
PERMIAN QUARTERLY

Permian Basin Programmatic Agreement Quarterly Newsletter

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New Mexico



Carlsbad Field Office Archeologist Bruce Boeke stands in a large depression that resulted from the *circa* 1965 excavation of Pit Room 1 at the Merchant Site in Lea County, New Mexico. Read more about the Merchant Site and plans for its remediation inside this newsletter.

The *Permian Quarterly* is a newsletter for participants in the Permian Basin Programmatic Agreement (PA) and for other interested persons. Its purpose is to provide information in a timely manner about implementation of the PA and to disseminate that information to a wide audience.

Introduction to the Permian Basin Programmatic Agreement

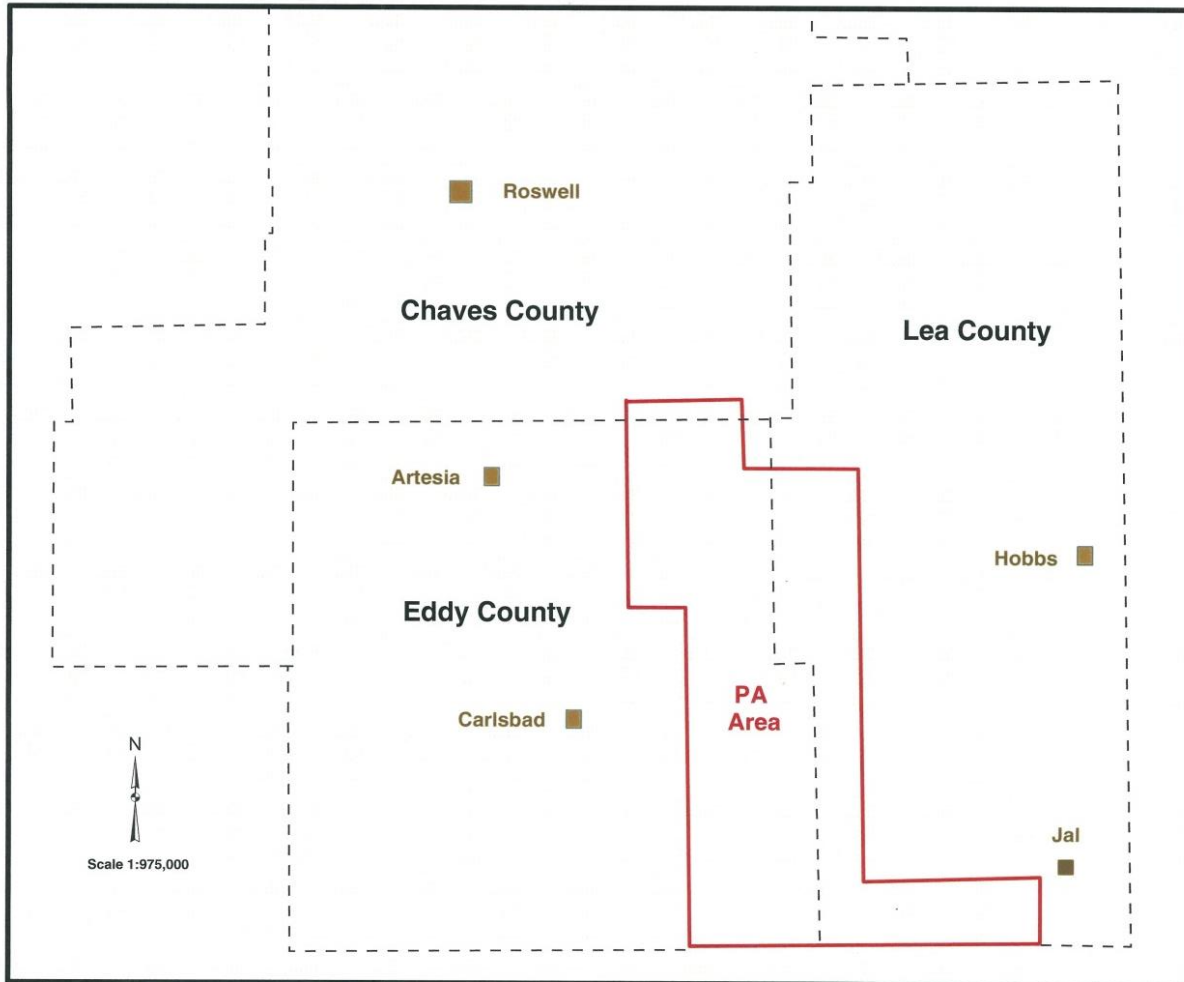


Figure 1. Map showing the Permian Basin PA Area.

The PA is an alternate form of compliance with Section 106 of the National Historic Preservation Act of 1966, as amended, that is offered to the oil and gas industry, potash mining companies, and local governments in southeastern New Mexico for federal projects located on Bureau of Land Management (BLM) land or private property. Formerly called the Permian Basin MOA, it was extended for a period of three years in April 2013 as a Programmatic Agreement. The PA area, noted above in red, is located partially in Chaves, Eddy, and Lea counties and generally coincides with a physiographic region in southeastern New Mexico called the Mescalero Plain. Proponents of projects within the PA area may contribute to a dedicated archeological research fund in lieu of contracting for project specific archeological surveys, provided their proposed projects avoid recorded archeological sites. This dedicated fund is then used to study the archeology and history of southeastern New Mexico.

Current PA News

Projects are Proposed for the Permian Basin PA

Four projects have been proposed to the Permian Basin PA Workgroup beginning in calendar year 2014 that will comply with the goals spelled out primarily in Section VI, F of the PA. The Permian Basin PA Workgroup provides overall direction for research conducted under the program. Two of the proposals build on the recently completed project to collect 500 samples from features in sites located primarily within the PA area. One proposal will be a GIS assisted analysis of the radiocarbon dates and plant information gleaned from the samples to provide information for better designed research plans; while the other will focus on the distribution of the identified plants and the seasons in which specific plants are best utilized as an aid to interpret past human activities. Another proposal is to investigate better recording practices by utilizing a program with an electronic grid tied to the Universal Transverse Mercator (UTM) coordinate system in order to examine an area in a systematic fashion, termed the Transect Recording Unit (TRU) survey method. This project will also detail the steps taken to evaluate the physical condition of sites. This will hopefully result in better site recording practices that will in turn result in better evaluations of a site's eligibility to be listed on the National Register of Historic Places, and a better understanding of the site's data potential to address high-priority research questions in the Southeastern New Mexico Regional Research Design. The final proposal is to do remediation work at the Merchant Site, a village site with evidence of surface and subterranean rooms. This site was extensively excavated by the Lea County Archeological Society, an amateur group active during the 1950s and 1960s. More detail about these proposed projects is presented below.

Project Number 1: Selection of Sites to Address Questions Identified in the Southeastern New Mexico Regional Research Design

Site records within the Carlsbad Field Office (CFO) were created primarily as a response to the needs of small-scale oil and gas operations, where sites were quickly and minimally recorded and then avoided by rerouting or relocating the project. These records seldom describe in specific detail the artifact assemblage and features present and they are generally inadequate for planning research projects.

In order to partially address these deficiencies CFO staff archeologists undertook a project to collect 500 samples of charred material from features in sites located within the PA area. More specifically, small sites were given priority in the collection scheme. These samples were then examined for macrofloral remains, starch and phytoliths, and radiocarbon dates were obtained. The results are reported in "Macrofloral, Phytolith, and Starch Analyses, and AMS Radiocarbon Dating for the Permian, Basin MOA, New Mexico," by Linda Scott Cummings and Peter Kováčik, and by shapefiles compatible with ESRI ArcMap Version 10.1 used by the CFO.

Although the Cummings and Kováčik report provides useful analysis of the samples, it was always intended that a GIS-assisted analysis of the results be completed. Such an analysis should uncover relationships and patterns within the data by adding spatial parameters and supplemental GIS shapefile information, such as soils identification, geological outcrop information, vegetation distribution, and topographic location to the other attributes discovered in the laboratory analysis of the samples. The results of the GIS-assisted analysis should provide several inventories of uniquely identified sites and each site will be placed into a matrix that will more accurately define its research potential. This inventory can assist the Workgroup in deciding how PA research will proceed in the future.

References Cited:

Scott Cummings, Linda and Peter Kováčik

2013 Macrofloral, Phytolith, and Starch Analyses, and AMS Radiocarbon Dating for the Permian, Basin MOA, New Mexico. Paleoresearch Institute, Golden, Colorado.

Project Number 2: A Reference Book: Prehistoric Plant Utilization within Southeastern New Mexico

The completion of the 500 sample project provides information about plant utilization obtained from macrofloral, starch, and phytolith identification. Added to this is another body of data collected from 121 sites that have been excavated or tested within the CFO and that have produced information about plant use (beginning in 1980) from 682 macrofloral, 251 pollen, 217 starch, 117 phytolith and 40 FTIR samples. Added together they total 1182 macrofloral, 717 starch, and 617 phytolith samples providing plant information, plus the pollen and FTIR numbers previously mentioned.

These sample locations are concentrated within the PA area, but some sites are located in other parts of the CFO. Together they represent an opportunity for professional and public education which can be realized through a book that will:

- name the plants identified;
- describe the uses to which they were put, primarily based upon ethnographic and historic accounts;
- identify the time of the year that the plants ripen or the probable time of the year they were used;
- illustrate the potential natural geographical distribution of the plants;
- map the observed archeological distribution of the plant remains;
- provide photographs of the plants useful for identification by the public and archeologists.

This should be a valuable resource to complement more traditional studies of artifacts and sites, as it will consolidate information that is currently scattered in numerous publications. Knowing the yearly cycle of growth and maturity of the plants prehistoric people found useful and necessary for their lives will enhance our understanding of the ways in which they moved across the landscape.

Project Number 3: The Relationship between Surface and Subsurface Components of Archeological Sites

This project will provide information to address the evaluation of archeological sites, which will in turn influence evaluations of a site's research potential and decisions made about a site's eligibility to be listed on the National Register of Historic Places.

This project includes an evaluation of the Transect Recording Unit (TRU) as a possible recording standard for the CFO. Section VI. F. 6. a. of the PA states that: the BLM will work cooperatively with the State Historic Preservation Officer (SHPO) to consider and implement improvements in survey and site documentation procedures including:

- (1) Site boundary definitions;
- (2) Mapping features;
- (3) Descriptions and recordation of features and artifact assemblages;

- (4) Test excavations to identify potential for buried cultural deposits;
- (5) Site-specific geomorphological assessments of integrity of cultural deposits;
- (6) Determination of site eligibility; and
- (7) Any other needed improvements in site survey techniques or recordation procedures revealed through this mitigation program.

The shortcomings of the majority of the current site forms in the CFO site files have been recognized for some time. These deficiencies include abbreviated descriptions of artifacts and features and poor mapping of artifact and feature locations. Some of these deficiencies resulted from the lack of suitable recording standards in the past and some came about because of the sheer volume of reports that were being produced. The use of GPS technology significantly improved recording abilities. Additionally, the CFO instituted a set of standards in 2012 in order to improve the quality of site recording. These measures have greatly improved current site records, but greater site recording precision can be achieved.

The current Blanket Purchase Agreement Contract included a question about how to improve site recording within the CFO boundaries. All four of the selected contractors recommended use of the Transect Recording Unit (TRU) method as a way to improve site recording. TRU is also preferred by the CFO staff, primarily because it superimposes an electronic grid over the entire CFO and, like the system of longitude and latitude used in marine and aerial navigation, makes it possible to find a spot in a featureless landscape. Although the landscape within the CFO is not featureless, local topography is seldom mentioned in site reports, and the locations of features are not always shown in sufficient detail and with landmark references to enable them to be relocated. TRU recording will also enable Isolated Manifestations (IM), also called Isolated Features or Isolated Artifacts, to be maintained within the CFO GIS mapping system. Such IM location information has been used elsewhere to demonstrate the locations of trails between sites, as indicated by the linear distribution of artifacts across the landscape.

Despite these apparent benefits there are costs to be considered. This project will be a cost/benefit analysis of the TRU method. Topics to be considered include:

- the hardware and software required;
- how TRU can be integrated into the existing CFO GIS system;
- the costs of the needed hardware and software;
- a comparison of TRU in terms of time and manpower to the current Class III survey method;
- the amount and kind of training needed in order to become proficient in using the TRU method.

Also needed is a determination of the knowledge and attitudes concerning TRU among the contractors who do the bulk of the surveys and site recording in the CFO; the SHPO and SHPO staff who review CFO reports; and the BLM State Office Permitting staff. The resulting report will provide a recommendation and a roadmap for instituting the TRU survey in the CFO, if it is so desired.

The textbook example of an archeological site describes artifacts of everyday life that have been discarded, features such as outdoor hearths or ramadas, and the remains of houses or other structures and places them just as they were when the site inhabitants left. The structures and artifacts are said to be in primary context. This ideal situation is seldom found. Typically the archeologist has to account for changes that result from natural forces operating on the site, such as burrowing animals, insects, and root disturbances, as well as deterioration and disturbance brought about by weathering and erosion.

Disturbance can also come in the form of undocumented artifact collecting, where portable artifacts are removed from a site, and by undocumented digging (pothunting) that destroys the context of artifacts,



Figure 2. Burned caliche from a buried feature cascades down the side wall of a dune at site LA 143568. The rock originates at a level just above the scale, which is 1 meter (approximately 3 feet) long. Recording and evaluating features such as this will be explored in the proposed surface and subsurface relationship project

features, or structures.

In the PA area disturbance by erosion and undocumented artifact collecting are the two major site impacts. The sandy soils in the Mescalero Plain erode easily once the protective vegetation cover is removed. The low annual rainfall inhibits new vegetation growth and the strong winds that are common in the region carve the sand into a mosaic of bowl-shaped depressions and hummocks. Determining the physical condition of a site that has been affected by erosion is a major challenge.

There are numerous site condition configurations that can result from the vagaries of the erosional process, but Figure 3 illustrates three scenarios that are commonly encountered.

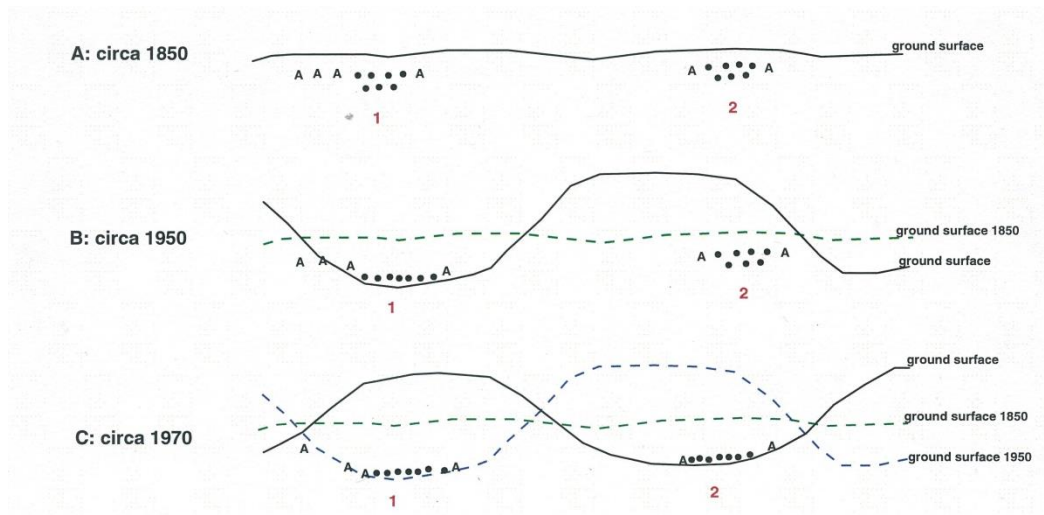


Figure 3. Hypothetical vertical cross-section through a site showing the effects of erosion.

Figure 3 illustrates a shallowly buried site with two rock filled hearths (indicated by dots and labeled “1” and “2”) and associated artifacts, labeled “A.” Geomorphological studies indicate the current land surface in the Permian Basin PA area was created primarily during the last portion of the 19th and early 20th centuries, when a combination of drought and overgrazing caused widespread soil erosion. In scenario A the hearths and artifacts are in place beneath the ground surface. This situation is the best for research purposes, because the hearths still contained charred materials useful for dating and for identification of the fuels used. The relationship of the artifacts to the hearths and to other artifacts is preserved, as is the relationship of the hearths to each other. Scenario B shows that Hearth 1 and most of its associated artifacts are now exposed in the bottom of a deflation basin. The hearth is essentially destroyed and most of the artifacts are not in primary context. Hearth 2 and its artifacts are still buried and in context. But now any interpretation will have to take into account the destruction of approximately one-half of the site. In Scenario C, Hearths 1 and 2 are both eroded from their primary contexts as are most of the associated artifacts, but the destroyed Hearth 1 is now buried beneath a dune. Although buried and seeming in primary context the potential for Hearth 1 to provide significant information about the site is actually very low. Hearth 2 is likewise now destroyed and the research potential of the site is significantly reduced.

Site recording and site testing are closely related topics. A small number of sites will be chosen that will be located partly in shallow and partly in deep soils. An emphasis will be placed on choosing small sites and within that category those with a limited artifact assemblage. This selection will be made with the

advice of the New Mexico SHPO. The sites will be updated by using the Transect Recording Unit method and then evaluated in a systematic manner. The resulting report will provide concrete examples and direction for future evaluation of small ephemeral sites within the CFO.

Project Number 4: Remediation at the Merchant Site (LA 43414)

The Merchant Site, LA 43414, is a *circa* A.D. 1400 village site dug into by the Lea County Archeological Society in the early 1960s. There are a few photographs of their work and a short paper, by Robert H. Leslie, that contains a sketch map of the site layout, sketches of two of the 13 surface rooms, and plan views of two large pit rooms that were uncovered. Artifacts found at the site are briefly described.

Charred acorns were found, as well as a small number of fragmentary fresh water mussel shells. The report notes that, "An almost solid bone layer some twelve inches thick was found in the fill of pit room 1." Pit room R-1 was excavated to a circular shape, approximately 20 feet in diameter, but it is conjectured that it was originally rectangular, with an extended entryway. Pit room R-2 was excavated into a rectangular shape, approximately 8 feet by 12 feet, with an extended entryway measuring approximately 4 feet by 7 feet. Both pit rooms are described as being approximately 6 feet deep. Two strata of artifacts were found in each room, separated by a layer of sand 12 to 16 inches deep, indicating abandonment and reuse of the structures.

The locations of the two pit rooms are evident today as two large depressions, one circular and the other rectangular in shape. Linear rows of large and small rocks outlining square or rectangular spaces apparently denote the locations of at least some of the surface rooms. Two relatively large mounds are assumed to be backdirt piles from the excavations and each pit room is also surrounded by backdirt from its interior. Stone debitage, some small sherds, and animal bone fragments are eroding from the presumed backdirt piles and can occasionally be seen on the site surface elsewhere. Samples were obtained by CFO archeologists from two undisturbed features located east of the excavated portion of the site area. A charred corn cupule also came from one of these features and radiocarbon dates were obtained from these features and also from one of the large backdirt piles.

This project will document the remnants of the site and obtain new information through an analysis of the artifacts still remaining, and in particular through an analysis of the animal bone and surviving charred floral remains. The site will be surveyed using the TRU method; at present the site boundaries are extensive and include six artifact loci that are widely separated from each other. A map of the excavated portion of the site will be prepared in order to document the locations of the various features and artifacts visible on the surface. A contour map will also be made. The interiors of the pit and surface rooms will be cleaned to determine if any features, such as posts, postholes, or hearths remain and then they will be backfilled with clean soil and caliche to grade. The backdirt piles will be screened for animal bones, charred plant remains, and artifacts. A technical report will be prepared as well as a publication suitable for public education purposes.

References Cited

Leslie, Robert H.

1965 The Merchant Site (A Mogollon Site). Bulletin of the Lea County Archaeological Society 1:23-29, Hobbs, New Mexico.

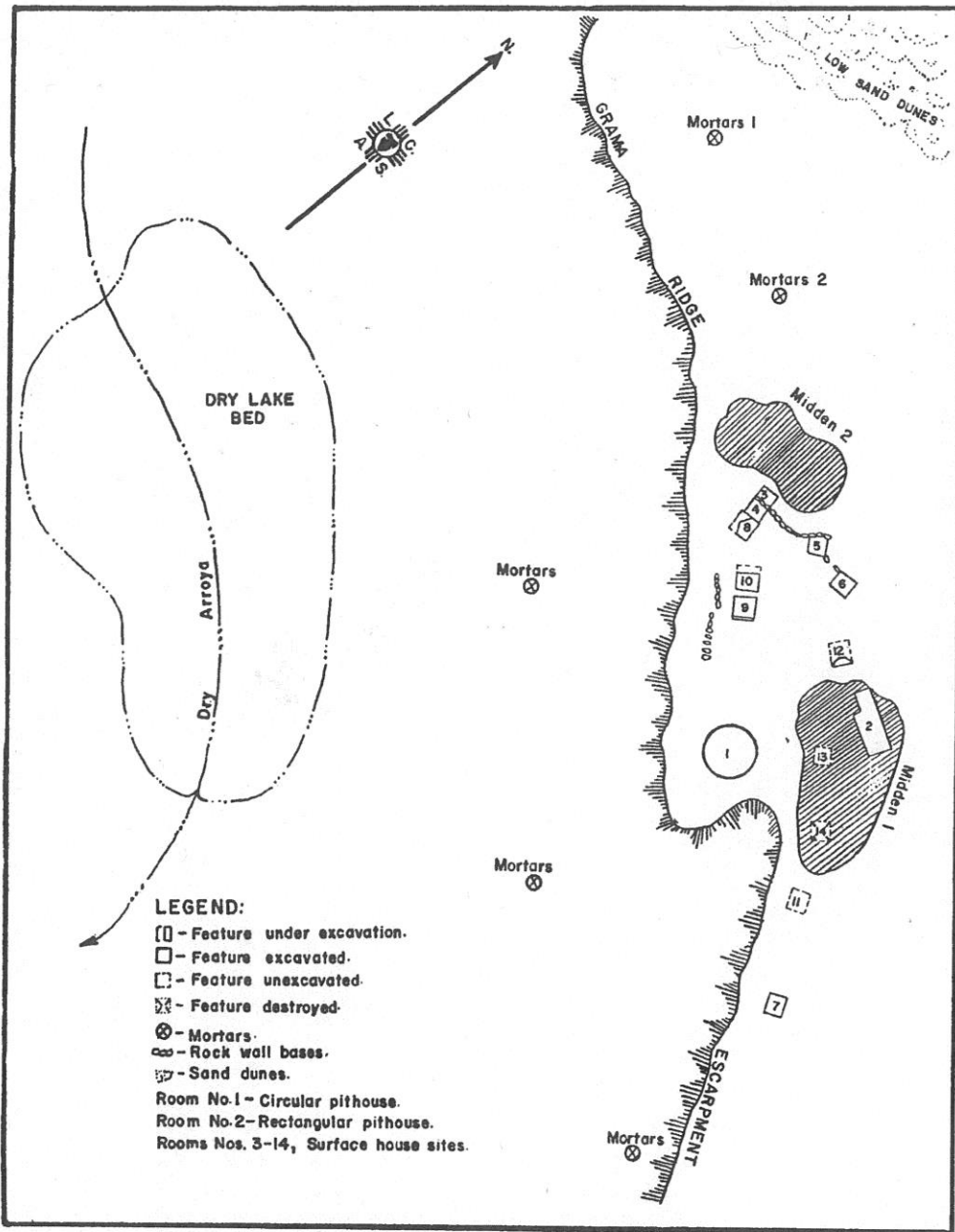


FIGURE 2. The Merchant Site, L.C.A.S. E-4, showing site plan and topography.

25

Figure 4. This sketch map of the Merchant Site shows its layout circa 1965. Adapted from Leslie 1965:25.

Back Issues of the Newsletter are Available

Back issues of the *Permian Quarterly* are available at the Bureau of Land Management, New Mexico State Office website at <http://www.blm.gov/nm/st/en.html>. Use the "Quick Links" section, go to Cultural Resources - Research/Partnerships - Permian Basin Partnership.

Newsletter Contact Information

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