

PRELIMINARY FIELD REPORT ON EXCAVATIONS AT FOUR DESERT SITES WITHIN THE SUGARLOAF ARCHAEOLOGICAL DISTRICT, COUNTY OF INYO

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This paper discusses a testing program designed for four archaeological sites near Coso Junction, Inyo County, California. Analyses of three of the sites indicated that they may have been utilized for a minimum of 2,000 years and were possibly located along an important trade route to the local Sugarloaf Mountain and Cactus Peak obsidian sources. Additional site mapping revealed that they were divided into special use areas related to subsistence, mobility, basic site activities, and possible regional and local trade.

Located at the western edge of the Great Basin, within part of the Basin and Range Province at the lower end of the Coso Range, which includes the northwesternmost portion of the Mojave Desert, lie four sites considered to be adjuncts to the preexisting Sugarloaf Archaeological District. The sites are located within a remote area 4.5 km east of the community known as Coso Junction, on Bureau of Land Management (BLM) lands, in Inyo County, California. The sites can be found east of Rose Valley and west of the Coso Range and cover much of Section 21 and a small part of Section 28 of T21S, R38E of the Coso Junction, CA. and Cactus Peak, CA. 7.5' USGS topographic maps (Figure 1).

The surface characteristics of the four prehistoric sites were originally observed during a Class III archaeological survey in November of 2001 for the Makayla Mine APE by L&L Environmental (Dice and Irish 2001). A large pumice mine, currently operated by California Lightweight Pumice in conjunction with the BLM Ridgecrest office, is situated near the sites and was the impetus for this project. The pumice resources at the mine have been intermittently mined by multiple entities since the 1940s. Currently, it is known as Makayla Pumice Mine No. 1. Mining of the area over time has both directly and indirectly impacted the archaeological sites.

Four prehistoric archaeological sites were excavated during the current testing program (CA-INY-2334, -3669, -5949, -5952). Of these, three sites will be discussed. Prior to conducting analysis, the BLM requested that no additional analysis, significance determination, or discussion occur on INY-5949.

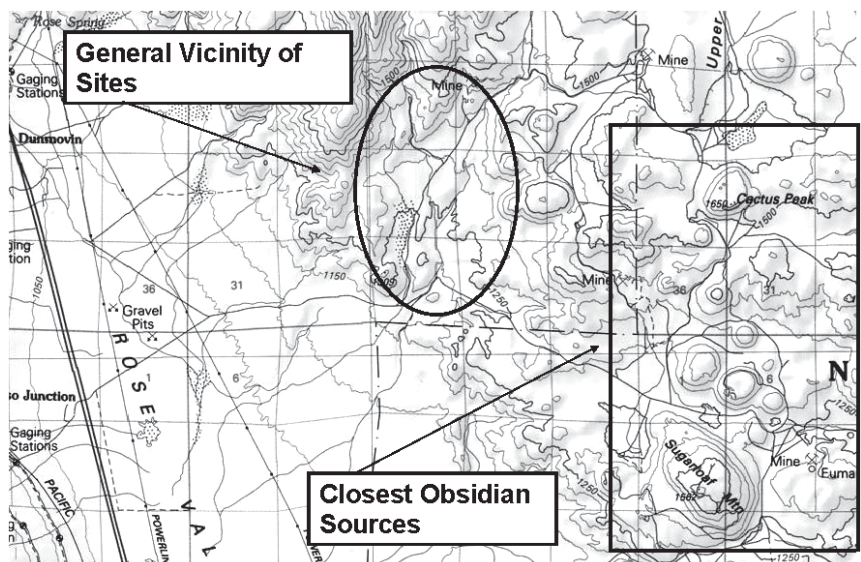
The following sections describe the project, its environmental setting, site descriptions and field methods, and results of analysis, as well as the research goals and conclusions.

ENVIRONMENTAL SETTING

Plant communities near the sites are generally characterized by Mojave Creosote Bush and Joshua Tree Scrub on the lower altitudes, with Joshua Tree Woodlands and Juniper-Pinyon Woodlands in the higher altitudes. In the general region of the sites, the vegetation community contains mixtures of saltbush (*Atriplex canescens*), shadscale (*Atriplex canescens* ssp. *canescens*), creosote (*Larrea tridentata*), yucca (*Yucca baccata*), low sagebrush (*Artemisia arbuscula*), and Great Basin sagebrush (*A. tridentata*) with low-growing plants such as desert needlegrass (*Stipa speciosa*), western needlegrass (*S. occidentalis*), rice grass (*Achnatherum coronatum*), silver cholla (*Opuntia echinocarpa*), Mormon tea (*Ephedra nevadensis*), and desert tea (*E. californica*) (CalPhotos 2005; Gilreath and Hildebrandt 1997; Hildebrandt et al. 2001).

Large fauna within the region include pronghorn antelope (*Antilocapra americana*), coyote (*Canis latrans*), and mule deer

Figure 1: General location of sites in relation to the closest obsidian sources.



(*Odocoileus hemionus*). Small game in the area is comprised of species such as ground squirrels (*Spermophilus* sp.) and Mojave ground squirrels (*S. mohavensis*), foxes (*Vulpes vulpes*), black-tailed jackrabbit (*Lepus californicus*), and cottontail rabbit (*Sylvilagus* sp.). Additional animal resources include varieties of insects, lizards, desert tortoises, and fowl. Waterfowl and fish can be found to the south at Little Lake. The western Great Basin and northwestern Mojave Desert is characterized by low rainfall and sparse vegetation. Several intermittent blue-line streams lie in the archaeological study area. No sources of permanent water were found near the sites.

SITE DESCRIPTIONS AND METHODOLOGY

The three sites studied represent different subsistence strategies: site INY-2334 was focused on biface production with an associated habitation component; INY-3669 is primarily a seasonal habitation and resource exploitation site, and INY-5952 is a multicomponent site that may represent several occupation periods. The density of surface artifacts and the extensive use wear of the milling equipment at each site suggest that they were part of a seasonal migratory pattern and were used repeatedly over many generations. Hydration dates are expansive and range from the Pre-Archaic to the Terminal Prehistoric, although point typology data maintains that the sites were occupied during the Late Archaic up to the Historic Period.

Chronology

During the study, the following chronological basis was used, which is a synthesis of the numerous chronologies that abound for archaeology in this region (Figure 2). The body of current research on prehistoric occupation in the Mojave Desert recognizes the existence of at least five temporal intervals, briefly outlined here as the Pre-Archaic, Early Archaic, Middle Archaic, Late Archaic, and Terminal Prehistoric periods. These cultural periods are based on general economic trends and material culture within the region and the Great Basin in general. These have been adapted from Hildebrandt et al. (2001) and Wells and Tabares (n.d.). This table is adapted from Wells and Tabares (n.d.) and presents the general as well as regional timeframes.

Methodology

The field methods for our project were conditioned by the research design and were developed in conjunction with the BLM Ridgecrest Office. Sampling strategies were typical for a testing program: surface

collection followed by limited exploratory excavations, although varied techniques were tailored to fit each specific site's limitations and attributes.

Shovel Test Pits (STPs) assisted in defining the site/locus boundaries and in determining if subsurface resources existed. All STPs measured 50 x 50 cm and were excavated to sterile soil or until the compaction rate was too high to allow for further hand excavation. GPS points for the STPs were taken in the approximate center of the pit. All excavated soil was screened for artifacts using 3-mm (1/8-inch) mesh shaker screens. Hand-excavated units assisted with horizontal and vertical control and allowed a much larger area to be viewed for possible soil changes and discolorations.

According to Gilreath and Hildebrandt (1997), the major goal of the research for the Coso Volcanic Field is to monitor the prehistoric production, use, and exchange of Coso obsidian and determine the relationships of such activities to the other socioeconomic developments in the region. The three sites studied are directly related to the use, movement, procurement, and, possibly, trade of Coso obsidian. Previous research (Dice and Irish 2001) hypothesized that the sites were utilized primarily for exploitation of the surface float or air-fall obsidian. Analysis of the collected materials and associated data has revealed that the sites were being utilized for a variety of reasons, the exploitation of air-fall obsidian being a small portion.

INY-2334

Site INY-2334 was originally recorded in 1977 by BLM crew as a relatively small site measuring approximately 51-250 m² (7 x 7 m to 16 x 16 m). No tools were recorded, and the site record contained minimal information about the nature of the site. The site was rerecorded in 2001 by L&L as a moderate lithic scatter, containing mostly obsidian artifacts, that was bisected by a dirt access road (Figure 3). The boundaries of the site were extended during the current testing program to encompass additional areas of lithic scatters identified during the surface collection phase. Overall, the majority of material collected from the site consisted of obsidian lithic debitage; however, other lithics such as cores, flaked stone tools, bifaces, a projectile point, and metates were also recovered. Additionally, the majority of lithic material consisted of obsidian, although basalt, quartz, granite/granitics, cryptocrystalline quartz, and metavolcanic lithic materials were also collected. Excavation locations and surface collection areas were determined by topography, artifact density, and site context.

Figure 2: Summary and comparison of regional chronologies.

Epoch	General	Owens Valley Region	Mojave Desert Region	~Dates
Early Holocene	Pre-Archaic	Early	Lake Mojave	~12,000 to 7000 B.P.
Middle Holocene	Early Archaic	Little Lake	Pinto	~7,000 to 3500-4000 B.P.
Late Holocene	Middle Archaic	Newberry	Gypsum	~3500-4000 to 1500 B.P.
Late Holocene	Late Archaic	Haiwee	Rose Spring/Saratoga Spring	~1500 to 1000 B.P.
Late Holocene	Terminal Prehistoric	Marana	Late Prehistoric	~ 1000 B.P. to Historic Era



Figure 3:
Overview of site
CA-INY-2334.

The data at INY-2334 suggest that the site was focused on production of bifaces, possibly with the intention of transport or trade. The preponderance of the materials collected was early and late biface thinning flakes, suggesting that this was a very important activity. Also present at the site is a habitation component. There were multiple milling slicks situated around the dry drainage, numerous metates located near the western edge of the site, and three identified thermal features near the northern boundary.

For management purposes, INY-2334, was divided into three loci (A, B, and C). The loci were organized based on topography as well as artifact density. Locus A is bordered to the north by steep mountains, to the south by a northeast-to-southwest trending dry creek, to the west across the mine access road into a large drainage area, and its eastern boundary was determined by diminished artifact density. Locus B is immediately to the west of Locus A, on a flat, south-sloping terrace, beginning from the western ridge above the wash. The northern boundary ends at a rocky ridgeline at the toe of the steep mountains, and the southern boundary is the topographic end of the terrace. The western boundary was determined by a diminished artifact density. Locus C is to the immediate west of Locus B and is centered on a large rock feature with a high concentration of lithic materials surrounding it. The boundaries of Locus C were determined by surface artifact density only. Due to the pristine condition of the area and the low potential for impacts, it was deemed unnecessary to disturb the locus with invasive testing techniques, preserving the site indefinitely. The locus was recorded only, and no excavations or surface collections occurred.

A total number of 37 STPs were excavated, all located within Locus A. The STPs were excavated primarily along the road area, although several were intuitively placed around the east boundaries and along the west boundaries adjacent to the wash. No STPs were excavated in the road, as it is currently being utilized as a haul road and it was unsafe.

Additionally, the road had been graded within a week prior, and, after walking the road, no artifacts were observed. The STPs were placed along the road in approximately 50 to 25 m intervals, and the remaining STPs were intuitively placed on both east and west sides, based upon existing surface artifact density and topography. The results of the STPs indicated that approximately half contained subsurface deposits.

A total of two surface scrapes were excavated within Locus A to the east of the road. One was placed just to the east of the road near the northern portion of the locus, over a moderately dense surface scatter, and measured 5 x 5 m, and the other, measuring 2 x 2 m, was placed at the eastern boundary, near Datum A, also near a surface scatter. The smaller of the surface scrapes (SS2) was excavated to a visually estimated 5 cm depth. The larger surface scrape (SS1) was divided into quadrants and excavated using flat-head shovels to a visually estimated 10 cm depth. GPS points for the scrapes were taken at each of the four corners. All excavated soil was screened for artifacts using 3-mm mesh shaker screens.

INY-3669

Site INY-3669 was originally recorded by Jobson in 1989 as much smaller than the current site boundary (Figure 4). The site record included a rock feature, which was relocated during the current study. The enlarged site boundary encompasses a moderately dense scatter of over 200 surface artifacts, mostly consisting of obsidian debitage, one historic can, and 10 bedrock outcroppings with a total of 15 associated bedrock milling slicks. The site boundary was larger than initially recorded, roughly oval in shape, measuring approximately 137 m north-south by 169 m east-west, and is located on the tip of a bench. It includes two distinct areas, a south-sloping bench that drops into the current pumice mine and a small canyon and east-west ridgeline containing boulder outcroppings bisected by a manmade erosional



Figure 4: Overview of site CA-INY-3669.

channel; a small number of artifacts were found on the slope to the west of the bench edge, and none were found on the canyon floor. For management purposes, the site was divided into two loci, A and B.

Locus A included the lower portion of a ridge line that is currently being impacted by mine expansion activities and a terrace area encompassing a total of 13 milling slicks spanning over eight bedrock outcrops and a large dense lithic scatter, which includes multiple portable metates along with other miscellaneous ground stone.

A 5 x 5 m grid system was placed over the densest portion of the site, an area on the bench containing the majority of the lithic artifacts. A survey over the locus was conducted, and single or small clusters of artifacts were pin flagged for later collection. A selective surface collection then occurred over the entire locus. All visible ground stone was collected with the exception of two large embedded metates located within the northern portion of the locus, within the bedrock outcrop. A GPS point and collection number were assigned to each individual artifact and/or each cluster of artifacts as they were collected during this process. Clusters of artifacts were collected in 1 m radii, with a GPS point taken in the center of the cluster.

Locus B, located adjacent and to the northeast of Locus A, consists of two major granite outcrops with three bedrock milling features, three portable metates, miscellaneous ground stone, and one historic can which was located near the center of loci A and B. As it was presumed that no impacts were to occur to Locus B, no excavations were conducted; the milling slicks and ground stone artifacts were recorded but not collected, although the historic can was collected for analysis.

Locus A included the excavation of 14 STPs. No STPs were excavated on Locus B. The locations of the STPs were intuitively chosen, based upon existing locus topography and artifact density. Results of the STPs indicated that artifacts were located primarily on the surface,

with a small number being collected to approximately 40 cm below surface.

A total of two 1 x 1 m excavation units (Units 1 and 2) were completed within Locus A. Unit 1 was placed over a dense surface lithic scatter near the manmade water channel. The unit was excavated in 10-cm arbitrary levels to a depth of 60 cm. The majority of the artifacts were located primarily on the surface and slightly below, as most were collected no deeper than 40 cm.

Unit 2 was placed over what was recorded as a thermal feature. The unit was excavated in 10-cm arbitrary levels to a depth of 90 cm. Excavations of each level, from surface to 90 cm, resulted in the collection of one artifact per level. Further analysis and a profile of this unit indicated that extreme bioturbation and possible flooding or erosional events in this area were the cause for artifacts being located at the 90 cm level.

The excavation of Unit 2 resulted in confirming that the feature was indeed thermal and was most likely a hearth, although the associated rocks were very loosely connected; no true pattern was noted. This could be a result of bioturbation shifting the feature, or it could indicate that this feature was not extensively used. Additionally, several pieces of charcoal were collected, although they were not suitable for dating purposes.

The analysis indicated that the site is a food resource exploitation area, most likely utilized as part of a seasonal migration pattern for an extended period of time. Special activity areas are apparent within this site structure; food processing was primarily conducted within the rocky ridgeline area, while lithic activities were conducted on the lower-lying bench. The results of the lithic analysis indicated that there were no specialized technologies, nor was there an overabundance of one type of artifact, indicating specialization. The site does not seem to be located

within an easy access area such as with sites INY-2334 and INY-5952, and there are no lithic materials to quarry.

The artifacts collected indicate “general housekeeping” activities such as tool sharpening and some tool manufacturing. Conspicuously absent from the site assemblage were hammer stones and milling equipment maintenance tools. This suggests that no long-term habitation occurred, as the important tools were being removed from the site. Additionally, Jobson indicated that there were pottery sherds at the site during the initial recordation. Although these were not located during the current program, their presence could indicate either storage/caching at the site or collection of food resources for transport.

INY-5952

Site INY-5952 is the most complex and the most unique site of the three. It is hypothesized that this site was on the direct trade route to the Sugarloaf quarries and was utilized for several purposes at several different time periods (Figure 5).

During the current testing program, it was determined that the site contained at least three specific activity areas, topographically separated. It was noted that the mine access road was a formal topographic barrier separating the site into east and west sides. It seemed unusual to us that each side of the road exhibited seemingly separate types of artifacts. The first area is on the west side; the majority of the artifacts were made from air-fall obsidian, mostly utilizing a bipolar technique. The artifacts were smaller, and more shatter was observed. Further, a few biface thinning flakes were collected from this side only.

The second area is on the east side of the road where larger clusters of flakes and debitage were observed as well as a large number of flakes resulting from core preparation activities. Finally, the northern portion of the site was most likely the primary food processing area; milling features and manos were located in a denser concentration, presumably because of the rock outcrops. This large outcrop would have also been ideal for protection from the elements.

Surface collection was completed using extensive hand and GPS mapping and recordation with two separate datums and grid systems set over a portion of the site on the west side of the road and over the terrace on the east side. A survey over the entire site was conducted, and single or small clusters of artifacts were pin flagged for later collection. All grid points on the site were recorded by GPS.

On the western side of the site, a grid was placed immediately off the northwest corner of Coso Junction Road and the Makayla Mine access road. The grid was organized in order to accommodate tighter control of the resources for collection purposes, and it utilized 5-m intervals for 30 m along a north-south axis and 35 m along an east-west axis. The entire grid was selectively surface collected, and each grid point was recorded by GPS. A GPS point and collection number was assigned to each individual artifact and/or each cluster of artifacts outside of the grid system as they occurred during the collection process. Clusters of artifacts were collected in 1-m radii with a GPS point taken in the center of the cluster.

The eastern grid system was set up over a much larger area and used more for mapping control purposes. The grid points were placed at 25 m intervals along a north-south axis and an east-west axis. Eight

Figure 5:
Overview of
CA-INY-5952.



areas of dense artifact concentrations, designated A thru H, were identified on the eastern side of the site. A boundary of each concentration area was determined based upon presence of artifacts and was then mapped. A 10 percent sample was collected from eight of the 10 artifact concentrations in the area. A reduced collection strategy was employed during collections in order to minimize the amount of impact on the integrity of the site but still assist in answering the research questions posed in the Research Plan.

A wash is located to the west of the terrace and runs from Coso Junction Road across the mine access road and up towards the northwest. The mine access road, Coso Junction Road, and the terrace form a large triangle of highly disturbed soil resulting from erosion, wash activity, road use, and historic mine usage associated with the remnants of a loading dock. Due to the disturbance, this area was topographically separated into two collection areas, 1 and 2. Both collection areas were recorded by GPS and selectively surface collected.

Testing of this site included the excavation of nine STPs. The locations of the STPs were intuitively chosen based upon existing site topography and artifact density. One 2 x 2 m surface scrape was excavated within the site to the west of the mine access road. It was intuitively placed over an obsidian lithic scatter and excavated to a visually estimated depth of 5 cm. GPS points for the scrape were taken at each of the four corners. All excavated soil was screened for artifacts using 3-mm mesh shaker screens. The soil was very rocky, with pea-sized, subangular gravel and small pieces of air-fall obsidian. Very few artifacts were collected subsurface.

It seems likely that this site can be called an off-site quarrying area as defined by Gilreath and Hildebrandt (1997), although of a much more complex design. The intrasite patterning indicates that the primary subsistence-related activities, such as eating and sleeping, were conducted at the base of the large basalt outcropping at the northern boundary. Milling slicks, metates, manos, and a possible windbreak area confirm this. Core preparation activities occurred along the eastern terrace, south of the boulder outcropping. This pattern could also lend itself to a special activity area model. Based upon the lithic analysis, the core preparation areas on the terrace were entirely different from the activities conducted to the west of the mine access road. The activities conducted here include bipolar air-fall cobble reduction and biface preparation. It has been hypothesized that the air-fall was utilized expediently; possibly on the way to or from the Sugarloaf quarries or as temporary tool implements in order to preserve the inhabitants' higher-quality toolstone.

DISCUSSION

Regionally, it is perceived that these sites played an important role in settlement patterning over the landscape as well as population mobility. The sites are situated north of the Stahl Site and south of the Rose Spring site, east of the food resources and smaller habitation areas within the Sierra Nevada mountains and west of the largest and best-studied obsidian sources in California. Most settlement patterning models indicate that water, food, and tool resources were the primary

reasons for migrating or for seasonal rounds. Inhabitants of the sites would have had access to all available necessary resources, including major winter villages such as Stahl and Rose Spring. Dependence on hydration dating of the selected artifact would indicate that these sites have been in use for over 10,000 years; point typology dating indicates at least a 2,000- to 3,000-year span of usage.

There are several hypotheses relating to subsistence, internal site organization and selection, chronology, and population movements that may be proposed for INY-2334 based on the artifact placement and density in conjunction with the data results. The density of artifacts over the entire site, along with the wide range of hydration dates and the supportive point typology data, maintains that the site has been utilized over an extended time, a period of at least 2,000 years. While artifacts were not recovered at deep levels, the wind and water erosion of the area is high, and deflation due to these conditions most likely accounts for a large percentage of the lack of depth.

Little research has been conducted on the basic internal structures/activity area placement of small-group habitations such as those found in the Coso region and Great Basin areas. Studies of the selection process for site placement, special activity area placement, and site organization may shed light onto the larger sociopolitical organization of the bands/groups within villages and even over the landscape. For example, at INY-2334, the occurrence of milling equipment around the lithic scatters may indicate specialized activity zones, in that cooking, eating, and sleeping — basic subsistence activities — occurred near the drainage/food resources and on the north near the shelter of the northern mountains, while the lithic activities occurred south of that. This internal organization would have provided separate working areas for a family or families and allowed for more than one activity to occur at the same time. While surface collection of some artifacts occurred within the “kitchens,” the large clusters of lithics are concentrated in separate areas across the site. Further, the extended usage of the site over long time periods would have contributed lithic production waste to old clusters and created new ones that most likely have resulted in the expansive site recorded at present. Further research should be conducted at this site to answer additional research questions. Sample questions are: Was this site on the obsidian trade route that ran to and from the eastern obsidian sources? Why are there such a large number of metates at Locus C? Is there a definitive answer to why there is such a large scatter of obsidian? Where were the habitation areas; possibly to the north or to the west? Were there other activities associated with the site?

Analysis indicates that INY-3669 is a food resource exploitation site, most likely utilized as part of a seasonal migration pattern for an extended period of time. Special activity areas are apparent within this site structure as well; food processing was primarily conducted within the rocky ridgeline area, while lithic activities were conducted on the lower-lying bench. The analysis indicated that there were no specialized technologies nor was there an overabundance of one type of artifact, indicating specialization. The artifacts collected indicate “general housekeeping” activities such as tool sharpening and some tool manufacturing. Conspicuously absent from the site assemblage were hammer stones and milling equipment maintenance tools. This suggests that no long-term habitation occurred, as the important tools

were being removed from the site. Additionally, Jobson indicated that there were pottery sherds at the site during the initial recordation. Although these were not located during the current program, their presence could indicate either storage/caching at the site or collection of food resources for transport.

The location of the site indicates that it was being utilized primarily for food exploitation. It does not seem to be located within an easy access area such as with sites INY-2334 and INY-3669, and there are no lithic materials to quarry.

INY-5952 is the most complex and the most unique site of the three. It is hypothesized that this site was on the direct trade route to the Sugarloaf quarries and was utilized for several purposes at several different time periods. During the current testing program, it was determined that the site contained at least three specific activity areas, topographically separated. It was noted that the mine access road was a formal topographic barrier separating the site into east and west sides. The first area is on the west side of the road where the majority of the air-fall obsidian was collected as well as several bifaces. The second area is on the east side of the road where larger clusters of flakes and debitage were observed as well as a large number of flakes resulting from core preparation activities. Finally, the northern portion of the site contains a large basalt outcrop that would have been ideal for protection from the elements.

It seems likely that this site can be called an off-site quarrying area as defined by Gilreath and Hildebrandt (1997), although of a much more complex design. The intrasite patterning indicates that the primary subsistence-related activities, such as eating and sleeping, were conducted at the base of the large basalt outcropping. Milling slicks, metates, manos, and a possible windbreak area confirm this. Core preparation activities occurred along the eastern terrace, south of the boulder outcropping, in the second area. This pattern could also lend itself to a special activity area model. Based upon the lithic analysis, the core preparation areas on the terrace were entirely different from the activities conducted to the west of the mine access road. The activities conducted here include bipolar air-fall cobble reduction and biface preparation. It has been hypothesized that the air-fall was utilized expediently, possibly on the way to or from the Sugarloaf quarries or as temporary tool implements in order to preserve the inhabitants' higher-quality toolstone.

As with INY-2334, there were several questions that were raised that additional research could answer for INY-5952. Due to the sampling techniques and preservation strategies used at this site, not all of the specific cluster areas were collected or excavated. Sample questions are: Were there any other technological techniques being practiced at the site? Are there additional chronological determiners that can help solidify the periods of usage? Is there depth to the activity areas near the northern boundary? How long was the site used? Is the site directly related to obsidian quarrying, and is it on the trade/migratory route to/from the quarries? Does air-fall obsidian play a larger role within the site objectives? Is the intersite patterning related to specific use areas, mobility, settlement patterning, or the passage of time?

ACKNOWLEDGEMENTS

All of us at L&L and those associated with the project would like to thank everyone who has made this research project possible. California Lightweight Pumice, Inc., provided support and funding for the current project and granted L&L Environmental, Inc., the opportunity to work within an incredibly culture-rich region. We would also like to thank the BLM, specifically Judyth Reed, Mike Baskerville, Joan Oxendine, and Don Storm. Without their support, this project would not have been completed. Sincere appreciations go to Geochemical Research Laboratory and Origer's Obsidian Laboratory for the quick yet thorough analysis and for their assistance with the obsidian dating process. Finally, we would like to thank the members of the L&L field crew and laboratory staff for their hard work, dedication to the project and late nights. Thank you all!

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