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## Archaeological Inventory, Site Assessment, and Data Management, Lake Mead National Recreation Area (LAME) and Parashant National Monument (PARA), Annual Report for 2008

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## **ANNUAL REPORT FOR 2008**

University of Nevada, Las Vegas  
October 1, 2007 to September 30, 2008

Cooperative Agreement Number H8R07060001  
Task Agreement Number J8R07060013

Archaeological Inventory, Site Assessment, and Data Management, Lake Mead National Recreation Area (LAME) and Parashant National Monument (PARA)

This cooperative task agreement was awarded to the Public Lands Institute (PLI) at the University of Nevada, Las Vegas (UNLV) on October 1, 2006, with the term ending on February 17, 2009, as modified. The following information constitutes an annual report for all of the major activities performed during the second year of this agreement. In addition, a brief summary of all work performed for each project in the agreement between October 1, 2007 and September 30, 2008 is presented. Other important tasks or activities associated with this agreement, but not identified under any specific project, are also summarized.

### **Executive Summary**

- Over 5,000 acres were inventoried or monitored and 152 newly discovered archaeological sites documented on LAME and PARA
- Ten technical reports and three memoranda were written in support of TA projects
- Seven manuscripts and two master's thesis are in progress, under peer-review, or published
- Twelve papers or posters were presented at professional conferences
- Monitored 151 features at the historic town site of Saint Thomas
- Draft report summarizing the test excavation program at 26Ck4943 completed
- Over 65 site condition assessments conducted on LAME and PARA
- Over 2,800 acres inventoried and 90 sites recorded as a result of NPS and BLM fire management projects on PARA
- Test excavations and related field work completed at several Puebloan sites on PARA
- Predictive site settlements models developed for PARA
- Over 900 acres inventoried and 9 sites recorded for Capital Improvement Projects at LAME
- Over 450 acres surveyed and 19 sites recorded for the Lost City Inventory Project
- Ground penetrating radar and electro-magnetic conductivity surveys completed for three sites at Pueblo Grande de Nevada

## Summary of Attachments

- Archaeological Inventory Project Status and Summary (10/01/2007-09/30/2008)
- Site Condition Assessments Conducted in Year 2
- Geochemical Research Laboratory Letter Report No. 2008-49

## Program Activities

### Preserve American Project 1A: Saint Thomas

This particular project, including all deliverables specified in the TA, is complete. The following narrative summarizes the results of all field and laboratory-based work that took place over the last two years.

During the first year of the TA, site and feature information obtained prior to the agreement was compiled into a variety of computer files/databases with hard-copy originals placed in a large three-ring binder (Phase 1, Deliverable 1). A copy of the original documents was also created for use during field work. A feature monitoring form was developed in collaboration with various cultural resource management professionals and tested/used during field work in January of 2007 (Phase 1, Deliverable 2). Field tests proved that, with only one modification, the monitoring form is sufficient for long-term use (Phase 1, Deliverable 3).

In all, a total of 141 architectural and non-architectural features were monitored during the first phase, including 17 new features (Phase 1, Deliverable 3). GPS spatial data were obtained for all of these features, as well as approximately 1,400 tree stumps that line roadways and property boundaries (Phase 1, Deliverable 4). Scale drawings were made and photographs taken for 10 features (Phase 1, Deliverable 5). Finally, a GIS-derived site map was developed from the GPS data (Phase 1, Deliverable 6). These data are available for Park Service use and GIS manipulation on the NPS network (R:\CRData\Geodatabase\_Working\_NAD83\26Ck6758(St\_Thomas)). A copy of the completed map was attached to the 2006-2007 second quarter report.

During the second year of work, condition assessments were conducted on all 146 previously recorded features (Phase 2, Deliverable 1). This work included filling out the condition assessment form for each feature and reduplicating digital photographs from established photo points. In addition to these 146 features, 5 newly discovered features were found and documented. Scale drawings, along with digital photographs, were completed for 27 features, 7 more than specified in the TA (Phase 2, Deliverable 2). All of the information obtained as a result of this project has been integrated into appropriate Park Service electronic and hard-copy databases.

To summarize the results of long-term monitoring efforts at Saint Thomas, of the 151 features identified at the site to date, 125 features have been documented/monitored for 3 years (Features 1-129, 2003-2008), 21 have been documented/monitored for 2 years (Features 130-151, 2007-2008), and 5 for only 1 year (Features 152-156, 2008). Of these features, 35 (23%) are in poor condition or less than 25% of each of these features remain

intact, 44 (29%) are in fair condition or have between 25-75% of each feature intact, while 72 (48%) remain in good condition with over 75% of each feature intact. The overwhelming majority of damage/disturbance affecting these features is the pervasive growth of tamarisk. Tables that summarize the results of monitoring efforts were attached to the 2007-2008 second quarter report.

In addition, preventive maintenance was performed on two features: Feature 3, a cement foundation, and Feature 17, a covered water diversion channel. In the case of Feature 3, the Phase 1 assessment found part of the foundation undercut by erosion, so dirt was shoveled underneath it last January (Phase 2) to shore it up. For Feature 17, the Phase 1 assessment found that visitors walking across the top of the feature had caused a portion of the cement to fracture. During Phase 2, four metal posts with a connecting chain were emplaced to discourage visitors from walking across it. In addition, most of the cisterns remain open and some even contain water. These features pose real threats to visitor safety and should be sealed in some fashion. Monitoring efforts have identified at least 12 cisterns that pose a threat to visitor safety.

#### Preserve American Project 1B: Lake Mead Website Cultural Resource Information Review and Update

A total of 18 different web pages have been drafted thus far for this project (see below). Most of these pages include various associated graphics, including maps and photographs. To summarize past work, a web-based format for presenting historic and cultural resource data, as well as an outline identifying relevant prehistoric and historic period information, was provided in October, 2006 (Phase 1, Deliverables 1-2). Web pages that relate to each historic and prehistoric theme identified as a deliverable in the TA have been produced. Draft web pages include geographic or historic overviews for Boulder Basin (Phase 1, Deliverable 3), Lake Mohave (Phase 1, Deliverable 4), the Overton Arm (Phase 2, Deliverable 1), and other parts of Lake Mead (Phase 2, Deliverable 2). In addition, text regarding the prehistoric periods for Lakes Mead and Mohave has been provided (Phase 2, Deliverable 3). Web pages currently being developed include an historic overview for Lakes Mead and Mohave, a mining district overview, and information on Katherine Mine (Lake Mohave). Content for these pages will be completed by Greg Haynes and Hal Rager and submitted by November 30, 2008.

Over the past year, work on this project has proceeded with periodic meetings between NPS ATR Daron, Program Manager Greg Haynes and other PLI Research Assistants. Visual Arts Specialist, Ms. Leslie Paige, has not been available to assist with this project. It is important to stress that the content of each web page, in terms of related texts and graphics, is being conducted in coordination with NPS ATR Daron. If, and when, this information gets posted on the official Lake Mead website is entirely up to the Park Service. The following list identifies the web pages that have been drafted and delivered to the Park Service to date:

- Thematic Overviews
  1. Outline for presenting historic and prehistoric period information

2. Culture and History Introduction
  3. Native Peoples (Prehistoric, Native American)
  4. Archaeological Impacts, Preservation and Stewardship
- Geographic Overviews
    5. Boulder Basin (Lake Mead)
    6. Overton Arm (Lake Mead)
    7. Gregg Basin (Lake Mead)
    8. Temple Bar (Lake Mead)
    9. Newberry Mountains (Lake Mohave)
  - Historic Web Pages
    10. Six Companies Railroad in Boulder Beach (Boulder Basin)
    11. McKeeversville and Ragtown (Boulder Basin)
    12. Anson Call (Callville Bay)
    13. Daniel Bonelli (Temple Bar)
    14. B-29 (Overton Arm)
    15. Civilian Conservation Corps
    16. Elwood Mead
  - Prehistoric Web Pages
    17. Pueblo Grande de Nevada (Overton Arm)
    18. Salt Caves (Overton Arm)
    19. Mark Raymond Harrington

#### Preserve America Project 1C: Evaluation of Site 26Ck4943

Last April, two obsidian artifacts recovered during test excavations were mailed to the Geochemical Research Laboratory in Portola, California, to determine their geological source location. The results from this analysis were received in July. While the two artifacts appear to come from the same geological source, the exact location of the parent material remains unknown. This is surprising since most large obsidian flows in the western U.S. have been characterized and their locations identified. This suggests that the obsidian comes from a highly localized source, like from one of the many small volcanic mountain ranges adjacent to the lower Colorado River, or perhaps from a location in northern Mexico (see attached report).

A draft report that summarizes the results of test excavations at 26Ck4943 was submitted to the Park Service in August (Phase 2, Deliverable 1). Once the Park Service completes their internal review and provides comments on the draft, then a final report will be completed (Phase 2, Deliverable 2). All other deliverables for this project, as specified in the TA, have been finished including the accession/catalog of artifacts and archival material into the NPS ANCS+ curatorial database (Phase 2, Deliverable 3).

#### Project 2: Site Condition Assessments

All of the deliverables for both Phase 1 and Phase 2 of this project have been completed. This year, a total of 68 site condition assessments were conducted on NPS lands (Table

2). Of this total, 37 assessments were undertaken within the boundaries of LAME (Phase 2, Deliverable 1), while 31 were done on PARA (Phase 2, Deliverable 2). The overwhelming majority of these sites, or 54 (79.4%), were found in *GOOD* condition. Two other sites (2.9%) were considered to be in *FAIR* condition, because a portion of each site had received some obvious and significant damage. One other site (1.5%), a segment of the Quartette Railroad grade (26Ck6581), was considered to be in *POOR* condition. This particular site has been severely degraded across its entire length by a variety of natural and man-made effects. Six (8.8%) other sites were visited, but no longer meet current site definitions for the states of Arizona or Nevada. Five other sites (7.4%) could not be relocated. Condition assessment information for all of these sites has been entered into the NPS ASMIS database (Phase 2, Deliverable 3).

A review of over 800 site records in ASMIS was completed last fall (Phase 2, Deliverable 4). Geospatial information was ensured for each record. Any site without a spatial or locational referent, or found to be outside of boundary of LAME or PARA, was designated as a “Local Resource Type”, as per NPS stipulations. The Park’s Master Site Form Directory was updated as well.

#### Project 3A: Fire Management Projects – NPS Andrus Burn Unit (PARA)

All of the deliverables identified in Phase 1 and Phase 2 for the Andrus Burn Unit project are complete, as stated previously in the FY07 Year End Report (Project 3A, Phases 1-2, Deliverables 1-2).

#### Project 3B: Fire Management Projects – NPS Kelly East Fuels Treatment Unit (PARA)

As per the TA modification, the Kelly East Fuels Treatment Unit replaced the Twin South Fuels Treatment Unit inventory. Field work for the Kelly East Unit was completed during the previous quarter (March 1 to June 30). A total of 1,850 acres received inventory and 81 archaeological sites documented. In addition to basic site surface documentation, 42 shovel probes were excavated at four prehistoric sites. While 17 artifacts were recovered from these probes (< 1 per probe), these subsurface tests showed little potential for sensitive archaeological deposits to be located in near-surface contexts at these particular sites.

All of the deliverables identified for this project are complete, with the exception of entering some remaining site information into the NPS ASMIS database. An inventory report was completed and submitted to Arizona SHPO for review (see Unpublished Technical Reports, Velasquez).

#### Project 4A: UNLV Archaeological Field School on the Shivwits Plateau

The draft report of the 2006-2007 field school investigations is nearly complete and will be submitted to NPS ATR Steve Daron by November 3, 2008. This report include will a description of field work conducted at Lava Ridge Ruin (AZ A:14:50) and Granary House (AZ A:14:46), and will include data obtained from the analysis of pollen, macrobotanical, ceramic, lithic, and tree-ring dating samples. All artifacts from that project have been accessioned according to NPS standards and requirements, and all artifacts and records have been prepared for curation.

To follow up on the 2006-2007 field school findings, a nine-day session to conduct surface investigations and limited subsurface test excavations at several sites on the Shivwits Plateau was undertaken by Karen Harry. Field work focused primarily on the excavation of test units at two large sites, the Corn Cob Pueblo (AZ A:15:56) and the Andrus Canyon site (AZ A:15:151). Other work included a site map and in-field ceramic analysis at Hill-Top Pueblo and the collection of multiple pollen and soil samples at three sites believed to be prehistoric agricultural fields (AZ A:14:91, AZ A:14:110, and PARA-9). The analysis of lithic and ceramic artifacts recovered from this fieldwork is currently underway. Pollen, macrobotanical, and soil samples are currently being analyzed.

To follow up on the 2006-2007 field findings, a three-day field session to conduct in-field analyses of surface artifacts was recently conducted by Karen Harry and James Watson. The following site locations were inspected (AZ A:14:52, A:15:36, A:15:43, A:15:45, A:15:47, A:15:52, A:15:55, A:15:75, A:15:76, A:15:89, A:15:123). The purpose of this study was to obtain finer-grained information regarding the functions and chronological placements of these sites than previously available from the survey data. A letter report detailing the results of this fieldwork is currently being prepared and will be submitted to NPS ATR Steve Daron thirty days after receiving comments from the ATR.

#### Project 4B: Settlement Pattern Study

A comprehensive GIS database which includes data on the following cultural and environmental attributes has been finalized: (a) archaeological sites -- by type, age, and cultural affiliation; (b) topography; (c) soil type; (d) springs/seeps; (e) plant communities; and (f) elevation (Phase 1, Deliverables 1-2). In addition, this database incorporates geospatial data from all archaeological inventories completed across PARA.

In July, Ms. Glendee Ane Osborne, who is conducting this study for her M.A. thesis in anthropology, traveled to Reno to work with Ms. Alyce Branigan, an archaeological modeler with the Humboldt-Toiyabe National Forest. As a result of this trip, ArcGIS-compatible software for developing predictive location models (Spatial Data Modeler, SDM3.1) was used on the PARA database. A draft report that summarizes a number of somewhat different predictive models was completed in August 2008 (Phase 2, Deliverable 1). In this report, individual predictive site location models were developed for a number of different prehistoric site types, time periods and cultural affiliations (i.e., all prehistoric sites, camp sites, habitation sites, Pueblo II Period sites, all Puebloan sites). The final report has been submitted.

Additionally, because a number of large-scale surveys have been completed on PARA over the last two years, field work will not be conducted to test any of these models. Rather, GIS-based testing will be conducted, and field-based testing is not necessary. The GIS-based testing will be used to determine how well each model predicts the location of archaeological sites. Following this test procedure, each model will be fine-tuned and a final report will be completed. Completion of the GIS-based testing procedure is scheduled for October 30, 2008 (Phase 2, Deliverable 3), while the final report is

scheduled for November 26, 2008 (Phase 2, Deliverables 4), which will be completed by Glendee Ane Osborne as part of her UNLV master's thesis.

#### Project 5: SNPLMA Capital Improvement Projects

To date, all field work related to the CIP inventories is complete (Phase 2, Deliverable 2). A total of 975 acres were surveyed this year: a 320 acre parcel near Laughlin, a 245 acre parcel in Government Wash; and a 410 acre parcel near Twin Springs. In all, 9 new sites and 53 isolated finds were documented. All three technical reports associated with these inventories have also been written (Phase 2, Deliverable 3). Both the Laughlin report (see Unpublished Technical reports, Haynes) and the Twin Springs Cove Report (see Unpublished Technical Reports, Velasquez) have gone through Park Service review and are complete. However, the Government Wash report remains in draft form (see Unpublished Technical Reports, Roycraft) and the completion of this report by Greg Haynes and Hal Rager is scheduled for December 1, 2008.

#### Project 6: Lost City Inventory

Field work during the second year of this project (Phase 2) included the inventory of 475 acres at Pueblo Grande de Nevada (Phase 2, Deliverable 1). As a result of this work, 19 sites were recorded and site forms drafted (Phase 2, Deliverable 2). Due to the inordinately large number of sites associated with the Kelly East inventory on PARA (see above), ASMIS data entry for these 19 sites remains incomplete. ASMIS data entry for this project will be finished before December 15, 2008. Additionally, a draft preliminary report that covers field work results for both Year 1 (Phase 1) and Year 2 (Phase 2) is in preparation by Greg Haynes and scheduled for completion by November 15.

Geophysical surveys that include the use of ground penetrating radar and an electromagnetic conductivity device have been accomplished at three sites located as a result of field work (Phase 3, Deliverable 1). These sites include two Virgin Anasazi habitations, Harrington's House 46 (26Ck8411) and House 47 (26Ck7592), along with the historic, Euroamerican-built, Pageant Site pueblo (26Ck6759). As a result of this work, a number of subsurface anomalies hypothesized to be architectural features were identified. Subsurface excavations to test a number of these anomalies will be conducted from October 9 to October 18 (Phase 3, Deliverable 1). A draft preliminary report is scheduled for completion by December 7 (Phase 3, Deliverable 2). The final report will be submitted thirty days after receiving comments from the ATR on the preliminary report.

#### Project 7: BLM Andrus Burn Unit (BLM-PARA)

All deliverables identified in both Phase 1 and Phase 2 for this project are complete, as previously stated in the FY07 Year End Report.

#### **Other Projects Conducted at the Request of the National Park Service and Bureau of Land Management**

In addition to October 2007 – September 2008 fuel reduction projects for PARA, two other parcels totaling 1,050 acres have been inventoried in support of agency fire



management programs. The smaller of these units, located near Kelly Dam, is not more than 450 acres in size and contains 11 sites. A compliance report for this project was completed by Research Assistant Roycraft (see Unpublished Technical Reports). The larger parcel is located immediately south of the Kelly East Unit, totals 600 acres and contains 29 sites. While the documentation of archaeological sites on the Kelly East Extension unit is not yet finished, completion of this project is at the discretion of the Park Archaeologist.

During the first quarter, October 1, 2007 – December 31, 2007, several hundred artifact records were entered into ANCS+, the Park Service's national curation catalog. All of these records relate to previous archaeological investigations at Main Ridge (Smithsonian site #26Ck2148), Pueblo Grande de Nevada. At the same time, quality control and assurance for records in the Natural History catalog of ANCS+ was also conducted.

Also during the first quarter, three rock art sites were initially recorded near Cottonwood Cove (26Ck6577, 26Ck6578, 26Ck6579). The documentation crew included two PLI employees (Bonstead, Burrows), an NPS seasonal employee (Ms. Allison King) and two volunteer Student Conservation Association volunteers (Ms. Crystal Kauk, Ms. Sarah Weems). Ms. Bonstead trained the entire crew on the proper techniques used to record rock art according to standards provided by the Nevada Rock Art Foundation and approved by Nevada SHPO. Follow up documentation took place this past July 2008, and scale drawings were made for each rock art panel at 26Ck6577 and 26Ck6578.

In March 2008, UNLV Graduate Student, Ms. Glendee Ane Osborne, assisted NPS Archaeologist, Pat Baird, in the documentation of Blue Point Spring. Ms. Osborne's work primarily involved the creation of a highly accurate site map using a Total Station. Both the upper and lower spring localities were mapped in March, along with associated historic fish ponds, roadways and other historic features.

In 1997 and 1978, the Western Archaeological Center (WACC) recorded 130 sites near Tassi Spring in the Grand Wash area of PARA. These sites eventually became listed on the National Register of Historic Places (NRHP) as the "Grand Wash Archaeological District". Because the level of documentation for archaeological sites has significantly changed over the years, Lake Mead Archaeologist Steve Daron requested that field work take place at this district to update the existing site records. This work included relocating, re-recording and assessing the condition of as many sites as possible using current standards and protocols. Field work began in October 2007 under the direction of PLI Research Assistant Steph Velasquez, and continued throughout the year as time and the disposition of personnel allowed. Sixteen archaeological sites were revisited as a result of this project.

PLI Research Assistants have assisted the Park Service on a number of GIS-based tasks throughout the year. A new and comprehensive cultural resource GIS database for both LAME and PARA is nearing completion. PLI Research Assistant Steph Velasquez, in particular, played a critical role during the developmental process, ensuring that all cultural resource geospatial data was properly migrated into the new system, and that it

could be used seamlessly by cultural resources personnel. Other university-based people who assisted with this process include Elizabeth Roycraft, Vanessa Truit and Hal Rager.

Another important GIS-based task has been to digitally rectify a suite of aerial photographs that show Boulder Basin before its inundation by Lake Mead. In simple terms, this work ensures that all of these aerial photographs match other topographic maps and aerial photographs. Also, the UTM or longitude/latitude data can be obtained from them with a relatively high degree of accuracy. PLI employee, Hal Rager, continues to work on this task.

## **Personnel and Hiring**

With the archaeological TA nearing completion, significant changes in personnel have taken place. On August 31, Elizabeth Roycraft resigned as Research Assistant for PLI, and was hired by Lake Mead as a term archaeological technician. Glendee Ane Osborne was also hired as a technician for Lake Mead, but will continue her work on her UNLV thesis related to this task agreement under the direction of Dr. Karen Harry. Mr. Hal Rager was hired in July to complete several unfinished projects and assist with GIS-based tasks. Mr. Rager obtained an M.A. in anthropology at UNLV in 2001 and has nearly 20 years of archaeological/GIS experience in southern Nevada. Program Manager Haynes will continue to be employed through the TA until January 30, 2009. Lauren Falvey, student worker, will continue to assist Dr. Harry to meet all remaining deliverables through February 17, 2009.

## **Training**

- PLI archaeologists (Karen Harry, Greg Haynes, Leah Bonstead, Steph Velasquez, Elizabeth Roycraft, Erin Burrows, graduate student Osborne) attended the biennial *Three Corners Conference* held on the campus of UNLV October 2007. This conference included 27 papers that presented the results of current archaeological research taking place in southern Nevada, northwestern Arizona and southeastern California (see below).
- Research Assistant Elizabeth Roycraft attended the National Historic Preservation Trust's introductory course on Section 106 of the National Historic Preservation Act (October 2007).
- Research Assistant Steph Velasquez attended a week-long SCUBA training course at Lake Mead and obtained a PADI SCUBA certificate. She was also able to obtain a Diver's Alert Network Oxygen Administration Certification at the same time. It is important to note that these two courses were undertaken on Ms Velasquez's own time and expense (October 2007).
- Research Assistant Elizabeth Roycraft attended the NPS Basic Helicopter Safety training. No one is allowed to fly in an NPS helicopter without this training. So,

if it is necessary for a PLI archaeologist to access the field via helicopter, Ms Roycraft will be able to do this following proper NPS protocols (November 2007).

- PLI Research Assistant Roycraft and graduate student Glendee Ane Osborne attended a four-day long Geographic Information System training class. This was an intermediate-level course organized by the BLM and hosted at UNLV (November 2007).
- Program Manager Haynes and Field Supervisor Bonstead attended a two-day supervisory-leadership training course at Lake Mead. The purpose of this course was to develop different kinds of supervision and leadership skills, depending on the skill level and morale of the employee(s) (January 2008).
- PLI archaeologists at Lake Mead (Velasquez, Roycraft, Burrows, King) attended a Lake Mead Resource Management retreat in January 2008. This retreat primarily focused on monitoring Smoketrees in the Telephone Cove area of Lake Mohave.
- PLI archaeologists at Lake Mead (Haynes, Velasquez, Roycraft, King) attended an Interagency Aviation Training Course (B-3: Basic Aviation) at Lake Mead. No one is allowed to fly in an NPS airplane without this training. So, if it is necessary for a PLI archaeologist to access the field via plane, a number of people will be able to do so according to NPS protocols (March 2008).
- Research Assistant Steph Velasquez attended a two-day wilderness training workshop entitled *Introduction to the Wilderness Act*. This workshop, held in Las Vegas, was taught by the nationally recognized Arthur Carhart National Wilderness Training Center (April 2008).
- Research Assistant Steph Velasquez completed a semester-long Basic Emergency Medical Training course (EMT-B) through the College of Southern Nevada this spring semester 2008. She received an “A” grade.

## **Public Outreach**

- Information recovered during Lost City fieldwork is currently on display as a panel in the Lost City Museum’s new exhibit entitled “Southern Nevada Landscapes of Change.”
- Karen Harry gave a presentation on the fieldwork conducted at Lost City to a region-wide meeting of the NPS archaeologists, Boulder City, Nevada (2/12/2008).

- Karen Harry gave a presentation to invited members of the public at an exhibit opening for the Lost City Museum (May 8, 2008).
- Greg Haynes gave a presentation to the Lincoln County Chapter of the Nevada Archaeological Association in Caliente. The talk discussed past and current investigations at Pueblo Grande de Nevada (November 28, 2007).
- Greg Haynes gave a presentation to the Archaeo-Nevada Society in Las Vegas. This talk was also about past and current investigations at Pueblo Grande de Nevada (January 10, 2008).
- Leah Bonstead gave a presentation to Nevada Conservation Corp (NCC) employees who work on public lands throughout Southern Nevada. Leah spoke about the kinds of archaeological sites found throughout the region, as well as the kinds of sites found specifically at Lake Mead (October 8, 2008).
- Elizabeth Roycraft gave a presentation to the Archeo-Nevada Society in Las Vegas. Her talk was about the prehistory of the Shivwits Plateau and the large-scale inventories she has been involved with over the last two years (March 13, 2008).

### **Scholarly Activity**

*The following manuscripts are published or in press:*

Ast (Charest), Andreas

Defining Grinding Slicks- An Experimental Approach. In *Proceedings of the 2007 Three Corners Conference*, edited by Mark C. Slaughter, Steven Daron, and Kathleen A. Sprowl (forthcoming).

Harry, Karen G.

Seven Foot Giants & Silk-Clad Skeletons: A Voyeur's Look Back at the Discovery and Early Fieldwork of Nevada's 'Lost City'. In *Proceedings of the 2007 Three Corners Conference*, edited by Mark C. Slaughter, Steven Daron, and Kathleen A. Sprowl (forthcoming).

Haynes, Gregory M.

Variability in Morphology and Raw Material Choices in Paleoamerican Projectile Points from Yucca Mountain. Accepted for publication in *Current Research in the Pleistocene*, Volume 24 (published January 17, 2008).

Asking Why in Great Basin Lithic Studies. Co-authored with Daron G. Duke. Under review for the upcoming edited volume: *Past, Present and Future Issues in Great Basin Archaeology: Papers in Honor of Don D. Fowler*. Nevada Bureau of Land Management, Cultural Resources Series, Sparks, Nevada (forthcoming).

Henrickson, Stephanie and Angela N. Peterson

Explaining the Absence of Hearts at Lava Ridge Ruin. In *Proceedings of the 2007 Three Corners Conference*, edited by Mark C. Slaughter, Steven Daron, and Kathleen A. Sprowl (forthcoming).

*The following manuscripts are currently undergoing peer-review:*

Harry, Karen G., and James Watson

The Archaeology of Pueblo Grande de Nevada: Past and Current Research within Nevada's 'Lost City'. Manuscript is in peer-review for publication in *Kiva* (submitted August 13, 2008).

Haynes, Gregory M.

Cross-Cultural Implications for Ancestral Pueblo Agriculture along the Lower Muddy River in the Mojave Desert. Manuscript currently under revision for *Journal of Anthropological Research*. (submitted May 20, 2008; returned for revision August 10, 2008).

*The following master's theses projects are currently underway:*

Anderson, Sharlyn

Green Gold: An Evaluation of Technological and Socioeconomic Functions of Olivine Temper in Pueblo II Virgin Anasazi Ceramics from Lost City. M.A. thesis, University of Nevada, Las Vegas, Department of Anthropology and Ethnic Studies (unfinished). Anticipated graduation date: Spring 2009.

Osborne, Glendee Ane

Prehistoric Settlement, Land Use, and Site Locations: A Predictive Model for the Shivwits Plateau, Northwest Arizona. M.A. Thesis, University of Nevada, Las Vegas, Department of Anthropology and Ethnic Studies (unfinished). Anticipated graduation date: Fall 2008.

*The following papers or posters were presented at professional conferences:*

Anderson, Sharlyn, Karen Harry and Nancy Gray

Vessel Function as a Means of Understanding Ceramic Trade during the Middle Pueblo II Period in Nevada. Paper presented at the 37<sup>th</sup> Annual Meetings of the Nevada Archaeological Association, Minden, Nevada (April 12, 2008).

Bonstead, Leah, Eva Jensen, and Steve Daron

History and Condition of St. Thomas: A Southern Nevada Ghost Town. Paper presented at the 2007 Three Corners Conference, Las Vegas, Nevada (October 13, 2007).

Charest, Andreas P.

Milling Slicks: Evidence of Practical Activity, Rock Art or Ritual Activity? Paper presented at the 2007 Three Corners Conference, Las Vegas, Nevada (October 13, 2007).

- Harry, Karen G.  
Red-Headed Giants, Silk-Clad Skeletons, and Drunken Archaeologists: A Voyeur's Look Back at the Discovery and Early Fieldwork at Nevada's "Lost City". Paper presented at the 2007 Three Corners Conference, Las Vegas, Nevada (October 13, 2007).
- Harry, Karen G., and Steve Daron  
Depression Era Archaeology along the Colorado River: The Role and Legacy of the CCC. Paper presented at the 9<sup>th</sup> Biennial Conference on Nevada History, Reno, Nevada (May 21, 2008).
- Harry, Karen G., and James Watson  
The Shivwits Research Project: Exploring Virgin Anaszi Settlement and Subsistence Patterns on the Arizona Strip. Paper presented at the 73<sup>rd</sup> Annual Meetings of the Society for American Archaeology, Vancouver, Canada (March 28, 2008).
- Harry, Karen G., Steve Daron, Leah Bonstead, and Glendee Ane Osborne  
Puebloan Land Use in the Mt Dellenbaugh Region of the Arizona Strip. Poster presented at the 20<sup>th</sup> Anniversary of the Southwest Symposium, Tempe, Arizona (January 19, 2008).
- Haynes, Gregory M.  
Cross-Cultural Implications for Ancestral Pueblo Agriculture along the Lower Muddy River in the Mojave Desert. Paper presented at the 2007 Three Corners Conference, Las Vegas, Nevada (October 13, 2008). This paper was also presented at the 37<sup>th</sup> Annual Meetings of the Nevada Archaeological Association, Minden, Nevada (April 12, 2008).
- Henrikson, Stephanie, and Angela Peterson  
Explaining the Absence of Hearths at Lava Ridge Ruin. Paper presented at the 2007 Three Corners Conference, Las Vegas, Nevada (October 13, 2007).
- Osborne, Glendee Ane  
Predicting Site Locations on the Shivwits Plateau, Northwest Arizona: Preliminary Results using MaxEnt Software. Poster presented at the 20<sup>th</sup> Anniversary of the Southwest Symposium, Tempe, Arizona (January 19, 2008).
- Thompson, Jennifer, Debra Martin and Karen G. Harry  
Demographic Composition and Health at Pueblo Grande de Nevada. Paper presented at the 77<sup>th</sup> Annual Meetings of the American Association of Physical Anthropologists, Columbus, Ohio (April, 10, 2008).

## Unpublished Technical Reports

Cummings, Linda Scott, and Kathryn Puseman

*Pollen and Macrofloral Analysis of Samples from the Catacombs Curve Site, 26Ck4943, Nevada.* Paleo Research Institute Technical Report No. 07-149. Prepared by Paleo Research Institute, Golden, Colorado. Technical report on file at the Public Lands Institute, University of Nevada, Las Vegas (11 pages: March 21, 2008)

Haynes, Gregory M.

*A Class III Archaeological Inventory at Pueblo Grande de Nevada, A Virgin Anasazi Community along the Lower Muddy River in Southeastern Nevada.* Western Archaeological and Conservation Center Project No. LAME 2006E; Lake Mead Cultural Resources Project No. 06-043. Draft technical report in progress. (38 site documents: No date as yet, incomplete)

*Lake Mead Capital Improvement Project 2008: The Laughlin Inventory.* Western Archaeological and Conservation Center Project No. LAME 2008 G; Lake Mead National Recreation Area Cultural Resources Project No. 08-012. Final technical report on file at Lake Mead NRA, Cultural Resources Office, Boulder City, Nevada (19 pages, 2 site documents: July 17, 2008)

*Test Excavation Results at Catacombs Curve, an Ancestral Yuman Archaeological Site near Laughlin, Nevada (Site No. 26Ck4943).* Western Archaeological and Conservation Center Project No. LAME 2006 F; Lake Mead Cultural Resources Project No. 07-006. Draft technical report on file at the Lake Mead NRA, Cultural Resources Office, Boulder City, Nevada. (52 pages, 6 appendices: August 18, 2008)

Haynes, Gregory M., Leah Bonstead and Elizabeth Roycraft

*Class I Cultural Resources Inventory of Selected Areas for Lake Mead Capital Improvement Projects in FY08.* Memorandum on file at Lake Mead NRA, Cultural Resources Office, Boulder City, Nevada. (9 pages, 4 figures: December 30, 2007)

Hughes, Richard E.

Letter report presenting the results of energy dispersive x-ray fluorescence (edxrf) analysis of 21 obsidian artifacts from three project areas (26Ck4943, Lost City, and Shivwits Plateau) in southern Nevada and northwestern Arizona. Letter report from R. E. Hughes to G. M. Haynes. Geochemical Research Laboratory Letter Report No. 2008-49. (5 pages, 2 figures, 1 table: July 28, 2008)

Osborne, Glendee Ane

*Prehistoric Settlement and Land Use: A Predictive Model of the Shivwits Plateau, Northwest Arizona.* Draft technical Report on file at Lake Mead NRA, Cultural

Resources Office, Boulder City, Nevada. (115 pages, 7 Appendices: August 29, 2008, Final Report completed September 30, 2008)

Roycraft, Elizabeth

*Lake Mead Capital Improvement Project 2008: Government Wash Area Survey, Condition Assessments, and Report Synthesis.* Western Archaeological and Conservation Center Project No. LAME 2007 M; Lake Mead National Recreation Area Cultural Resources Project No. 08-008. Draft technical report on file at Lake Mead NRA, Cultural Resources Office, Boulder City, Nevada. (31 pages, 7 site documents: May 28, 2008)

*Kelly Dam Prescribed Burn Project.* Western Archaeological and Conservation Center Project No. PARA 2008 B; Lake Mead Cultural Resources Project No. 08-032. Final technical report on file at Lake Mead NRA, Cultural Resources Office, Boulder City, Nevada. (16 pages, 11 site documents: August 2008)

Velasquez, Steph

*Kelly East Prescribed Fire Project, Grand Canyon-Parashant National Monument, Arizona.* Western Archaeological and Conservation Center Project No. PARA 2008 A; Clearance No. 001-2008-PARA. Final technical report on file at Grand Canyon-Parashant National Monument, Cultural Resources Office, Saint George, Utah. (40 pages, 81 site documents: July 31, 2008)

*Capital Improvement Project Parcel 3a – Twin Springs Cove.* Lake Mead Cultural Resource Project Number 08-015. Final technical report on file at Lake Mead NRA, Cultural Resources Office, Boulder City, Nevada. (13 pages, 0 site documents: March 2008)

*Valley of Fire Wash Prescribed Fire Project, Lake Mead National Recreation Area, Clark County, Nevada.* Lake Mead National Recreation Area Cultural Resources Project No. 08-031. Final technical report on file at Lake Mead NRA, Cultural Resources Office, Boulder City, Nevada. (15 pages, 3 site documents: April 2008)

Memorandum: Grand Wash Archaeological District Site Re-Documentation Project, October 2007 Trip Report. Lake Mead Cultural Resource Project Number 08-011. Memorandum on file at Lake Mead NRA, Cultural Resources Office, Boulder City, Nevada. (10 pages, 7 site documents: November 2007)

Memorandum: Kelly East Prescribed Fire Project, November 2007 Trip Report. Lake Mead Cultural Resource Project Number 08-013. Memorandum on file at Lake Mead NRA, Cultural Resources Office, Boulder City, Nevada. (4 pages, 3 site documents: November 2007)



Submitted by:



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Margaret N. Rees, Project Administrator

11/4/2008

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Date

## ATTACHMENTS

**Table 1. Archaeological Inventory Project Status and Summary (10/01/2007 – 09/30/2008)**

<b>Project Name (Number)</b>	<b>Inventoried Acres (Terrestrial/Submerged)</b>	<b>Number of Newly Recorded Sites</b>	<b>Number of NRHP Eligible/Ineligible Sites</b>	<b>Number of Unevaluated Sites</b>	<b>Report Status</b>
Project 1A. Saint Thomas	405 (0 / 405)	*	*	*	No Report Required
Project 2. Condition Assessments	265 (264 / < 1)	*	*	*	No Report Required
Project 3B. NPS-PARA Kelly East Unit	1,850 (1,850 / 0)	81	0 / 0	81	Final Report Complete
Project 5. CIP Government Wash	245 (245 / 0)	7	0 / 0	7	Final Report Incomplete
Project 5. CIP Twin Springs Cove	420 (0 / 420)	0	0 / 0	0	Final Report Complete
Project 5. CIP Laughlin	320 (320 / 0)	2	0 / 2	0	Final Report Complete
Project 6. Lost City Year 2	475 (255 / 220)	19	8 <sup>1</sup> / 0	11	Draft Report in Progress
BLM-PARA Kelly Dam	440 440 / 0	11	0 / 0	11	Final Report Complete
NPS-PARA Kelly East Extension	600 (600 / 0)	29	0 / 0	29	Field Work Incomplete (to be finished by NPS)
Other Inventories	465 (465 / 0)	3	0 / 0	3	No Report Required
<b>Year 2 Totals</b>	<b>5,485 4,440 / 1,045</b>	<b>152</b>	<b>8 / 2</b>	<b>142</b>	
<b>GRAND TOTAL (Year 1 &amp; 2)</b>	<b>12,199 10,184 / 2,015</b>	<b>248</b>	<b>14 / 2</b>	<b>232</b>	

<sup>1</sup> Eight sites recorded as a result of the Phase 2 Lost City Inventory are eligible to the National Register of Historic Places by virtue of being located within the Pueblo Grande de Nevada National Register District (Site No. 26Ck2148).

**Table 2. Conditions Assessment Summary, Year 2**

<b>NPS Unit</b>	<b>Site Number</b>	<b>General Location</b>	<b>Site Type</b>	<b>Condition</b>	<b>Comments</b>
LAME	26Ck1223	Boxcar Cove Road	Prehistoric	Good	
LAME	26Ck1218	Las Vegas Wash	Prehistoric	Good	
LAME	26Ck1219	Las Vegas Wash	Prehistoric	Good	Local resource – does not meet current site definitions
LAME	26Ck1532	Las Vegas Wash	Prehistoric	*	Local resource – could not be relocated
LAME	26Ck5732	Overton Arm	Prehistoric	*	Local resource – no artifacts found on site
LAME	26Ck5733	Overton Arm	Prehistoric	*	Local resource - no artifacts found on site
LAME	26Ck5734	Overton Arm	Prehistoric	*	Local resource – no artifacts found on site
LAME	26Ck5887	Overton Arm	Prehistoric	Good	Some erosion present
LAME	26Ck6156	Overton Arm	Prehistoric	Good	
LAME	26Ck6158	Overton Arm	Prehistoric	Good	Impacts from visitors and ORV use present
LAME	26Ck5880	Overton Arm	Prehistoric	Good	Some erosion present
LAME	26Ck5953	Overton Arm	Prehistoric	Good	
LAME	26Ck6759	Overton Arm	Historic	Fair	Prior inundation by Lake Mead; road construction; cattle
LAME	26Ck6576	Cottonwood Cove	Historic	Good	
LAME	26Ck6577	Cottonwood Cove	Prehistoric	Good	
LAME	26Ck6578	Cottonwood Cove	Prehistoric	Good	
LAME	26Ck6581	Cottonwood Cove	Historic	Poor	Substantial natural and man-made impacts
LAME	26Ck1220	Government Wash	Prehistoric	Good	
LAME	26Ck1221	Government Wash	Prehistoric	*	Local resource – site re-recorded as multiple sites
LAME	26Ck6015	Government Wash	Prehistoric	*	Local resource – does not meet current site definitions
LAME	26Ck6020	Government Wash	Prehistoric	Good	
LAME	26Ck6032	Government Wash	Prehistoric	Good	
LAME	26Ck6604	Government Wash	Prehistoric	Good	
LAME	26Ck6605	Government Wash	Prehistoric	Good	
LAME	26Ck6017	Government Wash	Prehistoric	Good	
LAME	26Ck6529	Government Wash	Prehistoric	Fair	Off road vehicle and erosion damage present
LAME	26Ck6539	Government Wash	Prehistoric	Good	
LAME	26Ck6661	Government Wash	Prehistoric	Good	
LAME	26Ck6662	Government Wash	Prehistoric	*	Local resource – could not be relocated
LAME	26Ck6663	Government Wash	Prehistoric	Good	

**Table 2. Conditions Assessment Summary (continued)**

<b>NPS Unit</b>	<b>Site Number</b>	<b>General Location</b>	<b>Site Type</b>	<b>Condition</b>	<b>Comments</b>
LAME	26Ck6664	Government Wash	Prehistoric	Good	
LAME	26Ck6769	Government Wash	Prehistoric	Good	
LAME	26Ck6817	Government Wash	Prehistoric	*	Local resource – does not meet current site definitions
LAME	26Ck6818	Government Wash	Prehistoric	Good	
LAME	26Ck6819	Government Wash	Prehistoric	Good	
LAME	26Ck6820	Government Wash	Prehistoric	Good	
LAME	26Ck6821	Government Wash	Prehistoric	Good	
PARA	AZ A:9:012	Grand Wash	Prehistoric	Good	
PARA	AZ A:9:013	Grand Wash	Prehistoric	Good	
PARA	AZ A:9:014	Grand Wash	Prehistoric	Good	
PARA	AZ A:9:015	Grand Wash	Prehistoric	Good	
PARA	AZ A:9:016	Grand Wash	Prehistoric	Good	Some erosion present
PARA	AZ A:9:081	Grand Wash	Prehistoric	Good	
PARA	AZ A:9:087	Grand Wash	Prehistoric	Good	
PARA	AZ A:9:090	Grand Wash	Prehistoric	Good	
PARA	AZ A:9:094	Grand Wash	Prehistoric	Good	
PARA	AZ A:9:095	Grand Wash	Prehistoric	Good	
PARA	AZ A:9:096	Grand Wash	Prehistoric	*	Local resource – could not be relocated
PARA	AZ A:9:097	Grand Wash	Prehistoric	Good	
PARA	AZ A:9:098	Grand Wash	Prehistoric	*	Local resource – could not be relocated
PARA	AZ A:9:099	Grand Wash	Prehistoric	Good	
PARA	AZ A:9:100	Grand Wash	Prehistoric	Good	
PARA	AZ A:9:103	Grand Wash	Prehistoric	Good	
PARA	AZ A:14:061	Twin Point	Prehistoric	Good	
PARA	AZ A:14:063	Twin Point	Prehistoric	Good	
PARA	AZ A:14:141	Twin Point	Prehistoric	Good	
PARA	AZ A:14:142	Twin Point	Prehistoric	Good	
PARA	AZ A:14:143	Twin Point	Prehistoric	Good	

**Table 2. Conditions Assessment Summary (continued)**

<b>NPS Unit</b>	<b>Site Number</b>	<b>General Location</b>	<b>Site Type</b>	<b>Overall Condition</b>	<b>Comments</b>
PARA	AZ A:14:144	Twin Point	Prehistoric	Good	
PARA	AZ A:14:145	Twin Point	Prehistoric	Good	
PARA	AZ A:14:146	Twin Point	Prehistoric	*	Could not be relocated due to fuel reduction activities
PARA	AZ A:14:147	Twin Point	Prehistoric	Good	
PARA	AZ A:14:148	Twin Point	Prehistoric	Good	
PARA	AZ A:14:149	Twin Point	Prehistoric	Good	
PARA	AZ A:14:150	Twin Point	Prehistoric	Good	
PARA	AZ A:14:151	Twin Point	Prehistoric	Good	
PARA	AZ A:14:152	Twin Point	Prehistoric	Good	
PARA	AZ A:14:153	Twin Point	Prehistoric	Good	

July 28, 2008

Dr. Gregory Haynes  
UNLV-NPS Archaeology Program Manager  
Public Lands Institute  
P.O. Box 452040  
University of Nevada  
Las Vegas, NV 89154-2040

Dear Dr. Haynes:

This letter reports the results of energy dispersive x-ray fluorescence (edxf) analysis of 21 obsidian artifacts from three project areas (26CK4943, Lost City, and Shivwits Plateau) in southern Nevada and northwestern Arizona. The xrf research reported here was completed pursuant to your letter request of April 1, 2008.

Analyses of obsidian are performed at my laboratory on a QuanX-EC™ (Thermo Electron Corporation) edxf spectrometer equipped with a silver (Ag) x-ray tube, a 50 kV x-ray generator, digital pulse processor with automated energy calibration, and a Peltier cooled solid state detector with 145 eV resolution (FWHM) at 5.9 keV. The x-ray tube was operated at differing voltage and current settings to optimize excitation of the elements selected for analysis. In this case analyses were conducted on specimens for the elements rubidium (Rb K $\alpha$ ), strontium (Sr K $\alpha$ ), yttrium (Y K $\alpha$ ), zirconium (Zr K $\alpha$ ), and niobium (Nb K $\alpha$ ). Barium (Ba K $\alpha$ ) concentrations and iron vs. manganese (Fe K $\alpha$ /Mn K $\alpha$ ) ratios also were computed for certain artifacts, and x-ray tube current was scaled to the physical size of each specimen.

X-ray spectra are acquired and elemental intensities extracted for each peak region of interest, then matrix correction algorithms are applied to specific regions of the x-ray energy spectrum to compensate for inter-element absorption and enhancement effects. Following these corrections, intensities are converted to concentration estimates by employing a least-squares calibration line established for each element from analysis of up to 30 international rock standards certified by the U.S. Geological Survey, the U.S. National Institute of Standards and Technology, the Geological Survey of Japan, the Centre de Recherches Petrographiques et Geochimiques (France), and the South African Bureau of Standards.

Trace element measurements in Table 1 are expressed in quantitative units (i.e. parts per million [ppm] by weight). Comparisons between trace element data generated for unknowns (the artifacts you sent) and known obsidian chemical groups are made, and "source" assignments for artifacts are advanced on the basis of correspondences (at the 2-sigma level) in diagnostic trace element concentration values (in this case, ppm values for Rb, Sr, Y, Zr, Nb, Ba, Ti, Mn and Fe<sub>2</sub>O<sub>3</sub><sup>T</sup>) that appear in Anderson et al. (1986), Baugh and Nelson (1987, 1988), Glascock et al. (1999), Hughes (1984, 2005a), Hughes and Nelson (1987), Jack (1971), Nelson (1984), Shackley (1995, 1998, 2005), and unpublished data on other Nevada and Utah obsidians (e.g., Hughes, 2001, 2004, 2005b). Artifact-to-obsidian "source" (geochemical type, *sensu* Hughes 1998) correspondences are considered reliable if diagnostic mean measurements for artifacts fall within 2 standard deviations of mean values for source standards. I use the term "diagnostic" to specify those trace elements that are well measured by x-ray fluorescence, and whose concentrations show low intra-source variability and marked variability across sources. In short, diagnostic elements are those whose concentration values allow one to draw the clearest geochemical distinctions between sources (Hughes 1990, 1993). Zn and Ga ppm concentrations are not considered "diagnostic" because they don't usually vary significantly across obsidian sources in the study area vicinity (see Hughes 1982, 1984).

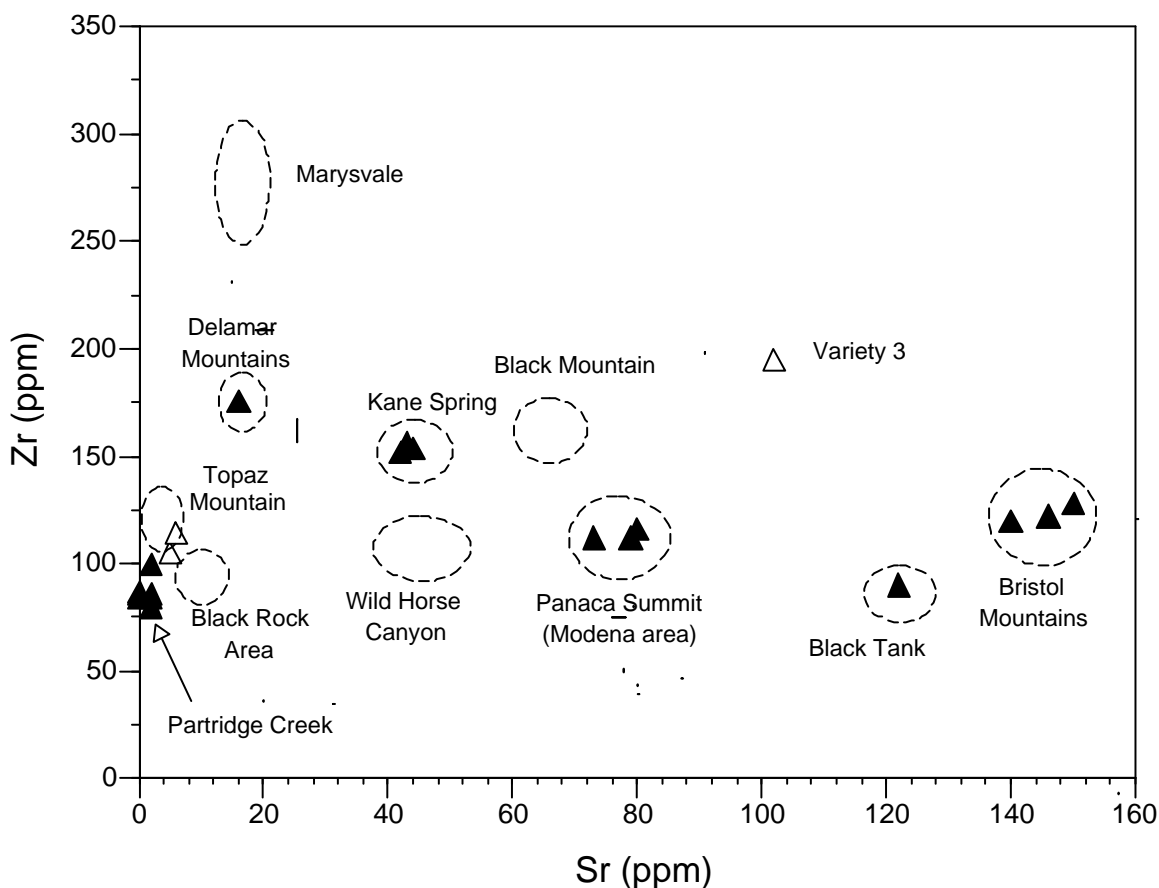
Concentration values reported in Table 1 reflect, as closely as possible, calibration-imposed resolution capabilities of non-destructive energy dispersive x-ray fluorescence spectrometry. The resolution limits of the present x-ray fluorescence system for the determination of Rb is about 4 ppm; for Sr about 3 ppm; Y about 3 ppm; Zr about 4 ppm; and Nb about 3 ppm (see Hughes [1988, 1994] for other elements). When counting and fitting error uncertainty estimates (the "±" value in the table) for a sample are greater than calibration-imposed limits of resolution, the larger number is a more conservative indicator of composition variation and measurement error arising from differences in sample size, surface and x-ray reflection geometry. Artifact-to-source (geochemical type) attribution for each sample appears in the data tables, and the chemical type (source) locations can be found in Hughes (2005a: Figure II.1), Nelson (1984: Figure 1) Nelson and Holmes (1979: Figure 5), and Shackley (1995: Figure 1).

Table 1 and Figure 1 present the results of these edxrf analyses. Of 21 specimens analyzed, edxrf data indicate that six specimens match the trace element profile of Partridge Creek, Arizona, obsidian (cf. Shackley 1995: Table 1). Although Partridge Creek is similar to Black Rock area obsidian on the basis of Zr and Sr composition (Figure 1), it is easily distinguished from the latter source on the basis of Nb and Y (see Figure 2) and Rb composition data. Three specimens each were manufactured from Panaca Summit (Modena area) obsidian (Hughes 2005a: Table II.2; Nelson 1984: Table 4, source # 14), Kane Spring volcanic glass (Hughes 2005a: Table II.2), and Bristol Mountains (Shackley 1995: Table 1) material. Single specimens were fashioned from obsidian from Black Tank and Burro Creek, Arizona (Shackley 1995: Table 1), and the Delamar Mountains, southern Nevada (Hughes 2004).

Three other specimens represent varieties of obsidian for which the geographic eruption location is currently unknown. One of these (sample # 16399b from Lost City) has the same trace element composition as geographically unknown obsidians labeled Variety 3 at Conaway and O'Malley Shelters (Hughes 2004). Two other specimens (both from 26CK4943) have a unique trace element signature that could not be attributed to a known chemical type/group.

Figure 1

Zr vs. Sr Composition for Artifacts from Sites in Nevada and Arizona

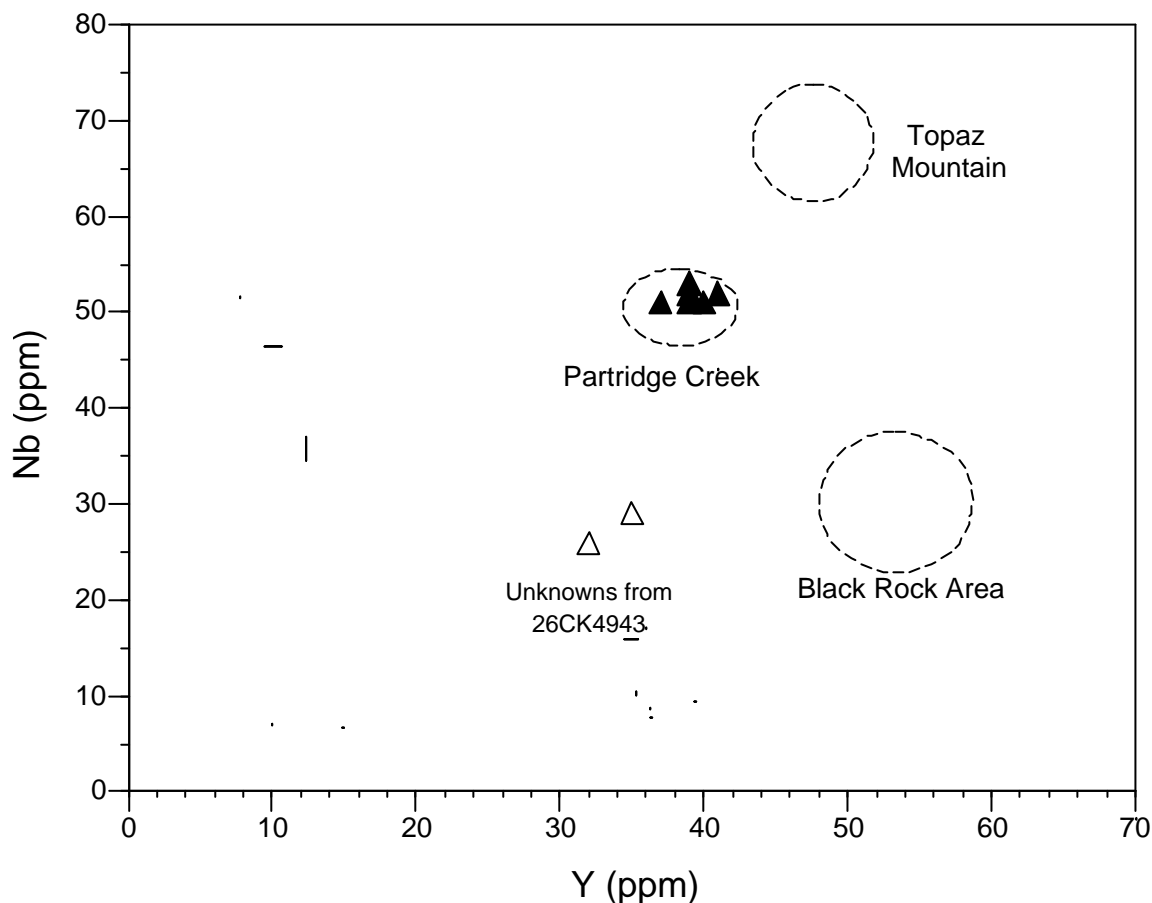


Dashed lines represent range of variation measured in archaeologically significant geologic obsidian source samples from Utah, southern Nevada, and northern Arizona. Filled triangles represent plots for artifacts from Table 1 attributable to source (chemical type); open triangles are plots for artifacts from geographically “unknown” source(s). The numbers of artifact plots do not correspond exactly to the tabulations in Table 1 because of convergence of data points at this scale.



Figure 2

Nb vs. Y Composition of Artifacts from Nevada and Arizona Sites



Dashed lines represent range of variation measured in Partridge Creek, Topaz Mountain, and Black Rock area geologic obsidian source samples. Filled triangles are the plots for artifacts from Table 1 similar to Topaz Mountain and Black Rock area obsidians on the basis of Zr and Sr composition. Open triangles are plots from unknown samples from 26CK4943.

I hope this information will help in your analysis of other cultural material from these sites. Please contact me at my laboratory (phone: [650] 851-1410; e-mail: rehughes@silcon.com; web site: www.geochemicalresearch.com) if I can provide any further assistance or information.

Sincerely,

Richard E. Hughes, Ph.D., RPA  
Director, Geochemical Research Laboratory

## REFERENCES

- Anderson, Duane C., Joseph A. Tiffany, and Fred W. Nelson  
1986 Recent Research on Obsidian from Iowa Archaeological Sites. **American Antiquity** 51: 837-852.
- Baugh, Timothy G., and Fred W. Nelson  
1987 New Mexico Obsidian Sources and Exchange on the Southern Plains. **Journal of Field Archaeology** 14: 313-329.  
  
1988 Archaeological Obsidian Recovered from Selected North Dakota Sites and Its Relationship to Changing Exchange Systems in the Plains. **Journal of the North Dakota Archaeological Association** 3: 74-94.
- Glascock, Michael D., Raymond Kunselman, and Daniel Wolfman  
1999 Intrasource Chemical Differentiation of Obsidian in the Jemez Mountains and Taos Plateau, New Mexico. **Journal of Archaeological Science** 26: 861-868.
- Hughes, Richard E.  
1982 Age and Exploitation of Obsidian from the Medicine Lake Highland, California. **Journal of Archaeological Science** 9: 173-185.  
  
1984 Obsidian Sourcing Studies in the Great Basin: Problems and Prospects. *In* Richard E. Hughes (ed.) **Obsidian Studies in the Great Basin. Contributions of the University of California Archaeological Research Facility** No. 45: 1-19.  
  
1988 The Coso Volcanic Field Reexamined: Implications for Obsidian Sourcing and Hydration Dating Research. **Geoarchaeology** 3: 253-265.  
  
1990 Obsidian Sources at James Creek Shelter, and Trace Element Geochemistry of Some Northeastern Nevada Volcanic Glasses. *In* Robert G. Elston and Elizabeth E. Budy (eds.), **The Archaeology of James Creek Shelter. University of Utah Anthropological Papers** No. 115, pp. 297-305.  
  
1993 Trace Element Geochemistry of Volcanic Glass from the Obsidian Cliffs Flow, Three Sisters Wilderness, Oregon. **Northwest Science** 67: 199-207.  
  
1994 Intrasource Chemical Variability of Artefact-Quality Obsidians from the Casa Diablo Area, California. **Journal of Archaeological Science** 21: 263-271.  
  
1998 On Reliability, Validity, and Scale in Obsidian Sourcing Research. *In* Ann F. Ramenofsky and Anastasia Steffen (eds.), **Unit Issues in Archaeology: Measuring Time, Space, and Material**, pp. 103-114. University of Utah Press, Salt Lake City.  
  
2001 Geochemical Characterization of Obsidian from Outcrops on the Eastern and Southern Flanks of Obsidian Butte, Nellis Air Force Range, Nevada. *In* **Investigation of Geochemical Variability in Obsidian Raw Material and Artifact Sources on the North Nellis Air Force Range, Nevada**, by Lynn Haarklau, pp. 27-54. Nellis Air Force Base Cultural Resource Report 00-04, Nellis Air Force Base, Nevada  
  
2004 Trace Element Characterization of Volcanic Glasses from Obsidian Butte, Nellis Air Force Range, Nevada, and Surrounding Areas. Manuscript in possession of the author.  
  
2005a Determination of the Geologic Sources for Obsidian Artifacts from Camels Back Cave, and Trace Element Analysis of Some Western Utah and Eastern Nevada Volcanic Glasses. *In* Dave N. Schmitt and David B. Madsen (eds.), **Camels Back Cave. University of Utah Anthropological Papers** No. 125, pp. 249-256.

Hughes, Richard E.

- 2005b Appendix D. ED-XRF Analyses: Original Letter Reports and Data from R.E. Hughes, Geochemical Research Laboratory. *In* Anastasia Steffen, *The Dome Fire Obsidian Study: Investigating the Interaction of Heat, Hydration, and Glass Chemistry*, pp. 333-350. Ph.D. Dissertation, Department of Anthropology, University of New Mexico.

Hughes, Richard E., and Fred W. Nelson

- 1987 New Findings on Obsidian Source Utilization in Iowa. **Plains Anthropologist** 32 (117): 313-316.

Jack, Robert N.

- 1971 The Source of Obsidian Artifacts in Northern Arizona. **Plateau** 43: 103-114.

Macdonald, Ray, Robert L. Smith, and John E. Thomas

- 1992 Chemistry of the Subalkalic Silicic Obsidians. **U.S. Geological Survey Professional Paper** 1523.

Nelson, Fred W., Jr.

- 1984 X-ray Fluorescence Analysis of Some Western North American Obsidians. *In* Richard E. Hughes (ed.) *Obsidian Studies in the Great Basin*. **Contributions of the University of California Archaeological Research Facility** No. 45: 27-62.

Nelson, Fred W., and Richard D. Holmes

- 1979 Trace Element Analysis of Obsidian Sources and Artifacts from Western Utah. **Antiquities Section Selected Papers** 6 (15). Division of State History, Utah State Historical Society.

Shackley, M. Steven

- 1995 Sources of Archaeological Obsidian in the Greater American Southwest: An Update and Quantitative Analysis. **American Antiquity** 60: 531-551.
- 1998 Geochemical Differentiation and Prehistoric Procurement of Obsidian in the Mount Taylor Volcanic Field, Northwest New Mexico. **Journal of Archaeological Science** 25: 1073-1082.
- 2005 **Obsidian: Geology and Archaeology in the North American Southwest**. University of Arizona Press, Tucson.

Table 1

## Quantitative EDXRF Data for Artifacts from Sites in Nevada and Arizona

Cat. Number	Trace and Selected Minor Element Concentrations											Ratio Fe/Mn	Obsidian Source (Chemical Type)
	Zn	Ga	Rb	Sr	Y	Zr	Nb	Ba	Ti	Mn	Fe <sub>2</sub> O <sub>3</sub> <sup>T</sup>		
26CK4943, 16601a	nm	nm	189 ±4	5 ±3	32 ±3	105 ±4	26 ±3	0 ±15	nm	nm	nm	18	Unknown
26CK4943, 16601b	nm	nm	235 ±4	6 ±3	35 ±3	114 ±4	29 ±3	0 ±16	nm	nm	nm	19	Unknown
26CK7596, 7596a	nm	nm	173 ±4	140 ±3	21 ±3	120 ±4	21 ±3	784 ±15	nm	nm	nm	24	Bristol Mtns., CA
26CK7596, 7596b	nm	nm	182 ±4	146 ±3	21 ±3	122 ±4	20 ±3	716 ±14	nm	nm	nm	23	Bristol Mtns., CA
26CK7596, 7596c	nm	nm	188 ±4	150 ±3	21 ±3	128 ±4	21 ±3	711 ±16	nm	nm	nm	23	Bristol Mtns., CA
Site 08-001, 15-b	nm	nm	201 ±4	44 ±3	38 ±3	154 ±4	26 ±3	265 ±12	nm	nm	nm	48	Kane Spring, NV
Site 08-001, 100	nm	nm	190 ±4	16 ±3	52 ±3	176 ±4	34 ±3	86 ±13	nm	nm	nm	61	Delamar Mountains, NV
Lost City, 16394a	nm	nm	179 ±4	73 ±3	26 ±3	112 ±4	18 ±3	538 ±14	nm	nm	nm	30	Panaca Summit (Modena area ), NV/UT
Lost City, 16394b	nm	nm	197 ±4	79 ±3	28 ±3	112 ±4	20 ±3	510 ±14	nm	nm	nm	31	Panaca Summit (Modena area), NV/UT
Lost City, 16399a	nm	nm	207 ±4	43 ±3	37 ±3	156 ±4	27 ±3	251 ±14	nm	nm	nm	48	Kane Spring, NV
Lost City, 16399b	nm	nm	145 ±4	102 ±3	27 ±3	195 ±4	23 ±3	1182 ±16	nm	nm	nm	33	Variety 3
Lost City, 16399c	nm	nm	195 ±4	42 ±3	35 ±3	152 ±4	27 ±3	284 ±13	nm	nm	nm	51	Kane Spring, NV
AZ A:14:46, PD:2, FS # 10	nm	nm	244 ±4	0 ±3	40 ±3	86 ±4	51 ±3	nm	nm	nm	nm	17	Partridge Creek, AZ
AZ A:14:46, PD:0, FS # 9	nm	nm	246 ±4	2 ±3	39 ±3	86 ±4	51 ±3	nm	nm	nm	nm	17	Partridge Creek, AZ
AZ A:14:46, PD:0, FS # 13	nm	nm	134 ±4	122 ±3	21 ±3	90 ±4	29 ±3	800 ±16	nm	nm	nm	31	Black Tank, AZ
AZ A:14:50, PD:115, FS # 11	nm	nm	325 ±4	2 ±3	45 ±3	100 ±4	59 ±3	nm	nm	nm	nm	17	Burro Creek, AZ

AZ A:14:50, PD:0, FS # 2	nm	nm	239 ±4	0 ±3	39 ±3	84 ±4	53 ±3	nm	nm	nm	nm	18	Partridge Creek, AZ
AZ A:14:50, PD:113, FS # 10	nm	nm	241 ±4	2 ±3	39 ±3	84 ±4	52 ±3	nm	nm	nm	nm	17	Partridge Creek, AZ
AZ A:14:50, PD:0, FS # 31	nm	nm	188 ±4	80 ±3	28 ±3	116 ±4	20 ±3	518 ±14	nm	nm	nm	31	Panaca Summit (Modena area)
AZ A:14:50, PD:117, FS # 13	nm	nm	247 ±4	0 ±3	41 ±3	87 ±4	52 ±3	nm	nm	nm	nm	16	Partridge Creek, AZ
AZ A:14:50, PD:111, FS # 15	nm	nm	241 ±4	2 ±3	37 ±3	80 ±4	51 ±3	nm	nm	nm	nm	17	Partridge Creek, AZ

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*U.S. Geological Survey Reference Standard*

RGM-1 (measured)	nm	nm	151 ±4	108 ±3	24 ±3	218 ±4	10 ±3	835 ±15	nm	nm	nm	62	Glass Mtn., CA
RGM-1 (recommended)	32	15	149	108	25	219	9	807	1600	279	1.86	nr	Glass Mtn., CA

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Values in parts per million (ppm) except total iron (in weight %) and Fe/Mn (count ratios); ± = estimate of x-ray counting uncertainty and regression fitting error at 120-360 seconds livetime; nm = not measured; nr = not reported.



October 15, 2008

Steve Daron, Park Archaeologist  
Agreement Technical Representative (ATR)  
Lake Mead National Recreation Area  
601 Nevada Way  
Boulder City, NV 89005

Dear Steve:

As you are aware, Task Agreement #J8R07060013 for *Archaeological Inventory, Site Assessment, and Data Management, Lake Mead National Recreation Area and Parashant National Monument* is scheduled to end February 17, 2009. In reviewing the task agreement and modification, we discovered several discrepancies in project completion dates for the deliverables.

In order to clarify, we have prepared a list for your approval of the revised dates. Please review the enclosed page and provide your signature of approval. We thank you in advance for your time and consideration.

Sincerely,

Karen Harry, Ph.D.  
Principal Investigator

KGH:wd  
Enclosures

cc: *Dr. Margaret N. (Peg) Rees*  
*Dr. Gregory Haynes*  
*File*

Please review and approve the following date changes for the listed deliverables for Task Agreement #J8R07060013:

**Products for Project 4A: UNLV Archaeological Field School**

- Phase 1: Deliverable 4
  - Original Due Date: October 1, 2008
  - Proposed New Due Date: November 3, 2008
- Phase 1: Deliverable 5
  - Original Due Date: September 15, 2008
  - Proposed New Due Date: Thirty days after receiving comments from the ATR on the Preliminary Report (i.e., Phase 1: Deliverable 4)

**Products for Project 4B: NPS System-wide Archaeological Inventory Program Funded PARA Projects**

- Phase 2: Deliverable 3
  - Original Due Date: September 1, 2008
  - Proposed Work: GIS-based testing will be conducted, and field-based testing is not necessary.
- Phase 2 : Deliverable 4
  - Original Due Date: October 30, 2008
  - Proposed New Due Date: November 26, 2008

**Products for Project 5: SNPLMA Capital Improvement Projects**

- Phase 2: Deliverable 4
  - Original Due Date: September 15, 2008
  - Proposed New Due Date: December 1, 2008

**Products for Project 6: Lost City Inventory**

- Phase 2: Deliverable 2 (ASMIS Database)
  - Original Due Date: July 15, 2008
  - Proposed New Due Date: December 15, 2008
- Phase 2: Deliverable 2 ( Preliminary Report)
  - Original Due Date: July 15, 2008
  - Proposed New Due Date: November 15, 2008
- Phase 2: Deliverable 3
  - Original Due Date: November 30, 2008
  - Proposed New Due Date: Thirty days after receiving comments from the ATR on the Preliminary Report (i.e., Phase 2: Deliverable 2)
- Phase 3: Deliverable 1
  - Original Due Date: October 1, 2008
  - Proposed New Due Date: October 18, 2008
- Phase 3: Deliverable 2
  - Original Due Date: October 31, 2008
  - Proposed New Due Date: December 7, 2008

- Phase 3: Deliverable 3
  - Original Due Date: December 19, 2008
  - Proposed New Due Date: Thirty days after receiving comments from the ATR on the Preliminary Report (i.e., Phase 3, Deliverable 2)
  
- Quarterly Report / Final Report
  - Original Due Date: December 30, 2008
  - Proposed New Due Date: February 17, 2009 (Final Report)



This concludes the proposed date changes for the deliverables. Please sign below if you agree with the date changes and return this page to the Public Lands Institute. Also, the quarterly report will be submitted immediately following your approval.

If you have any questions or concerns regarding the due dates, please contact me at 702.895.2534 or Margaret N. (Peg) Rees at 702.895.3890.

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I understand and approve the abovementioned changes to the deliverable dates for Task Agreement #J8R07060013 for the *Archaeological Inventory, Site Assessment, and Data Management, Lake Mead National Recreation Area and Parashant National Monument*.



Steve Daron, Park Archaeologist  
Agreement Technical Representative (ATR)  
Lake Mead National Recreation Area

10/23/08

Date

Public Lands Institute  
4505 Maryland Parkway Box 452040 Las Vegas NV 89154-2040  
Phone 702-895-4678 Fax 702-895-5166

