Going Big

The Permian Basin Memorandum of Agreement as a Fundamental Shift in Section 106 Compliance

Sarah Schlanger, George MacDonell, Signa Larralde, and Martin Stein

ABSTRACT

In 2008, the Carlsbad Field Office of the Bureau of Land Management (BLM) made a fundamental change in how they work with the energy industry in the Permian Basin of southeastern New Mexico, one of the nation's busiest "oil patches." Through a collaborative effort that involved the Bureau of Land Management, the New Mexico State Historic Preservation Officer, the Advisory Council on Historic Preservation, the Mescalero Apache Tribe, and industry representatives, they developed and implemented the Permian Basin Memorandum of Agreement (MOA). This agreement allows energy development proponents to contribute funds to archaeological research in lieu of spending an equivalent amount of money on traditional archaeological field survey. The mitigation program governs how BLM addresses long-term damage and cumulative impacts to archaeological resources as new development proceeds in the Permian Basin MOA area. Now in its fifth year, the program has succeeded in key ways: industry has gained control over schedules and time, while archaeologists have gained control over where and how they do archaeology. Key lessons have been learned along the way: The funding mechanisms of the program work well, but doing archaeology through a collaborative working group takes a lot of time and energy.

En 2008, la oficina Carlsbad Field Office del Bureau of Land Management (BLM) realizó un cambio fundamental en la forma en la que había venido trabajando con la industria energética en la Cuenca del Pérmico, localizada en el sureste de Nuevo México, y considerada como una de las principales zonas de extracción de petróleo crudo y gas natural de los Estado Unidos. Como resultado de un esfuerzo de colaboración conjunta, en el que participaron la BLM, el New Mexico State Historic Preservation Officer, el Advisory Council on Historic Preservation, la Mescalero Apache Tribe y representantes de la industria, se elaboró e implementó el Permian Basin Memorandum of Agreement (MOA). Este acuerdo permite a los promotores de la industria energética aportar fondos a la investigación arqueológica, en lugar de invertir una cantidad económica equivalente en el tradicional recorrido de superficie. El plan de mitigación regula como la BLM tiene que administrar el daño a largo plazo y los impactos acumulados a los recursos arqueológicos, mientras se desarrolla la zona delimitada por el Permian Basin MOA. Desde su implementación hace cinco años, el programa ha tenido logros importantes que han permitido a la industria tener un mayor control sobre la programación y el tiempo de realización de los proyectos y a los arqueólogos tener un mayor control sobre cómo y dónde ejercer la arqueología. El tiempo nos ha dado lecciones importantes: los mecanismos de financiamiento del programa funcionan bien, pero, el ejercer la arqueología en colaboración con un grupo de trabajo demanda una gran cantidad de tiempo y energía.

In 2008, the Carlsbad Field Office of the Bureau of Land Management (BLM) implemented the Permian Basin Memorandum of Agreement (MOA), a comprehensive approach for site management in one of the nation's busiest "oil patches." What follows is a case study of how and why the Carlsbad Field Office made this fundamental change in the way they work with industry to develop and manage the archaeological record of the Permian Basin. The issues that eventually led to change in the Carlsbad Field Office and southeast New Mexico are not unique to Carlsbad. Widespread, heavy, and sustained demands for development can lead, and have led elsewhere, to the same case-by-case approach to the assessment of impacts to archaeological resources, inefficiencies in data management and review, accumulation of site records without opportunity for synthesis and evaluation, and a reliance on "flag and avoid" as a dominant strategy for accommodating development. This story—how the Carlsbad Field Office "went big"—is part of the future for cultural resource management across the public lands.

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Each year, the Department of the Interior's BLM archaeologists review more than 10,000 projects which have the potential to affect archaeological resources on public lands. Historically, nearly a third of these projects have been carried out in just two BLM field offices: the Farmington Field Office, in northwestern New Mexico, and the Carlsbad Field Office, in southeastern New Mexico. The past 30 years have come to pass very differently in these two "oil patch" field offices. In the 1980s, the Farmington Field Office developed an integrated approach to oil- and gas-development-related archaeology, the Fruitland Project, which allowed energy companies participating in a natural gas pipeline gathering system to contribute funds toward excavation of sites not directly impacted by the project. Proposed and adopted as alternative mitigation, the Fruitland Project let the archaeological community of northwestern New Mexico "do big archaeology" in a situation where strict compliance with cultural resource laws and regulations might otherwise have led to stand-alone, small surveys and an occasional excavation project. Supported by industry, the State Historic Preservation Office (SHPO), and the Advisory Council on Historic Preservation, the Fruitland Project resulted in a coordinated program of regional research that created an important body of knowledge for regional archaeology in general, and the archaeology of the Navajo, or Diné people, in particular. Although the project was industry-driven, the archaeological program was regional in scope and directed by archaeological research questions with broad application.

From the 1970s through 2008, the Carlsbad Field Office (Figure 1) worked in a more traditional management and development environment. The rate at which project proposals flowed into the field office and the lack of large projects that offered an opportunity to pool efforts militated against a comprehensive approach. Instead, the Carlsbad archaeologists were kept busy analyzing and reviewing small project after small project. The archaeological record of the Carlsbad area and New Mexico's portion of the Permian Basin oil and gas field, especially the record as seen from the modern ground surface, was built on thousands of small well pad, access road, pipeline, and utility corridor surveys.

HOW CHANGE BEGINS

While this case study is focused on the Carlsbad Field Office and cultural resource management on public lands, the questions driving the development of the Permian Basin MOA were broader in scope. Chief among them were: How do you change from a reactive, project-by-project approach to a more comprehensive approach? How do you initiate a new program when all your resources are directed toward keeping up with the tremendous workload of the current program? How do you integrate cultural resource management, research, and energy development? How do you best serve the public interest in archaeological resources?

For almost 30 years, from the early days of National Historic Preservation Act Section 106 compliance efforts, the archaeological program in the Carlsbad Field Office was driven by industry's needs, as indeed such programs usually are on the public lands. Where archaeological sites were found to be at risk from any particular proposed development, the preferred action was to "flag and avoid" the archaeology in the project area. The overall management plan focused on short-term goals: survey, locate and record sites, and redesign projects to avoid as many of them as possible. By 2003, over 300,000 acres of the 2 million acres managed by the field office had been surveyed by professional archaeologists, a survey rate of 15 percent for the entire field office. Over 8,000 archaeological sites had been recorded.

But as the site forms piled up, so did the concerns. First, were concerns for the archaeological resources. The mainstay of every federal land managing agency, "flag and avoid" was developed to address the "Conservation Ethic" that stresses preservation in place for finite, non-renewable archaeological resources (Davis 1972; Lipe 1974). As long as the spacing between developments allowed archaeologists to help industry move project footprints to avoid archaeological resources, preservation in place was a viable option. By 2003, there had been so much development in some areas of the Carlsbad Field Office and New Mexico's portion of the Permian Basin that it was no longer always possible to "fit" projects in between archaeological sites. Archaeological sites were suffering "the death of a thousand cuts" from continued road maintenance, casual (and illegal) artifact collecting, trespass, and inadvertent blading and trenching. In addition to these man-made threats, the sandy soils and shifting dunes of the Mescalero Plain, the physiographic setting of the Permian Basin MOA study area, pose a challenge to the long-term physical integrity of the region's archaeological sites.

Then, there were concerns over how well the "flag and avoid" strategy was serving archaeological interests. More than 25,000 "flag and avoid" surveys had been conducted in the Carlsbad area. Unfortunately, instead of developing a survey program to investigate human responses to the variety of environments present in the Permian Basin, the energy companies and commercial interests insisted on working in areas most likely to produce oil, gas, and other commodities. Over one hundred excavations—small tests to full-site excavations—had been carried out since the 1970s. Again, as with the surveys, most of this fieldwork was "data recovery," designed to mitigate adverse impacts from development or even to mitigate damage to sites from ongoing oil and gas operations. Because industry usually chose not to take on excavations of large, complicated, interesting sites, they found a way to move their projects to avoid these sites. When data recovery projects were launched, they focused on smaller, sometimes damaged sites that barely met eligibility criteria for listing on the National Register of Historic Places. These "iffy sites" were not often the sites archaeologists would have chosen to investigate.

"Flag and avoid" fieldwork is designed to answer one question, and to answer that question as expediently as possible: Where are the archaeological sites that may be eligible for listing on the National Register of Historic Places? New Mexico archaeologists working on public lands in southeastern New Mexico relied on "flag and avoid" because it was a successful strategy. It identified eligible sites, created the opportunity for preservation in place, and expedited the entire process. Historically, the New Mexico SHPO did not question calls that found sites eligible, but they often questioned calls where sites were found not to meet eligibility criteria. A conservative approach to eligibility evaluations reduced BLM conflicts with SHPO. New Mexico SHPO policy discouraged extensive testing as part of

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FIGURE 1. The Permian Basin Memorandum of Agreement project area. The Carlsbad Field Office includes public lands in Eddy, Lea, and southern Chaves Counties, New Mexico. The PUMP III project analyzed blocks of 8 U.S.G.S. 7.5-foot quadrangles in the Loco Hills, Azotea Mesa, and Otero Mesa areas.

survey, which added additional pressure to err on the side of site preservation. "Iffy" sites with thermal features? Probably eligible under National Register evaluation criterion (d) (resources that possess integrity of location, design, setting, materials, workmanship, feeling, and association and that have yielded, or may be likely to yield, information important in prehistory or history). "Iffy" sites with a variety of artifact types exposed in dune blowouts? Probably part of a site eligible under criterion (d). "Iffy" sites not lying directly on bedrock? Probably eligible under criterion (d).

"Flag and avoid" tends to work for archaeological interests in the short term and in areas with a low volume of development: sites are preserved in place for future research and preservation agendas. The same strategy works against archaeological interests in the long term and in areas with heavy development. Because of the tendency to expedite fieldwork with conservative eligibility evaluations, "iffy" sites go untested and unexcavated. Not only are we avoiding excavation at rich, interesting sites, but we are also not learning as much as we might about the "iffy" sites either. Our short-term gain leads to long-term losses in information. For BLM, that information is critical to cultural resource management.

A THREE-PART APPROACH

The BLM worked with SHPO to meet these concerns through a three-part approach. First, we developed a good understanding of the current situation. Then, we worked to build common ground among archaeologists, managers, the SHPO, and industry; we developed a collaborative approach to doing archaeology. Finally, we passed control of key resources to each of the partners in the new program. These elements were captured in a programmatic document, the Permian Basin Memorandum of Agreement, which was signed in May 2008 by the BLM, the SHPO, the Mescalero Apache Tribe, the Advisory Council on Historic Preservation, and the New Mexico Archaeological Council. The main players involved in developing the Permian Basin MOA were Stephen Fosberg, Sarah Schlanger, David Simons, George MacDonell, James Smith, and Bruce Boeke, of the New Mexico BLM cultural resources team; Katherine Slick and Jan Biella, of the New Mexico SHPO; Holly Houghten, Mescalero Apache Tribal Preservation Office; Nancy Brown and Reid Nelson, Advisory Council on Historic Preservation; Deni Seymour and Tim Maxwell, New Mexico Archaeological Council; and Bob Gallagher of the New Mexico Oil and Gas Association.

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EVALUATING WHAT WAS KNOWN ABOUT THE PERMIAN BASIN AREA: THE PUMP III PROJECT

Southeastern New Mexico has broad expanses of federal lands with traditional uses that include rangeland, extractive industries (including the largest potash production area in the United States), and energy production. Oil and gas reserves are part of the Permian Basin, a geological structure that underlies southeastern New Mexico and portions of west Texas. The New Mexico BLM lands with dense oil and gas development are bounded on the east by a limestone caprock formation with springs at its base and on the west by the Pecos River drainage, which contains the only substantial riverine environment in the area. In between lies a largely undifferentiated, undulating plain with active sandsheets, the Mescalero Sands. Most of the archaeological sites are light, extensive lithic scatters; some are anchored by burned rock and other thermal features; a handful appear to be residential sites. Surface visibility and site preservation are complicated by the shifting dunes.

In the late 1980s, BLM sponsored a regional synthesis for the general area (Sebastian and Larralde 1989). After that, BLM and SHPO worked to create a new regional research paradigm (Hogan 2006). Through 2003, however, we had no rigorous examination of survey results on a regional basis. As a result, the primary conclusion raised in 1989—that BLM (or someone) needed to mount a program of research-oriented fieldwork, including extensive excavations—was still valid in 2003.

The Department of Energy's Preferred Upstream Management Processes (PUMP) grant program gave us the opportunity to develop a thorough evaluation of the Permian Basin archaeological data. The PUMP III project explored the site record database resulting from 30 years of survey in southeastern New Mexico (Sebastian et al. 2005). The PUMP III study reconstructed the history of archaeological inventories in three 8-quadrangle areas: Loco Hills, a mature oil field; Azotea Mesa, a developing field; and Otero Mesa, an undeveloped, potential field. The study revealed some surprises about the archaeological record of the Permian Basin in southeastern New Mexico and revealed how that record accumulated in the context of energy development. The study also highlighted some of the challenges raised for cultural resource management (Figure 2).

First, we found that our current survey methods stopped yielding new information about the study area after we hit 6 to 10 percent survey coverage in the area. Adding more site records—and we've added some 15,000 new records since this point was reached—hasn't appreciably helped our understanding of where sites might be or what they might consist of. And adding additional survey—boosting the survey coverage above 10 percent—hasn't added appreciably to our understanding either. The patterns we can coax out of the survey reports stabilize by the time the sampling fraction reaches about 10 percent; in areas with very low environmental variability, the sampling fraction at which patterns stabilize is lower. As one of the preliminary reports from this project concluded, "[N]o amount of survey and site discovery is likely to increase our understanding of how humans used the study area" (Ingbar et al. 2005).

Secondly, we found that we could make reasonable models of where sites were likely to be—models that can be translated into maps of the probability of encountering sites—by combining our site survey data with geomorphological information on the age and kind of sediments present across the region, the location of water sources, and several other critical variables. Studies completed by Stephen Hall (2002, 2005) provided the geomorphological basis for these models.

Finally, we found that we had surveyed so many acres and so much of the area—up to 40 percent of the modern ground surface in some areas, and well over 15 percent in many places—that most sites had already been crossed by one or more surveys. For example, between 1975 and 2002, when the PUMP III data were collected, surveyed acreage in Loco Hills totaled 75,223 acres. However, only 62,875 acres were actually inspected for sites; the remaining 12,348 acres represent resurveys of areas already inventoried at least once before.

Especially where we had large seismic projects with regularly spaced survey transects, but also where we had multiple, overlapping surveys, we had probably already found most of the sites.

BLM funded another study—the Pierce Canyon survey (Raymond et al. 2007)—to assess the value of additional block surveys in an area with a high density of both sites and previous surveys (Figure 3). The Pierce Canyon block survey covered an area of 6,385 acres, south of the Loco Hills study area but within the Mescalero Sands; Pierce Canyon and Loco Hills share similar environments and depositional histories. Previous survey in the Pierce Canyon area included a variety of small projects and one large seismic project, Poker Flats. The results of this Class III survey fit what we suspected from PUMP III—85 percent of the sites found by Ecosystems Management, Inc. (and 100 percent of the larger sites) had been previously recorded, even though the previous surveys had covered only 28 percent of the modern ground surface.

The PUMP III study also highlighted serious issues with our survey data. Not surprisingly, PUMP III found that relatively few of the observations made on site forms were capable of supporting robust statistical analyses. The observations were made by hundreds of archaeologists filling out site forms for inclusion in a statewide database; the preponderance of the surveys were "flag and avoid" surveys on the public lands. Consequently, the database had serious shortcomings as a research tool. The site record from southeastern New Mexico, which is probably representative of the 200,000-plus records in the full database, shows inconsistent recording of site boundaries, surface attributes, features, and assemblage content, and a very conservative approach to assessing and evaluating eligibility. None of these issues were likely to resolve themselves; BLM felt that they would certainly not be resolved by continuing to require archaeological survey using traditional and current methods. The outcome of the PUMP III study was clear: to gain substantial additional knowledge about the archaeology of southeastern

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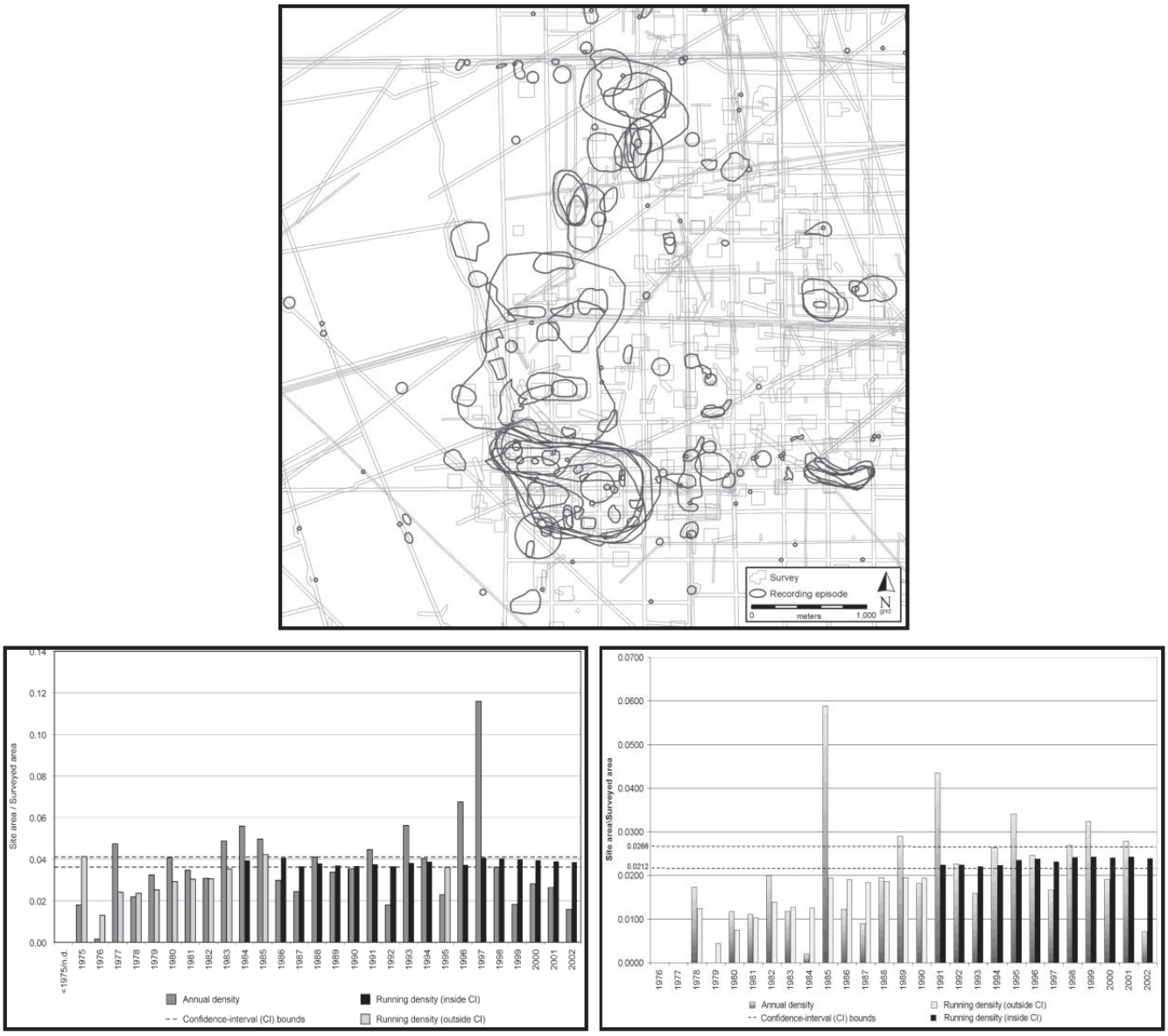


Figure 2. Top left, an example of the extraordinary complexity produced by more than 30 years of survey in the Loco Hills 8-quadrangle study area. Repeat encounters with the same archaeological resources results in a number of coincident, overlapping boundary measurements. Bottom, running site density figures, by year, for Loco Hills (left) and Azotea Mesa (right). Site density serves as a proxy for return on "new" survey-based information. Dark bars represent years where yearly running site density fell within the 95 percent confidence interval calculated from the cumulative site density figure for all years, including 2002. In Loco Hills, site information return had become fixed around 1985, in Azotea Mesa, by about 1991, after 10 to 15 years of survey. These graphs show "cleaned up" survey data, which minimizes problems introduced by resurvey and rerecording. (Figures used with permission from Ingbar et al. 2005).

New Mexico, we were going to need to excavate sites, not just continue to add to an increasingly redundant record through additional survey work.

FINDING COMMON GROUND

What did the various parties involved in developing the Permian Basin MOA want? No one wanted to keep doing business as usual. The BLM, the SHPO, and the archaeological community wanted to do the right thing by the archaeological resources, which were being damaged by long-term field operations and placed at risk by a failure to change management approaches. As the SHPO commented during development of the MOA, "We can all agree the need for change is undeniable … The alternative is that for another 20 years we continue doing the same things we have done for the last 20, giving us the opportunity to know less and less about more and more oil and gas fields" (Katherine Slick, personal communication 2008).

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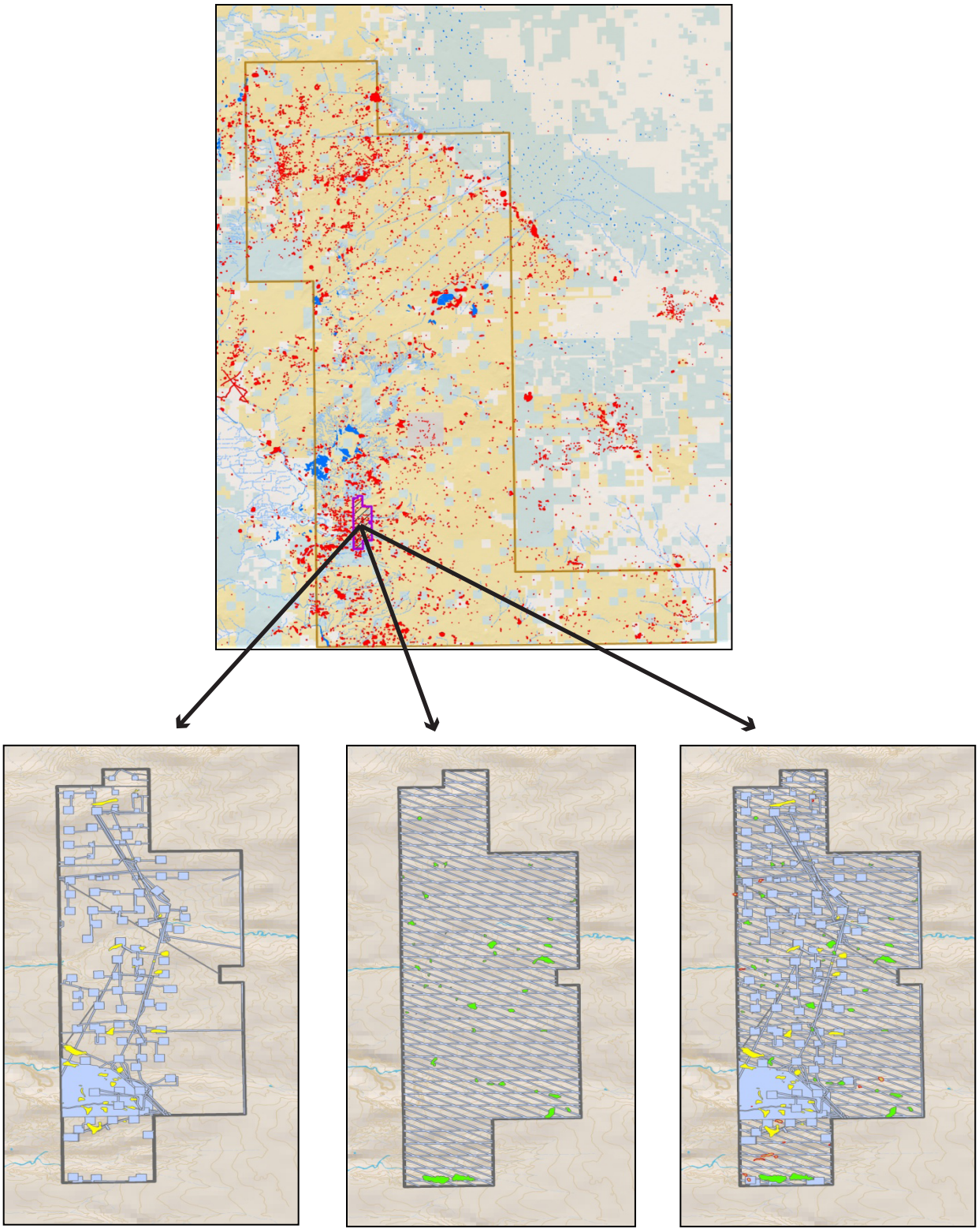


FIGURE 3. Top: Location of Pierce Canyon study area within the Permian Basin MOA area. Red polygons are recorded sites. Bottom, from left to right: Survey results prior to Poker Flats Seismic project, following Poker Flats Seismic, and following full coverage inventory. Sites identified at each stage are shown in yellow, green, and red, respectively. Surveys are shown as blue polygons.

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The oil and gas industry wanted to know that they weren't wasting money or time. The BLM could continue to call for additional survey, and industry could continue to pay for it, but the field was developing key signs of "avoidance failure." These included shortcuts in process; a growing backlog of survey reports that were not integrated into the statewide, contractor-accessible database; and the afore-mentioned damage to archaeological sites and data recovery projects that focused on small sites. Process shortcuts such as surveying first and checking for previously recorded sites later added to the site record backlog. Another shortcut had more insidious effects: As long as sites were being avoided anyway, site eligibility calls had little impact on the overall process, and the most expedient way to move projects forward was to consider virtually all sites eligible. Indeed, the lack of excavation data discouraged archaeologists from making any other call. Finally, everyone wanted to stop the complaints coming in from all parties. Don't you have enough of these sites by now? When will you be done surveying? When can we start digging up good sites? Why don't we know more by now? Have we surveyed enough? Are all these sites really eligible? Shouldn't we be past this stage? Why are we surveying some areas over and over and over again?

GOING BIG: THE PERMIAN BASIN MEMORANDUM OF AGREEMENT

The Permian Basin Memorandum of Agreement (MOA) outlines how BLM will manage cultural resources in a 28-quadrangle area (approximately 1,700 square miles) that encompasses the most active oil and gas production lease areas in the Carlsbad Field Office (United States Department of the Interior, Bureau of Land Management New Mexico State Office 2008). The MOA is a mitigation document: the work that BLM carries out under the MOA is a mitigation program that addresses the long-term damage to cultural resources that has resulted from energy field development and continued operations. In short, the MOA provides a procedure for mitigating cumulative impacts to archaeological resources as new development in the MOA area proceeds. The MOA is used only for seismic exploration, oil and gas undertakings, and associated roads, lines, and pipes, plus potash-related actions similar in size and scope to these oil and gas undertakings. Energy industry applicants must elect to participate in the program on a project-by-project basis. Applicants who do not elect to follow the MOA procedures will work under the existing New Mexico BLM-SHPO Protocol.

New Mexico BLM coordinates its activities with SHPO through a Protocol agreement of long standing that gives the BLM broad latitude to make eligibility determinations and determinations of effect. Any cultural resources discovered as a result of survey programs done as mitigation under the Permian Basin MOA will follow existing Protocol procedures for determining eligibility, and any sites found eligible will be added to the set of sites which must be avoided or mitigated within the project area. Eligibility determinations will be based on the potential of properties to address, at a minimum, research questions drawn from the regional research design or from other studies carried out as part of the Permian Basin MOA mitigation. Environmental assessments for oil and gas projects in the MOA area will reference this MOA and will acknowledge that any adverse effects to historic properties will be at least partially mitigated through the treatments described in the MOA. Mitigation actions under the MOA will be considered a categorical exclusion.

The primary work carried out under the Permian Basin MOA, which is a five-year pilot program recently extended to eight years, includes a synthesis of previous excavations carried out in the MOA area; additional, targeted survey; ethnographic studies to identify traditional cultural properties and other resources of interest to tribes; analyses of existing museum collections; mapping and test excavations at previously studied large village sites; development of an oil and gas industry context for southeastern New Mexico, and an extensive program of excavations designed to investigate subsurface deposits and features for a variety of sites in the study area. Program goals include improving site surface recording practices, providing a strong basis for eligibility evaluations, creating a shared research program for southeastern New Mexico, and, in general, returning information that will allow BLM to improve management practices for cultural resources in southeastern New Mexico and across the state. The regional research design developed in partnership between BLM and SHPO (Hogan 2006) guides the archaeological field program.

The MOA area was built to include 16 quadrangles that had been studied for the PUMP III project and an additional 12 adjoining quadrangles that each had at least 10 percent surface survey coverage (as of 2005). Of the 28 quadrangles, four had between 10 and 14 percent survey coverage; seven had 15 to 19 percent coverage; nine had 20 to 29 percent coverage; five had 30 to 39 percent coverage; and three had more than 40 percent surface survey coverage (Figure 4).

Within the MOA area, energy companies may choose to operate under the MOA or under BLM's standard operating procedures. Operating under the MOA is entirely voluntary. If companies choose the MOA procedures, they contribute the value of the archaeological survey they would have carried out to a pooled fund. The value of the survey work is based on a pricing schedule worked out with members of industry; each project is evaluated by Carlsbad Field Office archaeologists and a price schedule applied before the project can proceed.

For work carried out under the MOA, BLM does not require Class III inventories in the project area. In essence, BLM and the MOA signatories (SHPO, Mescalero Apache Tribe, Advisory Council on Historic Preservation) agree to trade off the ability to carry out an integrated research program for additional survey in the MOA area. BLM does require applicants to avoid previously recorded, eligible sites and previously recorded, eligibility-undetermined sites. BLM does not require applicants to avoid cultural resources which have been determined not eligible for the National Register (by BLM or by BLM and SHPO through consensus). BLM may require monitoring during construction and land disturbance in cases where BLM foresees the potential to affect previously recorded cultural resources. When adverse impacts are unavoidable, applicants will carry out mitigation as directed by BLM. These programs will be funded directly by the applicants. Mitigation of archaeological sites will follow the regional research design (Hogan 2006) for prehistoric and protohistoric resources. Historic property mitigation will follow site-specific research programs or programs based on historic contexts developed through the MOA.

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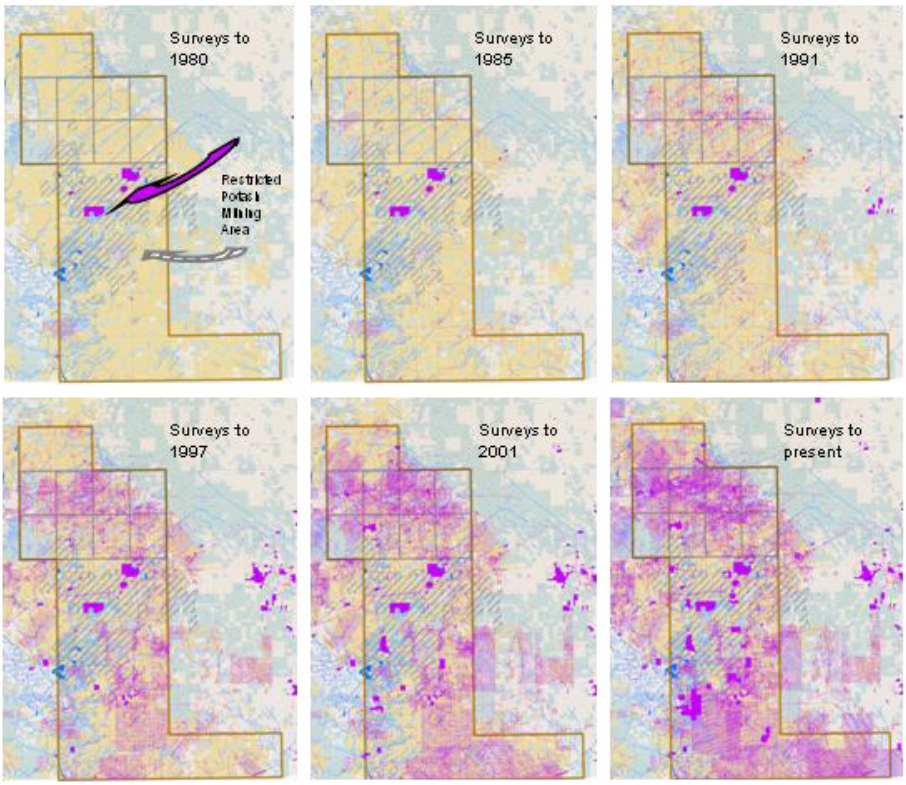


FIGURE 4. Survey coverage, in percentage of modern ground surface covered by pedestrian, Class III intensive archaeological survey, ranges from 10–15 percent in the least surveyed quadrangles, to more than 40 percent coverage in the most intensively surveyed areas. Of the 8 quadrangles that make up the Loco Hills area, outlined individually in this figure, three have more than 20 percent surface coverage, one has more than 30 percent coverage, and two have more than 40 percent survey coverage at present.

BLM will continue to consult with Indian Tribes to identify traditional cultural properties, sacred sites, and traditional use areas when new Federal leases are proposed and when Resource Management Plans are updated, and will determine National Register eligibility in consultation with concerned Indian Tribes. Any properties or sites so identified will be avoided or impacts mitigated in consultation with concerned Indian Tribes.

If human remains, skeletal remains that may be human, or any cultural objects subject to the Native American Graves Protection and Repatriation Act (NAGPRA) are discovered during an undertaking, the applicant will be required to cease activities in the discovery area immediately, protect the remains, and notify BLM within 24 hours. If the remains are determined by BLM to be subject to NAGPRA, BLM will prescribe treatment in consultation with culturally affiliated Indian Tribes and lineal descendants. Treatment costs will be borne by the applicant outside the mitigation fund. Other discoveries of new, previously unrecorded cultural resources will not require avoidance; applicants may proceed without BLM notification. BLM may monitor any ongoing construction for compliance with this inadvertent discovery procedure.

Over the past five years, more than 70 percent of the projects carried out in the Permian Basin MOA area have been conducted under the MOA procedures. A total of 56 companies have signed up to use the MOA and 39 have contributed funds in lieu of archaeological survey. As of this writing, 2,657 projects have been logged in under the MOA. BLM works closely with the SHPO, the New Mexico Archaeological Council, the Mescalero Apache Tribe, regional archaeological experts, and consultants from the four archaeological firms selected to carry out the larger field projects (SWCA, Inc.; TRC, Inc.; Lone Mountain Archaeological Services, Inc.; and SRI, Inc.) to identify project priorities and facilitate the research program. To date, the mitigation pool contributions have totaled nearly $6 million. Without the Permian Basin MOA, those funds would have gone for thousands of additional small surveys in the study area. Instead, the mitigation pool is being used to build a comprehensive field program which will give BLM a solid foundation for managing the area's archaeological resources. Eight archaeological projects have been completed. One is an ethnographic and archaeological inventory, conducted in partnership with the Mescalero Apache Tribe to identify potential Traditional Cultural Properties in the vicinity of the Permian Basin MOA study area. Other projects have included collections analyses, limited testing, and mapping programs at large habitations; regional syntheses of excavation data; Class III archaeological surveys; and thematic surveys. Five reports are available through the Digital Archaeological Record (www.tDAR.org; tDAR Identification Numbers 378484, 378468, 378476, 378477, and 378478; Bandy 2011; Brown 2010; Brown 2011; McCormack 2010; Railey et al. 2009). Three projects are in progress, including a historic context for oil and gas development, a study of lithic sources within and

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adjacent to the MOA area, and an analysis of soil samples taken from some 500 features (primarily small hearths, but also including ashy stains and other thermal features) from across the MOA study area.

CONTROLLING KEY RESOURCES

The real success of the Permian Basin MOA, however, is that it gives control over key resources to the constituencies most interested in having that control. The oil and gas industry gains control over schedules and time. The Permian Basin MOA reduces the guesswork that often accompanies cultural resource clearance procedures. Once the Carlsbad Field Office reviews an application to proceed under the MOA in the Permian Basin MOA area, and once known eligible sites are avoided or treated, the applicant can proceed with development. BLM grants the applicants limited access to site location data so they can see where they can develop without adverse impacts and where they will need to plan for extensive mitigation. This information lets them plan more effectively and creates greater certainty in project scheduling.

Archaeologists gain control over field programs, which means that archaeologists are "doing archaeology." One of the most common concerns raised during the development of the MOA was that we would no longer require or carry out any survey in the Permian Basin MOA area. In the first two years of the Permian Basin MOA, we actually surveyed more acreage overall in the area than we would have seen without the MOA because we were able to contract for survey in areas which had not been well sampled by oil and gas development. More important than the increase in survey acres was the increase in control over where to look: we were able to to look where we felt we needed additional survey to improve our understanding of Permian Basin prehistory. "Doing archaeology" in the Permian Basin MOA means that archaeologists identify sites for excavation, rather than having the excavation sample determined by industry needs. We are fielding intensive mapping and testing programs at the larger sites in the area, which have been known and avoided since the 1960s. We are designing and implementing field programs and experimental programs to improve survey, give us better tools for eligibility evaluations, and jump-start our understanding of area archaeology. We are doing critical, much needed work in the Permian Basin.

BIG CHANGE LEADS TO BIG IMPROVEMENT AND NEW CHALLENGES

Most significantly for BLM, under the Permian Basin MOA, managers gain control over critical information. Our Carlsbad Field Office has begun to manage all resources through an integrated Geographic Information System. This system has replaced mylar overlays, smudged 7.5-foot maps, and outdated electronic records. The archaeological data in this system were gathered and prepared through the PUMP III program and through Carlsbad Field Office initiatives supported by the Energy Policy Act of 2005 pilot office program. We now have a real-time picture of where archaeological survey has taken place, where archaeological resources have been located, and, as importantly, where we still need to do more work. We've been able to stop recording the same resources over and over again; we can look instead to improving how we create our records and manage our resources (Figure 5).

We are now in the fifth year of the initial Permian Basin MOA. We remain focused on improving our ability to evaluate the research potential and eligibility of the Permian Basin's most common archaeological resources: the artifact scatters found in the blowouts and shallow deposits of the Mescalero Sands. But, the difficulties inherent in the archaeology of southeastern New Mexico continue to challenge us. In some ways, the very success of the Permian Basin MOA has resulted in its own issues. Some of the most valuable lessons we have learned involve the challenge of working in a collaborative environment:

- We have learned that organizing regular meetings of the collaborative working group is a major task, and that collaborative efforts require a lot of behind-the-scenes work; we anticipate putting more resources toward this task in the future.

- We have undergone considerable change in Permian Basin MOA leadership among the BLM team. We have had three BLM lead archaeologists in 5 years, and we've come to understand that a shared vision and continuity of leadership is critical for the success of the MOA.

- We have learned that administration of the Permian Basin MOA is a substantial workload by itself. The Carlsbad Field Office staff is committed to monitoring sites that may be affected by Permian Basin-exempted projects to make sure that no resource damage is occurring even when and where monitoring is not required by the MOA. Between this unanticipated field time and the time demands of research program development and contract administration, the work load is overwhelming. We have recently established a position dedicated to administration of the MOA to address this problem.

- We have also learned that listening to the advice of the working group, and keeping lines of communication open among members of the collaborative, is critical for the success of the MOA. We must pay attention to the advice of archaeologists with years of experience in southeastern New Mexico, whether as contractors, academics, or independent archaeologists, and we also must be willing to allow them to assist BLM in formulating the research program. BLM cannot and should not be implementing the research program in a vacuum.

Five years is not a long time in which to implement large changes, and our three-year extension has probably bought us new challenges, along with a little additional time. The biggest lesson we have learned to date, though, is that five years of directed field research is more than equal to 30 years of business as usual.

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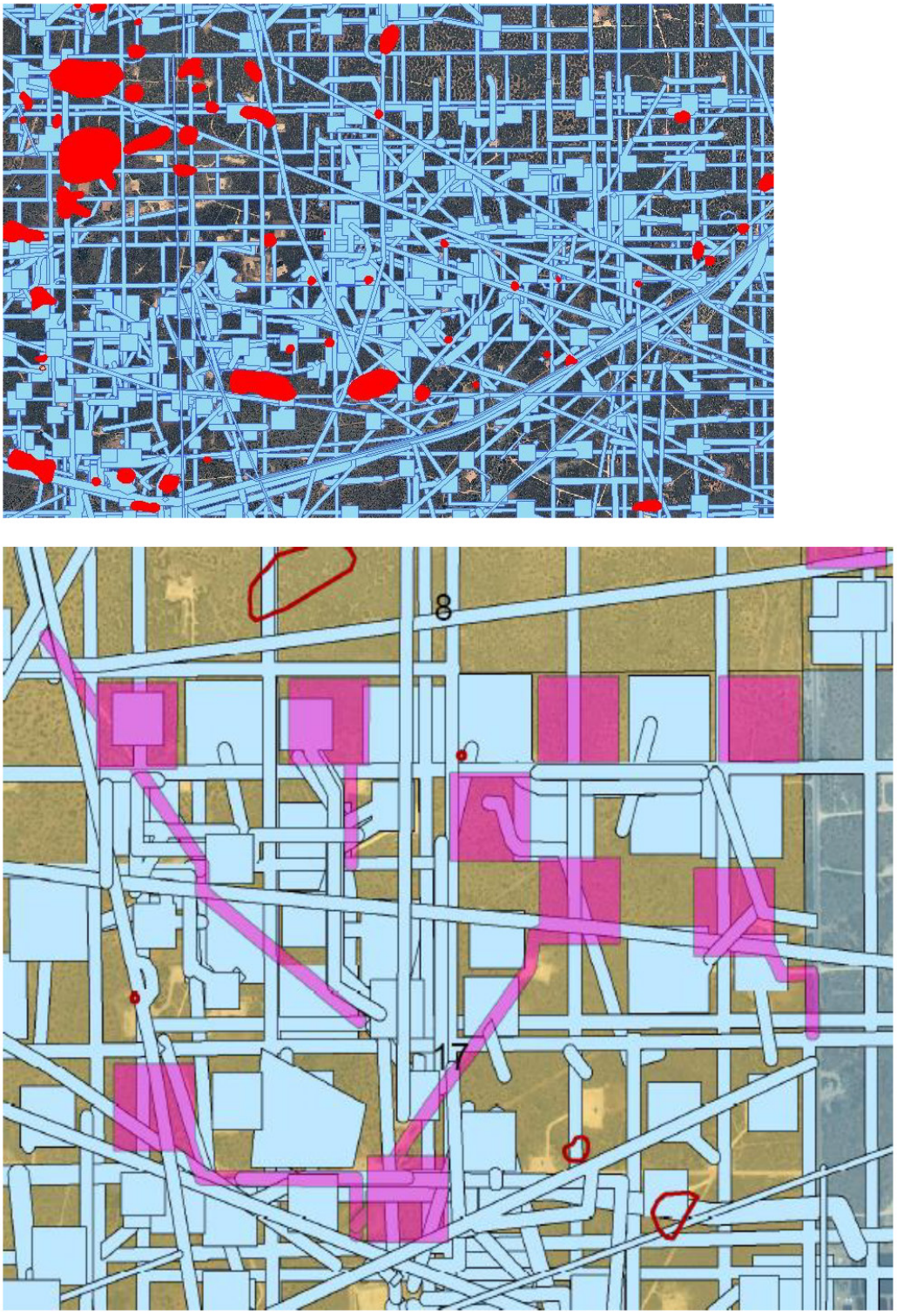


Figure 5. This figure shows surveys and recorded sites in the Loco Hills area (top) and one small section of the Permian Basin MOA area (bottom). Surveys are shown in blue; archaeological sites are shown in red. Prior survey has already located most, if not all, sites in this heavily surveyed area. In the lower map, projects carried out under the Permian Basin MOA are shown in magenta. These projects were authorized without additional, new inventory survey. The light blue polygons indicate areas of prior survey; the red polygons are previously recorded sites. Under the Permian Basin MOA, we can trade off the inefficiency of overlapping additional survey for new, targeted research.

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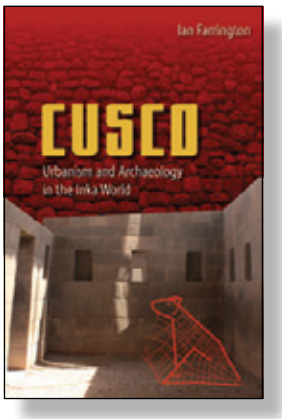
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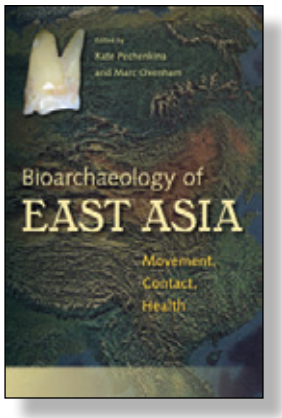
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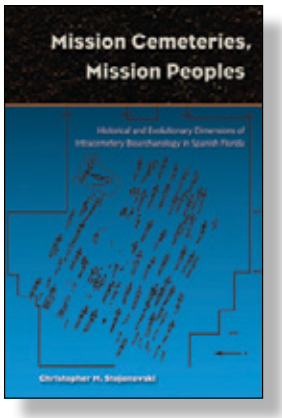
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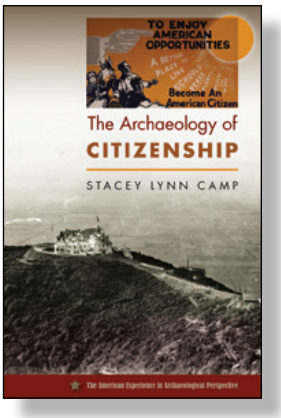
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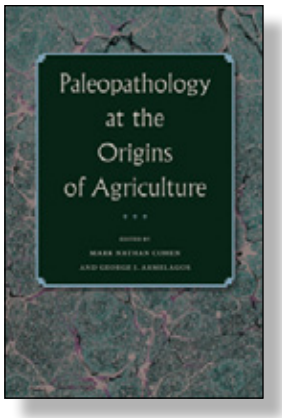
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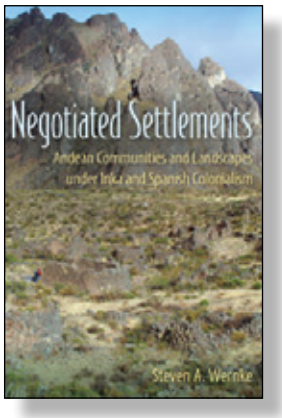
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