire, Jemez Mountains, NM,” http://swfireconsortium.org/wp-content/uploads/2012/11/Las-Conchas-Factsheet_bsw.pdf; Valles Caldera Trust, *Report to Congress*, Fiscal Year 2013, 26.

⁶⁴ *Public Law 113-291* (December 19, 2014), Sec. 3043, Part b(8)(a); 128 Stat 3794.

⁶⁵ NPS, *Foundation Document, Valles Caldera National Preserve, New Mexico* (March 2018), 26; Robert Parmenter, telephone conversation with Frank Norris, February 2, 2021. As one example of a post-2014 thinning project, the NPS contracted with Sweat US, LLC to undertake 260 acres of “cut-and-pile” forest thinning on San Antonio Mountain between October and December 2020. Task Order Number VCNP 2020-4.

⁶⁶ Martin, *Valle Grande*, 89, 92; U.S. Forest Service, *Report on the Study*, 31; Valles Caldera Trust, *Valles Caldera National Preserve; Framework and Strategic Guidance for Comprehensive Management* (n.p., the Trust, 2005?) 94.

inches in diameter or greater) being harvested. Hundreds of miles of roads were built during this period to gain access to the timber resource. These roads, typically, were spaced one-quarter to one-half mile apart from one another.

Between 1963 and 1972, NMT continued to harvest the forested area on the ranch. But because of a change in the state's timber laws, and the availability to sell and market trees of both medium and large sizes, the company significantly increased its harvest rate—and, in so doing, carved out hundreds of additional miles of haul roads. (A logging truck that dates from this period, as shown in Figure 7.4, remains on preserve property, just west of Rito de los Indios.) Maps show that these roads proliferated on the northeastern slopes of Redondo Peak, the slopes of Cerro del Medio and Cerros del Abrigo, and the eastern slopes above Valle Toledo. As noted above, the logging company during this period came under fire from ranch owner Pat Dunigan because of its refusal to spend any additional funds to install erosion control devices (known in the industry as “thank you ma’ams”) on the many miles of roads it was creating. But by 1970, the lumbermen had changed their roadbuilding methodology; as NMT forester Sam Bailey noted, “the logging roads, which admittedly for decades had been left to erode, now are being ‘water barred’ once they no longer are used.”⁶⁷

Since 1972, a relatively small number of acres on the Baca Ranch have been subject to first-time lumbering, with timber operators blading out several new access roads. Those roads, combined with those bladed out since the mid-1930s, meant that by July 2000, when Congress had established Valles Caldera National Preserve, some 1,400 miles of logging roads were contained within its boundaries.⁶⁸

Over the years, a number of lumber mills and camps have been established on the Baca Ranch. Specifics about several of these camps, however, have been difficult to obtain. In 1935, the New Mexico Lumber and Timber established a new sawmill in Redondo Meadow, and nearby the company laid out Camp Redondo (Redondo Camp), complete with log houses, movable frame houses, a mess hall and a school. Camp Redondo closed in 1939. The location of that camp, and the adjacent mill, has been pinpointed, and both of these historic features are well documented.

During the 1940s and 1950s, there were various mills—all south of the ranch—to which logs were hauled. At various times, these mills were located in Ponderosa, Gilman, Bernalillo, and Albuquerque. In addition, there may have been several small mills established within the ranch boundaries during this time. In 1962, for example, ranch owner Pat Dunigan, during the 1960s, noted that he had seen “four or five of these mill sites” on the ranch, each of which occupied “five or six or eight acres.” He further noted that he noticed “debris left around the mill sites. . . . I’m just talking about the camps and mill sites where the company—where employees had obviously been and had camps at that time.”⁶⁹ In addition, lumberman Thomas P. Gallagher, in a 1968 deposition, referred to “various mill sites on the Baca” that had been “placed there by gyppo [contract] operators.” And NMT official Paul Weber, also as part of a court case, noted in 1965 that several

⁶⁷ *Los Alamos Monitor*, December 17, 1970, 1.

⁶⁸ U.S. Congress, “Valles Caldera National Preserve Management Act (Senate Report), September 27, 2010, <https://www.govinfo.gov/content/pkg/CRPT-111srpt321/html/CRPT-111srpt321.htm>

⁶⁹ James P. “Pat” Dunigan Testimony, July 19, 1968, vol. III, pp. 408–411, Exhibit DX-DS, “US Exhibits from Jemez Trial, 1779–2000,” from non-confidential trial exhibits, on file at VALL.

places on the ranch had sawdust piles that were mute evidence of where sawmills had once existed.⁷⁰ Although not further documented, it appears that if any or all of these sawdust piles can be found, that discovery will not only indicate sawmill locations, but evidence of residences and similar camp buildings might also be located. These mill locations, as indicated by the sawdust piles, are most likely located adjacent to known harvesting areas that date from the 1940–1962 period.



Figure 7.4. This logging truck, typical of many used to extract Baca Ranch timber during the 1960s and 1970s, was built during the early- to mid-1960s and operated until 1988. These 2008 photographs were taken near Rito de los Indios, in the preserve’s northeastern corner. Images courtesy of Valles Caldera National Preserve.

⁷⁰ Thomas P. Gallagher, in “Record on Appeal, U.S. Court of Appeals, Tenth Circuit,” vol. III, July 18, 1968, pp. 321, Exhibit DX-DQ; and Paul Weber Deposition, April 9, 1965, pp. 35 and 59, Exhibit DX-DI; both in “US Exhibits from Jemez Trial, 1779–2000,” from non-confidential trial exhibits, on file at VALL.

Beyond Redondo Camp, one other logging camp location is known. It was located “at the headwaters of Redondo Creek,” and it was active in 1971 as part of the timber cutting operation in the area at that time.⁷¹ Doubtless other camp locations, all dating from the 1963–1972 period, might also be found in areas adjacent to the harvesting areas that were active during that period: Cerro del Medio, Cerros del Abrigo, and Cerro Toledo. Regarding timber harvesting operations that took place after 1980, the small size of those harvests suggests that there were few if any mills or camps associated with those operations.

Slash piles, for many years, were notably visible remnants related to commercial logging, particularly as it related to the chain-style logging that NMT conducted between 1963 and 1972. Historian Craig Martin noted that logging crews, in the wake of their clear cuts, typically left behind three- to six-foot high piles of jumbled limbs, brush, and debris—none of which the timber companies were willing to remove.⁷² The existence of these unsightly slash piles was a particularly sore point between ranch owner Pat Dunigan and lumber company executive Thomas Gallagher, one that contributed to Dunigan filing a lawsuit in 1964 against Gallagher’s company. Sam Bailey, who served as NMT’s forester, was quoted by one reporter as saying that “the slash, which is obviously ugly in the newly logged regions, is soon covered up by secondary growth if it is left alone.” He rejected, moreover, the option to either remove the slash (“There just aren’t enough trucks,” he intoned) or to burn it (arguing that setting the slash piles on fire would simply kill the secondary growth). Slash piles, therefore, remained for years as a prominent—and ugly—remnant of the 1963–1972 logging operations. Given the passage of many intervening years of regrowth and decay, however, these slash piles had largely decayed away and disappeared by the time the Valles Caldera Trust began to administer the area, and in recent years they have not been a management issue.⁷³

Although there are quite a few extant logging-related resources on the Baca Ranch—logging roads, slash piles, mills, and camps—relatively few of these have been examined for their eligibility to the National Register of Historic Places. As noted above, the ranch contained 1,400 miles of roads in July 2000. By 2010, preserve staff had inventoried approximately 875 miles of these roads. A document published that year noted that “once the inventory is completed, a determination would be made on the number of miles of road required for management of the preserve. Through forest restoration efforts, the existing roads that are unneeded for future management would then be closed, decommissioned or obliterated.”⁷⁴ Neither the inventoried nor the non-inventoried logging roads, however, have yet been evaluated for their National Register eligibility.

Of the remaining logging-related resources, the various slash piles scattered about the ranch were a major issue during the 1960s. But because they have largely disappeared in recent years, their potential National Register significance is lacking.

Key logging-related resources are the various lumber mills and camps, both those from the primary logging period (1935–1972) and from more recent years. The location of the preserve’s first logging

⁷¹ Martin, *Valle Grande*, 93.

⁷² Martin, *Valle Grande*, 90.

⁷³ *Los Alamos Monitor*, December 17, 1970, 1; Robert Parmenter, telephone conversation with Frank Norris, February 2, 2021.

⁷⁴ U.S. Congress, “Valles Caldera National Preserve Management Act (Senate Report), September 27, 2010, <https://www.govinfo.gov/content/pkg/CRPT-111srpt321/html/CRPT-111srpt321.htm>.

camp, in Redondo Meadow, is fairly well known. From that camp, three cabins (all *eligible* to the National Register of Historic Places) plus four “cabin remains” (two of which are *eligible*) have been inventoried (see Appendix E, Table E1).⁷⁵ Less known is the camp located at the headwaters of Redondo Creek (active in 1971) along with seven other small mill sites, scattered across the preserve, that recent site surveys have located, inventoried and described. Three of the inventoried mill sites have been recommended as being *eligible* to the National Register. More of these mill sites will doubtless be discovered and inventoried as these site surveys continue. Each non-inventoried mill site needs to be evaluated for its National Register eligibility as part of future cultural resource endeavors.

⁷⁵ Details about these three cabins and the four “cabin remains” are noted on site forms LA 017141 through LA 017146 along with site form LA 133540.

CHAPTER 8: DRILLING PROJECTS AND FILM-SET CONSTRUCTION (Norris)

The Baca Ranch, over the years, has witnessed a series of drilling projects: for water, for energy development, and for geological research. This chapter will discuss each of these projects as context for a number of drilling sites that are now dispersed across the ranch. In addition, the chapter will discuss its fifty-year history as a location shot for both motion pictures and television shows, focusing on the buildings that were erected as part of those cinematic developments.

Water System Proposals

Ever since its founding in the early eighteenth century, Albuquerque residents have been searching for water. As the city grew, its increasing water needs required a search for ever more distant water sources. In 1923, residents in and around Albuquerque formed the Middle Rio Grande Conservancy District (MRGCD), after which it managed an increasingly sophisticated network of levees, canals, irrigation systems, and wells in order to obtain and distribute water.

Hoping to obtain additional water sources, the city and the MRGCD during the 1930s hit upon the idea of tapping into water supplies in various nearby mountain ranges. They sought out potential project sites near Tierra Amarilla, Cochiti, Mora, and elsewhere. In addition, the city worked with the federal Public Works Administration, a New Deal agency, on a proposed \$2.25 million water storage system. That plan called for the impoundment of water in high-elevation lakes in the Jemez Mountains; this was water that, in the words of one federal attorney, is “now wasted in sands between Bernalillo and San Ysidro.” Key to the project, according to its proponents, was two dams. Both of these would be built outside the Baca Ranch but would flood areas well within the ranch’s boundaries. Along the ranch’s southern boundary, they planned an

\$80,000 reservoir back of Boyd’s Ranch [adjacent to today’s Las Conchas Campground] in Valle Grande [East Fork] Creek canyon at 8,440 ft. altitude. A 50-ft. dam, it is estimated, would make a lake covering 850 acres and store 12,200 acre ft. of water. The drainage basin is said to be 47 square miles.¹

The other dam would have similar impacts along the ranch’s western boundary. Plans called for a

\$55,000 reservoir 18 miles above Jemez Springs on Valle San Antonio Creek at 8250 ft. altitude. [This was less than a mile upstream from San Antonio Hot Springs.] It is estimated to drain 60 square miles and impound 14,800 acre ft. of water. The 40-ft. dam, according to the engineer’s report, would form a lake of 705 acres.²

Other key components of the project included various control gates, to be built just downstream from the proposed dams, and a 52-mile pipeline connecting Jemez Springs with Albuquerque.³ During the 1930s, the MRGCD successfully built water storage facilities in other parts of the state, such as a storage dam at El Vado and diversion dams at Cochiti, Angostura (near Mora), and elsewhere.⁴ The proposed Jemez Mountains project, however, was never approved, and by 1937 a

¹ *Albuquerque Journal*, July 12, 1935, 12.

² *Albuquerque Journal*, July 12, 1935, 12.

³ *Albuquerque Journal*, July 12, 1935, 12.

⁴ Middle Rio Grande Conservancy District, “The Rio Grande: a Ribbon of Life and Tradition,” <https://www.mrgcd.com/history.aspx>.

new highway—State Highway 4—was winding through an area (just west of the present preserve entrance) that would have been inundated had the two dams been constructed (see Chapter 4).

During the late 1940s, water issues on the Baca Ranch again rose to the fore because the research center at Los Alamos was grappling with growing pains. During World War II, the U.S. Army Corps of Engineers had been responsible for providing the town's infrastructure. Water for the area had been initially obtained from a small reservoir along Los Alamos Creek, but as the area's population spiked, additional water was piped in from Water Canyon, Pajarito Canyon, and elsewhere. By the winter of 1945-1946, a combination of population growth and drought had overtaxed these sources. Authorities, therefore, were forced to employ tanker trucks to bring in hundreds of thousands of gallons of water per day from Rio Grande Valley sources.⁵

In April 1946, the management of Los Alamos's utilities—and a host of other services—was assumed by the Zia Company. In the summer of that year, three wells were drilled in the Rio Grande Valley to supply the town's water needs, along with the necessary pipes and pumps to assure a reliable water-delivery system.⁶ During the next several years, three additional Rio Grande wells were dug to supplement what had been built in 1946.

Those sources sufficed for the next several years, but in 1949, Atomic Energy Commission (AEC) officials—knowing full well that the number of Los Alamos residents was projected to rapidly increase during the next three years—recognized that the town quickly needed additional water sources. In response, the commission “requested the U.S. Geological Survey to study the ground-water potential of a volcanic depression at the top of an extinct volcano several miles west of Los Alamos” by determining the hydraulic characteristic of the caldera's aquifers.⁷ As noted in a New Mexico newspaper, the AEC in June

awarded a \$147,950 contract to a California firm for exploratory boring in the Valle Grand. [sic] The tests will determine feasibility of securing water from that nearby extinct volcano. Nineteen holes will be bored to determine the effect of pumping on the Valle Grande water table and the quality of the water.⁸

As it turned out, sixteen water wells were drilled in the caldera (see Figure 8.1) during the summer and fall of 1949 in order “to test the general character and extent of the water-bearing material” (as noted in a subsequent U.S. Geological Survey report). Six were drilled in Valle Toledo, seven in Valle Grande, and a final three “along the east side of the caldera.” (One of these is located on the margin of Valle Grande, just north of State Highway 4; a second is located in Valle de los Posos; and the third is located in the Rincon de los Soldados.) Most of these well sites can be seen on USGS map quadrangles that were issued during the early 1950s.⁹

⁵ Machen, et al., *Homesteading on the Pajarito Plateau, 1887-1942*, 45; Truslow, *Manhattan District History*, 2, 7, 8, 34–35; Atomic Heritage Foundation, “Los Alamos, NM,” <https://www.atomicheritage.org/location/los-alamos-nm>.

⁶ Truslow, *Manhattan District History*, 35, 40, 60; <https://newmexicohistory.org/2013/11/19/zia-company-1946-1986/>.

⁷ C.S. Conover, C.V. Theis, and R.L. Griggs, *Geology and Hydrology of Valle Grande and Valle Toledo, Sandoval County, New Mexico*, U.S. Geological Survey Water-Supply Paper 1619-Y (Washington, GPO, 1963), Y2, Y15.

⁸ *Clovis News Journal*, June 9, 1949, 10; *Santa Fe New Mexican*, February 21, 1950, 9.

⁹ Roy Lee Griggs, *Geology and Ground-Water Resources of the Los Alamos Area, New Mexico*, US Geological Survey Water-Supply Paper 1753 (Washington, GPO, 1964), 80; Conover, et al., *Geology and Hydrology*, Y16, Y26, Plate 1; USGS, Valle Toledo Quadrangle, 1:24,000, 1952; USGS, Bland Quadrangle, 1:24,000, 1953.



Figure 8.1. In the summer and fall of 1949, sixteen wells were drilled on the east side of Baca Ranch with an eye toward supplying Los Alamos with water. These wells remain within today's preserve. Image courtesy of Valles Caldera National Preserve.

Moving ahead with its plan to obtain water from the Baca Ranch, the AEC in December 1949 announced that it “proposes to tap the water supply in Valle Grande west of the Atomic installation to meet an increasing demand for water.” (No details were offered regarding how that water transfer would take place.) Arrayed against the proposal, however, was the United Pueblos Agency representing the Bureau of Indian Affairs (BIA), which represented the rights of Indian Pueblos that used the Jemez River.¹⁰ Inasmuch as the “Indians living downstream on the main stem of the Jemez River have a primordial right to this surface flow for use in irrigation,” the pueblos’ obvious concern was the potential loss of water.¹¹ The contention between the AEC and BIA officials dragged on through the winter. Further conflict was avoided, however, when—in late April 1950—AEC officials announced that they had sunk a test well in Guaje Canyon, six miles north of Los Alamos, and the results of that testing showed “a very favorable report.” The AEC, as a result, obtained the water it needed from Guaje Canyon. No further efforts were made to get water from Baca Ranch.¹²

¹⁰ *Farmington Daily Times*, December 30, 1949, 1.

¹¹ Griggs, *Geology and Ground-Water Resources*, 80.

¹² *Santa Fe New Mexican*, issues of February 21, 1950, 9; March 26, 1950, 8; and April 27, 1950, 7; *Clovis News Journal*, April 27, 1950, 12.

Historic Properties Summary and Recommendations

The mid-1930s plans of the City of Albuquerque, combined with those of the Middle Rio Grande Conservancy District, to impound two different watercourses in the Baca Ranch vicinity were not implemented, and so far as is known, there were no on-the-ground improvements that were related to those proposals. As to the Atomic Energy Commission's 1949 plans to tap into the Baca Ranch's water supplies and transfer them to Los Alamos, evidence relating to that project include the sixteen holes bored that year into Valle Toledo and Valle Grande, along with supporting structures such as pipes, valves, wellheads, and earthen diversions. Several of these water development and water diversion resources have been evaluated for eligibility to the National Register of Historic Places, with none having been found eligible. However, studies to date have not yet addressed the remainder of these resources and their National Register eligibility.

Geothermal Energy Development

For more than twenty years, business interests made intensive, highly capitalized efforts to develop Valles Caldera's geothermal resources. This development was guided by geologists, hydrologists, and other specialists. Resource discovery, however, did not occur by intention but by accident.

In 1960, the Westates Petroleum Company—which was based in Los Angeles but had operations in various western states—contacted members of the Bond family and received permission to drill a test oil well on the Baca Ranch. The company specifically wished to drill near the bubbling seeps in Alamo Canyon, just northeast of Sulphur Springs, because the site had a high potential to be a petroleum reservoir. The company's crew began drilling through successive layers of rock, but instead of discovering oil it tapped into a jet of superheated water (almost four hundred degrees Fahrenheit) at a shallow depth. To the ranch owners, the “Westates-Bond 1” well was an obvious disappointment, and the drilling crew soon left the area. That day's events, however, would not soon be forgotten.¹³

Within a year, the Bond family had let it be known that the ranch was for sale, and in September 1962, James “Pat” Dunigan and several colleagues toured the ranch as prospective buyers. Dunigan and his partner, Joab Harrell, soon heard about the Westates drilling venture, and in January 1963 the men decided to purchase the ranch. According to Craig Martin, “Harrell later said that the geothermal potential of the Baca property was the primary reason for his interest in the purchase.”¹⁴

Once the purchase was complete, Dunigan looked forward to investigating the ranch's geothermal potential. As soon as the snowpack thinned in the spring of 1963, Dunigan—representing the Baca Land and Cattle Company—contracted to bring a drill rig into the Sulphur Creek area (see Figure 8.2). He chose a site less than a half mile south of where the Westates Petroleum crew had operated

¹³ Kurt F. Anschuetz and Thomas Merlan, *More Than a Scenic Mountain Landscape: Valles Caldera National Preserve; Land Use History* (United States Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fort Collins, Colorado, September 2007), 126; Craig Martin, *Valle Grande; a History of the Baca Location No. 1, Background to Creation of the Valles Caldera National Preserve* (Los Alamos, All Seasons Publishing, 2003), 96; “Westates Petroleum Co. v. Commissioner,” 1953, *Leagle*, <https://www.leagle.com/decision/19535621ctc35154>; U.S. Department of Energy (DOE), *Draft Environmental Impact Statement (EIS), Geothermal Demonstration Program, 50 MWe Power Plant, Baca Ranch, Sandoval and Rio Arriba Counties, New Mexico* (Washington, the Department, July 1979), p. 2–15.

¹⁴ Martin, *Valle Grande*, 76–79.

three years earlier, and immediately north of the privately-owned Sulphur Springs health resort which William Culler had long been operating (see Chapter 6). At this site, Dunigan's crew punched a new exploratory hole, called the Baca No. 1 well. (see Figure 8.3).¹⁵ The crew quickly struck a source of steam capable of generating about eighty-five thousand pounds of steam per hour, but the hole showed very little hot water production.



Figure 8.2. Between 1963 and the late 1970s, various exploration crews fanned out across the Baca Ranch to test the area's geothermal resource potential. Supporting that effort, as shown in this 1967 photo, were Howell Williams (left), Robert L. Smith, and Roy Bailey from the U.S. Geological Survey. Smith and Bailey, along with Clarence Ross, published in 1970 a geologic map of the Jemez Mountains. Courtesy of Valles Caldera National Preserve, donated by Robert L. Smith.

Soon afterward, Dunigan's drilling crew began work on the Baca No. 2 well, located near the junction of Sulphur Creek and Alamo Canyon. It produced about sixty thousand pounds of hot water per hour.¹⁶ Then, in 1964, he returned to the site of his first well, dug a year earlier,

¹⁵ The map was created by Frank Norris and VALL GIS Specialist Mike Shelley. It is based on similar maps in the following three publications: 1) Kimberly Meeker, et al., *Environmental Sampling and Mud Sampling Program of CSDP Core Hole VC-2B, Valles Caldera, New Mexico* (Los Alamos, LANL, March 1990), pp. 3 and 5; 2) Union Geothermal Division, *Baca Project Geothermal Demonstration Power Plant, Final Report*, December 1982, pp. 5-2 and 7-2; and 3) U.S. Dept. of Energy, *Draft EIS, Geothermal Demonstration Program*, p. 2-15.

¹⁶ Martin, *Valle Grande*, 96; U.S. DOE, *Draft EIS, Geothermal Demonstration Program*, p. 2-15; Fraser E. Goff and Jamie N. Gardner, *Geologic Map of the Sulphur Springs Area, Valles Caldera Geothermal System, New Mexico* (Los Alamos, LANL, December 1980). Sheet 1.

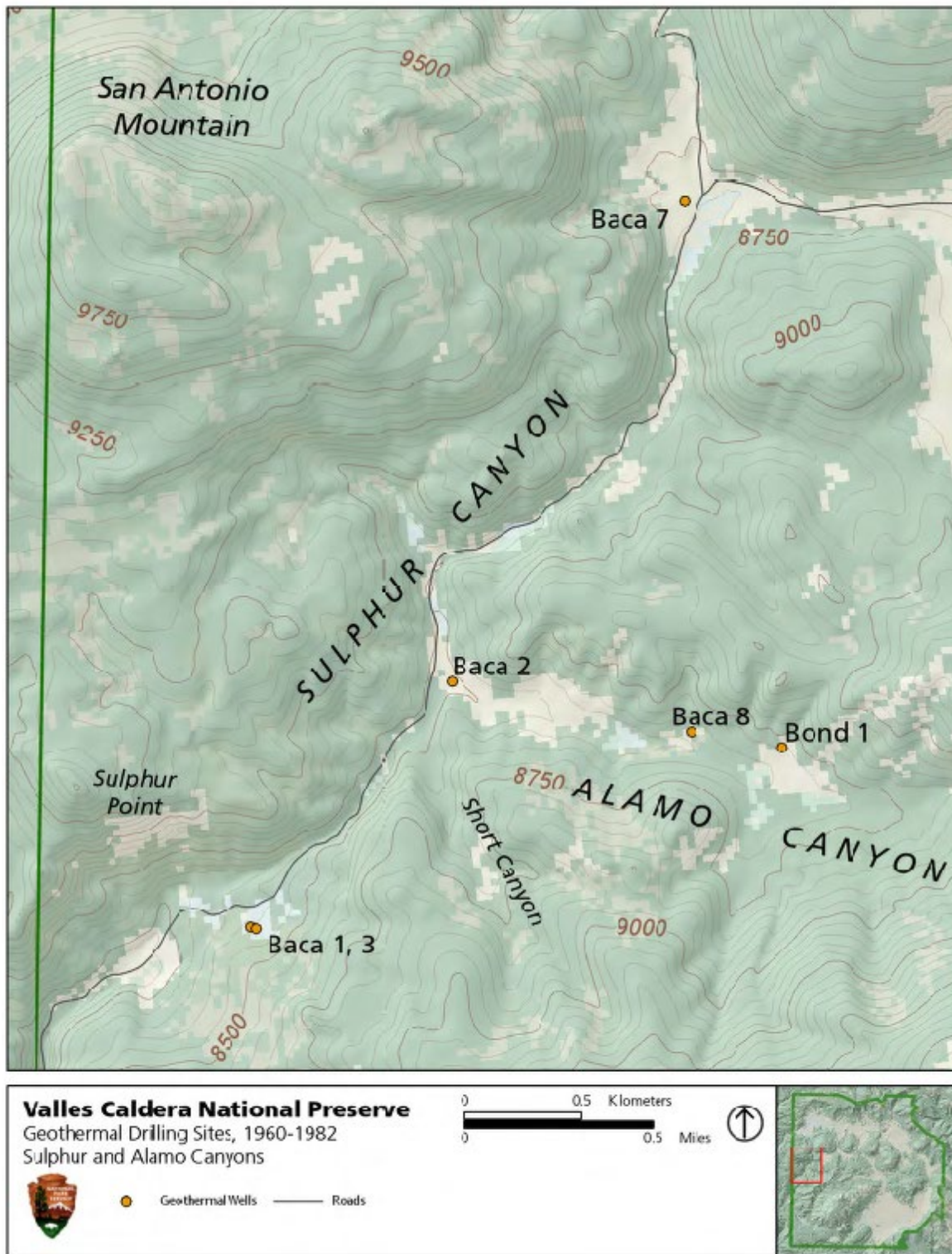


Figure 8.3. Geothermal drilling sites, 1960–1982, in Sulphur and Alamo canyons. GIS image produced by Valles Caldera National Preserve.

and contracted with a Farmington outfit to drill Baca No. 3. Despite a low output from this well, Harrell noted that geothermal energy was “still very much in our future plans. We have been highly encouraged by the first test wells and the day will probably come when a full-scale exploitation of that potential will be practical.”¹⁷ Dunigan, also optimistic to geothermal’s possibilities, sought new ways to develop the ranch’s energy resources. He and his colleagues visited several areas powered by geothermal energy—such as Larderello, Italy; the Rotorua area, New Zealand; Reykjavik and vicinity, Iceland; and the Geysers area in California—hoping to learn ways to maximize the Baca Ranch’s possibilities for energy development.¹⁸

Six years after the initial test holes had been drilled, Dunigan’s associate Joab Harrell contacted Dick Dondanville, a geothermal expert from Union Oil of California. (Unocal’s Geothermal Division was a major player in the Geysers development in California because it drilled wells and supplied steam to the plants there.) Dunigan and his team hired a New Mexico firm—the Arapaho Drilling Company from Farmington—to drill a new well, to be called Baca No. 4. This well would be located high up the slope east of Redondo Creek, three miles southeast of the other drill holes. On October 10, 1970, after a month of drilling, the team hit commercial-quality steam. At five thousand feet below the surface, the well struck large quantities of 545-degree-Fahrenheit water, the steam pressure being forty-five thousand pounds per hour. Harrell was enthusiastic, calling the discovery “a big event.”¹⁹ His partner, Pat Dunigan, was even more enthusiastic upon hearing the news; as he told one reporter,

Estimates are that there is sufficient heat and energy available in the geothermal resources of our area alone to supply the power requirements of New Mexico now and through population increases extending many years into the future. It is not inconceivable that you could also include the power requirements of a couple of adjoining states.²⁰

Other officials with the Union Oil of California’s geothermal division liked what they saw in the Baca No. 4 well. On April 19, 1971, therefore, Union Oil Company of California entered into a 99-year lease with the Baca Land and Cattle Company (the ranch ownership) that permitted the company to explore for steam and develop the ranch’s geothermal energy resources. One Union Oil official, at the time, stated that “Our feeling is that it [the steam field] will be quite large,” perhaps enough to produce several million kilowatts of power. The terms of the lease permitted the oil company to use or construct roads, ponds, pipelines, or transmission lines. Union Oil, in response, built a guardhouse and controlled all access to the Redondo Creek drainage (see Figure 8.4).²¹

Encouraged by the early results of the drilling project, the Public Service Company of New Mexico (PNM) joined Union Oil in 1973. The partners explored ways to turn the steam into commercially available electric power. Over the next four years, they invested considerable money, know-how and equipment into geothermal development. Specifically, the consortium spent millions of dollars on

¹⁷ *Santa Fe New Mexican*, August 8, 1965, 1.

¹⁸ *Albuquerque Journal*, July 21, 1964, 15; *Los Alamos Monitor*, July 23, 1964, 1; Martin, *Valle Grande*, 96.

¹⁹ Martin, *Valle Grande*, 96–97; *Farmington Daily Times*, October 25, 1970, 2; DOE, *Draft EIS, Geothermal Demonstration Program*, pp. 2-15 and 3-15; Richard A. Kerr, “Geothermal Tragedy of the Commons,” *Science* 253 (July 12, 1991), 134.

²⁰ *Albuquerque Journal*, January 23, 1971, 4.

²¹ *Albuquerque Journal*, June 11, 1971, 1, 6; *Los Alamos Monitor*, June 10, 1971; Martin, *Valle Grande*, 97.



Figure 8.4. In 1971, Union Oil Company officials signed a 99-year lease for geothermal energy development on the Baca Ranch. To protect its assets, it installed this guard house along Redondo Creek in the southwest corner of the ranch property.

Photo, taken in 2020, by co-author Frank Norris.

twelve new geothermal wells in the Redondo Creek and Sulphur Creek drainages.²² (see Figure 8.5).²³ Its first two wells—dubbed Baca No. 5A and Baca 6—were within the Redondo Creek drainage, but the two that followed—Baca No. 7 and Baca No. 8—were near upper Sulphur Creek and in Alamo Canyon (a Sulphur Creek tributary), respectively. Neither of these latter two wells proved to be commercially promising, so—combined with similarly disappointing results from earlier attempts (Baca wells 1, 2, and 3)—the decision was made to forego further drilling activity in the Sulphur Creek drainage. During this same period, Union Oil underwrote the construction of an administrative complex (now known as the “Union Building”); it was located in lower Redondo

²² Martin, *Valle Grande*, 97. One report from the summer of 1975 stated that “right now there are 15 wells ... on the Baca Location,” while another report just three weeks later – entirely consistent with the previous account – stated that Union Oil was in the midst of “drilling its 12th geothermal well on the ... Baca Ranch.” *Los Alamos Monitor*, June 29, 1975, 2; *Albuquerque Journal*, July 16, 1975, 39.

²³ This map, created by Frank Norris and VALL GIS Specialist Mike Shelley, utilized the same map sources used for Figure 8.3 in this chapter.

Canyon, downstream from the Baca 6 drill pad. The complex was completed by the spring of 1975.²⁴

In the Redondo Creek drainage, the investors knew that of the nine geothermal wells drilled thus far, one of them—Baca No. 4—had generated potentially commercial quantities of hot water, so they concluded that they had located a known geothermal resource area, or KGRA. (In March 1975, one Albuquerque news report stated that “both federal and state officials agree the principal known geothermal resource area in New Mexico is the privately-owned Valle Grande caldera in northern New Mexico, also called Baca Location No. 1.”) By drilling additional exploratory wells, they endeavored to investigate the geothermal area’s potential and its boundaries. Union Oil, therefore, brought a drill rig to Redondo Creek and commenced operations, usually taking approximately forty-five days to drill each new well. By 1977, they had drilled eight wells in addition to the three wells (Baca wells 4, 5A, and 6) that had previously been sunk. All were drilled to depths ranging from 4,800 feet to 9,300 feet.²⁵

What the consortium got for its enormous investment was a decidedly mixed set of results. On the positive side, three of the newly-drilled wells (in addition to Baca No. 4, noted above) were judged to be of commercial status:

- Baca No. 11, drilled close to upper Redondo Creek, yielded 116,000 pounds per hour of steam pressure,
- Baca No. 13, drilled on the eastern slope of upper Redondo Creek, yielded fifty-four thousand pounds per hour of steam pressure, and
- Baca No. 15, drilled just west of upper Redondo Creek, yielded 105,000 pounds per hour of steam pressure.

On the down side, however, the consortium drilled seven other wells—both upstream and downstream from the four wells noted above—that were judged, for a variety of reasons, to be not commercially viable (see Figure 8.6).²⁶

Despite the mixed results, the consortium members were generally optimistic about the area’s geothermal prospects. During this period, moreover, the United States—having endured one OPEC-caused oil shock, and vulnerable to future actions by oil producers—was actively seeking to increase its non-petroleum-based energy production. Instability in the Middle East had created a rise in energy prices that led to initiatives—similar to this—to develop alternative sources of power and

²⁴ DOE, *Draft EIS, Geothermal Demonstration Program*, pp. 2–8 and 2-12 to 2-17; SWCA Environmental Consultants, *Documentation and Preservation of Historic Buildings on the Valles Caldera National Preserve, Sandoval County, New Mexico*, Vol. 1, November 2007, 65; Martin, *Valle Grande*, 97; Aerial photograph 75-38-27, dated June 5, 1975, VALL Collection.

²⁵ Union Geothermal Division, *Baca Project Geothermal Demonstration Power Plant, Final Report*, December 1982, Table 4.1-1; *Albuquerque Journal*, March 9, 1975, G-2; *Los Alamos Monitor*, July 16, 1975, 1.

²⁶ Union Geothermal Division, *Baca Project Geothermal Demonstration Power Plant, Final Report*, December 1982, Table 4.1-1. During the summer of 1975, a newspaper reported that “only five of the 16 wells have been drilled in a workable fashion, and of those five, only three look good enough to be used in power generation.” *Los Alamos Monitor*, July 16, 1975, 1.

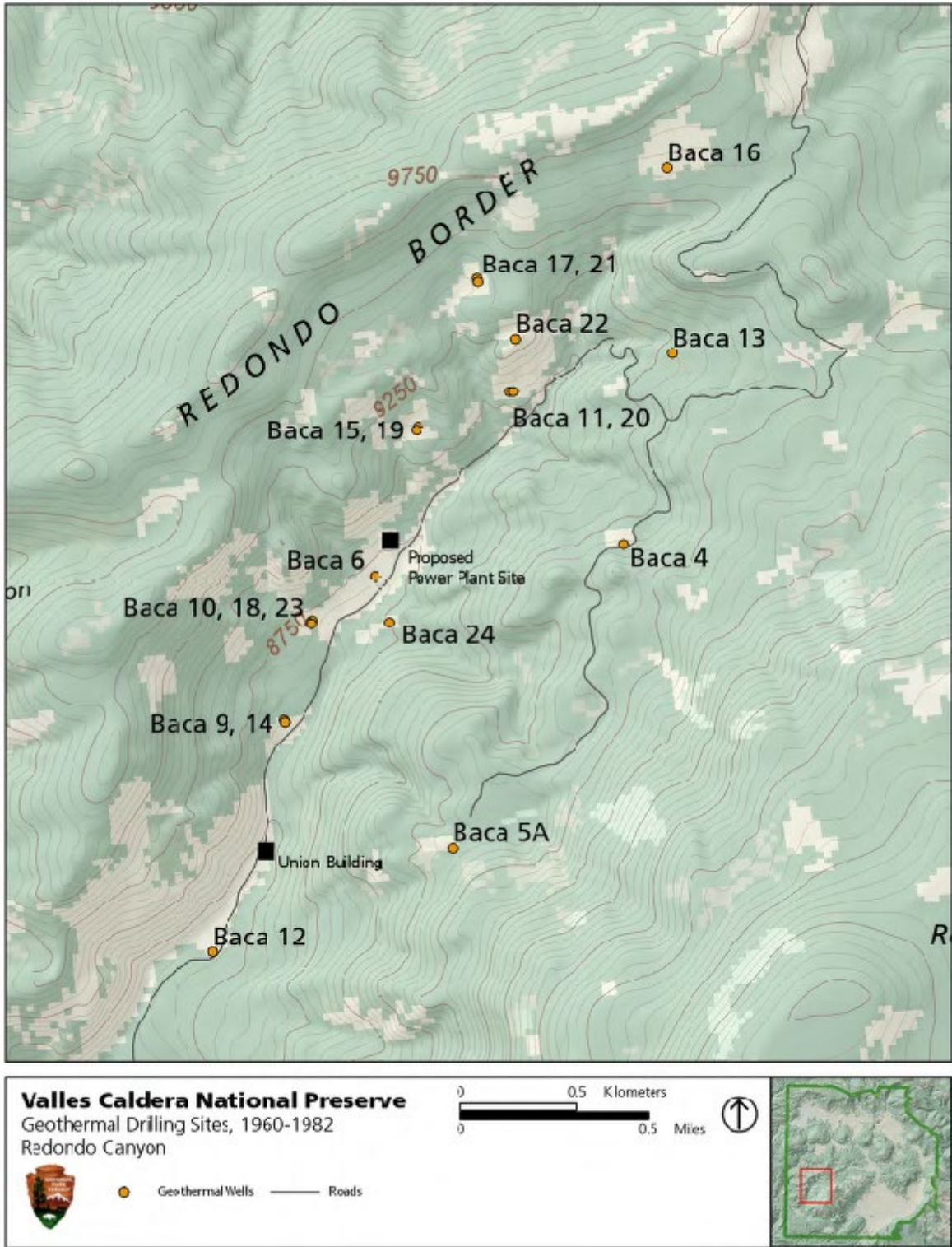


Figure 8.5. Geothermal drilling sites, 1960–1982, in Redondo Canyon. GIS image produced by Valles Caldera National Preserve.



Figure 8.6. Between the 1960s and the early 1980s, more than twenty geothermal wells were drilled on the Baca Ranch. All that remains at most sites—such as this one along Redondo Creek—are a wellhead pole and a large, surrounding cleared area.

Photo taken in 2020 by co-author Frank Norris.

decrease dependence on foreign petroleum. The newly created Department of Energy (DOE) was overseer of the new projects.

Seeking government support for research and development, Union Geothermal and PNM approached the DOE with their plan for geothermal power generation on the Baca Ranch. The government agency showed an obvious interest, and on July 6, 1978, the partners entered into a cooperative agreement with the DOE to finance construction of a 50-megawatt power plant in Redondo Canyon, along with transmission lines to tie the power plant to an existing electrical substation near Los Alamos. The parties estimated that they would need to locate another six hundred thousand pounds of steam per hour—in addition to the estimated 320,000 pounds of steam per hour from the four commercial-grade wells in Redondo Canyon—to generate sufficient electricity to justify the construction of the power plant. Alternatively, as one news article noted, “It requires at least ten commercial producing wells to operate a 50-megawatt electric generating plant.”

Under DOE's proposed timetable, the agency hoped to have the power flowing by mid-1982. It was incumbent, therefore, to locate substantial additional steam pressure by drilling new bore holes.²⁷

With the support of DOE funding, Union Geothermal and PNM initiated an extensive drilling program to locate more steam and to determine the extent of the reservoir of hot water beneath the surface. Between July 14, 1978, and December 1982, geothermal researchers drilled an additional eight new wells, plus two deeper versions of existing wells, all in the Redondo Creek area. It was an ambitious and expensive project. By 1980 the DOE had invested \$50 million of public funds into the project, while Union Geothermal had contributed another \$10 million. A portion of these funds was expended on designing the power plant and initiating site work.²⁸

The project's proponents, by this time, were well aware of some aspects of the geothermal resource area. As a result, only three of the eight new wells drilled during this period were in new locations, while the remainder were wells redrilled in new directions from the same general surface locations as previous wells. Similar to the wells drilled between 1972 and 1977, the well depths varied greatly, from three thousand feet to more than 10,500 feet. In most cases, more than a million dollars were spent at each well site.²⁹

As with the previous set of wells, there were some successes and some failures. Two of the wells were judged to have commercial status:

- Baca No. 20, drilled close to upper Redondo Creek from the same general location as Baca No. 11, promised thirty thousand pounds per hour at high pressure, and
- Baca No. 24, drilled in a new location on the east side of Redondo Creek, promised thirty-three thousand pounds per hour at high pressure.

The remaining eight drill holes, however, were judged to be "sub-commercial," "potentially productive," "non-productive," or otherwise lacking in development potential.³⁰

As the project proponents received the results regarding this second round of drill holes, their optimism about the prospects of geothermal development on the Baca Ranch began to fade away. As early as May 1981, Union Geothermal had announced that its wells could produce only a fraction of the steam-per-hour necessary to economically operate the power plant. Additional experiments were conducted through the summer and fall. But by the end of the year, PNM and DOE representatives had seen enough. On January 22, 1982, the cooperative agreement between the Union Geothermal, PNM, and DOE was terminated. In its explanation for abandoning the project, officials blamed the inability to obtain at reasonable cost the required volumes of hot water. A spokesman for Union Geothermal agreed, explaining that the lack of permeability of the subsurface

²⁷ Martin, *Valle Grande*, 97–98; DOE, *Draft EIS, Geothermal Demonstration Program*, pp. 1-1 and 2-12 to 2-20; *Albuquerque Journal*, July 16, 1975, 39.

²⁸ Martin, *Valle Grande*, 98; Union Geothermal, *Baca Project Geothermal Demonstration Power Plant*, Table 4.1-2; DOE, *Draft EIS, Geothermal Demonstration Program*, pp. 2-12 to 2-17.

²⁹ Norman E. Goldstein, William R. Holman, and Martin W. Molloy, *Final Report of the Department of Energy Reservoir Definition Review Team for the Baca Geothermal Demonstration Project* (Berkeley, Lawrence Berkeley Laboratory, June 1982), 38, 46–47; Union Geothermal, *Baca Project Geothermal Demonstration Power Plant*, Table 4.1-2.

³⁰ Union Geothermal, *Baca Project Geothermal Demonstration Power Plant*, Table 4.1-2.

rock inhibited the movement of the underground fluids, making it extremely difficult to collect enough hot water in the underground wells. Union Geothermal, which still held a long-term lease to explore and develop geothermal energy on the ranch, held on for two more years, hoping that the economics of the drilling operation would improve. Conditions, however, remained bleak, so Union Geothermal, having no other recourse, opted in early October 1984 to cancel its lease with the Baca Ranch ownership.³¹ There has been no additional geothermal development work since that time.

Historic Properties Summary and Recommendations

As noted above, the southwestern end of the Baca Ranch was the scene of an intense, highly-capitalized search for geothermal energy between 1960 and the early 1980s. During that period, drilling rigs came onto the ranch and dug twenty-five different wells, named Bond No. 1 and Baca No. 1 through Baca No. 24, and at many of those well sites, more than one drilling operation took place. Additional improvements included an administrative complex, which Union Geothermal constructed in Redondo Canyon during the mid-1970s; preparation work for a 50-megawatt power plant, constructed upstream from the administrative complex during the same period; a guard shack along the Baca Ranch's southwestern boundary; and numerous other improvements, some of which were removed once drilling operations had terminated.

Of these improvements, which were built more than forty years ago, little remains today. The most substantial physical reminders related to geothermal exploration are Union Geothermal's administrative complex and a small guard shack. The proposed power plant site today is marked by only low concrete walls, slabs of concrete floors, an electrical line and scattered apparatus. The drilling sites, moreover, are surrounded by flat, cleared areas stretching fifty feet from the wellsite in all directions. Most of the well sites are marked by pale green, four-foot high, round metal standpipes that denote where the wells were bored. These sites have been plugged and abandoned. Four remaining geothermal well sites, however, have not yet been plugged and abandoned; all are marked by steel caps near the ground instead of standpipes.³²

As of the date of this report, the administrative complex has been judged to be *not eligible* to the National Register of Historic Places (see Table 5.2). both the guard shack and the power plant site are of *insufficient age to be eligible*. None of these properties, moreover, appear to have exceptional qualities by which they would qualify for the National Register under Criterion G. Five of the geothermal wells drilled at the Baca Ranch—Bond No. 1 and Baca No. 1 through Baca No. 4—are more than fifty years old, and they are therefore *potentially eligible* for evaluation to the National Register of Historic Places. None of these wells has yet been evaluated, however. The remainder have not yet passed the fifty-year threshold, and therefore do not yet qualify as nominated properties.

Continental Scientific Drilling Program

During the same general period in which geothermal proponents were attempting to demonstrate the economic possibilities of drilling on the Baca Ranch, other geologists and geophysicists similarly

³¹ Martin, *Valle Grande*, 100–101; *Alamogordo Daily News*, December 8, 1981, 5; *Los Alamos Monitor*, January 22, 1982; Union Geothermal, *Baca Project Geothermal Demonstration Power Plant*, v.

³² Robert Parmenter, email to Frank Norris, March 8, 2021.

showed an interest toward drilling in the same general area (see Figure 8.7). Scientists at the nearby Los Alamos National Laboratory were behind this new project. The purpose behind their effort was basic research into the earth's stratigraphy.

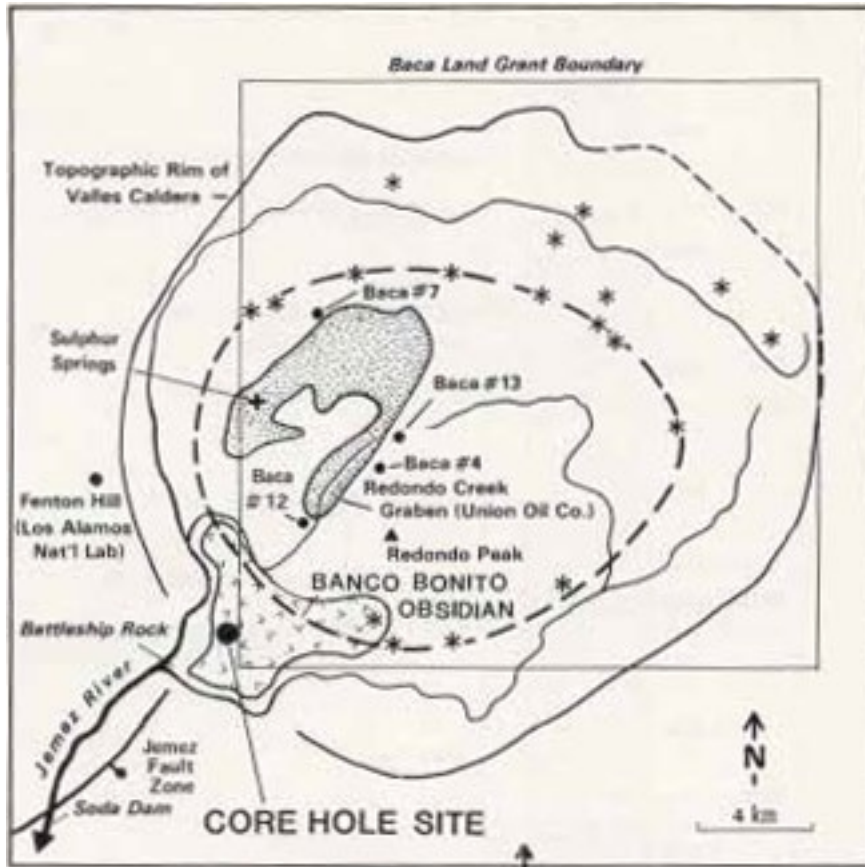


Figure 8.7. The first of three CSDP core holes, called VC-1, was drilled in 1984. As noted in the report's map caption, "Stars denote moat rhyolite vents. Stipple pattern [which includes Sulphur Springs] shows area of intense intracaldera surface hydrothermal alteration."

Source: Rowley et al., *Drilling Report, First CSDP/Thermal Regimes Core Hole Project*, 1987, p. 3.

During the early 1960s, in the midst of the space race, scientists—who were well aware that the earth's mantle underlay its crust—became increasingly interested in learning about areas below the crust. The area sandwiched between the crust and mantle was called the Mohorovičić discontinuity, more informally called the Moho. In order to penetrate the Moho, a group of scientists funded through the National Academy of Sciences organized Project Mohole during the late 1950s. The initial test wells—more than six hundred feet below the ocean floor—were drilled near Guadalupe Island, in eleven thousand feet of water, off the coast of Baja California during the spring of 1961.

Valuable scientific core-sample data was retrieved, and both the academic community and industry leaders deemed the project a success.³³

On the heels of that effort, the National Science Foundation organized the Deep Sea Drilling Project, a multi-decade effort to explore the world's oceans in search of information about the strata underlying the ocean floor. Using the *Glomar Challenger*, a specialized ship built in Texas in 1967, project personnel over the years drilled some 624 holes from the Atlantic, Pacific, and Indian oceans as well as the Mediterranean and Red seas. By the mid-1970s, the project had become international in scope as U.S. scientists were joined by their counterparts in Japan, the United Kingdom, the U.S.S.R., and other countries. The Deep Sea Drilling Project—and the *Glomar Challenger*—remained active until the effort was discontinued in the fall of 1983. (Scientific explorations of the ocean floor, through new organizations and more modern ships, have continued to the present day.)³⁴

Based on the many years of success of the deep-sea drilling program, the National Academy of Sciences (NAS) during the early 1980s hoped to attain similar degrees of success for continental tectonic systems. At that time, continental scientific drilling was in its infancy; the Soviet Union had initiated the field by drilling on the Kola Peninsula (near Murmansk) in 1970, and in the U.S., the Department of Energy during the 1970s worked on the exploration of hydrothermal resources.³⁵ Working from that previous effort, the NAS believed that a detailed study of a hydrothermal system would yield important results. In response, LANL geologist Jamie Gardner suggested drilling into the Valles Caldera, an area that had received much publicity during the past decade due to the geothermal drilling program. With DOE support, the National Academy of Sciences approved an ambitious plan to drill at least five holes into the heart of the caldera as part of its Continental Scientific Drilling Program (CSDP).³⁶ The work at Valles Caldera was undertaken in conjunction with similar work at Long Valley, California (a caldera located ten miles northeast of Mammoth Lakes, in Mono County), and also at Salton Sea, California (a geologic basin, or graben, located in Riverside and Imperial counties). The purposes of the broad program were “to answer fundamental scientific questions about magma, rock/water interactions, and volcanology through shallow (less than 1-km depth) core holes.”³⁷

The objectives of the first borehole, which would be called VC-1, were threefold. As noted in the published drilling report, those objectives were

³³ National Academy of Sciences, “Project Mohole, 1958–1966,” <http://www.nasonline.org/about-nas/history/archives/milestones-in-NAS-history/project-mohole.html>; National Research Council, *Symposium Commemorating the 25th Anniversary of the Demonstration of the Feasibility of Deep Ocean Drilling* (Washington, National Academy Press, 1989), 4–13.

³⁴ Deep Sea Drilling Project, “Reports and Publications,” <http://www.deepseadrilling.org/about.htm>; National Research Council, *Symposium Commemorating the 25th Anniversary*, 14–35.

³⁵ Anthony W. Walton, et al., “Introduction to U.S. Continental Scientific Drilling Workshop Report: Exciting Science through Drilling,” in *The Future of Continental Scientific Drilling: A U.S. Perspective, Proceedings of Continental Scientific Drilling Workshop, June 4–5, 2009, Denver, Colorado*, pp. 3–14 https://www.researchgate.net/publication/262263680_Introduction_to_US_Continental_Scientific_Drilling_Workshop_Report_Exciting_Science_through_Drilling

³⁶ Martin, *Valle Grande*, 101.

³⁷ J. Rowley, W. Hawkins, and J. Gardner, *Drilling Report, First CSDP/Thermal Regimes Core Hole Project at Valles Caldera, New Mexico (VC-1)* (Los Alamos, LANL, February 1987), 1.

- 1) To study the hydrogeochemistry of a subsurface geothermal outflow zone of the caldera near the source of convective flow,
- 2) To obtain structural and stratigraphic information from intracaldera rock formations in the southern ring-fracture zone, and
- 3) To obtain continuous core samples through the youngest volcanic unit in Valles Caldera, [which was] the Banco Bonito rhyolite.

Work on borehole VC-1 began in late July 1984, when drilling equipment was brought into the area. LANL's Fraser Goff, who led the team, chose a site at the vent of the Banco Bonito flow located on federal (U.S. Forest Service) land a short distance west of the Baca Ranch boundary, on the east side of Forest Road 1850. Drilling began on August 1, and for more than a month the crew collected both core samples and fluids; as Craig Martin noted, the team successfully "collected data on the hydrothermal outflow plume of the geothermal area and on the nature of ring fractures." On September 3, the crew finished its work after having reached a depth of 856 meters (2,809 feet), and the bottom-hole temperature reached 160 degrees Celsius (320 degrees Fahrenheit). The information assisted geologists in their understanding of magma systems.³⁸

Two years later, during the summer of 1986, the team prepared to drill its second hole, which was dubbed core hole 2A. The site chosen was the east side of the two 20-acre mining claims at Sulphur Springs, which at that time was owned by John Corbin and his partners. More specifically, the drill rig was installed just southeast of Footbath Spring and just northeast of Lemonade Spring.³⁹ As with the previous drill hole, scientists hoped to obtain data, throughout the drilling process, pertaining to both rocks and fluids. Drilling began on September 1 and continued until September 28, when the drill rig had reached a depth of 528 meters (1,731 feet), where the subsurface temperature reached 210 degrees Celsius (410 degrees Fahrenheit).⁴⁰ Funding proved insufficient for Goff and his team to complete five different drilling procedures as the original contract goals had specified, but during the summer of 1988 they were able to undertake one last drilling operation, which would be named core hole 2B (see Figures 8.8 and 8.9).⁴¹

³⁸ Rowley, et al., *Drilling Report, First CSDP/Thermal Regimes Core Hole Project*, 1–5, 16–20; Martin, *Valle Grande*, 101–102; John A. Musgrave, et al., *Selected Data from Continental Scientific Drilling Core Holes VC-1 and VC-2a, Valles Caldera, New Mexico* (Los Alamos, LANL, February 1989), 1–3.

³⁹ Musgrave, et al., *Selected Data*, 7, 33–35; Kimberly Meeker, et al., *Environmental Sampling and Mud Sampling Program of CSDP Core Hole VC-2B, Valles Caldera, New Mexico* (Los Alamos, LANL, March 1990), 3, 5. Both of the noted springs were noted on the page 33 map in W.K. Summers' *Catalog of Thermal Waters in New Mexico*, published in 1976, as well as on the USGS, Valle San Antonio Quadrangle, 1:24,000, published in 2013.

⁴⁰ Martin, *Valle Grande*, 102–103; Musgrave, et al., *Selected Data*, 14, 20.

⁴¹ The map was created by Frank Norris and VALL GIS Specialist Mike Shelley. It is based on similar maps in Kimberly Meeker, et al., *Environmental Sampling and Mud Sampling Program of CSDP Core Hole VC-2B, Valles Caldera, New Mexico* (Los Alamos, LANL, March 1990), pp. 3 and 5.



Figure 8.8. Preserve staff at the site where CSDP hole VC-2B was drilled during the summer of 1988. Photo, taken circa 2018, courtesy of Valles Caldera National Preserve.

As noted in a follow-up report, a chief objective of the drilling effort would be

the physical and chemical characterization of the four principal components of the active, high-temperature, Sulphur Springs hydrothermal system: 1) the deep, hot conductive zone, 2) the liquid-dominated zone, 3) the boiling transition zone, and 4) the vapor cap. . . . A second major objective is to provide insight into the magmatic history and eruption mechanisms involved in the development of the Valles Caldera.⁴²

In order to fulfill those objectives, Goff and his crew chose a drilling site one-half kilometer northeast of Sulphur Springs, southeast of the primary road through the area (now called VC08) and just a few yards east of two geothermal well sites (Baca No. 1 and Baca No. 3) where the Baca Land and Cattle Company had drilled in 1963. Drilling at the site began in June 1988 and continued until September. By the time operations were terminated, the crew had drilled 1762 meters (5780 feet) below the surface and, in the process, had encountered temperatures that reached 295 degrees Celsius (563 degrees Fahrenheit).⁴³

Historic Properties Summary and Recommendations

The Continental Scientific Drilling Program, in the Valles Caldera area, resulted in the drilling of three wells—VC-1, VC-2A, and VC-2B—between July 1984 and September 1988 (see Figure 8.9). Two of these wells were drilling within the boundaries of the present-day preserve, while the third (VC-1) was drilled just a few yards west of the preserve in the Banco Bonito area. The site of these

⁴² Meeker, et al., *Environmental Sampling and Mud Sampling Program*, 2–3.

⁴³ Meeker, et al., *Environmental Sampling and Mud Sampling Program*, 2, 5, 9–11,

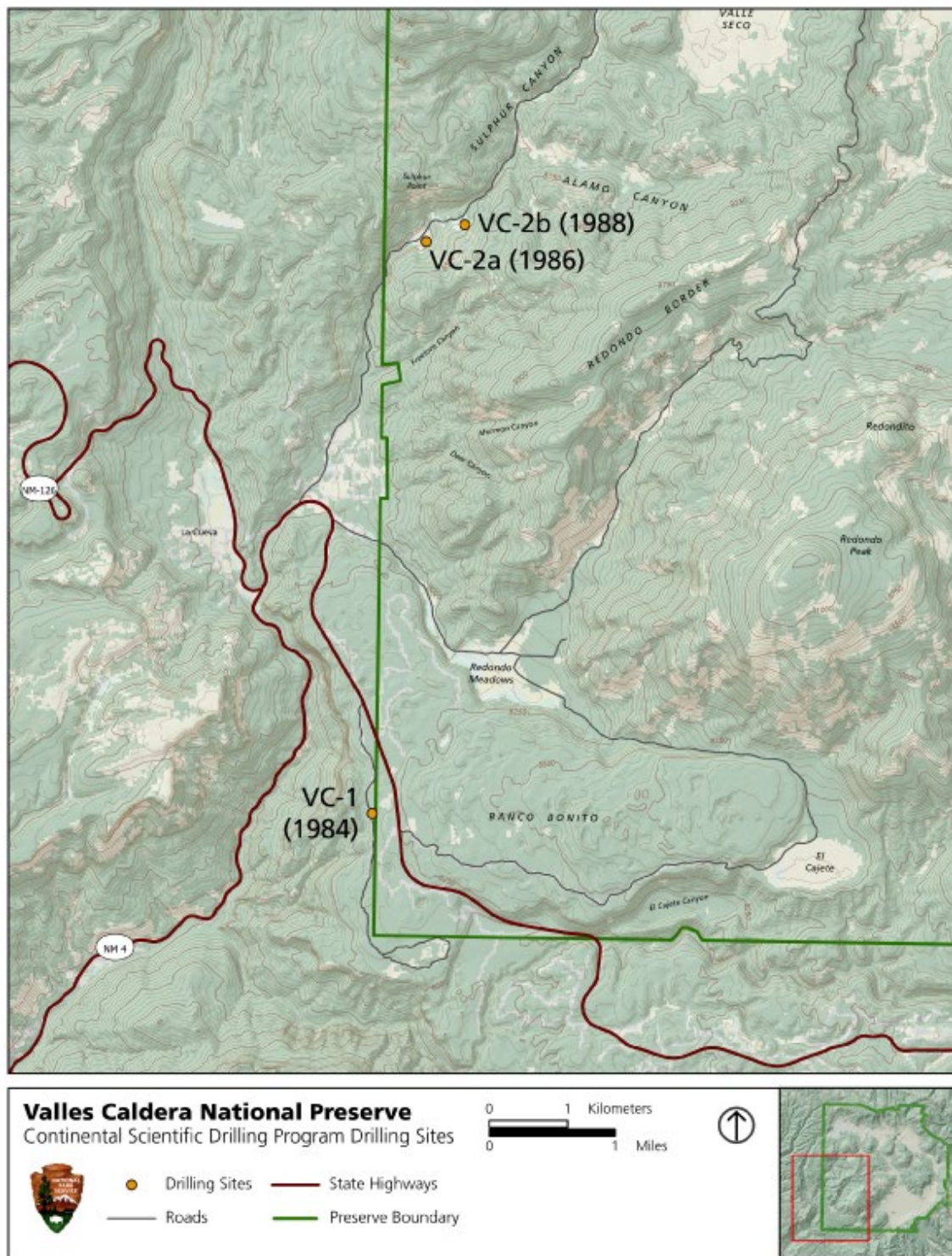


Figure 8.9. Continental Scientific Drilling Program drilling sites. GIS image produced by Valles Caldera National Preserve.

wells are marked by a flat, cleared area. The bore-hole site at VC-2B is marked by a tall (9-foot) metal pole and has been plugged and abandoned, but the VC-2A site is not specifically marked, nor has it been plugged.⁴⁴ These sites, due to their drilling dates during the 1980s, have not yet crossed the 50-year threshold for eligibility to the National Register of Historic Places, nor do they have exceptional significance by which they would qualify under National Register Criterion G.

Film-Set Construction

Valles Caldera National Preserve has been an area of interest to several generations of film crews. So far as is known, crews have visited the preserve to film seven motion pictures sponsored by film studios, three television movies, one television mini-series, and one multi-year television series.

The first film effort to consider Valles Caldera as a backdrop took place during the 1930s. In 1936, novelist Conrad Richter completed *The Sea of Grass*, which dramatized the late-nineteenth century clash in New Mexico between rich ranchers and salt-of-the-earth homesteaders. By the winter of 1937–1938, Metro-Goldwyn-Mayer had purchased the rights to Richter’s book and was contemplating making a motion picture based on its storyline. Given the book’s setting, MGM executives approached New Mexico governor Clyde Tingley, who offered two choices as a filming location. “One is Valle Grande, the other the Black Lake region [just south of present-day Angel Fire Resort] in Colfax and Mora counties. Both areas would make ideal locations.”⁴⁵ (Valle Grande, at the time, had been made accessible just a few months earlier by the completion of New Mexico Highway 4.) These plans, however, did not work out as expected. The film version of *The Sea of Grass* was not completed until 1947; it was directed by Elia Kazan, and it featured stars Spencer Tracy and Katharine Hepburn. MGM, at the time, had a purported “ten thousand feet” of stock “sea of grass” footage in its vaults that had been taken in the Nebraska sand hills. Rather than go on location, therefore, the film’s producers opted to use its stock footage instead by shooting a majority of the film against a process screen.⁴⁶

In 1970, not long after Dunigan had opened the ranch to commercial elk hunting, and just before he leased the ranch to Union Oil Co. for geothermal exploration, he opened the ranch to the film industry. As Craig Martin has noted, the Dunigan family did not particularly profit from opening the ranch to film crews. In fact, with the extra ranch hands required to guide, supervise, and entertain the guests, the Dunigans usually lost money on these propositions. Nevertheless, the family not only had fun playing backdrop for Hollywood, but it was glad to assist the New Mexico Film Commission in promoting in-state film productions.⁴⁷

Hollywood operatives that summer were invited to the ranch to film a classic-style western, called *Shoot Out*. Starring Gregory Peck and Patricia Quinn, and directed by Henry Hathaway, the film was released on October 13, 1971. The Valle Grande is an essential feature of several scenes. To prepare for the film, the crew built a small, two-building set on the edge of the Valle Grande near a stand of old-growth forest. (Later publications, as noted in Chapter 5, have called these buildings the

⁴⁴ Robert Parmenter, email to Frank Norris, March 8, 2021.

⁴⁵ *Clovis Evening News Journal*, February 19, 1938, 1.

⁴⁶ Elia Kazan, *Elia Kazan, A Life* (New York, Anchor Books), 1989; Homer Dickens and Lawrence J. Quirk, *The Films of Katharine Hepburn* (New York, Carol Publishing Group), 1990.

⁴⁷ Martin, *Valle Grande*, 107.

skinning shed cabin and—to the north—the skinning shed barn.) Because the set was simply a shell, the interior scenes were filmed elsewhere. Later, the Dunigans finished the cabin’s interior, which was used for two other films.⁴⁸

During the summer of 1977, the ranch played host to a National Broadcasting Company television movie called *Peter Lundy and the Medicine Hat Stallion*. It starred a 15-year-old Leif Garrett, along with Milo O’Shea, and it was directed by Michael O’Herlihy. It aired on NBC on November 6, 1977.⁴⁹ In the film, Valle Grande played the role of the route of the Pony Express near South Pass in Wyoming. The cabin just north of San Antonio Creek (the San Antonio Cabin, built in 1947), along with its corrals, was converted into a way station for the mail route. Additionally, a small movie set, the Box Elder Station, was constructed at the foot of Cerro Piñon. That set, however, was destroyed during the film as part of an Indian attack.⁵⁰

In 1978, *Butch and Sundance: The Early Days* was shot in Valles Caldera. This was a United Kingdom film that starred William Katt and Tom Berenger and was directed by Richard Lester. It was released on June 15, 1979. The movie chronicles the two outlaws’ lives in the years before the events portrayed in the 1969 movie, *Butch Cassidy and the Sundance Kid*.⁵¹

In 1979, a portion of the television movie *Kenny Rogers as the Gambler* (also known simply as *The Gambler*) was filmed at Valles Caldera, more specifically in the headquarters area. The movie, starring Kenny Rogers and an array of other characters (and based on the 1978 song of the same name), was directed by Dick Lowry and released on CBS television on April 8, 1980. It was so successful that it spawned four sequels—all starring Kenny Rogers—that were released between 1983 and 1994.⁵² None of the sequels, however, were filmed in or around Valles Caldera.

In 1993, director Terence Hill brought a crew to the Baca Ranch to shoot *Fight Before Christmas* (later known as *Troublemakers*) at the ranch. The spaghetti-western comedy starred Hill, Bud Spencer, and Boots Southerland, and it was released—initially in Italy—on November 25, 1994. Two years prior to the beginning of filming, a crew had built a large ranch house, on a knoll overlooking the Valle Grande southwest of today’s entrance station, that is easily seen from New Mexico Highway 4 (see Figure 8.10). The inside of the set was considerably roughed up during the drawn-out, slapstick fight scene that gave the film its name.⁵³

⁴⁸ Martin, *Valle Grande*, 106–107; Ethan Edwards, “Shoot Out” (1971), *John Wayne Message Board*, <https://dukewayne.com/index.php?thread/7349-shoot-out-1971/>. The term “skinning shed” was adopted because commercial elk hunters, who were home based at the Kiva Lodge, used the nearby barn to hang and season the animals they had harvested.

⁴⁹ “Leif Garrett,” IMDB; <https://www.imdb.com/name/nm0308161/>; <https://www.facebook.com/VallesCaldera/posts/movie-monday-filmed-in-valles-caldera-peter-lundy-and-the-medicine-hat-stallion-/2591625147532090/>.

⁵⁰ Martin, *Valle Grande*, 107.

⁵¹ “Butch and Sundance: the Early Days,” IMDB; https://www.imdb.com/title/tt0078919/?ref_=adv_li_tt; <https://www.imdb.com/title/tt0078919/locations>.

⁵² Turner Classic Movies, “Kenny Rogers as the Gambler,” <https://www.tcm.com/tcmdb/title/24304/kenny-rogers-as-the-gambler/#credits>; Martin, *Valle Grande*, 108; “The Valles Caldera,” <https://newmexiconomad.com/valles-caldera/>.

⁵³ Martin, *Valle Grande*, 107–108; “Troublemakers,” IMDB; <https://www.imdb.com/title/tt0109321/>; Ana Steffen, email to Frank Norris, January 26, 2021.



Figure 8.10. In 1993, movie crews constructed a house (center of photo) near the ranch's entrance gate. Ten years later, for a subsequent movie, crews erected a large barn (right) nearby. The barn was removed in 2005. Image, taken circa 2004, courtesy of Valles Caldera National Preserve.

In 1993, another part of the Baca Ranch was used to film the TV mini-series *Buffalo Girls* (see Figure 8.11). The series, which starred Anjelica Huston, Melanie Griffith, Jack Palance, and Sam Elliott, focused on Huston as Calamity Jane (a.k.a. Jane Canary). It was directed by Rod Hardy, and CBS television released the two-episode series—90 minutes per episode—on April 30 and May 1, 1995. To make the series, a new set was constructed in the Jaramillo Valley at the foot of Cerro Piñon, this one a small ghost town (portraying Deadwood, in present-day South Dakota) consisting of three false fronts. Several winter scenes featured the forests of the Valles Caldera.⁵⁴ According to the

⁵⁴ “Buffalo Girls,” IMDB; https://www.imdb.com/title/tt0111903/plotsummary?ref_=tt_ov_pl; Martin, *Valle Grande*, 107–109.



Figure 8.11. Three false-fronted mining town buildings were erected in Jaramillo Valley for the 1993 mini-series *Buffalo Girls*. Today, the set lies in ruins. Image, taken in 2020, by co-author Frank Norris.

website Redbubble, the barn used in the 1970 movie *Shoot Out*—often called the skinning shed barn—was also used in *Buffalo Girls*.⁵⁵

In 1996, director Dick Lowry—who had previously directed *Kenny Rogers as the Gambler*—arrived to film a story about an embittered Confederate soldier trying to make a new start. This Turner Network Television (TNT) movie was called *Last Stand at Saber River*. The movie starred Tom Selleck, Suzy Amis, and Rachel Duncan. It was released on January 19, 1997. The set that had been used for *The Troublemakers* (see above) in 1993 was used once again for this production. Converted this time into a general store occupied by the film's villain, the set is shown in many scenes, but the film did not take advantage of the Valle Grande backdrop.⁵⁶

⁵⁵ Mitchell Tillison, “Buffalo Girls Barn, Valles Caldera,” *Redbubble* <https://www.redbubble.com/people/theblindhog/works/2872981-buffalo-girls-barn-valles-caldera>. A Wiki Travel entry (https://wikitravel.org/en/Valles_Caldera_National_Preserve) notes that “parts of the [Buffalo Girls] set collapsed in 2006,” and by the fall of 2020 the entire, three-building set had collapsed.

⁵⁶ “Last Stand at Saber River,” IMDB, https://www.imdb.com/title/tt0119501/companycredits?ref_=ttrel_ql_4; Martin, *Valle Grande*, 107–108.

In February 2003, crews arrived to film *The Missing*, the first movie shot since Congress had designated Valles Caldera National Preserve. Directed by Ron Howard, it starred Tommy Lee Jones and Cate Blanchett. It was released to U.S. theaters on November 26, 2003. Just north-northeast of the set built ten years earlier for the *Fight Before Christmas* (southwest of the entrance station), the crew built a full-sized barn for *The Missing*. To make the movie, crews filmed scenes in both the house and barn. But less than two years after *The Missing* was released, the Valles Caldera Trust's board of directors—thinking that the barn was too obtrusive—voted to have it disassembled and moved. The building, reassembled soon afterward, is now located on private property just south of the preserve entrance.⁵⁷

In 2006, film crews visited the preserve as part of the filming of *Seraphim Falls*, a western which starred Liam Neeson, Pierce Brosnan, and Anjelica Huston. (This movie was Ms. Huston's second acting role at Valles Caldera.) It was directed by David von Ancken and was initially released to the public, in Taiwan, on April 13, 2007. Valles Caldera, as a scenic backdrop, played a relatively minor part in the film, crews also recording footage at more than a dozen other locations during the production process.⁵⁸

In 2009, a crew for an entirely different motion-picture genre came to Valles Caldera. The movie being shot was *Kites*, an Indian romantic action thriller that starred Hrithik Roshan and Bárbara Mori and was directed by Anurag Basu. It was released in India on May 21, 2010, and a week later to an international audience. The dialogue was in Hindi, but with substantial segments in English and Spanish as well. The film's location shots ranged from Nevada and California to the Maldives Islands, but they focused much of their filming on New Mexico, with eight different locations between Santa Fe and Jemez Springs, including Valles Caldera.⁵⁹

During the summer of 2012, crews from the production of *The Lone Ranger* visited Valles Caldera as part a broader effort that incorporated shooting locations elsewhere in New Mexico and in five other western states. The western, which starred Johnny Depp and Armie Hammer, was directed by Gore Verbinski. It was released to the public on June 22, 2013.

The best-known Hollywood production effort associated with Valles Caldera was the television series *Longmire*, which starred Robert Taylor, the sheriff of fictional Absaroka County, Wyoming, along with Katee Sackhoff and Lou Diamond Phillips.

The successful series aired for six seasons; it was broadcast by the A&E Network for three seasons and Netflix for the remaining three seasons. Sixty-three episodes were produced—with a variety of directors—of which the first episode was shown to the public on June 3, 2012, and the last released on November 17, 2017.

⁵⁷ Martin, *Valle Grande*, 108–110; “The Missing,” IMDB, <https://www.imdb.com/title/tt0338188/>; Ana Steffen, email to Frank Norris, January 26, 2021; Google Earth photos taken in July 2003 and July 2005.

⁵⁸ “The Cerro Grande Route,” *Rocky Mountain Journal*, <http://rockymountainhikingtrails.blogspot.com/2012/11/the-cerro-grande-route.html>; “Seraphim Falls,” IMDB, https://www.imdb.com/title/tt0479537/locations?ref_=tt_dt_dt;

⁵⁹ Lisa Tserling, “Kites – Film Review,” *The Hollywood Reporter*, <https://www.hollywoodreporter.com/review/kites-film-review-29651>; “Kites,” IMDB, https://www.imdb.com/title/tt1198101/locations?ref_=tt_dt_dt; Marc Valdez, “Kites,” *Marc Valdez Weblog*, <http://marcvaldez.blogspot.com/2019/09/kites-2010.html>.

The various *Longmire* episodes were filmed in many locations around New Mexico, including Las Vegas, which features the Absaroka County sheriff's office overlooking the town plaza. Another feature, shown in most episodes, is Walt Longmire's log cabin, located in the headquarters area of Valles Caldera National Preserve. Specifically, this cabin is known to preserve staff as the ranch foreman's house (or manager's cabin), dating from 1918 (see Figure 8.12). The show's episodes also prominently feature the panoramic view of Valle Grande from the Longmire Cabin's front porch. The long-running show has been sufficiently popular that a number of visitors come to the preserve specifically in search of Walt Longmire's cabin and the iconic view it offers.⁶⁰



Figure 8.12. The Ranch Foreman's Cabin, constructed in 1918, played an iconic role in the television series *Longmire*, which ran from 2012 to 2017.

Source: Dennison, et al./SWCA, *Documentation and Preservation of Historic Buildings*, 2007; Vol. 2, Ranch Foreman's House, Figure 13.

Historic Properties Summary and Recommendations

Since 1970, when the first motion picture was filmed in Valles Caldera, film studios have either erected or used seven buildings on the preserve. As noted in Chapter 5, several of these buildings

⁶⁰ "Longmire," IMDB, https://www.imdb.com/title/tt1836037/locations?ref_=tt_dt_dt; Chad Coppess, "Walt Longmire's Cabin," *Filmquest*; <https://www.filmquest.co/film-locations/walt-longmires-cabin/>.

have already been inventoried and evaluated for eligibility to the National Register for Historic Places. They are as follows:

- Skinning Shed (cabin) was built in 1970 for *Shoot Out* (1971). This building has been evaluated, and considered to be a *contributing* resource regarding NRHP eligibility, as part of the draft *Cultural Landscape Inventory* in 2020.
- Skinning Shed (barn) was also built in 1970 for *Shoot Out* (1971). This building has been evaluated, and considered to be a *contributing* resource regarding NRHP eligibility, as part of the preserve's draft *Cultural Landscape Inventory* in 2020.
- San Antonio Cabin, built in 1947, was used as part of *Peter Lundy and the Medicine Hat Stallion* (1977). It has been evaluated, and considered to be *eligible* to the NRHP, as part of the preserve's historic structures report (2007).
- Ranch House near the entrance station (see Figure 8.10), was built about 1991 for *Fight Before Christmas* (later renamed *Troublemakers*) and later used for both *Last Stand at Saber River* and *The Missing*. It has not been previously evaluated for the NRHP, but given its recent vintage, it should be evaluated when it reaches fifty years of age.
- *Buffalo Girls* Movie Set (ghost town composed of three false fronts) was built about 1993 for the *Buffalo Girls* television mini-series (see Figure 8.11). It was determined to be *not eligible* for the NRHP as part of the preserve's historic structures report, written by SWCA in 2007. This set has since collapsed.
- Barn near the entrance station (see Figure 8.10), built in 2003 for *The Missing*. It has not been previously evaluated for the NRHP and has been moved away from the preserve.
- Longmire Cabin, used from 2012 to 2017 for the Longmire television series (see Figure 8.12). This cabin, built in 1918, has long been known as the ranch foreman's house (or manager's cabin). It was determined to be *not eligible* to the NRHP as part of the preserve's historic structures report in 2007, but it was considered a *contributing* element to the draft Baca Ranch Headquarters Area NRHP district nomination in 2015, and also determined to be *eligible* to the NRHP in the draft *Cultural Landscape Inventory* in 2020.

Because of Valles Caldera's longtime importance as a film venue, a quality that will likely continue well into the future, it is recommended that many of the above-mentioned buildings should be considered for National Register eligibility under a new theme, that being their connection to film production.

CHAPTER 9: THE LONG TRAIL TOWARD PUBLIC OWNERSHIP (Norris)

Based on Congressional action, the Baca Ranch in July 2000 became Valles Caldera National Preserve, initially administered by the U.S. Forest Service and, two years later, by the Valles Caldera Trust. (Not until December 2014 would another Congressional act transfer the preserve to the National Park Service.) Advocates had begun to campaign for the federal purchase of lands surrounding the Baca Ranch as early as the late nineteenth century, but it took repeated campaigns—and years of effort by public-spirited proponents—to bring the Baca Ranch into federal hands. These varying proposals often had disparate goals and sought differing areas to be purchased for public purposes. The following narrative is a brief synopsis of those efforts—a process that other sources¹ have outlined in considerably more detail. Those with a greater interest in the long, complicated process—ending in July 2000—that resulted in public ownership for the Baca Ranch would be well served by seeking out those alternate sources; the majority of the references noted in this brief chapter, therefore, are from Craig Martin’s *Valle Grande* (2003) and from various New Mexico newspapers.

Early Proposals; the Role of Edgar Lee Hewett

The first proposal for a national park on the Pajarito Plateau was set forth in an 1888 Congressional bill introduced by Indiana congressman William S. Homan. The bill was the direct result of the advocacy of journalist Charles Lummis, who had met ethnologist Adolph Bandelier four years earlier and had remained his friend and acolyte for years afterwards. The purpose of Homan’s bill was to protect various archaeological sites northwest of Santa Fe.² That and later bills made little headway, but in 1900, archaeologist Edgar Lee Hewett (see Figure 9.1) took up the cause. Seeking a way to protect the ruins and artifacts scattered by the thousands across the flanks of the Jemez Mountains, Hewett lobbied Congress to create Pajarito National Park. Lack of interest on the federal level killed the first attempt, but the persistent Hewett continually pushed his proposal in Congress for more than two decades. At least seven bills to establish a park were introduced in Congress between 1900 and 1919, each with new components that attempted to accommodate the concerns of nearby pueblo members, cattlemen, loggers, and homesteaders. Opposition by the local population played a large role in the defeat of every Pajarito park bill introduced in Washington. In 1916, however, a

¹ Sources that discuss and evaluate attempts to make all or parts of the Baca Ranch public land include: Hal Rothman, *On Rims and Ridges: the Los Alamos Area Since 1880* (Lincoln, Univ. of Nebraska Press), 1997; Rothman, *Bandelier National Monument: an Administrative History* (Santa Fe, Southwest Cultural Resources Center Professional Papers, No. 14), 1988; NPS, *Valles Caldera: Study of Alternatives* (Washington, U.S. Dept. of the Interior), 1979; U.S. Forest Service, *Report on the Study of the Baca Location No. 1, Santa Fe National Forest, New Mexico*, August 1993; William DeBuys and Don J. Usner, *Valles Caldera: A Vision for New Mexico’s National Preserve* (Santa Fe: Museum of New Mexico Press), 2006; Peter Larry Gess, *A Grand Experiment in Public Lands Management: Responsiveness in the Valles Caldera National Preserve*, unpublished Ph.D. dissertation, Univ. of Georgia, 2006; and Melinda Harm Benson, “Shifting Public Land Paradigms: Lessons from the Valles Caldera National Preserve,” *Virginia Environmental Law Journal* 34:1 (2016), 1–51. Additional key information is available via www.congress.gov and other federal legislative sources, along with local newspaper articles.

² J.W. Hendron, *Prehistory of El Rito de los Frijoles, Bandelier National Monument* (Coolidge, Arizona, Southwestern Monuments Association, Technical Series, No. 1), May 12, 1940; https://www.nps.gov/parkhistory/online_books/wnpa/tech/1/intro.htm; Patrick Burns, ed., *In the Shadow of Los Alamos; Selected Writings of Edith Warner* (Albuquerque: University of New Mexico Press, 2008), p. 15; Craig Martin, *Valle Grande; a History of the Baca Location No. 1, Background to Creation of the Valles Caldera National Preserve* (Los Alamos, All Seasons Publishing, 2003), 73–74.



Figure 9.1. Early in the twentieth century, Edgar Lee Hewett championed a Pajarito National Park and, later, a Cliff Cities National Park, both of which would have protected a wide variety of archaeological treasures in areas surrounding the Baca Ranch.

Photo taken 1912 by George Vreeland, from Palace of the Governors Photo Archives, image 7380.

compromise was reached in which Bandelier National Monument was established with a smaller acreage than what Hewett had proposed.³

In 1923, Hewett tried again. Sensing that it was his last opportunity to steer a park bill through Washington, Hewett's idea took yet another new twist. The archaeologist expanded the scope of his proposed park to encompass the complete range of natural features in the Jemez, including the Valle Grande and the entire Valles Caldera, into a Cliff Cities National Park. The National Park Service (NPS) recognized the merit of Hewett's latest idea and requested the expansion of Bandelier National Monument. The NPS wanted the proposed park to encompass the pueblo ruins of Puyé and Otowi, so the bill included a transfer of 195,000 acres from the U.S. Forest Service to the new park. From the start, the proposed park faced obstacles that would prove impossible to overcome. So, after two years of rallies, meetings, and arguments, the park plan was abandoned.⁴

The NPS's failure to create a national park on the Pajarito Plateau beyond Bandelier National Monument convinced the NPS that a park based primarily on the archaeological attractions of the

³ Martin, *Valle Grande*, 74. During the late nineteenth century, establishing a national park – which required an act of Congress – was virtually the only way to protect federal land. A new avenue for land protection was established in 1906 when Congress passed the Antiquities Act. That legislation allowed for the creation of national monuments, which could be established by a presidential proclamation.

⁴ Martin, *Valle Grande*, 74; *Albuquerque Morning Journal*, September 12, 1925, 5.

area wouldn't work. In the late 1930s, therefore, the NPS shifted its attention to the geology of the Jemez Mountains and laid the groundwork for a new park centered on the Valles Caldera. In 1938, H. E. Rothrock of the agency's Naturalist Division, with concurrence from the United States Geological Survey, recommended that the NPS establish a national park in the Jemez Mountains, to be called the Jemez Crater National Park. The new plan encompassed a vastly expanded area of over a million acres, which was four times larger than any of the plans from the 1920s. The park would include the entire Valles Caldera, the ancient pueblo villages on the mesas to the north and south, the Bond-owned Ramon Vigil Grant on the Pajarito Plateau, and the Cañada de Cochiti Grant. The plan, however, proved to be overly grandiose, and it never left the Department of the Interior.⁵

The Proposed Valle Grande National Park

For the next 20-plus years, neither the public nor the federal land management agencies pushed for government acquisition of the Baca Ranch. In 1961, however, the idea was revived by Evelyn Frey, whose family had lived in nearby Frijoles Canyon since 1925 and had long operated the concession for guest services at Bandelier National Monument. That February, Frey wrote a short letter to New Mexico Senator Dennis Chavez, informing him that the Baca Ranch would be put up for sale. Frey suggested that the federal government investigate the possibility of purchasing the property. Chavez contacted the National Park Service, which—as it had many years previously—expressed an interest in acquiring the Valle Grande and the encircling mountains.⁶ Indeed, members of the Bond family (who had owned the ranch for decades) were willing to sell. The devil, however, was in the details; the federal government felt that a proper purchase price was less than \$2 million, while the Bond family firmly believed that the ranch was worth as much as \$50 million.⁷ Sen. Clinton Anderson, Chavez's New Mexico colleague in the U.S. Senate, submitted a Valle Grande National Park bill in May 1962, one which would include approximately one-third of the Baca Ranch as well as some adjacent U.S. Forest Service land. Given additional support from U.S. Interior Secretary Stewart Udall, who recommended that the remainder of the ranch be added to the Santa Fe National Forest, the plan seemed to have broad support. The deal abruptly fell through, however, because the Bond family opted to sell their ranch to a private party—the Baca Land and Cattle Company, represented by James P. (Pat) Dunigan—rather than to the federal government. The sales price was said to be \$2.5 million.⁸

The ranch's new owners, after initially announcing several major development schemes for their property, later backed away from those plans and decided to keep the Baca Location simply as a working cattle ranch. New Mexico's senatorial delegation, in both 1964 and 1965, was still sufficiently interested in the ranch that they introduced bills that once again called for the purchase

⁵ Martin, *Valle Grande*, 74–75.

⁶ Martin, *Valle Grande*, 75–76; *Albuquerque Journal*, issues of October 4, 1961, A-16; December 2, 1961, 9; December 4, 1961, C-7; December 13, 1961, 21; *Santa Fe New Mexican*, issues of April 10, 1961, 4; April 13, 1961, 4; September 25, 1961, 1, and September 26, 1961, 1; *Albuquerque Tribune*, issues of December 6, 1961, E-2, and December 20, 1961, 9.

⁷ Martin, *Valle Grande*, 76–77.

⁸ Martin, *Valle Grande*, 77–78; *Albuquerque Journal*, issues of May 23, 1962, 33; September 18, 1962, A1, A8; January 26, 1963, 1; June 28, 1963, 9; July 16, 1963, 1, 5; *Albuquerque Tribune*, issues of January 6, 1962; June 25, 1962, 2; September 18, 1962, 12, and January 25, 1963, 37; *Santa Fe New Mexican*, issues of May 18, 1962, 1; May 23, 1962, 2; August 23, 1962, 1; September 18, 1962, 17; July 15, 1963, 13; and July 16, 1963, 18.

of the Valle Grande. Dunigan and his colleagues, however, were not interested, and the bills never made it out of committee.⁹

In the late 1970s, Dunigan—after running the ranch for fifteen years—expressed a tentative interest in selling it to the federal government. The ranch owner spoke to NPS officials, who outlined a possible acquisition strategy and management plan. Dunigan went to Washington and got a cool reception from the NPS director, but the agency proceeded with compiling a “Study of Alternatives” as it investigated acquisition possibilities. The most probable alternative, it turned out, was largely a replication of the joint NPS-USFS proposal from the early 1960s. This envisioned the Baca Ranch’s southern end being added to Bandelier National Monument, with the remainder of the ranch being added to the Santa Fe National Forest.¹⁰ Dunigan, however, refused to go along with the NPS’s ideas. Instead, he talked with Forest Service officials because the agency’s multiple use mandate allowed far more flexible land uses. For several months, Dunigan and the USFS laid out details of a possible land transfer. That potential sale, however, was abruptly halted when Dunigan died from a heart attack in February 1980. With his death, the majority ownership of the ranch passed into a trust set up for Dunigan’s young sons, and the trustees were not interested in selling the property.¹¹

The Domenici-Bingaman Proposals

During the mid-to-late 1980s, proposed development actions brought forth a revival of the national park idea. Due to geothermal development proposals that had been taking place along Redondo Creek ever since the early 1970s—proposals that, if implemented, would have necessitated an electrical transmission line—the Public Service Company of New Mexico (PNM) proposed a major new north–south high-voltage line called the Ojo Line Extension. In response to those threats, a grassroots activist group called “Save the Jemez” proposed the establishment of a 125,000-acre national park with the Baca Ranch as the centerpiece. In the plan, the Valles Caldera would be combined with Bandelier National Monument to form the park, and three “National Archeological Preserves” with a total of about three hundred thousand acres would be transferred from the Santa Fe National Forest into the hands of the NPS. But opposition from Jemez Springs residents, as voiced at a March 1987 public meeting, was widespread and vehement. New Mexico Senator Pete Domenici (see Figure 9.2), after being apprised of the proposal, recommended that it be withdrawn.¹²

In 1990, the idea of public ownership of the Baca Ranch surfaced yet again. A federal legislative directive, brought on by a land dispute settlement with the Dunigan family, charged the Forest Service with the task of studying the property in light of pursuing public acquisition of the Baca

⁹ Martin, *Valle Grande*, 81–82; *Albuquerque Journal*, issues of May 30, 1964, 1, 9, and June 5, 1964, 58; *Los Alamos Monitor*, issues of April 9, 1964, 1, 3, and January 7, 1965, 1; *Santa Fe New Mexican*, issues of January 30, 1964; May 31, 1964, B-1, and December 26, 1965, B-1, B-3.

¹⁰ NPS, *Valles Caldera: Study of Alternatives* (Washington, U.S. Dept. of the Interior), 1979; Martin, *Valle Grande*, 111–113.

¹¹ Martin, *Valle Grande*, 113–114.

¹² Martin, *Valle Grande*, 114–115; *Los Alamos Monitor*, issues of February 5, 1987; March 3, 1987; March 13, 1987; and April 1, 1987.



Figure 9.2. Pete Domenici, who served as a U.S. Senator from New Mexico from 1973 to 2009, and Jeff Bingaman, who served as a U.S. Senator from New Mexico from 1983 to 2013, each played a key role in the 2000 establishment of the publicly-owned Valles Caldera National Preserve.

Sources: New Mexico State University Library, Archives and Special Collections, Image 4106 CFF. https://bingaman.unm.edu/sites/default/files/webarchives/bingaman.senate.gov02/247-bingaman.senate.gov_about_images_Bingaman-Official-Portrait-Sept-2008_2_1.jpg

Ranch. A congressional bill that was passed that year (Public Law 101-556) called for a study to report on the Baca Ranch's significant attributes, the probable cost of the purchase, and acquisition options. Three years later, the U.S. Forest Service completed the so-called Baca Report which listed a number of pros and cons pertaining to public acquisition. But because the property was not actually for sale, the study part of the law aroused minimal publicity, and talk of acquiring the ranch faded away.¹³

In early 1997, Andrew and Michael Dunigan (Pat Dunigan's sons) resurrected the idea of the federal government purchasing the Baca Ranch in talks with New Mexico U.S. senators Pete Domenici and Jeff Bingaman. Domenici was interested, but he was also reluctant, because he saw little to no chance of success in obtaining the large funding required to purchase the property.

That fall, the U.S. Forest Service brought the Baca Ranch to the top of its priority land acquisition list. Perhaps in response, Senator Bingaman introduced legislation on September 24 to authorize the federal purchase of the Baca Ranch. Senator Domenici declined to co-sponsor Bingaman's bill, noting that the federal government already owed millions of dollars for unfinished land acquisitions

¹³ U.S. Forest Service, *Report on the Study of the Baca Location No. 1*, 1993; Martin, *Valle Grande*, 116.

in various parts of the West. Senator Bingaman, undaunted, pushed ahead. But given the climate of fiscal conservatism that prevailed in Congress in 1997, the Bingaman bill did not advance far.¹⁴

Despite that setback, President Bill Clinton committed \$20 million from the Land and Water Conservation Fund for a down payment on the property. And in the private sector, regional and national environmental groups banded together to form the Valles Caldera Coalition, which actively supported the public purchase of the Baca Ranch. The coalition's campaign caught the ear of Senator Pete Domenici, and by mid-1998 the government was feeling pressure to move ahead with the Baca Ranch purchase. One and all recognized that no acquisition-related legislation would become law without the unqualified support of Pete Domenici, who had been serving as a U.S. senator since 1973.

New Mexico's senior senator searched for a way to acquire the Baca Ranch while adhering to his staunch principles of fiscal responsibility. After floating a few unsuccessful trial balloons, Domenici and his staff sketched out a proposal that was modeled on the recently-established Presidio Trust, founded to preserve and manage the Presidio section of the Golden Gate National Recreation Area in San Francisco. In the legislation that established the Presidio Trust, a seven-member board of directors was tasked with managing the Presidio with a minimum impact on the federal treasury and with a federally mandated goal to become financially self-sufficient by 2013. Domenici and his staff were intrigued by this experimental management system, and they liked the fact that this system could be applied to a natural area, all the while maintaining the parcel as a working ranch.¹⁵

In late July 1998, Senator Domenici spoke about Valles Caldera with President Clinton, who was intrigued by the trust idea. Clinton directed his staff to work with the senator on developing the idea. Domenici went public with his proposal, which was met with general approval by both legislators and outside advocates. Funding, however, was a sticking point. Toward the end of the congressional session that year, the New Mexico delegation introduced a version of the legislation that included the trust proposal. The bill, not surprisingly, never came up for a vote in that session; Congress did, however, approve \$20 million of Land and Water Conservation funds for a down payment.¹⁶

In January 1999, the Dunigan family, claiming bad faith in its negotiations with federal authorities, announced that it was no longer interested in consummating a sale of the Baca Ranch. That June, however, the family quietly approached the White House's Council on Environmental Quality and expressed interest in renewing sale-related discussions. By this time, the ranch property had been appraised for \$101 million. In September, the U.S. Forest Service offered to purchase the ranch for the appraised value, and the family accepted. Soon afterward, in November 1999, senators Domenici and Bingaman introduced the Valles Caldera Preservation and Federal Land Transaction Facilitation Act. Despite some delays based on a differing appraisal, the U.S. Senate passed the Valles Caldera bill (S. 1892, with the \$101 million price tag) in April 2000, and after further delays, the House of Representatives passed an identical version of the bill in mid-July. On July 25, 2000, a special White House ceremony was held in which President Clinton signed the bill—Public Law 106-248—into law. The Baca Ranch, after more than a hundred years, was once again in the public domain.¹⁷ After

¹⁴ Martin, *Valle Grande*, 117; *Albuquerque Tribune*, issues of September 24, 1997 and October 17, 1997.

¹⁵ Martin, *Valle Grande*, 118–119.

¹⁶ Martin, *Valle Grande*, 119–120.

¹⁷ *Los Angeles Times*, November 26, 1999; Martin, *Valle Grande*, 120–122.

Senator Domenici's retirement Senator Bingaman had concerns about the long-term sustainability of the trust model. Senator Bingaman, along with newly elected Senator Tom Udall, began exploring management alternatives for the preserve. Accordingly, the senators requested the National Park Service to update its 1979 study of alternatives. The resulting 2009 report confirmed the national significance and suitability of Valles Caldera, and determined that the feasibility of the unit for inclusion in the national park system had increased since 1979. Senator Bingaman in 2010 sponsored a bill to transfer administrative jurisdiction of the preserve to the National Park Service believing that "the National Park Service is best suited to manage the preserve while ensuring its long-term conservation." Although Bingaman retired before his legislation was passed by Congress, the New Mexico congressional delegation, including senators Tom Udall and Martin Heinrich, helped pass the bill as part of the National Defense Authorization Act for Fiscal Year 2015. Signed by President Barack H. Obama on December 19, 2014, Valles Caldera officially became a part of the national park system.¹⁸

Historic Properties Summary and Recommendations

The various actions that helped the Baca Ranch become a federally owned parcel took place well away from the Jemez Mountains of northern New Mexico. Because none of those actions had a physical component within the present-day national preserve, there are no associated sites to be considered for nomination to the National Register of Historic Places. Perhaps the only building that is thematically related to preserve administration is the Valle Grande Entrance Station. This building, however, was constructed circa 2009, and is thus too new at this time to qualify for National Register eligibility.

¹⁸ NPS, *Valles Caldera National Preserve: An Update Report of the NPS 1979 New Area Study* (Lakewood, CO, U.S. Dept. of the Interior), 2009; S.3452 111th Congress (see Introductory statement, pages S4551-3 in <https://www.congress.gov/111/crec/2010/05/27/CREC-2010-05-27-pt1-PgS4531.pdf>); *Public Law 113-291* (December 19, 2014), Sec. 3043; 128 Stat 3794.

CHAPTER 10: SUMMARY, RECOMMENDATIONS, AND CONCLUSIONS (Elliott and Norris)

Summary

In Chapter 1, the purpose, goals, and justification for this historic resource study were described. On June 1, 2020, the authors—under the direction of Regional Historian Angela Sirna—formalized a task agreement to research and write a historic resource study for Valles Caldera National Preserve. As noted in the agency’s *Cultural Resource Management Guideline* (called NPS-28) a historic resource study, or HRS,

provides a historical overview of a park or region and identifies and evaluates a park's cultural resources within historic contexts. It synthesizes all available cultural resource information from all disciplines in a narrative designed to serve managers, planners, interpreters, cultural resource specialists, and interested public as a reference for the history of the region and the resources within a park. Entailing both documentary research and field investigations to determine and describe the integrity, authenticity, associative values, and significance of resources, the HRS supplies data for resource management and interpretation. It includes the preparation of National Register nominations for all qualifying resources and is a principal tool for completing the Cultural Landscapes Inventory and the List of Classified Structures. The HRS identifies needs for special history studies, cultural landscape reports, and other detailed studies and may make recommendations for resource management and interpretation.¹

As noted in the project’s scope of work,

The cooperator will prepare an Historic Resource Study for Valles Caldera National Preserve. This will include the collection, evaluation, synthesis, and presentation of data and research findings on the history themes and historic resources of the park and area, as well as comprehensive GIS mapping of resource zones by context. This project requires a thorough multi-year research effort in primary and secondary sources (narratives and all graphics such as photographs and mapping) for the major historical themes, identified below, to complete a multi-chapter narrative history and context for identifying, evaluating, and interpreting the significance of the historic resources associated with the park. To accomplish this, the HRS shall require sustained documentary research and field investigations to determine and describe the integrity, authenticity, associative values, and significance of the park and its resources.

The document has been resource oriented, meaning it was not a research document *per se*, although research was required to provide archaeological and historic context for the study findings, “identifying, evaluating, and interpreting the significance of the historic resources associated with the park.”

¹ NPS, *NPS-28: Cultural Resource Management Guideline*, Chapter 2 (Research), Section E (Baseline Research Reports), 5; https://www.nps.gov/parkhistory/online_books/nps28/28chap2.htm. Note that the words “archaeology”¹ and “prehistory” do not appear in this guideline. However, the call is made to synthesize “all available cultural resources information from all disciplines,” of which, in these circumstances, archaeology is a key element.

Recommendations

This section is a summary of the author's recommendations for VALL archaeological sites (as discussed in Chapter 3) and also for historic period sites (as discussed in chapters 4 through 9).

Archaeological Sites Recommendations

Chapter 3

Our basic recommendations for VALL's archaeological sites then are these:

- Prioritize and add an annual National Register evaluation and nomination element to the VALL cultural resources management program.
- Consider three thematic National Register nominations using Multiple Property Documentation Forms for archaeological resources:
 1. Obsidian Procurement and Tool Production:
 - Consider non-site or lithic landscape approach;
 - Consider NHL nomination for Cerro del Medio Rhyolite and other obsidian sources;
 - Consider “Sister Park” partnership with other parks;
 - Investigate World Heritage Site, or World Biopark inscription.
 2. Rockshelters of the Valles Caldera;
 3. Indigenous Agriculture on the Banco Bonito.
- Evaluation of sites appropriate for the three preceding multi-site nominations will require research and fieldwork. Explore internal (NPS) and external sources for partnerships and funding for such work.
- Consider nominations of individual sites with special or outstanding characteristics, like other obsidian sources, Cerro la Jara, or Old Fort (if found).
- Consider cultural landscape analysis as a way to enhance VALL's cultural resource planning, its educational and interpretive programs, and for Section 110 compliance.
- Complete an Archaeological Overview and Assessment. This study is in progress, but should be completed as soon as possible, and will provide important research-based information and analysis to guide future archaeological studies at VALL that is complementary to the resource-based information in the current study.
- Consider Archaeological Identification and Evaluations Studies, particularly in areas relevant to the site themes identified in the present document, such as Cerro del Medio, Banco Bonito, and rockshelters.
- Complete an inventory and curation plan for collected artifacts. Some of these may be *eligible* for National Register nomination as objects, particularly if associated with sites to be nominated.
- Conduct an Ethnographic Overview and Assessment, a Tribal Affiliation Study, and a Traditional Use Study to identify ethnographic resources and issues that are important to indigenous and other local groups. Use the information in the preserve's cultural resources management, planning, interpretation, and education programs. Consult with all associated

Native American tribes regarding National Register nominations, National Historic Landmark nominations, cultural landscape studies, UNESCO inscriptions, and other cultural resource management decisions.

- Consult with the New Mexico SHPO regarding partnerships for National Register Nominations.
- NPS recommends that VALL add appropriate data to the NPS CRIS-AR database. The CRIS (Cultural Resources Inventory System) is relatively newly integrated system within NPS that “replaces three legacy inventory systems, ASMIS (archeology), CLI (cultural landscapes), and LCS (historic “classified” structures), and reinstates the ERI (ethnographic resources).”²
- Enter missing GIS and tabular data from VALL projects into the NMCRIS, and upload reports and forms as well. This should be done as a professional courtesy to compliance officials and researchers, and as archival backup for reports and forms. Although pandemic restrictions have created a somewhat unique situation vis-à-vis this report, the evaluation of archaeological resources done here would have been far easier and more thorough had the site data and site forms, and the survey reports been available from the NMCRIS. Working with the NMCRIS involves several steps, not just registration to get Activity and Site (LA) numbers. The New Mexico SHPO has for some time required that survey and site data be entered online, and that digital copies of survey reports and NIAF and LA forms be uploaded to the NMCRIS. The NMCRIS is a unique and world-class resource in which VALL should fully participate.

Historic Period Sites and Properties Recommendations

Chapter 4

Jemez Springs to Sulphur Springs Route

Four different routes have been outlined in this section.

- The segment between Albuquerque/Bernalillo and Jemez Springs is not relevant to this study, because it is entirely outside the boundaries of Valles Caldera National Preserve.
- Regarding the segment between Jemez Springs and Sulphur Springs, the great majority of this route is located outside the boundaries of Valles Caldera National Preserve. The segment located within the preserve (VC08), less than one mile long, is today a dirt road, and in all likelihood is along its historic footprint. This route was a trail during most of the 1880s, but it has been shown as a road on maps since the early 1890s. It is, therefore, potentially *eligible* to the National Register of Historic Places as a site, with statewide significance, under Criterion A (which pertains to activities or patterns of an area’s development).³
- The road segment between Sulphur Springs and Valle San Antonio has been identified on maps since the late 1890s and has long been used for purposes related to managing the Baca Ranch. The road, then as now, is a relatively narrow dirt road, and is thus potentially *eligible*

² <https://apps.cr.nps.gov/CRIS/>.

³ National Park Service, *How to Apply the National Register Criteria for Evaluation; National Register Bulletin* (Washington, the author, 1997), 5, 7; see https://www.nps.gov/subjects/nationalregister/upload/NRB-15_web508.pdf.

to the National Register of Historic Places as a site, with local significance, under Criterion A. Further analysis of this route, however, is necessary to ensure that 1) the historic route and the present route (VC08) follow the same right-of-way, and 2) the road otherwise retains its historic integrity.

- The road segment that begins on VC08 just north of the Alamo Canyon mouth, and continues east-northeast for several miles to present-day route VC02, does not appear to be part of any present-day road. Archaeological field investigations will be necessary to locate this route, after which it can be evaluated for its National Register eligibility. The potential eligibility of VC08, and similarly eligible preserve roads, may be diminished due to issues of integrity due to blading and possible realignments during the intervening years.

Valle Pass Route

The Valle Pass Road includes considerable mileage east of Valles Caldera National Preserve. This included an extensive segment east of Valle Pass that was inventoried and photographed in 1979, then again in 2002. Inasmuch as the eastern boundary of the preserve is approximately one-half mile east of Valle Pass, most if not all of the inventory work undertaken in October 2002 (for the “Valle Pass, Pajarito Section”) is on U.S. Forest Service land and is, therefore, not relevant to this study. But what was inventoried in late October 2001 (for the “Valle Pass, Valles Section”) offers considerable information about this road. This inventory notes that a significant majority of the Valle Pass Route located within Valles Caldera National Preserve is visible. Because of its historical importance and its pristine condition, moreover, both this segment and its counterpart east of the preserve are potentially *eligible* to the National Register for Historic Places as a site, with statewide significance, under Criterion A (which pertains to activities or patterns of an area’s development).

Santa Clara Canyon Route

As noted above, only the westernmost four-mile segment of the Santa Clara Canyon route is located within present-day Valles Caldera National Preserve, that segment being within the valley of Rito de los Indios. This segment, however, has seen little recent use; a U.S. Forest Service map published in 2006 noted that this two-mile segment was closed to all motor vehicle use, and following the devastating 2011 Las Conchas fire, this road segment was severely damaged by post-fire erosion. Perhaps as a result, a topographic map published in 2020 omits this route when on Santa Fe National Forest land.⁴

As noted above, approximately 80 percent of the Santa Clara Canyon route is on the Santa Clara Indian Reservation, and approximately 6 percent of the route is on U.S. Forest Service land. For the purposes of this study, therefore, only the 14 percent of the route located on National Park Service land will be evaluated for its eligibility to the National Register of Historic Places. Along that four-mile segment, the existing unpaved road following Rito de los Indios, in all probability, follows the same approximate right-of-way that has been followed by wagons since the 1890s. It is, therefore, potentially *eligible* to the National Register of Historic Places as a site, with local significance, under Criterion A. Before a more definitive determination can be made, however, further map analysis and a field investigation is needed to both ensure the exact location of the historic route and the condition of the present road surface.

⁴ USGS, Polvadera Peak, NM Quadrangle, 1:24,000, issues of 2011, 2013, 2017, and 2020; U.S. Forest Service, “Santa Fe National Forest” (map), 1:126,720, 2004, reprinted 2006.

San Antonio Springs Route

The historical San Antonio Springs route begins along present-day State Highway 126 and ascends San Antonio Creek, on U.S. Forest Service land, to San Antonio Springs. It then continues to ascend the creek bottom to where it crosses into the Baca Location, after which it trends in an easterly direction across Valle San Antonio to its junction with both the Santa Clara Canyon route (see above) and the Vallecitos route (see below). Most of the historical route between State Highway 126 and San Antonio Springs is in the same general location as present-day Forest Service Road 376, while most of the historical route located within Valles Caldera National Preserve is encompassed by roads VC08, VC09, and VC10. Because the route within the preserve appears to be the same route that has been used since the late nineteenth century, and because it remains as a dirt road, the entire route within the preserve appears to be potentially *eligible* as a site, of local significance, to the National Register of Historic Places.

Vallecitos Route

As was noted above, the Vallecitos Route—between Jemez Pueblo and Valle Toledo—is composed of two distinct sections: a southern segment between Jemez Pueblo and Vallecitos de los Indios, and a northern segment between Vallecitos de los Indios and Valle Toledo. Because none of the southern segment is on lands within Valles Caldera National Preserve, this study is not concerned with this segment regarding its eligibility to the National Register of Historic Places.

Regarding the Vallecitos Route's northern segment, most of this segment is located within Valles Caldera National Preserve. As noted in the bullet points above, however, some portions of this route have been used for a longer period of time than others. Generally speaking, those portions of the road are most likely to be *eligible* for the National Register (with local significance) if they are proven segments of dirt road that were used for significant periods of time prior to 1970. The following portions of this segment appear to fit those criteria:

- That portion of Road VC02 between Cerro Piñon and the southern end of Cerro Santa Rosa,
- That portion of Road VC02 between the southern end of Cerro Santa Rosa and Valle San Antonio, and
- The segment of unimproved road through Puerto Trasquilar, between the southern end of Cerro Santa Rosa and Valle Toledo.

So far as is known, only a short segment of the northern segment of the Vallecitos Route between State Highway 4 and Cerro Piñon—specifically, the segment immediately south of the Valle Grande Entrance Station—is currently being used as a road, and the exact location of the remainder of that road within Valle Grande has not yet been relocated or surveyed. Map analysis and/or field investigation will be necessary in order to locate this road segment. Only after this segment has been located can an evaluation be made regarding its National Register eligibility.

Bland Canyon–Sulphur Springs Route

Today, only portions of the Bland Canyon–Sulphur Springs route can be easily identified. An overview of the various segments that comprise this route follow.

- Between Cochiti and the former Bland townsite, the historical route is now an unimproved road. This entire segment, however, is outside of the boundaries of Valles Caldera National

Preserve, so its eligibility for the National Register of Historic Places is not a focus of this study.

- Between the former Bland townsite and the southern end of Valle Grande, most of this route has been abandoned. These abandoned segments are located on Upper Horn Mesa, in Medio Día Canyon, and in Cañon del Norte. The northern end of this segment—specifically, a short segment located on either side of Paso del Norte—continues to serve as a road. A minor portion of this segment, at its northern end, is on National Park Service land, and depending on further map analysis and field verification, it may be *eligible* to the National Register as a site of local significance. The remainder of this segment is on either U.S. Forest Service or private lands, and is not a focus of this study.
- Between the southern end of Valle Grande and El Cajete, the historical route was abandoned many years ago, and both map analysis and a field investigation may be necessary to locate this route more specifically. Most if not all of this historical route segment appears to be located within Valles Caldera National Preserve. Depending on further research, however, small portions of this route segment may be on U.S. Forest Service land.
- Between El Cajete and the route’s western terminus just south of Sulphur Springs, almost all of this historical route segment is on NPS land; and the entirety of the route segment on NPS land is still being used as a dirt road. Depending on further map analysis and field verification, the entire NPS-owned segment may be *eligible* to the National Register as a site of local significance.

Guaje Canyon and Quemazon Canyon Routes

The western terminus of both the Guaje Canyon Trail and the Quemazon Canyon Trail are located in Valles Caldera National Preserve, but only a mile or less of each trail is located on National Park Service land. The vast majority of both trails are located east of the preserve, primarily on land owned by the U.S. Forest Service and the San Ildefonso Indian Reservation.

For the purposes of this study, those portions of the two trails that are located on non-NPS land are not under consideration for eligibility to the National Register of Historic Places. Of the relatively short sections of these trails that are located in Valles Caldera National Preserve, both have been the subject of a field investigation.

The Guaje Canyon trail, which Los Alamos historian Dorothy Hoard named as the San Ildefonso/Jemez Trail, was first investigated in October 1978. Then, in late November 2001, Hoard teamed with three other Los Alamos residents to conduct a detailed reconnaissance of this route from Valle de los Posos to the eastern Valles Caldera boundary (marked by a double fence line) and beyond to the drainage divide. Extensive notes and photographs were taken. The group was unable to find any evidence of the trail in the meadow near the trail’s western terminus, but along the adjacent slopes the team found that “the tread of the trail is not apparent, but the route is well-marked by blazes its entire length.”⁵ Inasmuch as the team was able to locate the greater part of this route within Valles Caldera National Preserve, this route appears to be *eligible* as a site, of local significance, to the National Register of Historic Places.

Also in the fall of 2001—both in late October and late November—the team searched for evidence of the Quemazon Canyon Trail, but without success. A search was made both at its western terminus (in the Valle de los Posos), at the double fence line that separates Valles Caldera from U.S.

⁵ Dorothy Hoard, *Documentation of Historic Routes Over the Sierra de los Valles, Report to the Board of Trustees, Valles Caldera Trust* (January 2002), pp. 6–7, 23–32.

Forest Service land, and along the Sierra de los Valles drainage divide. The team noted that “some old aspen writing and cut branches were found, but a route could not be traced.” Given the fact that a gas pipeline had been built along this route in 1950, the team concluded that “It may be that the construction of the pipeline service road has obliterated any sign of the old route.”⁶ The lack of known evidence related to this route suggests that this route appears not to be *eligible* to the National Register of Historic Places.

New Mexico Highway 4

New Mexico Highway 4 crosses approximately six miles of Valles Caldera: 3.5 miles in its southeast corner and another 2.5 miles in its southwest corner. As noted above, the mileage in the southeast corner was paved between 1954 and 1963, while that portion in the southwest corner was paved between the mid-1960s and the mid-1970s. Both of those paved segments resulted in realignments, leaving short segments of unpaved highway immediately adjacent to the paved highway in the southeast corner (just north of Rabbit Mountain, for example) and a substantial length of unpaved highway segment in the southwest corner. Some of the paved section of Highway 4 in the preserve’s southwest corner is *not eligible* for the National Register of Historic Places because it has not yet reached the 50-year threshold for eligibility. But the remainder of the Highway 4 mileage, both paved or unpaved, has not yet been evaluated regarding its National Register eligibility, and these segments—along with associated features such as culverts and other drainage features—should be evaluated as part of future project work.

Other Preserve Routes

Of the nine routes mentioned in this section, most have the potential for eligibility, as sites of local significance, to the National Register of Historic Places.

- Along the route of the Bland Canyon spur is presently a recreational trail. In order to determine National Register eligibility, a field investigation will be needed to determine the route of the historical road in comparison with the present-day trail, along with the amount of evidence located related to the historical road. (Note: the “Baca Ranch Headquarters Area” National Register nomination, first submitted in December 2015 and not yet finalized, lists the “Bland Route spur road” as a contributing element to that nomination.)
- Of the Valle Grande–Scooter Pass route, the wooded section of the Valle Grande road has been relocated, but no similar investigation has taken place in the grasslands north of the wooded section. Of the Scooter Pass road, the post-investigation evidence is inconclusive; as Dorothy Hoard noted, “Though the [field] team believes that a historic road came through Scooter Pass, not enough remains to definitively locate the route.”⁷
- Regarding the Vallecitos eastern spur route (western leg of VC04), as well as the eastern leg of VC04, both present-day route segments may well be the same as their historical counterparts. If field investigations corroborate that association, Road VC04 has the potential to be *eligible* as a site of local significance to the National Register.
- Roads VC11 and VC14, along with roads VC03 and VC06, appear to be of sufficient vintage to be potentially *eligible* to the National Register. But roads VC07 and VC12, along with a portion of Road VC06, may have been constructed less than fifty years ago and thus do not qualify for the National Register.

⁶ *Ibid.*, p. 7.

⁷ Hoard, Report VCNP CR R2003-026, September 2003, 9.

Telephone Lines

As noted above, much is known about the location of the historic telephone lines within the preserve, as evidenced by both historic maps and Janie O'Rourke's exhaustive field investigations along adjacent U.S. Forest Service land. Within the preserve, various cultural resource reports have recorded several sections of these lines and described the associated artifacts, but no general report similar to O'Rourke's study has focused on preserve lands. This study recommends the completion of such a report. Until such an effort takes place, however, any evaluation of the potential National Register eligibility of these telephone-line corridors would be premature.

Gas Pipeline

As noted above, the gas pipeline across the northern end of the preserve, which is part of the 130-mile-long pipeline between Farmington and Los Alamos, was built in 1950. Since that time, the company's owners have periodically maintained it, but this maintenance has not required significant excavation activities along the pipeline right-of-way within the preserve. At present, only a small portion of the pipeline that crosses the preserve—located in Valle San Antonio—is above ground or otherwise visible. Various agencies, including the U.S. Forest Service, Valles Caldera Trust, and the New Mexico State Historic Preservation Office have evaluated the pipeline and have concluded that no part of it within the preserve is *eligible* for the National Register of Historic Places.⁸

Chapter 5

Ecological Modifications Due to Overgrazing

This section has noted several examples of ecological modifications that have taken place on the Baca Ranch over the years and, based on a consistent pattern of overgrazing that appears to have taken place at the ranch during the early and mid-twentieth century, many more physical manifestations of overuse may well come to light by future researchers. As they apply to National Register of Historic Places criteria, however, these examples of ecological modifications do not fit the traditional definition of "historic places." While the National Register, among its criteria, allows for districts that are either "farms with large acreage" or "rural historic districts," the ecological modifications that have thus far been identified on this ranch do not appear to be sufficiently iconic or cohesive to warrant nomination to the National Register.⁹

Boundary Markers

The Baca Location boundary, as noted above, was surveyed four times: in 1876, 1909, 1912, and 1920–1921. Three of those surveys—all except the 1909 effort—were by federal government surveyors, and all three government surveys involved the placement of new markers (stone mounds, tree blazes, or brass capped poles) along what the surveyors perceived as the ranch's exterior boundary. For various reasons, the number of markers physically placed along the boundary is not

⁸ Anastasia Steffen to Frank Norris, email, July 7, 2021 notes that NMCRIS listing 87769 provides documentation for the various agencies' decisions.

⁹ National Park Service, "How to Define Categories of Historic Properties," *National Register Bulletin; How to Apply the National Register Criteria for Evaluation* (Washington, D.C., the author, 1997), 6; https://www.nps.gov/subjects/nationalregister/upload/NRB-15_web508.pdf

known, but the best way to account for them is to utilize the reports and maps associated with each survey effort and to search for each marker in the field. Of those that were placed at one time, those marked by tree blazes are most likely lost, but of the remainder, many if not most of these markers may still exist. Locating these exterior boundary markers, and getting an accurate GPS reading for each, is an important part of a comprehensive inventory of cultural sites associated with the preserve. Also important to the inventory process is obtaining a descriptive listing of the various U.S. Geological Survey benchmarks that are located within the preserve.

Regarding the eligibility of these features to the National Register of Historic Places, the established criteria recognize “boundary markers,” “mileposts,” and “monuments” as “objects.” The guidelines, however, caution that “small objects not designed for a specific location are normally *not eligible*.” These boundary markers physically resemble thousands of similar objects that have been placed by USGS survey personnel over the years. Neither the exterior boundary markers nor the various interior benchmarks, however, have been comprehensively inventoried. These various markers have not yet been evaluated for their eligibility to the National Register of Historic Places.¹⁰

Sheep Camps and Culturally Modified Trees

Because of the longstanding interest in aspen arbor glyphs in Valles Caldera National Preserve, preserve staff have amassed a large, sophisticated database of information related to these trees. These trees, which have significant cultural value due to their longtime associations with New Mexico’s *pastores* and *camperos*, potentially qualify for the National Register of Historic Places. Individual CMTs would potentially qualify as sites, of statewide significance, inasmuch as one site category recognizes the importance of a “natural feature (such as a rock formation) having cultural significance.” The preserve’s site log, moreover, has recorded that one of its inventoried aspen carvings sites (see Appendix E, Table E1) is *eligible* to the National Register for Historic Places. Given the large number of identified CMTs, preserve staff may wish to work with the New Mexico Historic Preservation Office on the proper type of nomination to submit. (A previous nomination for a group of CMTs, approved in 2000, took place at Great Sand Dunes National Park and Preserve in Colorado.)

The large number of CMTs, moreover, combined with the proven association between CMTs and sheep camp sites, suggests that the location of these CMTs should be incorporated into future research efforts that are focused on locating sheep camp sites. As noted above, those who stayed in sheep camps may well have made minor improvements to these sites (firepits, trenches, rock rings, or rock shelters), and these short-term residents may also have discarded miscellaneous camp debris along with metal items (lard pails, coffee cans, tobacco tins, etc.) that a metal detector would be able to locate. Therefore, the existing data sheets pertaining to CMTs should be reexamined to see whether any notes were compiled about nearby surface features. Regardless, the location of existing CMTs offers a significant potential for future researchers to discern and describe scores if not hundreds of sheep camp sites.

¹⁰ National Park Service, “How to Define Categories of Historic Properties,” *National Register Bulletin; How to Apply the National Register Criteria for Evaluation* (Washington, D.C., the author, 1997), 5; https://www.nps.gov/subjects/nationalregister/upload/NRB-15_web508.pdf.

Buildings and Structures

As has been noted in Table 5.1 and Table 5.2, most of the ranching-related buildings and structures still standing within Valles Caldera National Preserve have been described by historians and architects and have been evaluated—sometimes several times—for their eligibility to the National Register of Historic Places. Some of these efforts have focused on the ranch’s headquarters area, while others have gone farther afield. They are listed below.

- In 2003, A. Abbott and T. Cordua from the Jemez Ranger District, Santa Fe National Forest, U.S.D.A. Forest Service, submitted a Headquarters Area Heritage Resources Survey which described and evaluated, for the National Register, various Baca Ranch headquarters-area buildings. The New Mexico State Historic Preservation Office reviewed the buildings in this report for National Register of Historic Places eligibility.
- In November 2007, Shannon Dennison and others, representing SWCA Environmental Consultants completed a three-volume report, *Documentation and Preservation of Historic Buildings on the Valles Caldera National Preserve, Sandoval County, New Mexico*. This HSD (historic structure documentation) has generally functioned as VALL’s historic structures report.
- In September 2014, Barbara Zook, an architect in New Mexico’s State Historic Preservation Office (SHPO), reviewed the recommendations in the SWCA report and provided an independent evaluation.
- In December 2015, James Wright Steely of SWCA Environmental Consultants, along with others, completed a 90% draft version of the “Baca Ranch Headquarters Area” National Register of Historic Places (NRHP) district nomination. This document has not been finalized.
- In 2020, Helen Erickson and Crystal Dillahunty from the University of Arizona, as part of a National Park Service task agreement, completed a draft *Cultural Landscape Inventory* (CLI) for the Baca Cabin Area. This document has not yet been finalized.
- At the time of this printing, a contractor is working on an adaptive reuse plan and a revised historic structures report for VALL’s cabin-area historic district.
- Most of these buildings and structures have also been inventoried and described in the preserve’s ongoing site log, historical items of which are summarized in Appendix E, Table E1. The site log also provides National Register eligibility recommendations for some of the inventoried sites.

Because one or more of the above reports has already described and evaluated most of the preserve’s buildings, buildings that have been previously evaluated will not be reexamined in the present study. As noted in the tables above, however, there are significant discrepancies in determinations of eligibility (DOE’s) between the various sources, particularly between HPD’s 2014 evaluation and 2020 Cultural Landscape Inventory. These resources, as needed, should be reexamined and reevaluated.

The only buildings in the preserve that have not been thus described and evaluated are two movie-set structures in the Valle Grande and the Valle Grande Entrance Station. These buildings were erected within the last thirty years and are thus unlikely, at this time, to be *eligible* for nomination to the National Register. In addition, the Skinning Shed and Skinning Shed Barn, along with the Union

Oil-era “guard/entrance station” in the southwest corner of Redondo Meadows, have not yet been evaluated for National Register eligibility. Most of these buildings, however, have been inventoried and evaluated in the preserve’s site log, as noted above.

Stables and Corrals

At Valles Caldera National Preserve, it has been more than sixty years since an appreciable number of sheep have grazed its valleys and hill slopes. Cattle, however, have grazed each year at the preserve since the early twentieth century and still return each spring, summer, and fall. As noted above, there were at one time corrals used for sheep in at least six different locations on the preserve, and compiled site records note that two sheep pens have been identified.

In addition, there is considerable evidence of corrals that hearken back to the ranch’s century-old cattle grazing tradition. Today, the Old Barn in the headquarters area, built in 1941, has long been surrounded by a milled-wood corral, and extensive steel-pipe corrals are found adjacent to the San Antonio Creek cabin, the Black Corrals near the present-day Valle Grande Entrance Station, and in scattered other locations. In addition, a set of corrals—adjacent to a large horse paddock—remains from “Pat” Dunigan’s ill-fated attempt to establish, on this ranch, an experimental training facility for thoroughbred horses.

Based on site-log records, nine corrals have been considered for nomination to the National Register of Historic Places. The wooden corral adjacent to the Old Barn (Salt Barn) appears to be an excellent candidate for nomination because of its age and its relationship to a structure that has also been judged, in multiple publications, as being National Register *eligible*. Other corrals have also been evaluated as being *eligible*. The remaining corrals, not yet inventoried, will need to be evaluated as part of future cultural resource work.

Fences and Stock Tanks

Based on the historic narrative, various individuals—associated with both the Bond and Dunigan families—were responsible to installing scores if not hundreds of miles of fence on the Baca Ranch property, both along its exterior boundaries and also to create various interior paddocks. In 2009, midway through the period in which the Valles Caldera Trust managed the Baca Ranch property, the trust’s staff completed an environmental assessment that, among its other recommendations, advocated that a substantial portion of the ranch’s internal fencing should be removed. (This report, dated April 7, 2009, was titled *Environmental Assessment, Multiple Use and Sustained Yield of Forage Resources*.) During the years that followed the completion of this report, most if not all of the fencing recommended for removal was in fact taken down. Of the remaining mileage of fencing, only one segment of fencing has been inventoried in the preserve’s site log; it was recommended as not *eligible* to the National Register, but New Mexico’s State Historic Preservation Office did not concur and instead recommended that LA136371 should be considered undetermined until evaluated in the context of ranching and grazing at the caldera (HPD log 106804). Other segments in the preserve are yet to be inventoried and evaluated.

Scattered about Valles Caldera National Preserve are more than a hundred stock tanks, also known as stock ponds or watering holes. The oldest of these appear to date to between the mid-1950s and the early 1960s. Many more of them, smaller than the earlier stock tanks, date from the mid-1960s,

and scores more were excavated more recently. Although many of these stock tanks are of sufficient age to qualify for the National Register of Historic Places, none have yet been identified as eligible.

Chapter 6

Valle Grande Hay Camp

As noted in the previous paragraph, the actual site of the Valle Grande hay camp is the focus of considerable speculation. Several authorities have postulated its location, but as yet, its location has not been verified. During the summer of 2020, archaeologists in an area thought to have been historically associated with the hay camp located several historic artifacts, including ceramics that appear to date to 1851. Further testing and analysis of this area, however, is needed to both verify the actual hay camp location and, if verified, to determine its extent and complexity. Only at that time can further steps be taken to evaluate the hay camp for eligibility to the National Register of Historic Places.

Camp Valles Grandes (Los Valles, Old Fort)

The actual site of Camp Valles Grandes is the focus of considerable speculation. Several authorities have postulated its location, but as yet, its location has not been verified. During the summer of 2021, a group of student geophysicists was scheduled to conduct investigations in an area thought to have been historically associated with Camp Valles Grandes. That and perhaps other investigations, however, are needed to both verify the actual camp location and, if verified, to determine its extent and complexity. Only at that time can further steps be taken to evaluate the camp for eligibility to the National Register of Historic Places.

Sulphur Springs

At Sulphur Springs, over the years, various entrepreneurs have erected a broad range of structures: some for mining, others for the health and tourist trade. The principal mining-related structures have been 1) a twenty-foot-deep timbered mine shaft, purportedly dating back to the era of Spanish occupation, and 2) a sulphur processing mill that was built in 1902 under the direction of Mariano S. Otero.

In order to serve the tourist and health-resort client, at least two hotels have been built adjacent to Sulphur Springs Road, along with several nearby tourist cabins and at least two bath houses. The first known tourist-related structures apparently dated from the early 1890s, and new (replacement) structures continued to be built until 1938 if not later. Several of these structures, moreover, were still standing as late as the early 1970s, although they were in ruinous condition just a few years later.

By the dawn of the twenty-first century, however, the last of these structures—related to both mining and the tourist / health resort trade—had either deteriorated into insignificance or had disappeared entirely. Today, moreover, virtually no historical structural remains are still visible, either at the remaining fumaroles (steam vents) or in the vicinity of Sulphur Springs Road. The lack of visible remains, to be sure, does not suggest that evidence of their presence is entirely lacking. An

archaeological survey at the site, perhaps with concurrent subsurface investigations, will be necessary in order to determine whether any remains are *eligible* to the National Register of Historic Places.¹¹

Valle Grande Tourism

Visitors, arriving either by wagon or automobile, have been attracted to Valle Grande and surrounding areas ever since the 1890s. Despite that long period of visitation, this study has identified no specific sites that are thematically related to the topic of Valle Grande tourism. (Many early rubber-tired visitors, as noted above, stopped at an informal viewpoint to gaze out on Valle Grande. That viewpoint, in all probability, was located near the intersection of present-day State Highway 4 and U.S. Forest Service Road 36, but its specific location is not known.) Because there are no known sites thematically related to early tourist visitation, none can be considered for evaluation to the National Register of Historic Places.

Skiing

The existing literature is not particularly specific regarding the actual locations where early recreational skiing took place in the Valles Caldera vicinity. Two general locations are mentioned: areas surrounding the hut at Camp May, and Sawyer Mesa. In all probability, any improvements that may have been made in the Camp May area are now located on U.S. Forest Service land or are located on the 165-acre parcel that the Los Alamos Ski Club, in 1975, purchased from the Baca Ranch. The skiing area on Sawyer Mesa, including the area surrounding the former rope tow, was also located on U.S. Forest Service land. There are no skiing-related sites, therefore, that should be considered for evaluation in this study to the National Register of Historic Places.

Sport Fishing

Many anglers have fished along the East Fork of the Jemez River, along San Antonio Creek, and along other waterways within the Baca Location. The literature, however, does not note specific fishing “hot spots” or other named locations. It does not appear, therefore, that any fishing-related locations are under consideration in this study for the National Register of Historic Places.

Sport Hunting

The primary property related to sport hunting on the preserve is the Kiva Lodge, also known as the Dunigan Lodge or Casa de Baca. This building, erected in 1963–64, served as the headquarters and base camp for more than thirty years of Baca Location sport hunting parties. In addition, as noted in the “Hunting Agreement Between Baca Land & Cattle Company, Inc. and Baca Outfitters, Inc.” drafted in 1999, the ranch ownership stated that “outfitters may use the Huffman Cabin [Los Indios Cabin], the trailer houses, the Cupid House [Cupit Cabin or Otero Cabin], the movie set [Skinning Shed Cabin], the barn and skinning shed near the movie set [Skinning Shed Barn], [as well as] the kiva throughout the Term of this Agreement.”¹²

¹¹ National Park Service, *National Register Bulletin; How to Apply the National Register Criteria for Evaluation*, https://www.nps.gov/subjects/nationalregister/upload/NRB-15_web508.pdf, 21-24.

¹² Hunting Agreement Between Baca Land and Cattle Company, Inc. and Baca Outfitters, Inc.,” 1999; Item DX-HP, as above; Ana Steffen, email to Frank Norris, November 30, 2020.

Of the various buildings that have been used for sport hunting on the preserve, all have been evaluated previously for the National Register of Historic Places. The Kiva Lodge and the Otero Cabin are considered *eligible* for the National Register in the report, completed by SWCA in 2007. The Skinning Shed Cabin and the Skinning Shed Barn have been recommended as being “contributing” elements to the proposed Baca Ranch National Register District in the preserve’s *Cultural Landscape Inventory*, a draft of which was completed in 2020.¹³ The Los Indios [Huffman] Cabin, according to the 2007 SWCA report, “retains all seven aspects of integrity ... defined by the National Register ... [but] it does not exhibit sufficient architectural or historical significance to be considered *eligible* for NRHP nomination.”¹⁴ Preserve staff have indicated, however, that they will recommend that this cabin is *eligible* to the NRHP. Finally, the trailer houses have been removed from the headquarters area and are therefore no longer under consideration.

Chapter 7

Commercial Logging on the Baca Ranch

Industrial logging took place on the Baca Ranch for more than sixty years, from 1935 until the mid-to-late 1990s, and it was a major, economically-profitable activity from 1935 until 1972. Roads are the most easily visible remnant related to the ranch’s logging period. Various maps and aerial photographs show the location of these roads.¹⁵ Closely related to these roads is the issue of erosion control devices.

Logging on the ranch can be divided into four periods. The period between 1935 and 1940 was one of intensive logging activity, in which most of the timber resource in the southwestern corner of the ranch was subject to clearcuts. Logging at that time was carried on with relatively rudimentary equipment, roads were widely spaced on the relatively level ground, and most trees were cut with hand saws located several feet off the ground. Based on this activity, it is possible that physical evidence of both the roads and tree stumps still remain. Most of this evidence, however, has probably disappeared, for two reasons: the intervening 80-plus years has brought sufficient regrowth to cover up this evidence, and much of the acreage subjected to timber harvesting during this period was the focus of another round of logging during the mid-to-late 1990s.

Between 1940 and 1962, the New Mexico Timber Company (NMT) annually harvested a variety of timber species on the Baca Ranch. The company, in accordance to state regulations and U.S. Forest Service policies, pursued a “light cutting plan” that resulted in only relatively large trees (twelve inches in diameter or greater) being harvested. Hundreds of miles of roads were built during this period to gain access to the timber resource. These roads, typically, were spaced one-quarter to one-half mile apart from one another.

¹³ SWCA Environmental Consultants, *Documentation and Preservation of Historic Buildings on the Valles Caldera National Preserve, Sandoval County, New Mexico*, November 2007, Vol. 1, 41–42 and 59–64; National Park Service, *Cultural Landscape Inventory, Baca Cabin Area, Valles Caldera National Preserve* (2020 draft), 4, 7.

¹⁴ SWCA, *Documentation and Preservation*, Vol. 1, 69.

¹⁵ Martin, *Valle Grande*, 89, 92; USFS, *Report on the Study*, 31; Valles Caldera Trust, *Valles Caldera National Preserve; Framework and Strategic Guidance for Comprehensive Management* (n.p., the Trust, 2005?) 94.

Between 1963 and 1972, NMT continued to harvest the forested area on the ranch. But because of a change in the state's timber laws, and the availability to sell and market trees of both medium and large sizes, the company significantly increased its harvest rate—and, in so doing, carved out hundreds of additional miles of haul roads. Maps show that these roads proliferated on the northeastern slopes of Redondo Peak, the slopes of Cerro del Medio and Cerros del Abrigo, and the eastern slopes above Valle Toledo. As noted above, the logging company during this period came under fire from ranch owner Pat Dunigan because of its refusal to spend any additional funds to install erosion control devices (known in the industry as “thank you ma’ams”) on the many miles of roads it was creating. But by 1970, the lumbermen had changed their roadbuilding methodology; as NMT forester Sam Bailey noted, “the logging roads, which admittedly for decades had been left to erode, now are being ‘water barred’ once they no longer are used.”¹⁶

Since 1972, a relatively small number of acres on the Baca Ranch have been subject to first-time lumbering, with timber operators blading out several new access roads. Those roads, combined with those bladed out since the mid-1930s, meant that by July 2000, when Congress had established Valles Caldera National Preserve, some 1,400 miles of logging roads were contained within its boundaries.¹⁷

Over the years, a number of lumber mills and camps have been established on the Baca Ranch. Specifics about several of these camps, however, have been difficult to obtain. In 1935, the New Mexico Lumber and Timber established a new sawmill in Redondo Meadow, and nearby the company laid out Camp Redondo (Redondo Camp), complete with log houses, movable frame houses, a mess hall and a school. That mill and camp are well documented, and their location has been pinpointed. Camp Redondo closed in 1939.

During the 1940s and 1950s, there were various mills—all south of the ranch—to which logs were hauled. At various times, these include Ponderosa, Gilman, Bernalillo, and Albuquerque. Additional evidence, less conclusively, has also noted that several small mills were established within the ranch boundaries during this time. In 1962, for example, ranch owner Pat Dunigan noted that he had seen “four or five of these mill sites” on the ranch, each of which occupied “five or six or eight acres.” He further noted that he noticed “debris left around the mill sites. . . . I’m just talking about the camps and mill sites where the company—where employees had obviously been and had camps at that time.”¹⁸ In addition, lumberman Thomas P. Gallagher, in a 1968 deposition, referred to “various mill sites on the Baca” that had been “placed there by gyppo [contract] operators.” And NMT official Paul Weber, also as part of a court case, noted in 1965 that several places on the ranch had sawdust piles that were mute evidence of where sawmills had once existed.¹⁹ Although not further documented, it appears that if any or all of these sawdust piles can be found, that discovery will not only indicate sawmill locations, but evidence of residences and similar camp buildings might

¹⁶ *Los Alamos Monitor*, December 17, 1970, 1.

¹⁷ U.S. Congress, “Valles Caldera National Preserve Management Act (Senate Report), September 27, 2010, <https://www.govinfo.gov/content/pkg/CRPT-111srpt321/html/CRPT-111srpt321.htm>

¹⁸ James P. “Pat” Dunigan Testimony, July 19, 1968, vol. III, pp. 408–411, Exhibit DX-DS, “US Exhibits from Jemez Trial, 1779–2000,” from non-confidential trial exhibits, on file at VALL.

¹⁹ Thomas P. Gallagher, in “Record on Appeal, U.S. Court of Appeals, Tenth Circuit,” vol. III, July 18, 1968, pp. 321, Exhibit DX-DQ; and Paul Weber Deposition, April 9, 1965, pp. 35 and 59, Exhibit DX-DI; both in “US Exhibits from Jemez Trial, 1779–2000,” from non-confidential trial exhibits, on file at VALL.

also be located. These mill locations, as indicated by the sawdust piles, are most likely located adjacent to known harvesting areas that date from the 1940–1962 period.

One other logging camp location is known. It was located “at the headwaters of Redondo Creek,” and it was active in 1971 as part of the timber cutting operation in the area at that time.²⁰ Doubtless other camp locations, all dating from the 1963–1972 period, might also be found in areas adjacent to the harvesting areas that were active during that period: Cerro del Medio, Cerros del Abrigo, and Cerro Toledo. Regarding timber harvesting operations that took place after 1980, the small size of those harvests suggests that the mills or camps associated with those operations were either small or nonexistent.

Slash piles, for many years, were notably visible remnants related to commercial logging, particularly as it related to the chain-style logging that NMT conducted between 1963 and 1972. Historian Craig Martin noted that logging crews, in the wake of their clear cuts, typically left behind three- to six-foot high piles of jumbled limbs, brush, and debris—none of which the timber companies were willing to remove.²¹ The existence of these unsightly slash piles was a particularly sore point between ranch owner Pat Dunigan and lumber company executive Thomas Gallagher, one that contributed to Dunigan filing a lawsuit in 1964 against Gallagher’s company. Sam Bailey, who served as NMT’s forester, was quoted by one reporter as saying that “the slash, which is obviously ugly in the newly logged regions, is soon covered up by secondary growth if it is left alone.” He rejected, moreover, the option to either remove the slash (“There just aren’t enough trucks,” he intoned) or to burn it (arguing that setting the slash piles on fire would simply kill the secondary growth). Slash piles, therefore, remained for years as a prominent—and ugly—remnant of the 1963–1972 logging operations. Given the passage of many intervening years of regrowth and decay, however, these slash piles had largely decayed away and disappeared by the time the Valles Caldera Trust began to administer the area, and in recent years they have not been a management issue.²²

Although there are quite a few extant logging-related resources on the Baca Ranch—logging roads, slash piles, mills, and camps—few if any have been examined for their eligibility to the National Register of Historic Places. As noted above, the ranch contained 1,400 miles of roads in July 2000. By 2010, preserve staff had inventoried approximately 875 miles of these roads. A document published that year noted that “once the inventory is completed, a determination would be made on the number of miles of road required for management of the Preserve. Through forest restoration efforts, the existing roads that are unneeded for future management would then be closed, decommissioned or obliterated.”²³ Neither the inventoried nor the non-inventoried logging roads, however, have yet been evaluated for their National Register eligibility.

Of the remaining logging-related resources, the various slash piles scattered about the ranch were a major issue during the 1960s. But because they have largely disappeared in recent years, their potential National Register significance is lacking.

²⁰ Martin, *Valle Grande*, 93.

²¹ Martin, *Valle Grande*, 90.

²² *Los Alamos Monitor*, December 17, 1970, 1; Robert Parmenter, telephone conversation with Frank Norris, February 2, 2021.

²³ U.S. Congress, “Valles Caldera National Preserve Management Act (Senate Report), September 27, 2010, <https://www.govinfo.gov/content/pkg/CRPT-111srpt321/html/CRPT-111srpt321.htm>.

Key logging-related resources are the various lumber mills and camps, both those from the primary logging period (1935–1972) and from more recent years. The location of the preserve’s first logging camp, in Redondo Meadow, is fairly well known. From that camp, three cabins (all *eligible* to the National Register of Historic Places) plus four “cabin remains” (two of which are *eligible*) have been inventoried (see Appendix E, Table E1).²⁴ Less known is the camp located at the headwaters of Redondo Creek (active in 1971) along with seven other small mill sites, scattered across the preserve, that recent site surveys have located, inventoried and described. Three of the inventoried mill sites have been recommended as being *eligible* to the National Register. More of these mill sites will doubtless be discovered and inventoried as these site surveys continue. Each non-inventoried mill site needs to be evaluated for its National Register eligibility as part of future cultural resource endeavors.

Chapter 8

Drilling Projects and Film-Set Construction

Water System Proposals

The mid-1930s plans of the City of Albuquerque, combined with those of the Middle Rio Grande Conservancy District, to impound two different watercourses in the Baca Ranch vicinity were not implemented, and so far as is known, there were no on-the-ground improvements that were related to those proposals. As to the Atomic Energy Commission’s 1949 plans to tap into the Baca Ranch’s water supplies and transfer them to Los Alamos, evidence relating to that project include the sixteen holes bored that year into Valle Toledo and Valle Grande, along with supporting structures such as pipes, valves, wellheads, and earthen diversions. Several of these water development and water diversion resources have been evaluated for eligibility to the National Register of Historic Places, with none having been found eligible. However, studies to date have not yet addressed the remainder of these resources and their National Register eligibility.

Geothermal Energy Development

As noted above, the southwestern end of the Baca Ranch was the scene of an intense, highly-capitalized search for geothermal energy between 1960 and the early 1980s. During that period, drilling rigs came onto the ranch and dug twenty-five different wells, named Bond. No. 1 and Baca No. 1 through Baca No. 24, and at many of those well sites, more than one drilling operation took place. Additional improvements included an administrative complex, which Union Geothermal constructed in Redondo Canyon during the mid-1970s; preparation work for a 50-megawatt power plant, constructed upstream from the administrative complex during the same period; a guard shack along the Baca Ranch’s southwestern boundary; and numerous other improvements, some of which were removed once drilling operations had terminated.

²⁴ Details about these three cabins and the four “cabin remains” are noted on site forms LA 017141 through LA 017146 along with site form LA 133540.

Of these improvements, which were built more than forty years ago, little remains today. The most substantial physical reminders related to geothermal exploration are Union Geothermal’s administrative complex and a small guard shack. The proposed power plant site today is marked by only low concrete walls, slabs of concrete floors, an electrical line and scattered apparatus. The drilling sites, moreover, are surrounded by flat, cleared areas stretching fifty feet from the wellsite in all directions. Most of the wellsites are marked by green, four-foot round metal standpipes that denote where the wells were bored. These sites have been plugged and abandoned. Four remaining geothermal well sites, however, have not yet been plugged and abandoned; all are marked by steel caps near the ground instead of standpipes.²⁵

As of the date of this report, the administrative complex has been judged to be *not eligible* to the National Register of Historic Places (see Table 5.2). both the guard shack and the power plant site are of *insufficient age to be eligible*. None of these properties, moreover, appear to have exceptional qualities by which they would qualify for the National Register under Criterion G. Five of the geothermal wells drilled at the Baca Ranch—Bond No. 1 and Baca No. 1 through Baca No. 4—are more than fifty years old, and they are therefore potentially *eligible* for evaluation to the National Register of Historic Places. None of these wells has yet been evaluated, however. The remainder have not yet passed the fifty-year threshold, and therefore do not yet qualify as nominated properties.

Continental Scientific Drilling Program

The Continental Scientific Drilling Program, in the Valles Caldera area, resulted in the drilling of three wells—VC-1, VC-2A, and VC-2B—between July 1984 and September 1988. Two of these wells were drilled within the boundaries of the present-day preserve, while the third (VC-1) was drilled just a few yards west of the preserve in the Banco Bonito area. The sites of these wells are marked by a flat, cleared area. The bore-hole site at VC-2B is marked by a tall (9-foot) metal pole and has been plugged and abandoned, but the VC-2A site is not specifically marked, nor has it been plugged.²⁶ These sites, due to their drilling dates during the 1980s, have not yet crossed the 50-year threshold for eligibility to the National Register of Historic Places, nor do they appear to be sufficiently exceptional that they would qualify under NRHP Criterion G.

Film-Set Construction

Since 1970, when the first motion picture was filmed in Valles Caldera, film studios have either erected or used seven buildings on the preserve. As noted in Chapter 5, several of these buildings have already been inventoried and evaluated for eligibility to the National Register for Historic Places. They are as follows:

- The skinning shed (cabin) was built in 1970 for *Shoot Out* (1971). This building has been evaluated, and considered to be a contributing resource regarding NRHP eligibility, as part of the preserve’s draft *Cultural Landscape Inventory* in 2020.
- The skinning shed (barn) was also built in 1970 for *Shoot Out* (1971). This building has been evaluated, and considered to be a contributing resource regarding NRHP eligibility, as part of the preserve’s draft *Cultural Landscape Inventory* in 2020.

²⁵ Robert Parmenter, email to Frank Norris, March 8, 2021.

²⁶ Robert Parmenter, email to Frank Norris, March 8, 2021.

- San Antonio Cabin, built about 1947, was used as part of *Peter Lundy and the Medicine Hat Stallion* (1977). It has been evaluated, and considered to be *eligible* to the NRHP, as part of the preserve’s historic structures documentation (Dennison, et al./SWCA, 2007). The cabin’s National Register eligibility was previously discussed in Chapter 5, Table 5.2.
- The ranch house, near the entrance station, was built about 1991 for *Fight Before Christmas* (later renamed *Troublemakers*) and later used for both *Last Stand at Saber River* and *The Missing*. It has not been previously evaluated for the NRHP, but given its recent vintage, it should be evaluated when it reaches fifty years of age.
- The *Buffalo Girls* Movie Set (ghost town composed of three false fronts) was built about 1993 for the *Buffalo Girls* television mini-series. It was declared *not eligible* for the NRHP as part of the preserve’s historic structures report, written by SWCA in 2007. This set has since collapsed.
- The barn near the entrance station, built in 2003 for *The Missing*. It has not been previously evaluated for the NRHP and has been moved away from the preserve.
- Walt Longmire’s Cabin, used from 2012 to 2017 for the *Longmire* television series. This cabin, built in 1918, has long been known as the ranch foreman’s house (or manager’s cabin). It was determined to be *not eligible* to the NRHP as part of the preserve’s historic structures report in 2007, but it was considered a *contributing* element to the draft Baca Ranch Headquarters Area NRHP district nomination in 2015, and also determined to be *eligible* to the NRHP in the draft *Cultural Landscape Inventory* in 2020. This building’s National Register eligibility was previously discussed in Chapter 5, Table 5.2.

Because of Valles Caldera’s longtime importance as a film venue, a quality that will likely continue well into the future, it is recommended that many of the above-mentioned buildings should be considered for National Register eligibility under a new theme, that being their connection to film production.

Chapter 9

The Long Trail Toward Public Ownership

The various actions that helped the Baca Ranch become a federally owned parcel took place well away from the Jemez Mountains of northern New Mexico. Because none of those actions had a physical component within the present-day national preserve, there are no associated sites to be considered for nomination to the National Register of Historic Places. Perhaps the only building that is thematically related to preserve administration is the Valle Grande Entrance Station. This building, however, was constructed circa 2009, and is thus too new at this time to qualify for National Register eligibility.

Conclusions and Next Steps

This historic resource study has described the rich diversity of prehistoric and historic resources on Valles Caldera National Preserve and placed them in regional context. These resources can be powerful tools for the interpretive and educational programs on the preserve. We have made specific recommendations for approaches to nominations to the National Register of Historic Places. We have recommended specific studies that might provide additional information about the resources of the preserve and help guide National Register evaluations and nominations. It has been our great honor to conduct this work and prepare this document. We hope that preserve managers

will take the information and recommendations herein into account and make informed, proactive cultural resource management decisions as the preserve moves toward its bright future.

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APPENDICES

APPENDIX A.

Table A.1. National Register properties and National Historic Landmarks within twenty-five miles of VALL

Name	County
Los Alamos Scientific Laboratory NHL	Los Alamos
Puyé Ruins NHL	Rio Arriba
San Gabriel de Yungue-Ouinge NHL	Rio Arriba
Giusewa (Jemez State Monument) NHL	Sandoval
Bandelier National Monument (2 portions) NHL and CCC National Register Historic District	Los Alamos
Los Alamos Ranch School	Los Alamos
Kuapa Ruin	Sandoval
San Juan Mesa Ruin	Sandoval
Santa Rosa de Lima de Abiquiú	Rio Arriba
Tsiping Archaeological District	Rio Arriba
Tsicumo	Rio Arriba
Rancho de Los Luceros (formerly Hacienda)	Rio Arriba
East Morada at Abiquiú	Rio Arriba
Cieneguilla Pueblo (LA 16) (aka Tzeguma)	Santa Fe
Santa Fe River Sites (16/2,16/3,16/4,16/8,16/9)	Santa Fe
Bouquet Ranch	Santa Fe
Tesuque, Pueblo of (Tatunge)	Santa Fe
San Ildefonso, Pueblo of	Santa Fe
Santa Clara, Pueblo of	Rio Arriba
Zia, Pueblo of	Sandoval
Cochiti, Pueblo of	Sandoval
Jemez, Pueblo of	Sandoval
Santo Domingo Pueblo	Sandoval
Nambe, Pueblo of	Santa Fe
San Juan, Pueblo of	Rio Arriba
La Iglesia y la Plaza de Santa Cruz de la Canada	Santa Fe
Los Alamos County Historical Museum and Archives	Los Alamos
Astialakwa Archaeological District	Sandoval
Patokwa, Pueblo of	Sandoval
Kotyiti (Old Cochiti)	Sandoval
Otowi Bridge Historic District	Santa Fe
Nambe Archaeological District	Santa Fe
Black Mesa (Tunyo)	Santa Fe
Ko-ah'-sai-ya Ruin	Sandoval
San Antonio de Padua Morada	Rio Arriba
High Road to Taos	Multiple
La Bajada Ruin (LA 7)	Santa Fe
Cerrito Recreation Site, Abiquiú Reservoir	Rio Arriba
Roybal, Ignacio, House	Santa Fe
Bond House, Espanola	Rio Arriba
Jemez Hot Springs Mineral Bath House (SR only)	Sandoval
Guaje Site	Los Alamos
Navawi	Santa Fe
Pajarito Springs Site	Los Alamos
Abiquiú Archaeological District (LA 275 and LA 4934)	Rio Arriba
Bouquet, Jean, Historic/Archaeological District	Santa Fe
La Bajada Mesa Agricultural Site	Santa Fe
Leafwater Archaeological District (LA 300, LA 918)	Rio Arriba
Tsama Archaeological District (LA 908, LA 909)	Rio Arriba
Exchange Hotel Complex	Sandoval

Name	County
Kiashita Ruin (LA 46340)	Sandoval
Boletsakwa Ruin	Sandoval
LA 44000	Sandoval
LA 483	Sandoval
LA 46341	Sandoval
Kwastiyukwa Ruin	Sandoval
LA 5920	Sandoval
LA 5918	Sandoval
Kiatsukwa Ruin (LA 133) [same as 966]	Sandoval
LA 135	Sandoval
Nanishagi Ruin	Sandoval
Unshagi Ruin	Sandoval
Wabakwa Ruin	Sandoval
LA 133 (Kiatsukwa Ruin) [same as 961]	Sandoval
Hot Springs Pueblo	Sandoval
Amoxiumqua Ruin	Sandoval
LA 385	Sandoval
LA 386	Sandoval
Pejunkwa Ruin	Sandoval
Guacamayo Ruin (Kiabakwa)	Sandoval
Wahajhamka Ruin	Sandoval
LA 24789	Sandoval
LA 24790	Sandoval
Tovakwa Ruin (Stable Mesa Ruin)	Sandoval
Hanakwa Ruin	Sandoval
Totaskwinu Ruin	Sandoval
LA 137	Sandoval
LA 128	Sandoval
LA 44001	Sandoval
LA 403	Sandoval
Pond Cabin (Dwight Young Cabin)	Los Alamos
White Rock Canyon Archaeological District	Los Alamos
Chimayo Trading Post	Rio Arriba
Mesa Public Library	Los Alamos
Gonzales, Tomas, House	Rio Arriba
La Capilla de San Francisco de Asis	Rio Arriba
Los Alamos Canyon Bridge	Los Alamos
Rio Grande Bridge at San Juan Pueblo	Rio Arriba
Otowi Suspension Bridge	Santa Fe
Santo Domingo Indian Trading Post	Sandoval
Mesa Prieta Petroglyphs	Rio Arriba
O'Keeffe, Georgia, Home and Studio NHL	Rio Arriba
Borrego Mesa Agricultural Site	Sandoval
Virgin Mesa Rock Art Site	Sandoval
Jemez Cave	Sandoval
AR-03-10-03-620	Sandoval
Chupaderos Mesa Village	Los Alamos
Corral Mesa Cavate Pueblo Site	Rio Arriba
Corral Canyon Pueblo Site	Rio Arriba
Chupaderos Canyon Small Structural Site	Los Alamos
Guaje Water/Soil Control Site	Los Alamos
Rio Chama Site	Rio Arriba
Holiday Mesa Logging Camp	Sandoval
Virgin Mesa Logging Camp No. 3	Sandoval
Virgin Mesa Logging Camp No. 2	Sandoval
Virgin Mesa Logging Camp No. 1	Sandoval

Name	County
Virgin Canyon Logging Camp No. 1 (Daniels Camp)	Sandoval
Lujan/Ortiz House	Santa Fe
Route 66 and National Old Trails Road Historic District at La Bajada	Santa Fe
Homestead and Ranch School Era Roads & Trails of Los Alamos MPL	Los Alamos
Bayo Canyon Road	Los Alamos
Beanfield Notch Road	Los Alamos
Beanfield Mesa Road	Los Alamos
Camp Hamilton Road	Los Alamos
Gonzales Road	Los Alamos
Grant Road	Los Alamos
Homestead Crossing	Los Alamos
Lujan Road	Los Alamos
Ranch School Trail	Los Alamos
Roybal Road	Los Alamos
Luhan, Martin Homestead	Los Alamos
Ranchito de Natividad	Rio Arriba
Los Alamos United States Post Office	Los Alamos
Las Acequias	Santa Fe
Rendija Canyon Traditional Cultural Properties District	Los Alamos
Camino Real-La Bajada Mesa Section	Santa Fe
Camino Real-Canon de Las Bocas Section	Santa Fe
Los Alamos Sheriff's Posse Lodge	Los Alamos
El Camino Real: La Cieneguilla South	Santa Fe
Guaje Canyon TCP District	Santa Fe
K'uuyemugeh (LA 835)	Santa Fe
El Camino Real de Tierra Adentro-La Bajada North Section	Santa Fe
El Camino Real de Tierra Adentro-La Bajada South Section	Santa Fe
Whitaker Dinosaur Quarry	Rio Arriba

APPENDIX B.

Table B.1. Previously recorded Archaic components/sites at VALL¹

LA No	Activity Type	Lithic counts	Period	Site features/ type	VALL Eligibility recommendations
LA 17137	Lithic reduction	>10,000 lithic	Late Archaic, Angloamerican	cabin remains	None
LA 26910	Lithic reduction	1,000–5,000 lithic	Archaic	artifact scatter	<i>Eligible</i>
LA 26917	Lithic-Multiple Function	>10,000 lithic	Paleoindian, Archaic, Puebloan	artifact scatter	<i>Eligible</i>
LA 82575	Lithic-Multiple Function- Rockshelter	1,000–5,000 lithic	Middle & Late Archaic, BM III, P III/IV	rockshelters	<i>Eligible</i>
LA 82576	Lithic reduction	100–500 lithic	Early to Middle Archaic	artifact scatter	Now in LA 82577
LA 82577	Lithic reduction	1000–5000 lithic	Early Archaic, Puebloan	fieldhouse, depression	<i>Eligible</i>
LA 82588	Lithic reduction	100–500 lithic	Late Archaic	artifact scatter	Undetermined
LA 133111	Lithic reduction	100–500 lithic	Late Archaic	artifact scatter	<i>Eligible</i>
LA 133157	Lithic reduction	1,000–5,000 lithic	Middle Archaic		<i>Eligible</i>
LA 133159	Lithic reduction	100–500 lithic	Middle Archaic	artifact scatter	<i>Eligible</i>
LA 133160	Lithic reduction	100–500 lithic	Middle Archaic	artifact scatter	<i>Eligible</i>
LA 133164	Lithic reduction	100–500 lithic	Middle to Late Archaic		<i>Eligible</i>
LA 133165	Lithic reduction	100–500 lithic	Paleoindian; Middle to Late Archaic	artifact scatter	<i>Eligible</i>
LA 133167	Lithic reduction	500–1,000 lithic	Late Archaic	artifact scatter	<i>Eligible</i>
LA 133180	Quarry-Lithic reduction	1,000–5,000 lithic	Late Archaic		<i>Eligible</i>
LA 133538	Lithic reduction	1,000–5,000 lithic	Late Archaic	artifact scatter	<i>Eligible</i>
LA 133897	Lithic reduction	100–500 lithic	Archaic; Ancestral Pueblo	artifact scatter	<i>Eligible</i>
LA 135611	Lithic reduction	<100 lithic	Archaic	artifact scatter	<i>Eligible</i>
LA 136373	Lithic reduction	100–500 lithic	Archaic	artifact scatter	<i>Eligible</i>
LA 136374	Lithic reduction	5,000–10,000 lithic	Archaic	artifact scatter	<i>Eligible</i>
LA 136375	Lithic reduction	100–500 lithic	Archaic	artifact scatter	<i>Eligible</i>
LA 137061	Lithic reduction	>10,000 lithic	Paleoindian; Middle Archaic; Late Archaic; Ancestral Puebloan	sheep pens	<i>Eligible</i>
LA 140256	Lithic reduction	100–500 lithic	Archaic	artifact scatter	<i>Eligible</i>
LA 148149	Lithic reduction	100–500 lithic	Archaic	artifact scatter	<i>Eligible</i>
LA 148150	Lithic reduction	100–500 lithic	Archaic	artifact scatter	<i>Eligible</i>
LA 148747	Lithic and ceramic scatter	1,000–5,000 lithic	Archaic, Coalition–Classic	artifact scatter	<i>Eligible</i>
LA 157461	Lithic reduction	<100 lithic	Late Archaic	artifact scatter	Undetermined
LA 157463	Lithic reduction	<100 lithic	Late Archaic	artifact scatter	Undetermined
LA 158846	Lithic-Multiple Function	500–1,000 lithic	Paleoindian, Archaic, Puebloan		<i>Eligible</i>

¹ The park edited this table in 2022 to update NRHP eligibility recommendations in the right column. These updates are only corrections for flaws in the sitelog provided to the authors (VCNP_sitelog_20200604_AS.xlsx); these edits are not based on any change in information or recommendations since the HRS was written.

LA No	Activity Type	Lithic counts	Period	Site features/ type	VALL Eligibility recommendations
LA 160296	Rockshelter	100–500 lithic	Archaic, Coalition–Classic	rockshelter	<i>Eligible</i>
LA 161537	Quarry-Lithic reduction	1,000–5,000 lithic	Late Archaic	quarry	<i>Eligible</i>
LA 162481	Lithic reduction	<100 lithic	Early Archaic	artifact scatter	Undetermined
LA 162482	Lithic reduction	<100 lithic	Middle–Late Archaic	artifact scatter	<i>Eligible</i>
LA 162556	Lithic reduction	<100 lithic	Archaic	artifact scatter	Undetermined; (Not a site)
LA 162557	Lithic reduction	<100 lithic	Archaic	artifact scatter	<i>Eligible</i>
LA 162561	Lithic reduction	<100 lithic	Archaic	artifact scatter	Undetermined
LA 162562	Lithic reduction	100–500 lithic	Archaic	historic dump	<i>Eligible</i>
LA 162564	Lithic reduction	<100 lithic	Archaic		Undetermined
LA 162565	Lithic reduction	<100 lithic	Archaic	artifact scatter	Undetermined
LA 162567	Lithic reduction	<100 lithic	Archaic	artifact scatter	Undetermined
LA 162578	Lithic reduction	<100 lithic	Archaic	artifact scatter	<i>Eligible</i>
LA 162581	Lithic reduction	1,000–5,000 lithic	Archaic	artifact scatter	<i>Eligible</i>
LA 165319	Lithic reduction	<100 lithic	Middle to Late Archaic	artifact scatter	Undetermined
LA 165320	Lithic reduction	lithic debitage	Middle to Late Archaic	Rockshelter Hunting blind, Unidentified rock alignment	<i>Eligible</i>
LA 165689	Lithic reduction	100–500 lithic	Archaic	artifact scatter	<i>Eligible</i>
LA 165698	Lithic reduction	<100 lithic	Archaic	artifact scatter	<i>Eligible</i>
LA 169957	Lithic reduction	100–500 lithic	Late Archaic, Anasazi	carved aspen	<i>Eligible</i>
LA 169961	Lithic reduction	100–500 lithic	Late Archaic	artifact scatter	Undetermined
LA 169962	Lithic reduction	100–500 lithic	Archaic	none	<i>Eligible</i>
LA 169965	Lithic reduction	100–500 lithic	Archaic	artifact scatter	<i>Eligible</i>
LA 169967	Lithic reduction	100–500 lithic	Archaic	artifact scatter	<i>Eligible</i>
LA 170766	Lithic reduction	<100 lithic	Archaic	artifact scatter	<i>Eligible</i>
LA 170768	Lithic reduction	100–500 lithic	Archaic	rock alignment, hearth	<i>Eligible</i>
LA 174782	Lithic reduction	<100 lithic	Archaic	artifact scatter	Undetermined
LA 175019	Lithic reduction	500–1,000 lithic	Archaic	rock enclosure, 1 carved aspen, 1 axe-marked tree	<i>Eligible</i>
LA 176351	Lithic reduction	500–1,000 lithic	Archaic	artifact scatter	<i>Eligible</i>
LA 178122	Lithic reduction	<100 lithic	Late Archaic	artifact scatter	<i>Eligible</i>
LA 178127	Lithic reduction	1,000–5,000 lithic	Unknown Prehistoric, Late Archaic, Unknown Historic	none	<i>Eligible</i>
LA 178128	Rockshelter	<100 lithic	Late Archaic	rockshelter	<i>Eligible</i>
LA 178130	Lithic reduction	100–500 lithic	Middle Archaic	artifact scatter	Undetermined
LA 178263	Lithic reduction	100–500 lithic	Late Archaic	artifact scatter	<i>Eligible</i>
LA 180427	Lithic reduction	<100 lithic	Middle–Late Archaic, Unknown Prehistoric	artifact scatter	<i>Eligible</i>
LA 180429	Lithic reduction	100–500 lithic	Unknown Prehistoric, Late Archaic	artifact scatter	<i>Eligible</i>
LA 180432	Lithic reduction	<100 lithic	Unknown Prehistoric, Middle–Late Archaic	artifact scatter	<i>Eligible</i>
LA 180497	Lithic reduction	<100 lithic	Archaic, Unknown Prehistoric	building foundation, corral, fences	Undetermined

LA No	Activity Type	Lithic counts	Period	Site features/ type	VALL Eligibility recommendations
LA 180501	Lithic reduction	<100 lithic	Unknown Prehistoric, Late Archaic	fence	Undetermined
LA 180510	Lithic reduction	500–1,000 lithic	Middle Archaic	artifact scatter	<i>Eligible</i>
LA 180511	Lithic-Multiple Function	<100 lithic	Late Archaic	hunting blind	<i>Eligible</i>
LA 180512	Lithic reduction	<100 lithic	Early to Middle Archaic	artifact scatter	<i>Eligible</i>
LA 183108	Lithic reduction	100–500 lithic	Late Archaic	artifact scatter	<i>Eligible</i>
LA 183117	Lithic reduction	100–500 lithic	Late Archaic	none	<i>Eligible</i>
LA 186927	Lithic reduction	100–500 lithic	Late Archaic	artifact scatter	<i>Eligible</i>
LA 186937	Lithic reduction	<100 lithic	Middle Archaic	artifact scatter	Undetermined
LA 186938	Lithic reduction	100–500 lithic	Early to Late Archaic	artifact scatter	<i>Eligible</i>
LA 187013	Lithic reduction	100–500 lithic	Late Archaic	none	<i>Eligible</i>
LA 187170	Lithic reduction	100–500 lithic	Archaic	artifact scatter	<i>Eligible</i>
LA 187173	Lithic reduction	100–500 lithic	Middle to Late Archaic	artifact scatter	<i>Eligible</i>
LA 187174	Lithic reduction	500–1,000 lithic	Middle to Late Archaic	artifact scatter	<i>Eligible</i>
LA 187925	Lithic reduction	1,000–5,000 lithic	Archaic	artifact scatter	<i>Eligible</i>
LA 188254	Lithic reduction	100–500 lithic	Late Archaic	carved aspen	<i>Eligible</i>
LA 188255	Lithic reduction	<100 lithic	Early to Late Archaic	artifact scatter	<i>Eligible</i>
LA 188256	Lithic reduction	100–500 lithic	Late Archaic	rockshelter F17- 004	<i>Eligible</i>
LA 188585	Lithic reduction	<100 lithic	Middle to Late Archaic	artifact scatter	<i>Eligible</i>
LA 189856	Lithic reduction	100–500 lithic	Late Archaic; Classic	artifact scatter	<i>Eligible</i>
LA 189860	Lithic reduction	<100 lithic	Late Archaic to Early Formative	artifact scatter	Undetermined
LA 189861	Lithic reduction	<100 lithic	Late Archaic	artifact scatter	Undetermined
LA 189864	Lithic reduction	100–500 lithic	Early to Middle Archaic	artifact scatter	<i>Eligible</i>
LA 189865	Lithic reduction	<100 lithic	Late Archaic to Basketmaker II	artifact scatter	Undetermined
LA 189866	Lithic reduction	1,000–5,000 lithic	Early to Middle Archaic	artifact scatter	<i>Eligible</i>
LA 189870	Lithic reduction	100–500 lithic	Middle to Late Archaic	artifact scatter	Undetermined
LA 189879	Lithic reduction	500–1,000 lithic	Late Archaic	artifact scatter	Undetermined
LA 193535	Lithic reduction	<100 lithic	Archaic, Unknown Prehistoric	artifact scatter	Undetermined
none (S07-0036)	Lithic reduction	100–500 lithic	Archaic	artifact scatter	None
none (S07-0041)	Lithic reduction	100–500 lithic	Archaic	artifact scatter	None
none (S13-0009)	Lithic reduction	100–500 lithic	Late Archaic	artifact scatter	None

APPENDIX C.

Example of integrity evaluation on modified LA site form (do not use without SHPO approval)

3. CONDITION

Archaeological Status: surface collection test excavation partial excavation complete excavation

Disturbance Sources: wind erosion water erosion bioturbation vandalism construction/land development
 other source (specify: _____)

Vandalism: defaced glyphs damaged/defaced building surface disturbance manual excavation
 mechanical excavation other vandalism (specify: _____)

Percentage of Site Intact (choose one): 0% 1-25% 26-50% 51-75% 76-99% 100%

Observations on Site Condition: _____

****Assessment of Project Impact: ~~MOVED FROM SECTION 4~~** _____

****Treatment Recommendations:** _____

4. RECOMMENDATIONS (for Performer/Recorder use only)

*Applicable significance criteria: none, recorder does not consider site significant under any criteria
 assoc. w/important events (a) distinctive architectural style, etc.(c)
 assoc. w/important persons (b) information potential (d)

If significant, has integrity of: not applicable, recorder does not consider site significant
 location setting design materials workmanship feeling
 association

Notes on integrity: _____

If significant and has integrity, could be nominated as:
 site building structure object
 part of a district traditional cultural property
 part of a multiple-property documentation form context:

 _____ (name)

Basis for Recommendation: _____

*Recorder's opinion ONLY—this is not an official determination of eligibility **Performing agency: consult with sponsoring agency before completing these data items

APPENDIX D.

Table D.1. Previously recorded fieldhouse and agricultural sites recorded at VALL¹

LA No	Period	Site type	Description	VCNP Elig
LA 68528	Unknown Prehistoric	fieldhouse		None
LA 68529	Unknown Prehistoric	fieldhouse		None
LA 73235	Unknown Prehistoric	fieldhouse	no artifacts found with the fieldhouse	<i>Eligible</i>
LA 73236	Coalition–Classic	fieldhouse	3 Jemez B/W sherds	<i>Eligible</i>
LA 73237	Coalition–Classic	fieldhouse	7 Jemez B/W bowl sherds, 1 Rio Grande Glaze Polychrome jar sherd	<i>Eligible</i>
LA 73238	Coalition–Classic	fieldhouse	1 Jemez B/W sherd	<i>Eligible</i>
LA 73239	Coalition–Classic	fieldhouse	1 Jemez B/W bowl sherd, 1 Jemez B/W jar sherd	<i>Eligible</i>
LA 82577	Early Archaic, Puebloan	fieldhouse, depression	San Jose-style chert point; includes LA 82576; rock features (1 w depression), 6 sherds (1 slipped & polished rim sherd, tentatively typed Kapo Black [ca 1650–1750])	<i>Eligible</i>
LA 133532	Coalition–Classic	fieldhouse	at logging road to N	<i>Eligible</i>
LA 133533	Coalition–Classic	fieldhouse (2)		<i>Eligible</i>
LA 133534	Unknown Prehistoric	fieldhouse		<i>Eligible</i>
LA 133535	Coalition–Classic	fieldhouse	fieldhouse, 7 ceramics	<i>Eligible</i>
LA 133536	Coalition–Classic	fieldhouse	4 plain ware sherds	<i>Eligible</i>
LA 137369	Unknown Prehistoric	fieldhouse	no diagnostics	<i>Eligible</i>
LA 137370	Unknown Prehistoric	fieldhouse	12 sherds	<i>Eligible</i>
LA 137371	Unknown Prehistoric	fieldhouse	9 sherds	<i>Eligible</i>
LA 137372	Unknown Prehistoric	fieldhouse	no diagnostics	<i>Eligible</i>
LA 137373	Unknown Prehistoric	fieldhouse	no diagnostics	<i>Eligible</i>
LA 137375	Unknown Prehistoric	fieldhouse	no diagnostics	<i>Eligible</i>
LA 137376	Unknown Prehistoric	fieldhouse	4 sherds	<i>Eligible</i>
LA 137377	Unknown Prehistoric	check dam	6 check dams, no diagnostics	Undetermined
LA 137380	Unknown Prehistoric	fieldhouse	no diagnostics	<i>Eligible</i>
LA 137381	Unknown Prehistoric	fieldhouse	1 sherd	<i>Eligible</i>
LA 137383	Unknown Prehistoric	fieldhouse	no diagnostics	<i>Eligible</i>
LA 137384	Unknown Prehistoric	fieldhouse	no diagnostics	<i>Eligible</i>
LA 137385	Unknown Prehistoric	fieldhouse	1 sherd	<i>Eligible</i>
LA 137386		fieldhouse?	no diagnostics	Undetermined
LA 137387	Unknown Prehistoric	fieldhouse	2 sherds	<i>Eligible</i>
LA 137388	Unknown Prehistoric	fieldhouse	20+ sherds	<i>Eligible</i>
LA 137389	Unknown Prehistoric	fieldhouse	no diagnostics	<i>Eligible</i>
LA 137390	Coalition–Classic	fieldhouse, depression	2 fieldhouses, depression, and no artifacts	<i>Eligible</i>

¹ The park edited this table in 2022 to update NRHP eligibility recommendations in the right column, and added one row for a missed site. These updates are only corrections for flaws in the sitelog provided to the authors (VCNP_sitelog_20200604_AS.xlsx); these edits are not based on any change in information or recommendations since the HRS was written.

LA No	Period	Site type	Description	VCNP Elig
LA 137391 LA 137392	Coalition–Classic	fieldhouse and possible kiva; historic scatter	2 sherds; <2000 historic artifacts	<i>Eligible</i>
LA 137393	Coalition–Classic	fieldhouse, agricultural	2 fieldhouses, possible terracing, 2 Jemez B/W, 2 plainware sherds, 1 sherd with white slip on exterior	<i>Eligible</i>
LA 137394	Unknown Prehistoric	fieldhouse	no diagnostics	<i>Eligible</i>
LA 137395	Coalition–Classic	fieldhouse	no diagnostics	<i>Eligible</i>
LA 137396	Coalition–Classic	fieldhouse	no diagnostics	<i>Eligible</i>
LA 137397	Unknown Prehistoric	fieldhouse	no diagnostics	<i>Eligible</i>
LA 137398	Unknown Prehistoric	fieldhouse	no diagnostics	<i>Eligible</i>
LA 137399	Coalition–Classic	fieldhouse, grid gardens, terraces	15 sherds	<i>Eligible</i>
LA 137400	Coalition–Classic	fieldhouse	2 sherds	<i>Eligible</i>
LA 137401	Unknown Prehistoric	fieldhouse & terraces	no diagnostics	<i>Eligible</i>
LA 137402	Unknown Prehistoric	fieldhouse	no diagnostics	<i>Eligible</i>
LA 137403	Unknown Prehistoric	fieldhouse	no diagnostics	<i>Eligible</i>
LA 137404	Coalition–Classic	fieldhouse	2 fieldhouses, no diagnostics	<i>Eligible</i>
LA 137710	Unknown Prehistoric	fieldhouse	1 lithic, no diagnostics	<i>Eligible</i>
LA 137711	Unknown Prehistoric	fieldhouse	1 lithic, no diagnostics	<i>Eligible</i>
LA 148634	Coalition–Classic	fieldhouse	one-room masonry structure (fieldhouse); no artifacts	<i>Eligible</i>
LA 148636	Coalition–Classic	fieldhouse	two-room masonry structure (fieldhouse); no artifacts	<i>Eligible</i>
LA 148637	Coalition–Classic	fieldhouse, terrace?, depression	multi-room masonry structure (fieldhouse) and possible terracing	<i>Eligible</i>
LA 148638	Coalition–Classic	fieldhouse, undefined rock alignment	two rock features (1 fieldhouse?), 1 gray plainware sherd	<i>Eligible</i>
LA 150074	Coalition–Classic	fieldhouse	Fieldhouse 1 or 2 room	<i>Eligible</i>
LA 150075	Coalition–Classic	fieldhouse	Fieldhouse	<i>Eligible</i>
LA 150076	Coalition–Classic	fieldhouses	3 Fieldhouses	<i>Eligible</i>
LA 150077	Coalition–Classic	fieldhouse	Fieldhouse 1 or 2 room	<i>Eligible</i>
LA 150078	Coalition–Classic	fieldhouse	Fieldhouse (?)	<i>Eligible</i>
LA 150079	Coalition–Classic	fieldhouse	Fieldhouse	<i>Eligible</i>
LA 150080	Coalition–Classic	fieldhouse, grid/terrace	Terrace with 4 tiers; smaller grids within & fieldhouse	<i>Eligible</i>
LA 150081	Coalition–Classic	fieldhouse	Fieldhouse	<i>Eligible</i>
LA 150082	Coalition–Classic	grid garden/terrace	Terraces, 2 to 7 tiers. Some terraces overlap with others. Smaller grids within the larger structures	<i>Eligible</i>
LA 150083	Coalition–Classic	fieldhouse	Fieldhouse	<i>Eligible</i>
LA 150084	Coalition–Classic	fieldhouse, grid/terrace	At least 2 room fieldhouse and terraces of at least 4 tiers. 10 Jemez B/W, 11 Rio Grande plain A, 2 Rio Grande plain B, 1 Rio Grande smeared corrugated	<i>Eligible</i>
LA 150085	Coalition–Classic	fieldhouse, grid/terrace	Terraces composed of 3 or 4 tiers & fieldhouse. 2 Jemez B/W sherds, 2 indeterminate B/W sherds	<i>Eligible</i>

LA No	Period	Site type	Description	VCNP Elig
LA 150086	Coalition–Classic	grid garden/terrace	Terrace system-up to 4 terrace lines and several smaller grids within terraces	<i>Eligible</i>
LA 150087	Coalition–Classic	fieldhouse	3 Fieldhouses & two Terrace lines	<i>Eligible</i>
LA 150088	Coalition–Classic	grid garden/terrace	Terrace composed of 4-6 tiers; double coursed visible. Some small grids within structure	<i>Eligible</i>
LA 150089	Coalition–Classic	fieldhouse	Fieldhouse	<i>Eligible</i>
LA 150090	Coalition–Classic	fieldhouse, grid/terrace	Fieldhouse & Terraces (4 tiers)	<i>Eligible</i>
LA 150091	Coalition–Classic	fieldhouse	Fieldhouse 2 room	<i>Eligible</i>
LA 150092	Coalition–Classic	fieldhouse	Single room Fieldhouse	<i>Eligible</i>
LA 150093	Coalition–Classic	fieldhouse	Fieldhouse	<i>Eligible</i>
LA 150094	Coalition–Classic	fieldhouses	2 Fieldhouses and a small Room block	<i>Eligible</i>
LA 150095	Coalition–Classic	fieldhouse	Fieldhouse & 3 or 4 Terrace lines	<i>Eligible</i>
LA 150096	Coalition–Classic	fieldhouses	2 Fieldhouses	<i>Eligible</i>
LA 150097	Coalition–Classic	fieldhouse	potential other functions	<i>Eligible</i>
LA 159264	Unknown Prehistoric	check dams	1000–5000 lithic, 3 ceramic, 24 likely historic check dams	<i>Eligible</i>
LA 162537	Coalition–Classic	fieldhouse	single room fieldhouse, no artifacts	<i>Eligible</i>
LA 162538	Coalition–Classic	fieldhouse	two single room fieldhouses; 3 sherds	<i>Eligible</i>
LA 162539	Coalition–Classic	fieldhouse	fieldhouse, 1 obsidian debitage	<i>Eligible</i>
LA 162543	Coalition–Classic	fieldhouse	single room fieldhouse with 3 wall alignments visible, no artifacts	<i>Eligible</i>
LA 162544	Coalition–Classic	fieldhouse	possible fieldhouse with no associated artifacts	Undetermined
LA 162545	Coalition–Classic	fieldhouse, terrace	fieldhouse and possible terrace feature, no artifacts	<i>Eligible</i>
LA 162546	Coalition–Classic	fieldhouse	fieldhouse, no artifacts	<i>Eligible</i>
LA 162547	Coalition–Classic	fieldhouse	fieldhouse, no artifacts	<i>Eligible</i>
LA 162549	Coalition–Classic	fieldhouse, cairn	multiroom fieldhouse and large stone cairn	<i>Eligible</i>
LA 162551	Coalition–Classic	fieldhouse	fieldhouse, 43 ceramics, 1 obsidian debitage, 1 groundstone	<i>Eligible</i>
LA 164461	Coalition–Classic	fieldhouse	two room fieldhouse, no artifacts	<i>Eligible</i>
LA 164462	Coalition–Classic	fieldhouse	single room fieldhouse, no artifacts	<i>Eligible</i>
LA 169946	Coalition–Classic	fieldhouse	one room fieldhouse with no associated artifacts	<i>Eligible</i>
LA 169947	Coalition–Classic	fieldhouse	two room fieldhouse, 57 ceramics, 1 groundstone	<i>Eligible</i>
LA 169948	Coalition–Classic	fieldhouse, undefined rock alignment	Undefined rock alignment possible fieldhouse, 1 lithic, 1 groundstone, 21 ceramics, 1 glass fragment, 1 can	Undetermined

LA No	Period	Site type	Description	VCNP Elig
LA 169949	Coalition–Classic	fieldhouse	one room fieldhouse, 1 lithic, 38 ceramics, 1 metal can	<i>Eligible</i>
LA 169950	Coalition–Classic	fieldhouse (2)	2 one room fieldhouses, 11 ceramics	<i>Eligible</i>
LA 169951	Coalition–Classic	fieldhouse	three to four room fieldhouse, 38 ceramics, 2 fragments of architectural stone (sandstone)	<i>Eligible</i>
LA 169952	Coalition–Classic	fieldhouse	one room fieldhouse with no associated artifacts	<i>Eligible</i>
LA 169953	Coalition–Classic	fieldhouse	two room fieldhouse, 11 ceramics	<i>Eligible</i>
LA 169954	Coalition–Classic	fieldhouse	one room fieldhouse, 9 ceramics	<i>Eligible</i>
LA 169955	Coalition–Classic	fieldhouse	three room fieldhouse with no associated artifacts	<i>Eligible</i>
LA 169963	Unknown Prehistoric	check dams, cross	68 lithics, 9 check dams, 1 wooden descanso cross	<i>Eligible</i>
LA 169964	Unknown Prehistoric	check dams	138 lithics, 3 glass, 1 can, 5 check dams	<i>Eligible</i>
LA 175363	Coalition–Classic	fieldhouse	1 fieldhouse no assoc. artifacts	<i>Eligible</i>
none (S07-0043)	Unknown Prehistoric	check dams	8–10 obsidian debitage, 3 likely historic stone check dams in drainage	None

APPENDIX E.

Table E.1. Previously recorded historic sites/components at VALL, sorted by site type¹

LA No	CR_No	Historical Site Type	Location	Site Name	VALL Eligibility Recommendation
137059	S02-0019	Aspen carving(s)	Northwest Preserve	Cabins Aspen Carvings	Undetermined
162558	S08-0015	Aspen carving(s)	Banco Bonito	Blank	<i>Eligible</i>
165699	S09-0027	Aspen carving(s)	Cerro Del Medio	Blank	<i>Not Eligible</i>
None	S09-0029	Aspen carving(s)	Sulphur Springs	“site lead”	<i>Undetermined</i>
155499	S06-0043	Barn	Valle Grande	Paddocks Barn	<i>Not Eligible</i>
161924	S08-0049	Borrow pit	South Mtn	“site lead”	<i>Undetermined</i>
17137	S00-0018; S01-0059	Cabin	Redondo Mtn (crossroads)–Five Points Area	Cotton Cabin	None
17141	S00-0022	Cabin	Redondo Canyon–N end of Red. Meadow	Redondo Camp 1	<i>Eligible</i>
17142	S00-0023	Cabin	Redondo Canyon–N end of Red. Meadow	Redondo Camp 2	<i>Eligible</i>
17145	S00-0026	Cabin	Redondo Canyon–N end of Red. Meadow	Blank	<i>Eligible</i>
136351	S02-0008	Cabin	HQ	Commissary, Otero Cabin, 1990s Bunkhouse	<i>Eligible</i>
137534	S02-0062	Cabin	HQ	Cabin/Cowboy Cabin	<i>Eligible</i>
137535	S02-0063	Cabin	HQ	Saddle Shed	Undetermined (contributing)
137536	S02-0064	Cabin	HQ	Bond Headquarters	<i>Eligible</i>
137537	S02-0065	Cabin	HQ	Ranch Foreman’s House	<i>Eligible</i>
137538	S02-0066	Cabin	HQ	Ranch / Red Office	<i>Eligible</i>
137539	S02-0067	Cabin	HQ	Old Barn and Three Corrals	<i>Eligible</i>
137540	S02-0068	Cabin	HQ	Sheep Barn Foundation	<i>Eligible</i>
140099	S01-0057	Cabin	Valle San Antonio (West)	Hot Springs Shack	<i>Eligible</i>
140099 (repeat)	S03-0001	Cabin	Valle San Antonio (West)	San Antonio Cabin	<i>Eligible</i>
140258	S03-0020	Cabin	Redondo Mtn (East)	Skinning shed [cabin]	Undetermined (contributing)

¹ The park edited this table in 2022 to update NRHP eligibility recommendations in the right column. These updates are only corrections for flaws in the sitelog provided to the authors (VCNP_sitelog_20200604_AS.xlsx); these edits are not based on any change in information or recommendations since the HRS was written. Ten rows were deleted; in these cases, the deleted row contained an obsolete site number that had previously been subsumed into another site.

LA No	CR_No	Historical Site Type	Location	Site Name	VALL Eligibility Recommendation
154705	S01-0052	Cabin	V Grnde; nr the E Fk SW of trail's S end	Lightning Shack	<i>Not Eligible</i>
154706	S01-0053	Cabin	Banco Bonito; in EC Cyn, ½ mi SW of EC	El Cajete Cabin	<i>Eligible</i>
154707	S01-0054	Cabin	Valle Toledo; along S rd @ base of mtn	Old Toledo Cabin	<i>Eligible</i>
154708	S01-0055	Cabin	Posos; N end of V de los Posos	Cabin White/Leese	<i>Eligible</i>
155495	S06-0041	Cabin	San Antonio Mtn	Sargent's Bluff Cabin	<i>Not Eligible</i>
155496	S03-0024	Cabin	North Rim	Hilton Cabin	<i>Not Eligible</i>
155497	S01-0056	Cabin	Indios	Indios Cabin	<i>Eligible</i>
172053	S11-0018	Cabin	Banco Bonito; nr rd, SE of Red. Meadow	Blank; cabin remains	<i>Eligible</i>
Blank	S01-0058	Cabin	Redondo Border; up on ridge above Freelove Canyon	Redondo Border Cabin	Undetermined
17143	S00-0024	Cabin remains	Redondo Meadows—nr road & crk xing	Hist Town/Darnell's Camp	<i>Eligible</i>
17144	S00-0025	Cabin remains	Redondo Canyon—N end of Red. Meadow	Blank	<i>Not eligible</i>
17146	S00-0027	Cabin remains	Redondo Canyon – nr the “hist town”	Blank	None
133540	S01-0040	Cabin remains	Redondo Meadows—nr the “hist town”	Pea Cabins	<i>Eligible</i>
147669	S04-0347	Cabin remains	Valle Toledo; nr main road	Blank; historic structure fdtn	Undetermined
155498	S06-0042	Cabin remains	Redondo Mtn (East)	Buffalo Girls Movie Set	<i>Not Eligible</i>
157465	S07-0033	Cabin remains	Cerro Seco; nr VC06-VC08 xing	Blank; Anglo/Euroamerican	Undetermined
137377	S02-0034	Check dam	Banco Bonito	Blank	Undetermined
159264	S07-0055	Check dams	Rabbit Mtn	Blank	<i>Eligible</i>
169963	S09-0003	Check dams	Valle Entrada	Blank	<i>Eligible</i>
169964	S09-0004	Check dams	Valle Entrada	Blank	<i>Eligible</i>
None	S07-0043	Check dams	Main Gate	“site lead”	None
82589	S00-0066	Corral	Posos	Blank	Undetermined
137063	S02-0023	Corral	Valle Toledo	Valle Toledo Corral	<i>Eligible</i>
152304	S04-0027	Corral	Cerro La Jara	Valle Grande Corral; Black Corrals	<i>Not Eligible</i>
156540	S06-0025	Corral	Indios	Blank	<i>Not Eligible</i>
157033	S07-0028	Corral	Redondo Meadows	Blank	<i>Not Eligible</i>
165265	S09-0031	Corral	Redondo Border	Blank	<i>Eligible</i>
169966	S09-0009	Corral	Valle Entrada	Blank	<i>Eligible</i>
None	S05-1450	Corral	Valle Grande	“site lead”	Undetermined

LA No	CR_No	Historical Site Type	Location	Site Name	VALL Eligibility Recommendation
None	S13-0001	Corral	Sulphur Canyon	“not a site”; corral is F14-020	None
134541	S01-0048	Culverts	Redondo Mtn (West)	Culverts on Rd C	<i>Not Eligible</i>
162579	S08-0033	Depression	Valle San Antonio (East)	Blank	Undetermined
136371	S02-0010	Fence	Valle Grande	East Fork Fence	Disputed
175530	S12-0044	Geothermal features	Alamo Canyon	Blank	<i>Not Eligible</i>
None	S08-0047	Geothermal features	Redondo Border	“site lead”	<i>Not Eligible</i>
160294	S08-0600	Highway lantern	Valle Grande	Blank	<i>Eligible</i>
133539	S01-0039	Hist-artifact scatter	Redondo Meadows	M-C Site (?)	<i>Eligible</i>
135613	S02-0006	Hist-artifact scatter	Cerro Del Medio	CDM Rocky Lookout	<i>Eligible</i>
137056	S02-0016	Hist-artifact scatter	Valle San Antonio (East)	Elton Site	<i>Eligible</i>
137391 (137392)	S02-0048; S02-0049	Hist-artifact scatter	Banco Bonito	Includes LA 137392	<i>Eligible</i>
140250	S03-0012	Hist-artifact scatter	HQ	Blank	<i>Not Eligible</i>
147667	S04-0344	Hist-artifact scatter	Valle Toledo	Blank	<i>Eligible</i>
148321	S04-0006	Hist-artifact scatter	Banco Bonito	Banco Staging Area	<i>Not Eligible</i>
150098	S05-0027	Hist-artifact scatter	Banco Bonito	Blank	<i>Eligible</i>
151598	S05-0001	Hist-artifact scatter	Rabbit Mtn	Blank	<i>Eligible</i>
158846	S07-0005	Hist-artifact scatter	Cerro Seco	Blank	<i>Eligible</i>
158848	S07-0037	Hist-artifact scatter	Sulphur Canyon	Blank	<i>Eligible</i>
160290	S08-0500	Hist-artifact scatter	Valle Grande	Blank	Undetermined
160297	S08-0700	Hist-artifact scatter	South Mtn	Blank	<i>Eligible</i>
160300	S08-0703	Hist-artifact scatter	Valle Entrada	Blank	<i>Eligible</i>
162554	S08-0011	Hist-artifact scatter	Banco Bonito	Blank	<i>Eligible</i>
162562	S08-0023	Hist-artifact scatter	Redondo Canyon	Blank	<i>Eligible</i>
162564	S08-0044	Hist-artifact scatter	Redondo Canyon	Blank	Undetermined
164460	S04-0172	Hist-artifact scatter	Redondo Canyon	Blank	<i>Not Eligible</i>
164464	S09-0039	Hist-artifact scatter	Redondo Canyon	Blank	Undetermined
164465	S09-0040	Hist-artifact scatter	Banco Bonito	Blank	Undetermined
164573	S09-0041; S04-0173	Hist-artifact scatter	Redondo Canyon	Includes site lead S04-0173	Undetermined
169957	S10-0021	Hist-artifact scatter	Valle Seco	Blank	<i>Eligible</i>
170767	S11-0011	Hist-artifact scatter	Valle San Antonio (East)	Blank	Undetermined
170942	S11-0006	Hist-artifact scatter	Valle San Antonio (East)	Blank	<i>Eligible</i>
171529	S10-0022	Hist-artifact scatter	Banco Bonito	Blank	Undetermined
172034	S11-0015	Hist-artifact scatter	Mtn (Southeast)	Blank	<i>Not Eligible</i>
172052	S11-0007	Hist-artifact scatter	Banco Bonito	Blank	Undetermined
172438	S10-0040	Hist-artifact scatter	Indios	Blank	<i>Eligible</i>
173953	S12-0033	Hist-artifact scatter	Banco Bonito	Blank	Undetermined
175042	S12-0036	Hist-artifact scatter	Rosa / Trasquilar	Blank	<i>Eligible</i>
175172	S12-0028	Hist-artifact scatter	Rabbit Mtn	Blank	<i>Eligible</i>
178124	S13-0017	Hist-artifact scatter	Valle San Antonio (West)	Blank	<i>Eligible</i>
178127	S13-0020	Hist-artifact scatter	Valle San Antonio (West)	Blank	<i>Eligible</i>

LA No	CR_No	Historical Site Type	Location	Site Name	VALL Eligibility Recommendation
180499	S14-0012	Hist-artifact scatter	Redondo Mtn (West)	Blank	<i>Not Eligible</i>
180500	S14-0013	Hist-artifact scatter	Redondo Mtn (West)	Blank	Undetermined
180501	S14-0019	Hist-artifact scatter	Redondo Mtn (West)	Blank	Undetermined
186116	S16-0101	Hist-artifact scatter	Rincon soldados	Blank	<i>Eligible</i>
186118	S16-0103	Hist-artifact scatter	Rincon soldados	Blank	Undetermined
187013	S16-0227	Hist-artifact scatter	Posos	Blank	<i>Eligible</i>
187707	S16-0008	Hist-artifact scatter	Valle Seco	Blank	<i>Not Eligible</i>
188814	S17-0153	Hist-artifact scatter	Blank	Blank	Undetermined
189444	S17-0180	Hist-artifact scatter	Blank	Blank	<i>Not Eligible</i>
189481	S17-0120	Hist-artifact scatter	Blank	Blank	Undetermined
189849	S17-0100	Hist-artifact scatter	Blank	Blank	<i>Eligible</i>
189850	S17-0101	Hist-artifact scatter	Blank	Blank	Undetermined
189851	S17-0102	Hist-artifact scatter	Blank	Blank	Undetermined
189853	S17-0104	Hist-artifact scatter	Blank	Blank	Undetermined
190394	S17-0148	Hist-artifact scatter	Blank	Blank	Undetermined
195822	S19-0130	Hist-artifact scatter	San Antonio Mtn South (?)	Blank	<i>Not Eligible</i>
None	S13-0010	Hist-artifact scatter	HQ	“site lead”	None
None	S13-0012	Hist-artifact scatter	HQ	“site lead”	None
None	S13-0013	Hist-artifact scatter	HQ	“site lead”	None
None	S13-0014	Hist-artifact scatter	HQ	“site lead”	None
None	S13-0015	Hist-artifact scatter	HQ	“site lead”	None
None	S13-0030	Hist-artifact scatter	Cerro Del Medio	“site lead”	None
None	S14-0018	Hist-artifact scatter	Cerro Del Medio	“site lead”	None
180498	S14-0011	Hist-artifact scatter - fence/corral	Redondo Mtn (West)	Blank	Undetermined
188254	S17-0002	Hist-aspen	Valle San Antonio	Blank	<i>Eligible</i>
187913	S16-0230	Hist-cairn	Posos	Blank	<i>Eligible</i>
133899	S01-0044	Hist-features and scatter	Valle Grande	Horse Barn (Thin Biface Site)	<i>Eligible</i>
135612	S02-0005	Hist-hydro features	Cerro Del Medio	Walmart / Notorious BIG quarry	Undetermined (the prehistoric site is eligible but this tank was not evaluated)
148148	S04-0440	Hist-hydro features	Valle Toledo	Blank	Undetermined
155032	S05-1545	Hist-hydro features	Rincon soldados	Rincon Tank	<i>Not Eligible</i>
155033	S05-1559	Hist-hydro features	Valle Grande	Valle Grande Stock Tank	<i>Not Eligible</i>
155034	S05-1580	Hist-hydro features	Valle Seco	Seco Tank	<i>Not Eligible</i>
155035	S05-1581	Hist-hydro features	Posos	Posos Tank	<i>Not Eligible</i>
162573	S08-0040	Hist-hydro features	Rabbit Mtn	Blank	Undetermined
175019	S12-0018	Hist-marked tree	Jaramillo Creek	Catface Terrace	<i>Eligible</i>
180434	S10-0023	Hist-marked tree	Valle Seco	“former site lead”	<i>Eligible</i>
137064	S02-0024	Hist-rock carvings	Rosa / Trasquilar	Coyote Carvings	<i>Eligible</i>
160298	S08-0701	Hist-rockshelter	South Mtn	Blank	<i>Eligible</i>
135593	S02-0002	Hist-rock wall	South Mtn	So Mtn Shelter	<i>Eligible</i>
140138	S03-0005	Hist-rock wall	Valle Entrada	Blank	<i>Eligible</i>

LA No	CR_No	Historical Site Type	Location	Site Name	VALL Eligibility Recommendation
161926	S05-1553; S16-0200	Hist-rock wall	South Mtn	“former site lead”	<i>Eligible</i>
137382	S02-0039	Hist-trash	Banco Bonito	Blank	Undetermined
174785	S12-0034	Hist-trash	Redondo Mtn (East)	Blank	<i>Not Eligible</i>
170764	S11-0008	Hist-wood features	Valle San Antonio (West)	Blank	Undetermined
137386	S02-0043	Hunting blind?	Banco Bonito	Blank	Undetermined
134418	S01-0047	Mill	Northwest Preserve (1 mi E, 2 mi S of NW corner of VCNP)	Rd N Mill Site; mill features	<i>Eligible</i>
140140	S03-0007	Mill	North Rim; 1 mi S of N bdy, S of R4E, S31	Black Bear Meadow site; historic mill remains	Undetermined
140141	S03-0008	Mill	North Rim; 2 mi N of San Ant Warm Sprg	Blank; historic mill remains	Undetermined
140142	S03-0009	Mill	N Rim; nr small hill top, 3/4 mi S of N bdy S of R3E S36 SE 1/4	Blank; lumber piles, aspen carving	<i>Eligible</i>
156541	S06-0026	Mill	Indios; nr. Rito de los Indios, appx 1/2 mile S of VCNP's N bdy	Blank; brace, milled board pile, depressions, cut log pile, milled lumber structure	Undetermined
161539	S06-0034	Mill	Alamo Canyon, 1/2 mile E of Sulphur Creek confluence	Blank; mill, milled lumber piles, depression; saw mill remains in Alamo Canyon	<i>Not Eligible</i>
162493	S07-0014	Mill	Northwest Preserve; 1 mi E and 1 mi S of NW corner of VCNP	Blank; numerous milled lumber piles, light scatter of hist artifacts, mid-20 th century	<i>Eligible</i>
140257	S03-0019	Modern structure	Redondo Mtn (East)	Lodge [Kiva Lodge]	<i>Eligible</i>
155494	S06-0040	Modern Structure	Redondo Canyon	Union Building and Storage	<i>Not Eligible</i>
155500	S09-0034	Modern Structure	Redondo Mtn (East)	A-Frames	<i>Eligible</i>
188456	S05-1362	Modern Structure	Valle San Ant (West) 0.6 mi E of W bdy, 1.2 mi S of N bdy	NW Cabin	<i>Eligible</i>
173952	S10-0032	Ramada/Shelter	Banco Bonito	Blank	Undetermined
140251	S03-0013	Ranch/grazing feature	Redondo Mtn (East)	Blank	<i>Not Eligible</i>

LA No	CR_No	Historical Site Type	Location	Site Name	VALL Eligibility Recommendation
140254	S03-0016	Ranch/grazing feature	Redondo Mtn (East)	Blank	<i>Eligible</i>
135432	S01-0050	Road	Rincon Soldados	Valle Pass Road	Undetermined
142018 (21617)	S03-0021	Road	Cerro Grande	Valle Grande Road	<i>Eligible</i>
158219	S07-0058	Road	Main Gate	Old Highway 4	Undetermined
175368	S12-0043	Road	Banco Bonito	Blank	Undetermined
133418	S01-0028	Rockshelter	Sulphur Canyon	Walled Rockshelter	<i>Eligible</i>
192411	S18-0145	Rockshelter	Blank	Blank	<i>Eligible</i>
140252	S03-0014	Shed x 3	HQ	Blank	<i>Eligible</i>
137061	S02-0021	Sheep pen	Valle S. Antonio (W)	Blank	<i>Eligible</i>
161923	S08-0048	Sheep pen	Valle Grande	“site lead”	Undetermined
156537	S06-0021	Structure foundation(s)	Indios; 2 miles up the Rito de los Indios	Blank	Undetermined
165693	S09-0020	Structure remains	Redondo Mtn (East)	“site lead”	None
180497	S14-0010	Structure remains	Redondo Mtn (West); Deer Cyn on W bdy	Blank; foundation, corral, fences	Undetermined
135433	S01-0051	Trail	Posos	San Ildefonso/ Jemez Trail	Undetermined
137374	S02-0031	Undef rock align	Banco Bonito	Blank	Undetermined
137378	S02-0035	Undef rock align	Banco Bonito	Blank	Undetermined
137379	S02-0036	Undef rock align	Banco Bonito	Blank	Undetermined
161927	S05-0064	Undef rock align	Valle Grande	Blank	Undetermined
133157	S01-0006	Unk-need to find out	Valle San Antonio (West)	Blank	<i>Eligible</i>
133168	S01-0015	Unk-need to find out	Valle San Antonio (East)	Blank	<i>Eligible</i>

Total historic site/components = 169

Table E.2. Previously recorded historic site/component counts at VALL, sorted by site type

Site Type	Count
Aspen carving(s)	4
Barn	1
Borrow pit	1
Cabin	24-25
Cabin remains	7
Check dam	5
Corral	9
Culverts	1
Depression	1
Fence	1
Geothermal features	2
Highway lantern	1
Hist-artifact scatter	57
Hist-aspen	1
Hist-cairn	1
Hist-features & scatter	1
Hist-hydro features	7
Hist-marked tree	2
Hist-rock carvings	1
Hist-rock wall	4
Hist-trash	2
Hunting blind (?)	1
Mill	7
Modern structure	4
Ramada/Shelter	1
Ranch/grazing feature	2
Road	4
(Hist.) Rockshelter	3
Shed	1
Sheep pen	2
Structure remains	3
Trail	1
Undef rock alignment	4
Unk-need to find out	2
(Hist.) Wood features	1
Total	169

* One of the “Hist-artifact scatters” on p. 6 states, “Hist-artifact scatters, fence/corral.”

The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that every entry, no matter how small, should be recorded to ensure the integrity of the financial data. This includes not only sales and purchases but also expenses, income, and any other financial activities. The text explains that proper record-keeping is essential for identifying trends, managing cash flow, and preparing for tax obligations. It also highlights the role of regular audits in verifying the accuracy of the records and detecting any potential errors or fraud. The document provides detailed instructions on how to organize and maintain these records, including the use of ledgers, journals, and supporting documents. It also discusses the importance of keeping records for a sufficient period of time to comply with legal requirements and to facilitate future audits. The second part of the document focuses on the analysis of the financial data. It describes various methods for interpreting the records, such as comparing current performance with historical data and industry benchmarks. It also discusses the use of financial ratios and other analytical tools to assess the company's financial health and identify areas for improvement. The text provides examples of how to calculate and interpret these ratios, and it offers guidance on how to use the results to make informed business decisions. Finally, the document concludes with a summary of the key points and a call to action, encouraging the reader to implement the principles and practices discussed throughout the text.