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Salmon Pueblo: Chacoan Outlier and Thirteenth-Century Middle San Juan Community Center

Paul F. Reed, Center for Desert Archaeology

Salmon Pueblo was constructed as a Chacoan outlier around A.D. 1090, with 275 to 325 original rooms spread across three stories, an elevated tower kiva in its central portion, and a great kiva in its plaza. Subsequent use by local Middle San Juan people, starting around 1125, resulted in extensive modifications to the original building, with the reuse of hundreds of rooms, division of many of the original large, Chacoan rooms into smaller rooms, and emplacement of more than 20 small kivas into pueblo rooms and plaza areas. The site was occupied by Pueblo people until the 1280s, when much of the site was destroyed by fire and abandoned.

©Adriel Heisey

The ruins of Salmon Pueblo lie on the north bank of the San Juan River, approximately 2 miles west of the town of Bloomfield and 9 miles east of Farmington, New Mexico.

Salmon was excavated between 1970 and 1978, under the direction of Cynthia Irwin-Williams, of Eastern New Mexico University, in partnership with the San Juan County Museum Association. The San Juan Valley Archaeological Program resulted in the excavation of approximately one-third of Salmon. More than 1.5 million artifacts and samples were recovered from Salmon. In 1980, Irwin-Williams and co-principal investigator Phillip Shelley wrote, edited, and compiled a multivolume, 1,500-page report. The document fulfilled the reporting requirements for the series of grants under which the project had been completed, but it was not intended for publication. Throughout the 1980s, Irwin-Williams and Shelley worked on a modified and greatly reduced manuscript, with the goal of producing a publishable report. This work came to an end with Irwin-Williams's death in 1990.

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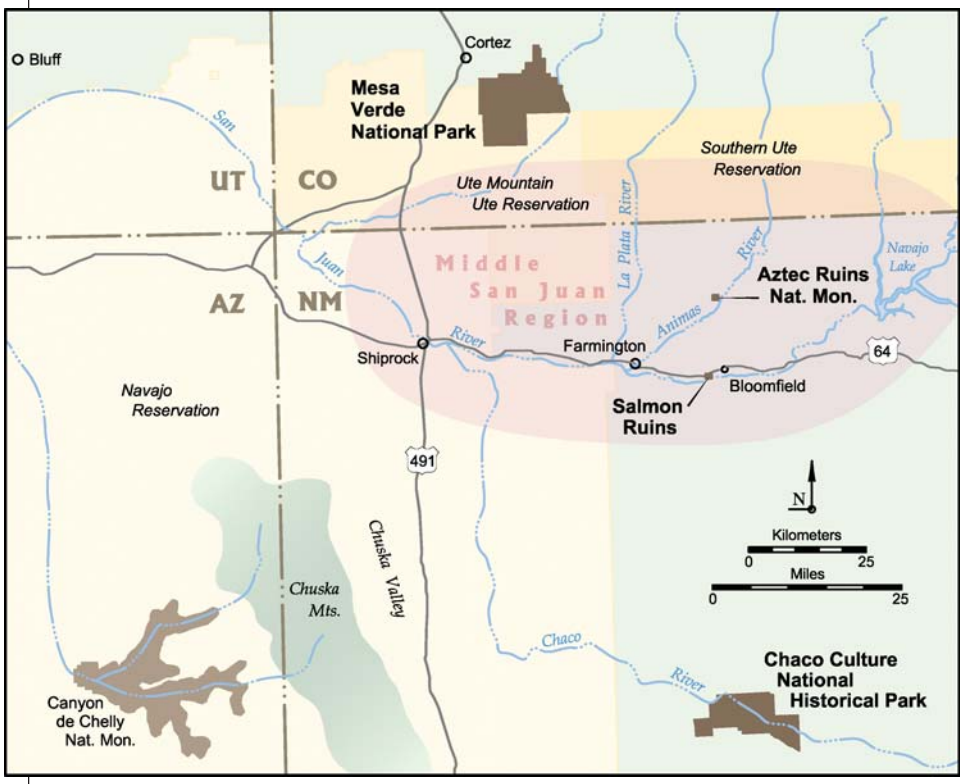
In 2000, Center for Desert Archaeology staff met with Salmon Executive Director Larry Baker, and forged a multiyear partnership. The partnership is part of the Center's effort to build a preservation archaeology network across the Southwest. The Center's effort at Salmon began in 2001, as the Salmon Reinvestment and Research Program, which I was selected to direct. The research initiative comprised two primary tasks: first, to condense and edit the original 1980 Salmon report into a new, published technical report, and second, to conduct additional, primary research in several targeted areas, with the goal of producing material for the detailed technical report, as well as a synthetic volume. I'm happy to report that the three-volume report, entitled *Thirty-Five Years of Archaeological Research at Salmon Ruins*, has been published.

Cynthia Irwin-Williams, digging at Salmon Pueblo in 1972, was Salmon's Principal Investigator from 1970 to 1980.

To understand the place of Salmon in the Chacoan world, we must review the prehistory of Chaco Canyon. The spectacular, ancient Puebloan sites in Chaco Canyon were undoubtedly known to Europeans since just after the time of the Spanish entrada in the 1540s. In 1849, James Simpson made the first well-documented visit to the canyon. Simpson's journal and drawings by Richard Kern brought news of the amazing Chacoan great houses to a limited audience in the mid-1800s. Additional visits and research by archaeologists and other researchers continued over the next several decades. Chaco was protected as a national monument in 1907. Professional archaeological research began in the 1920s, with the National Geographic Society–sponsored work by Neil Judd and work by the School of American Research and the University of New Mexico. In 1969, National Park Service (NPS) and University of New Mexico personnel initiated the Chaco Project, and conducted fieldwork from 1971 to 1982, which laid the foundation for our current understanding and interpretation of ancient Puebloan sites in the canyon. Beyond this, the project began a study of the series of similar and related sites, known as Chacoan outliers, that are spread across several thousand square miles in the greater San Juan basin.

A key aspect of Chacoan archaeology is the dichotomy between the largest sites—the great houses—and the smaller, "unit" pueblos that were ubiquitous across the ancient Puebloan landscape. At least a dozen Chacoan great houses are concentrated in the canyon. Great houses were built almost exclusively on the north side of the canyon, whereas small pueblo houses were constructed predominantly on the south side. Across the Chacoan world, great houses often have associated smaller pueblo houses.

Research by archaeologists associated with the NPS Chaco Project and other scholars indicates that, between 1000 and 1130, Chaco functioned as the political, social, economic, and ritual center of the northern Pueblo world. Archaeologists' views of Chacoan outliers, including Salmon and Aztec, have evolved in recent years, and some archaeologists now see little evidence for an overarching Chacoan "system." The Middle San Juan region figures strongly in modified interpretations of Chacoan outliers. As interpreted by the original excavators of Salmon and Aztec, Irwin-Williams and Earl Morris, respectively, Chacoan migrants established colonies at Salmon and Aztec in the late 1000s and early

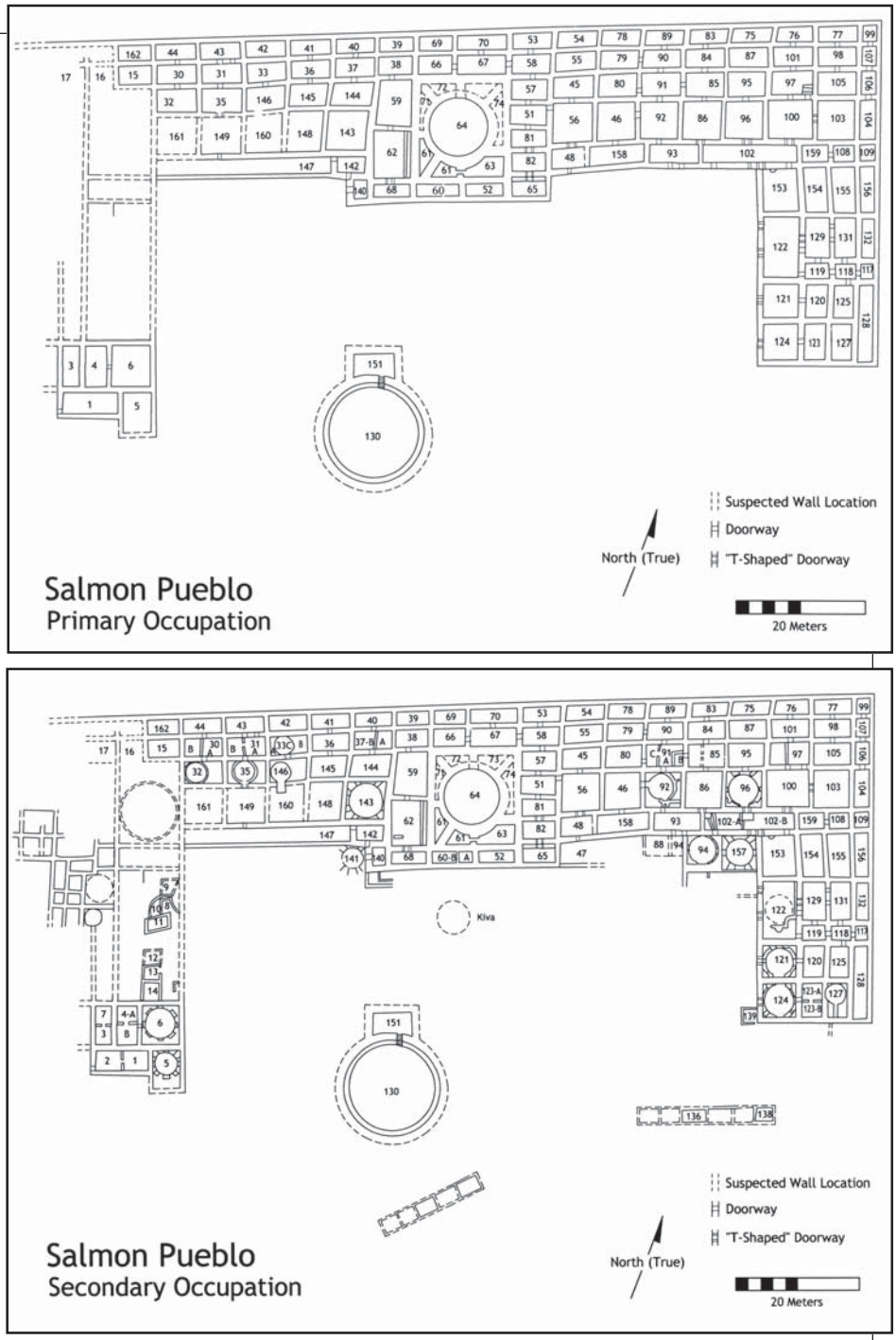


Map of Middle San Juan region showing Salmon Pueblo, Aztec Ruins, Chaco Canyon, and Mesa Verde.

1100s as part of an expansion to the north. Subsequent research suggests that other communities in the Middle San Juan emulated the Chacoan architectural style. The decline of Chacoan political influence by about 1130 led to the rise of new centers across the Pueblo landscape, including sites in the Northern San Juan–Mesa Verde region and in the Zuni–Cibola region to the south. As part of this process, important regional centers emerged in the Middle San Juan region, including Aztec and Salmon.

North of the San Juan River, there is a similar history of archaeological exploration and research in the greater Mesa Verde area. After their discovery by cowboys in the 1880s, sites in Mesa Verde were unfortunately heavily looted. Nevertheless, the efforts of many individuals to preserve the spectacular cliff dwellings and other sites prevailed, and Mesa Verde became one of the first national parks in 1906. Beginning in the 1890s, many years of intensive research were conducted, not only on Mesa Verde proper, but also in the surrounding region. The University of Colorado, the Field Museum of Chicago, and other institutions conducted archaeological research and held field schools in the Mesa Verde region for many decades. Like Chaco, Mesa Verde was the focus of NPS research from the 1960s through the 1980s.

The greater Mesa Verde region has many large Puebloan sites spread across the entire chronological sequence. At least 40 great houses contemporaneous with Chaco sites (1000–1125) have been documented across the area, many of them Chacoan outliers.



Maps of Salmon's primary (Chacoan, top) and secondary (San Juan, bottom) occupations.

Salmon lies between Chaco (45 miles to the south) and Mesa Verde (45 miles to the north), in the heart of the Middle San Juan region. (In our work in the area, we have chosen to use the broader and more inclusive term Middle San Juan and not the more restricted geographic term Totah, used by some other archaeologists). This positioning between two of the archaeological centers of the ancient Pueblo world, both of which have undergone intensive work by Southwestern archaeologists, has meant that the Middle San Juan region has been overshadowed by its neighbors. Despite the region's importance to interpretations of Chacoan and post-Chacoan developments, its archaeology has been largely overlooked in most regional syntheses. Indeed, settlement patterns and individual site histories—for example, for Salmon and Aztec—are usually interpreted in light of Chaco Canyon and Mesa Verde.

Nevertheless, research over the last 15 years has indicated that ancient Puebloan developments in the Middle San Juan have a unique trajectory linked to, but independent of, Chaco and Mesa Verde. A growing number of researchers, working for different institutions, have begun to discern the distinctive characteristics of the Middle San

Juan. For example, Steve Lekson has highlighted the importance of the Aztec community in the post-Chacoan world and has discussed its role as a descendant Chacoan "capital" from the 1100s through the end of the 1200s. Gary Brown and colleagues have begun the task of reassessing Aztec's architecture, chronology, and place in the region. Wolky Toll and colleagues have studied the La Plata Valley over the last decade and have identified a unique local pattern of ancient Pueblo culture. Finally, the newly completed Salmon report similarly focuses on reinterpreting the site's place in the region. In all of this recent research, it is clear that the Middle San Juan region was much more than simply a receiver of people and culture from Chaco and Mesa Verde.

Salmon occupies a unique place in ancient Puebloan history. The site was built along the San Juan River at the end of the Chacoan florescence, as Chacoan groups spread northward in the late 1000s. Salmon represents the first large-scale Chacoan pueblo built north of Chaco Canyon. Other sites in the north may have been built earlier—Wallace, Lowry, and Chimney Rock in southwestern Colorado, for example—but no other sites of comparable size and scale were constructed prior to 1090. Salmon's establishment by the Chacoans was quickly followed by Aztec's West Pueblo between 1105 and 1115. Aztec apparently carried the Chacoan mantle throughout the 1100s and into the 1200s; Chacoan buildings continued to be constructed at Aztec during these centuries. In contrast, Salmon's architecture made a complete transition after the 1120s, and no additional Chacoan masonry was added during the remainder of the site's history.

The founding of Salmon around 1090 represents a watershed in the history of the Middle San Juan region. The shift northward from Chaco Canyon has been attributed to various factors, including changing climatic conditions in the late 1000s. Chaco continued as one of the primary centers of ancient Puebloan life into the early 1100s and beyond. Nevertheless, the communities built in the Middle San Juan region, such as Aztec and Salmon, and those built farther north in the greater Mesa Verde region, indicate a change in the focus of activities and a broader geographic spread of Chacoan and post-Chacoan culture by the early 1100s. Salmon and Aztec were deliberately built in fertile, alluvial valleys next to some of the largest rivers in the northern Southwest. Given the development of water-management techniques in Chaco during the 1000s, it is not surprising that Chacoan movement northward focused on areas where these newly developed technologies could be implemented on a larger scale. Indeed, the available evidence indicates that both Salmon and Aztec produced large quantities of corn; in the case of Salmon, some of this corn may have been exported as ground meal. Further, the area around Aztec has evidence of at least two ancient irrigation ditches, first documented by John Newberry during an 1859 expedition.

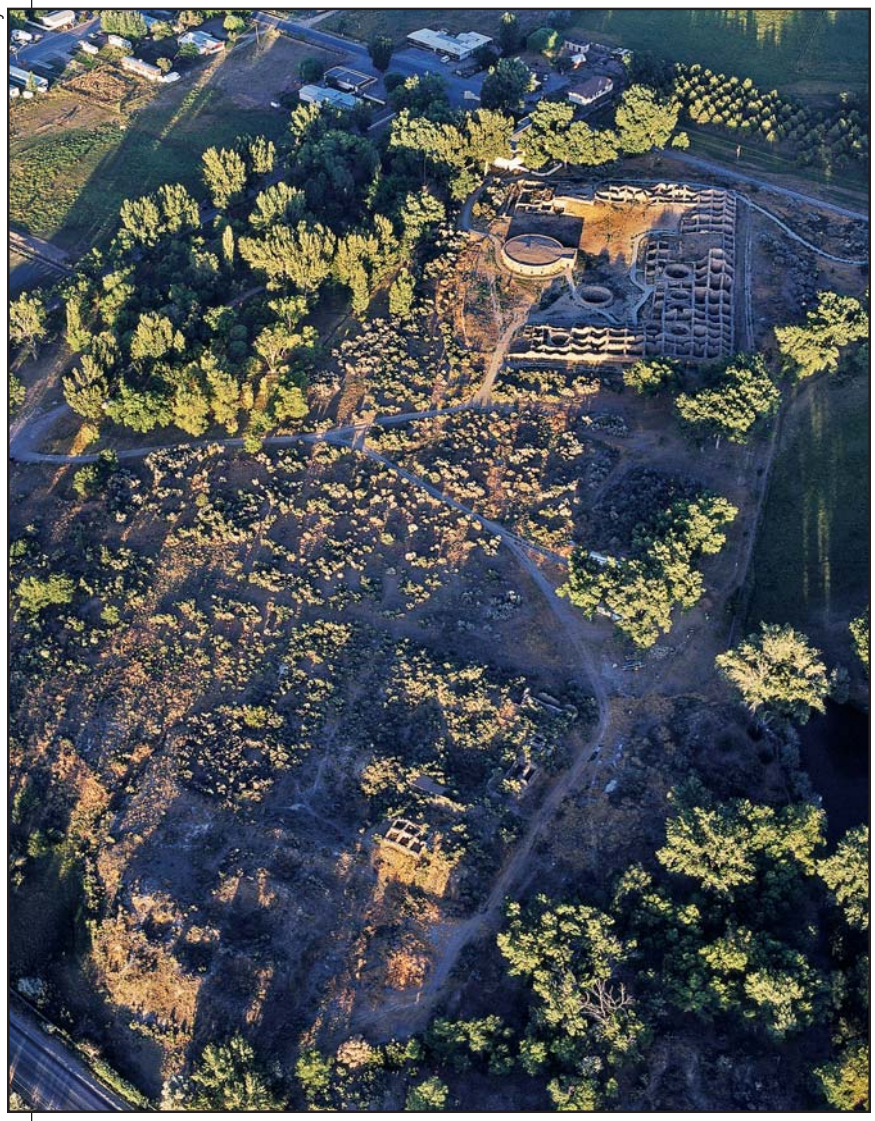
Salmon was built as a residential Chacoan site around 1090, and was occupied by Chacoans until the 1120s. After the Chacoan leadership at Salmon ended, the pueblo began a transition to a local San Juan settlement. Irwin-Williams thought that the drought that began around 1130 was a factor in the decline of Chacoan society, not just in the canyon but across the San Juan Basin. Certainly, the drought played a role. However, changes at Salmon began in the 1110s and 1120s, prior to the onset of the drought. I have suggested that local conditions may have caused the Chacoans to leave Salmon, and find their way to Aztec's East Ruin in the 1120s (see photo, page 5).

One challenge faced by Salmon's residents throughout its history was flooding of the San Juan River. Evidence of ancient flooding was found during excavations at Salmon, with flood deposits in rooms on both the southwest and southeast corners, and in the great kiva. Further, the latter structure was reroofed and perhaps entirely rebuilt in the mid-1260s. The final form of the great kiva included a high (perhaps 2 meters) cobble-and-dirt berm encircling the structure, which functioned as a flood-control facility.

It is my view that the power of the San Juan River was greater than the Chacoans had anticipated. At about 200 meters, Salmon was built too close to the river during a period of drought in the late 1080s and early 1090s when the flow was lower than average. When the river returned to full discharge, the Chacoans at Salmon realized their mistake. In comparison, Aztec West—initiated around 1105 and complete by 1120—was built more than 400 meters from the Animas River, a stream with a discharge and flow no more than half that of the San Juan. The Chacoans from Salmon, realizing that the location of Salmon would not meet their needs, apparently moved to Aztec and helped to build Aztec East, the symmetrical partner to Aztec West, whose construction began in the 1120s.

The mid- to late 1100s were a relatively quiet time at Salmon. Earlier archaeologists described an abandonment of the pueblo, although their interpretation is not supported by the most recent data, which indicates that Salmon continued to be occupied by local Puebloans—part of the original founding group at the site. With Chacoan leadership gone, however, these folks were free to modify the pueblo according to their own needs. Thus, we can document the conversion of Salmon's large, square living rooms to kivas; room 96W was apparently the first to be converted in the 1120s. Other rooms followed in the mid- to late 1100s. By the mid-1200s, more than 20 kivas had been

built into rooms at Salmon and placed into the plaza at several points. The need for so many kivas highlights social and ceremonial differences between these local San Juan groups and the earlier Chacoan residents. We thus have continuity through the 1100s at Salmon, with residents and their descendants recruited by the Chacoans to help build and live at the site in the late 1000s continuing in residence.



Aerial photograph of the Aztec Community. Aztec West, excavated by Earl Morris, is at top of the photograph; largely unexcavated Aztec East, symmetrically built across from Aztec West, is in the lower part of the photograph.

The twelfth-century residents of Salmon were subsequently joined by other local residents and people from the Middle San Juan region surrounding Salmon. From about 1190 to the 1280s, developments similar to those in the north, in the Mesa Verde region, occurred. In contrast to the original interpretation of the 1200s at Salmon, however, we no longer view migration from the north as the primary cultural influence. Certainly, people migrated to and from many areas of the ancient Puebloan Southwest in the 1200s (and in other times). However, evidence from architecture and ceramics at Salmon does not indicate a massive migration of people from the north. Instead, thirteenth-century Salmon fits within the larger cultural context for architecture (with San Juan–Mesa Verde–style kivas and cobble construction) and ceramics (with local versions of the widespread pottery types of the era, McElmo and Mesa Verde Black-on-white).

The articles in this issue of *Archaeology Southwest* look at new research in the Middle San Juan region as well as in Chaco Canyon. Larry Baker discusses the massive effort required to build Salmon Pueblo. Tom Windes and Eileen Bacha explore Salmon's extensive record of wood used for construction timbers, helping to determine that the site was built by Chacoans. Lori Reed describes the complicated ceramic traditions of the Middle San Juan, and Dorothy Washburn's symmetry study of ceramics from Salmon, Aztec, and Chaco Canyon sheds light on the relationship among the people at these sites. Karen Adams provides insight into Chacoan and San Juan food production and medicinal and ritual practices. Laurie Webster's study of the basketry and textiles from Salmon, Aztec, and Pueblo Bonito adds to our knowledge of Chacoan ritual, and Kathy and Steve Durand's article on Salmon animal bones documents the importance of two bird species, macaws and turkeys. Ruth Van Dyke offers a larger view of sacred landscapes across the San Juan Basin, linking Chaco, Salmon, and Aztec. Wolky Toll's exploration of the La Plata Valley places it within the larger context of Chacoan activities across the region, and Gary Brown summarizes the history and development of the complex at Aztec Ruins, highlighting the similarities and differences between Salmon Pueblo and Chaco Canyon. Steve Plog and Carrie Heitman discuss the Chaco Digital Initiative and demonstrate the usefulness of Chaco's huge archival record, and Gwinn Vivian offers concluding thoughts on Chaco, Mesa Verde, and the Middle San Juan, reminding us that the ancient inhabitants of these "distinct" areas were related and shared many traits.

Finally, Center President Bill Doelle brings us full circle in Back Sight, describing how the Salmon Research Initiative came about and taking us into the future of preservation, research, and public outreach in the Middle San Juan region.

The Architecture and Development of Salmon Pueblo

Larry L. Baker, Salmon Ruins

THE BUILDING OF SALMON PUEBLO was a massive undertaking, even compared to the great houses in Chaco Canyon some 45 miles to the south. Moreover, I believe that pre-construction events at Salmon may have extended over at least two decades.

There are a number of early tree-ring dates from the east wing of Salmon's E-shaped pueblo. Further, the pueblo is aligned with a lunar phenomenon that occurred in A.D. 1066–1067. Based on these observations, I have argued that the design layout for the site was created in 1066–1067, and immediately thereafter, between 1068 and 1072, a small architectural unit was constructed. This structure probably served as a logistical staging facility—housing construction workers and supplies—in advance of the major construction episode in 1088 through 1090.

Doug Gann

To construct Salmon Pueblo, a large labor force was necessary to harvest trees, acquire stones, prepare foundations, initiate masonry construction, and provide the logistical support for the architects, planners, and masons.

The construction of the pueblo conforms to a series of planning principles that have been proposed by Stephen D. Dent and Barbara Coleman, both architects and planners, who conclude that "Chaco's built forms exhibit the sense of design and order that came from both the singular vision of the architect and the perseverance over time of the planner. Consequently, we see these remains as evocative of a better way to plan and build." This was indeed the case for Salmon Pueblo. The architects and planners drew on the history of Chacoan architectural construction from 850 to 1060 to determine how the structure at Salmon should be planned, designed, and built.

Salmon Pueblo contains a variety of wall-construction types, masonry facing styles, architectural features, and room types. Although the tower kiva was heavily burned, a portion of a mural was preserved.

Architectural Wood Studies at Salmon Pueblo

Thomas C. Windes, National Park Service
Eileen Bacha, Youngstown, Ohio

THE ARCHITECTURAL WOOD from Salmon Pueblo can help us determine if the site was established by people from Chaco Canyon or by a local group. Because today's local tree resources are similar around Salmon and nearby Aztec West Ruin, the builders of the two great houses would have had similar material and procurement choices. Only native species of juniper, piñon, willow, and cottonwood would have been locally suitable for most prehistoric construction. It is not surprising that juniper, willow, and cottonwood are represented in the wood inventories from Salmon. Piñon, seldom found in pueblo great house construction, is rarely seen in the vicinity today. Whereas small groves of ponderosa pine and Douglas fir now grow within 12 miles of both great houses, in prehistoric times, the closest large stands were found about 30 miles north of Aztec and an additional 11 miles north of Salmon. Aspens, firs, and spruces are now an additional 6 to 12 miles farther north in the mountains, and were undoubtedly the same distance away prehistorically.

Juniper was used most extensively by Salmon Pueblo's inhabitants during the second occupation. This room contains a large juniper post embedded into a kiva pilaster.

Nearly 1,800 prehistoric wooden elements have been documented from Salmon; of these, 1,667 were submitted for dating. Of the total sample, 562 yielded tree-ring dates. The large tree-ring sample provides an accounting of the wood resources selected for construction at Salmon, with 1,563 identified to tree species. The Salmon sample is dominated by two species: nonlocal ponderosa pine (37 percent) and local juniper (38 percent). There is also a large amount of spruce and fir (14 percent), along with smaller amounts of Douglas fir (2 percent) and *Populus* sp. (cottonwood or aspen; 7 percent). Almost no piñon was used for structural wood. The relative use of these different species of trees in construction is probably reflected accurately in these percentages, though *Populus* sp. (cottonwood or aspen) may be somewhat underrepresented.

We estimate that the initial Chacoan construction required between 7,500 and 9,500 trees to provide the 15,000 to 17,000 elements needed for roofing and wall apertures. After A.D. 1120, a maximum of some 2,900 to 5,600 more trees, primarily juniper, were obtained by the occupants.

The effort to obtain quantities of nonlocal wood suggests the importance of certain species for construction. The finishing of wood, with many of the beam butt ends whittled flat, was also highly technical and labor intensive. The central core units at Salmon reveal special treatment, as indicated by the extensive use of nonlocal woods in their construction, even though only about 61 to 65 percent at Salmon was nonlocal, compared to 96 percent in the Aztec West Ruin core unit. In both cases, specialists with the requisite knowledge appear to have directed the projects.

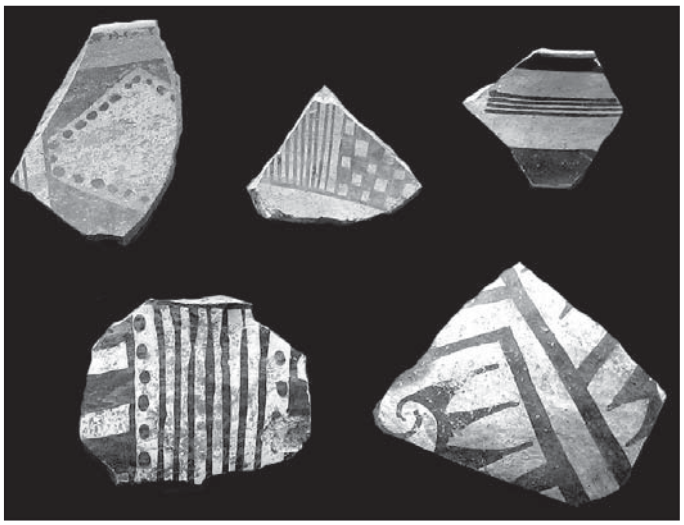
After these skilled Chacoan crews oversaw construction of the core units at Salmon Pueblo and the Aztec West Ruin, they appear to have turned the task over to local workers for the remaining construction, when local tree species were favored and less labor was expended on finishing the beam ends. Salmon is unmistakably a Chacoan great house; the initial architects and builders closely adhered to the traditions, standards, and craftsmanship of the great houses built earlier in Chaco Canyon in the eleventh century.

The late 1080s to early 1090s building effort at Salmon was extraordinary, but subsequent remodeling and construction in the 1100s and 1200s were small-unit building efforts, except the great kiva. At this time, the procurement techniques and subsequent beam-end treatments were less formalized, fewer materials were needed, fewer workers were required, and their progress was more leisurely, all indicative of a less-organized and local labor force.

Current Ceramic Research in the Middle San Juan Region

Lori Stephens Reed, Animas Ceramic Consulting, Inc.

In the Middle San Juan region, the nature and scale of local pottery production have long been the focus of debate. Most of the local pottery was tempered with crushed igneous rock (diorite), similar to ceramics produced throughout the Northern San Juan region. As a result, Middle San Juan ceramics have been typologically classified as Northern San Juan. However, our recent research, involving more-detailed technical analysis, as well as petrographic analysis, has produced a recognizable signature for locally produced rock-tempered Middle San Juan ceramic types; I have assigned the variety name Animas Variety to these locally produced ceramics.



The recognition of locally made varieties of Cibola ceramic wares is providing insights into ceramic production and patterns of interaction in the Middle San Juan. Two of these locally made ceramic types are illustrated here. Top: Red Mesa Black-on-white, Animas Variety. Bottom: Puerco Black-on-white, Animas Variety.

During our analysis, a second local pottery tradition was identified. Some of the ceramics that might have been classified as Chaco Cibola trade ware had characteristics matching those of the locally produced pottery. To distinguish these locally made Chaco Cibola-like ceramics from the trade ware, I have assigned them the variety name Cibola Animas Variety.

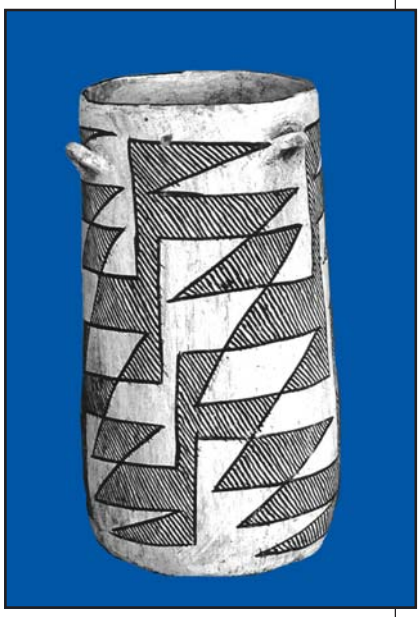
My ongoing ceramic research at Salmon and Aztec Ruins is yielding new insights regarding the influence of Chacoan culture on local pottery production and about interaction with other regions. For example, while sites in and around Chaco Canyon imported as much as 50 percent of their pottery from sites in the Chuska Valley, Chuskan ceramics never exceeded 5 percent during the Chacoan period at Salmon Pueblo. The importance of local ceramics in the Middle San Juan is also now evident. Chaco Cibola ceramics produced around Chaco Canyon represent just 6 percent of the Salmon assemblage, while Chaco Cibola types that were locally produced (Cibola Animas Variety) make up nearly 10 percent of the Salmon assemblage during the Chacoan period (see photographs for examples). Work is still ongoing to assess whether these Cibola Animas Variety ceramics were produced by Chacoan potters residing in the Middle San Juan or whether they represent emulation of Chacoan ceramics by local potters.

The collapse of the Chacoan system in the 1130s resulted in a decline in trade wares at Salmon due to the reorganization of social networks and an increasing trend toward more localized pottery production and exchange. Despite these changes, some production of the local Cibola Animas Variety ceramics continued into the 1200s, and some local potters continued to use the distinctive "washy slip" that is characteristic of Chacoan black-on-white pottery when they made local versions of Northern San Juan pottery types. These appear to be indicators of the ongoing importance of Chacoan crafts in the Middle San Juan long after the collapse of Chaco.

With an initial understanding of the technological aspects of Middle San Juan pottery, numerous research issues can now be reexamined concerning design styles associated with specific patterns of technology or localized traditions, distributions of local Cibola Animas Variety ceramics at sites other than Salmon and Aztec, associations of technological patterns in ritual or household contexts, and ancestral ties to Salmon, Aztec, and other sites based on technology and design styles.

Using Ceramic Symmetry to Understand Chacoan and Puebloan Culture

Dorothy Washburn



Top left: Red Mesa Black-on-white. Bottom left: Gallup Black-on-white. Right: Chaco Black-on-white cylinder jar.

FOR SOME YEARS, I have been studying the organization of design elements, rather than the design elements themselves. Because this approach requires complete or near-complete vessels to see how the elements are arranged, it cannot be used to analyze the sherd collections that are recovered from most site excavations. Nevertheless, I have been able to compile a large database from more than 400 ancient Puebloan sites dating from about A.D. 400 to 1600.

For people without a system of writing through which they can pass along their culturally defining principles from generation to generation, decoration is an important medium of information transfer. When the images are representational, outsiders can "read" the meaning in the designs. However, when the decoration is geometric, as it is on ancient Puebloan ceramics, the information content is more obscure.

Although I had observed a consistency in the structuring of ancient Puebloan design for some years—a preference for banded designs that repeated hooked triangles by bifold rotation—I was not able to tie this consistency in design organization with cultural ideas until I realized that the designs cannot be read literally, but must be read metaphorically. Thus, the bifold interlocking triangular and curvilinear design structure that dominates ancient Puebloan pottery design from approximately 900 to 1200 is a metaphor for the reciprocal relationships that organized and maintained members of the small agricultural village communities throughout the region.

We can now reexamine the assumption that great house complexes represent a local development from small unit pueblos. If this conclusion of cultural continuity is correct, we should see the same bifold structuring of design elements on Chaco Black-on-white that we see on Red Mesa and Gallup Black-on-white. But we do not: the ceramic designs on the three vessel forms—cylinder jars, small shallow bowls, and tall, sharp-shouldered pitchers—associated with great houses in Chaco Canyon and the presumed related outlying great houses from Salmon Pueblo and Aztec differ markedly from those made by the local ancient Puebloan farmers living along the San Juan River and environs.

Curiously, at both Salmon and Aztec, although there is ample evidence of Chacoan masonry, few artifacts were left in situ. Nevertheless, at both sites, we have examples of some of these special vessel forms with designs that are identical to those seen at Pueblo Bonito and other great house sites in Chaco Canyon.

In the accompanying illustration, I have juxtaposed typical examples of locally produced pottery decorated with banded designs with the distinctive pottery of the Chacoan era that is covered with overall patterns. (These overall patterns are termed "two-dimensional" because the axes along which the elements are repeated extend in two directions, in contrast to one-dimensional designs that are organized along a single linear axis.) At the top left is a typical locally made Red Mesa Black-on-white jar with a bifold rotational banded design. At the bottom left is the subsequent type, Gallup Black-on-white, characterized by designs with elements that are now hatched, rather than solid, but they too have a bifold rotation arranged in a linear band around the vessel.

However, the Chaco Black-on-white cylinder jar on the right is decorated with a two-dimensional pattern—a structural arrangement that has no precedent in the previous types made in the Four Corners area. Because the Gallup types are contemporaneous with the Chaco types, it is notable that the Gallup hatched bands of design are quite often one row of the two-dimensional patterns on the Chaco vessel forms, as if the local potters, in their attempts to copy the new hatched design system, used only one row of elements because that is how they had always constructed their designs.

Given the lack of continuity in this culturally significant attribute, in conjunction with the failure to satisfactorily account for the shift to great house communities, as well as their character and the presence of nonlocal objects in them, I suggest here that archaeologists should begin considering other explanations for the Chacoan phenomenon. We should consider the possibility that the three vessel forms bearing this nonlocal design system are evidence of a distinct, non–ancient Puebloan tradition, and further, that the individuals who used these vessels orchestrated the construction of the great house communities. And because cylindrical vessels and two-dimensional patterns are common in the assemblages of many prehistoric cultures in Mesoamerica, we should look beyond the Greater Southwest for the origins of the Chaco phenomenon.

Skilled Farmers, Astute Naturalists, Ritual Practitioners

Karen R. Adams, Crow Canyon Archaeological Center

THE RICH FARMLANDS along the San Juan River were cultivated by two groups that occupied Salmon Pueblo from the late A.D. 1000s to the late 1200s. Both grew corn, beans, and squash, gathered a wide range of native foods, including seeds and nuts, and probably relied entirely on wild plants when crops were poor. Gardeners picked the weedy plants that grew among their corn plots and in other disturbed locations, and family members harvested quantities of wild mustard, goosefoot, and pigweed seeds, grass grains, cactus fruit, juniper berries, and edible parts of a broad range of plants that ripened from spring through late fall.

Salmon Ruins Archive

Corn from Salmon Pueblo's secondary occupation, found burned in place on the floor of the tower kiva.

Despite their broad similarities in plant use, the two Salmon groups differed in some respects. The Chacoan occupants' diet relied heavily on corn, and less on wild plants. These people had limited access to gourd utensils and cotton cloth, though they do appear to have acquired them through trade. Organized Chacoan work teams traveled some distance to obtain wooden construction beams, which they stockpiled for building. In contrast, the second group to occupy Salmon gathered a wider variety of wild plants, apparently ate less corn, and left no evidence in their trash of nonlocal foods or other plant products. This group relied heavily on the roof timbers brought by their Chacoan predecessors; when roof repairs or construction were required, the second group cut down local juniper trees. For fuel, both groups regularly burned leftover corn cobs, locally available juniper, and some piñon. They used pliable juniper bark and yucca leaves for many household needs, such as bedding, diapers, burden rings, baskets, and sandals. As the 1200s drew to a close and changing climate affected agriculture, the secondary occupants ate more wild plants and resorted to consuming famine foods, such as juniper bark, yucca leaves, and leftover corn cobs.

Interpreting medicinal or ritual use of plants in ancient times is complicated by the fact that some plants serve more than one purpose. At Salmon, an unusually high amount of corn and cattail pollen found together on a room floor may suggest that prayers were once offered there. A wild tomatillo fruit recovered from a hearth may have been an offering of thanks prior to eating. Clumps of corn pollen on numerous floors may indicate that both groups regularly carried immature corn tassels into Salmon, in ways similar to modern Puebloans, who gather corn pollen for a range of medicinal and ceremonial uses. Two Chacoan rooms with other evidence of ceremonial usage contained extraordinarily high corn pollen percentages. And finally, the association of a high amount of corn pollen on a floor with chopping tools and animal bones may represent the blessing rituals associated with the butchering of meat, similar to a modern Zia custom, when a war chief visits the homes of successful hunters and sprinkles corn pollen over game that is later butchered in a ceremonial house.

The archaeological plant record has enriched our understanding of the two groups that occupied Salmon. From it we learn that they were skilled farmers and astute observers of their natural surroundings who gathered plants for reasons that went beyond daily subsistence and material culture needs. They coped with nature's vagaries as best they could, and when the regional and Salmon occupation ended abruptly in the late 1200s, they left us a detailed record of their lives along the San Juan River.

Ritual Uses of Textiles and Basketry

Laurie D. Webster

MODERN-DAY VISITORS to Pueblo Bonito, Salmon Pueblo, and the Aztec West Ruin may be unaware that large amounts of perishable materials were preserved within these structures. I have recently completed a study of the worked-fiber assemblage from Salmon Pueblo, and am currently analyzing the textiles and basketry from Pueblo Bonito and the Aztec West Ruin.

Certain forms of coiled baskets were apparently used in ceremonies either as containers or as ritual paraphernalia. Pueblo Bonito had the greatest variety of specialized forms. Two baskets resembling ceramic cylinder jars were associated with a high-status male burial, one covered with turquoise mosaics and the other with turquoise and shell. Some undecorated cylindrical baskets were found with a cluster of female burials. In all instances, ceramic cylinder jars were recovered nearby, suggesting a conceptual equivalence for the ceramic and basket forms. Two cylindrical baskets were also reported from Aztec West, both from mortuary contexts.

Plaited sandal with decorative border from room 62W, adjacent to Salmon's tower kiva.

A similar form, the conical basket, is known from Salmon and Aztec. It may represent a later modification of the cylindrical form or a regional variant. Most conical baskets from Salmon were found in or near the tower kiva; two contained corn, one contained feathers. Conical baskets have also been found at Aztec West. In addition, fragments of ceramic vessels molded in conical baskets are known from Aztec, Salmon, Chaco, and other sites in the region.

Large bifurcated baskets have been found at Pueblo Bonito. Archaeologists have suggested that they may be a ritualized form of a large, decorated carrying basket popular in earlier times. Miniature clay effigies of bifurcated baskets have been found at Pueblo Bonito and Pueblo del Arroyo. Although elliptical trays and bifurcated baskets or their related clay effigies have not been identified at Salmon or Aztec, both basket forms have been recovered to the west in the Kayenta region, so they are not unique to Chaco.

At Pueblo Bonito, fragments of clay-covered painted baskets and a painted cylindrical basket were recovered. At Aztec West, clay-covered painted baskets were found in the earliest Chacoan kiva and two Chacoan rooms. Another Chacoan room contained a clay-covered coiled basketry ladle that may have been decorated with painted designs.

A high-status burial at Pueblo Bonito contained a sewn-willow burial mat, while another such mat underlay a collection of nearby ceremonial sticks. Similar mats were associated with burials in the western part of Pueblo Bonito, where many elliptical, bifurcated, and cylindrical baskets were found. At Salmon Pueblo, a willow mat was associated with a burial cluster, and two such mats accompanied burials, one in a kiva, at Aztec West.

Several twined-reed mats were associated with a burial cluster at Pueblo Bonito, and a rolled-up example was reported at Salmon from a late Chacoan burial identified as a possible bow priest. Cylindrical reed-stem containers, similar to twined-reed mats in structure but tubular, also have a probable ritual association. Examples are known from at least one room at Pueblo Bonito, the Cacique's Sanctum near Chetro Ketl, and at least three rooms from Aztec West, one of which contained 12 examples. Some cylinders are sealed at one end, suggesting a possible use as ritual quivers or containers for prayer sticks or feathers.

Woven textiles that may have served as articles of ritual dress include cotton fabrics, looped shoe-socks of yucca cordage and animal hair or turkey feathers, and decorated twined yucca sandals. Finely woven plaited sandals were also commonly worn. Elongated bundles of reeds, wood, or other plant material wrapped with woven cotton cloth may have served as badges of office. Two such bundles were associated with adult burials at Pueblo Bonito, and another, wrapped in cloth, was recovered from a Chacoan room at Aztec West. Many sandals and baskets from Pueblo Bonito, Salmon, and Aztec were stained red with hematite, a pattern also observed for many of the ceremonial wooden objects from Pueblo Bonito.

Animal Bones from Salmon Pueblo

Kathy Roler Durand and Stephen R. Durand
Eastern New Mexico University

Two macaw wing bones from Salmon Pueblo. The one on the left is covered with red ochre, suggesting the macaw from which it came had been used for ritual purposes.

ANIMAL BONES from Salmon Pueblo have much to tell us about the lives of the people who lived there. Our study of the bones from Salmon began in 2002; this article discusses what we encountered there in trash deposits in seven rooms.

Our study found changes through time in the use of animals for both dietary and ritual purposes. During the Chacoan period, the inhabitants of Salmon relied on hunting artiodactyls (bighorn sheep, deer, elk, and pronghorn) for food. In the post-Chacoan period, turkeys and beans were a large component of the inhabitants' diet. Whether this change was brought about for cultural reasons or whether it was the result of a decline in the availability of artiodactyls, the result would have been a fairly healthy diet in the post-Chacoan period. In addition, this pattern supports the interpretation that turkeys were being raised across the northern Southwest after the Chacoan period.

Left: This macaw burial was one of at least nine found at Salmon Pueblo. Macaws were an important part of ritual practice at Salmon. Great effort and expense would have been required to obtain these birds in trade from lands to the south. Right: Turkey burials have been found at many Southwestern sites, including Salmon.

Ritual fauna are those species collected primarily for nondietary purposes; typically, they are desired for their feathers or fur. The most obvious animals collected for ritual purposes at Salmon were macaws, at least nine of which were found. The brilliant plumage of these birds, the likelihood that they were imported from northern Mexico, and the nature of their disposal in formal burials all point to the ritual importance of macaws to the inhabitants of Salmon. Interestingly, one of these birds had been covered in red ochre prior to burial and another had red ochre on some bones, though not as thick or extensive as that on the other macaw.

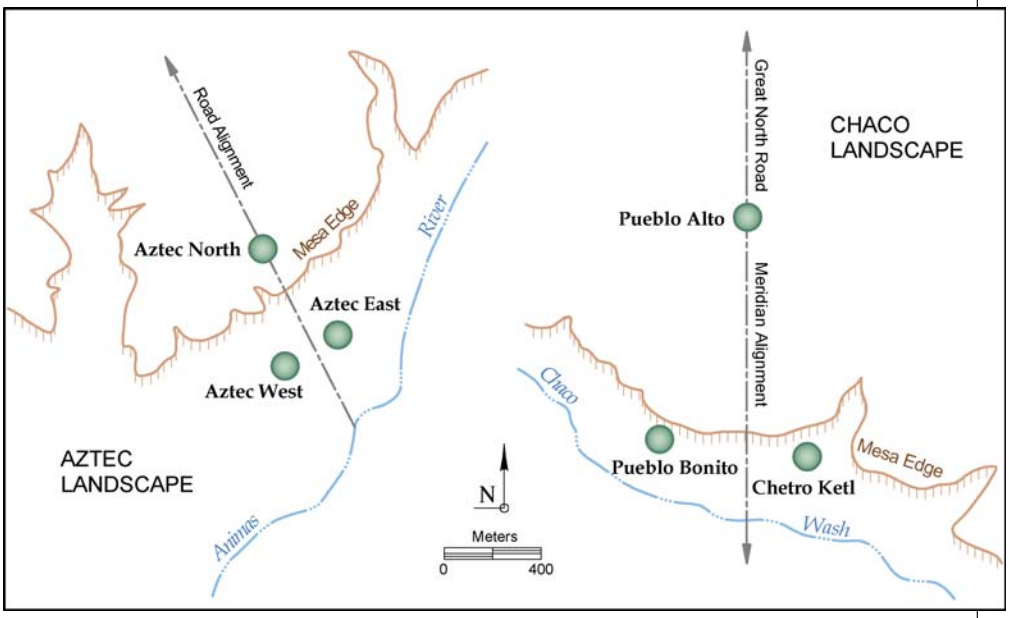
In addition to the macaw burials, two turkey burials were found at the site, both dating to the Chacoan occupation. These were recovered from a room that also contained two macaw burials. There is some evidence of a third turkey burial in another room, but this was not recognized as a burial until after it was excavated. These burials highlight the dual role of the turkey in Southwest prehistory as both a source of feathers for ritual and as a source of protein for the diet. Based on the increased frequency of turkeys from the Chacoan to the post-Chacoan periods, it is likely that in the earlier occupation they were hunted or raised in low numbers for their feathers, whereas later they were raised for their meat (but their feathers continued to be important).

Interestingly, although we have observed an increase in ritual fauna during the post-Chacoan period at some great houses, Salmon does not seem to reflect this overall pattern. Indeed, from these data it appears that the great houses become more different from one another in the post-Chacoan period than they were during the Chacoan period.

Sacred Landscapes: The Chaco–Middle San Juan Basin Connection

Ruth M. Van Dyke, Colorado College

RELIGIOUS LEADERS at Chaco Canyon were at the height of their social and political power near the end of the eleventh century. Canyon great houses such as Pueblo Bonito, Pueblo Alto, and Chetro Ketl housed elites and formed the core of a ritual landscape. People from throughout the surrounding San Juan Basin visited Chaco for ritual events coinciding with the solar and lunar calendars. Chacoan leaders created a built environment that resonated with aspects of ancient Puebloan ideologies and included the ideas of center place, directionality, visibility, balanced dualism, and social memory. Chacoan architecture and landscape confirmed visitors' beliefs about the world, so that rituals at Chaco were seen as critical to the balance of the social and the natural order, and ritual leaders' power was legitimated.



A comparison of the Aztec and Chaco landscapes.

At the end of the eleventh century, environmental and social instabilities weakened people's faith in Chacoan leaders, and rival factions emerged. Some leaders left the canyon to found new center places in the Middle San Juan region. Architectural analyses using a database of 188 outlier great houses from across the San Juan Basin indicate that the early twelfth-century outliers of Salmon Pueblo and Aztec Ruins were designed and built by people familiar with the design and construction of the great houses in Chaco. Salmon and Aztec are Chacoan-looking structures, with their large rooms, planned, symmetrical layouts, enclosed kivas, and core-and-veneer masonry. Several lines of evidence suggest the new Middle San Juan great houses were built by both local and Chacoan laborers.

Both Salmon and Aztec embody the major themes seen in Chaco Canyon architecture and landscape. Salmon was a formal, regional great house, not unlike many others found throughout the San Juan Basin. Aztec, on the other hand, represents an overt attempt to replace Chaco as the center of the Puebloan world. Aztec contains three great houses—Aztec North, West, and East—probably constructed in that order. Spatial relationships among the Animas River and Aztec North, West, and East are the same, in terms of orientation and layout, as the relationships among Chaco Wash and Pueblo Alto, Pueblo Bonito, and Chetro Ketl. The formalization of old, Chacoan ideas on a new landscape encouraged people to envision Aztec as a new social and ritual gathering place.

But Chaco itself was far from over. Between A.D. 1100 and 1130, agricultural yields in Chaco rebounded dramatically, restoring confidence in ritual leaders. Two factions were now in competition—a new group centered in Aztec, and a traditional group in Chaco. Twelfth-century McElmo-style great houses in Chaco, such as Kin Kletso, were part of the canyon leaders' attempts to attract followers to Chaco. There are a number of indications that the new McElmo great houses were erected under strain, and that Chacoan architects had fewer laborers at their disposal than they had in the past. The flurry of new construction at Chaco lasted only a generation, perhaps less, and some buildings were never completed. The incorporation of McElmo buildings into Aztec East may represent an integration of Chacoan and Aztec factions, although ultimately both Chaco and Aztec failed as center places. During the 1200s, the great houses of Chaco, Salmon, and Aztec were reused as domestic structures by local agrarian populations.

Archaeology in the La Plata Valley

H. Wolcott Toll, Museum of New Mexico, Office of Archaeological Studies

PICTURE YOURSELF in the A.D. 1000s. Look around the Four Corners region. Think of trying to live there as a farmer, without modern roads and transport. Pick out the most likely place for survival. My choice in that exercise is around modern Farmington, New Mexico, because the area contains three permanent streams fed by reliably snow-packed mountains, it has a climate and landforms suitable to growing corn and other crops, and it has access to many other environmental zones and a variety of populations.

A modern canal runs just downslope from a large Chaco-period site in the fertile La Plata Valley.

Because of its appeal, the area where the Animas and La Plata rivers join the San Juan—the Totah to the Navajos and those of us who find the term useful—has been heavily settled during many eras, including several centuries of ancestral Pueblo use, Navajo use, and American use beginning in the 1800s. This historic use, as well as the fact that the principal pueblo building material in the area was rounded rock from the vast cobble terraces in all three valleys, has meant that much of the evidence of the ancestral Pueblo occupation of the area is difficult to see. This is in contrast to buildings in Mesa Verde to the north and Chaco Canyon to the south. But the Totah was an important place in Chacoan times, as the buildings at Salmon Pueblo and Aztec Ruins clearly demonstrate.

How Totah populations fit into the social and economic fabric of the region is critical to understanding the whole. Modeling past economic and social relationships always involves a tension between local, material-based understanding and overarching concept-oriented evidence. This is very much the case in the Totah, where Chaco was a known, symbolic, transformational entity, but where material evidence for interaction is rare. Although the area between Chaco Canyon and the Totah is somewhat forbidding and was only sparsely populated during the occupation span of both, neither the distance nor the terrain was an obstacle for the people of the time. Eventually, the two were physically and symbolically linked by the North Road.

Discerning relationships within the Totah and with Chaco is part of what we at the Office of Archaeological Studies (OAS) are studying in our long-term project involving the La Plata Valley. The La Plata is the smallest of the three rivers that converge in the Totah, and probably the most useful for developing irrigation. OAS excavated parts of 34 sites for the New Mexico Department of Transportation as part of improvement, of the La Plata Highway. In just the New Mexico portion of the highway corridor, there are more than 80 sites, most of which are ancestral Pueblo. The occupation of the valley spans the entire Colorado Plateau agriculturalist record. In this portion of the valley, most features are contemporaneous with major developments in Chaco Canyon, and structures that are indisputably great houses are present. The major center, Aztec, is a mere 12 miles from the valley. In contrast to artifact assemblages in Chaco Canyon, however, materials from sources outside the immediate area are uncommon. There are many reasons for transporting material goods. One, of course, is when one area lacks a resource that another has, or a resource area has a material that is superior to that found in other areas. Another, less-verifiable reason is that a given material may have particular symbolic content, demonstrating connections between populations in different areas. Although sources of material in La Plata sites are nearly all local, artifact and architectural styles closely follow those in Chaco and the region.

There is some controversy over the degree to which great houses were residential and to which they were occupied by governing individuals. While important and difficult questions of participants' identity persist, I remain convinced that they were central to community gatherings. The communities in the Totah had access to local great houses such as those in the La Plata Valley, Totah-wide structures such as Salmon and Aztec, and the regional center in Chaco where exchanges of goods, information, genes, and ideas took place. As with leadership positions, we cannot know who was permitted or required to participate, but we can be sure that mobility and breadth of knowledge were extensive.

These levels of participation and variations on basic social and practical themes of existence present us with a continuing challenge to refine our understanding of how various areas interacted.

Current Research at Aztec Ruins

Gary M. Brown, Aztec Ruins National Monument

PRESERVING THE LARGEST Chacoan outlier in the Middle San Juan region—Aztec Ruins National Monument—is a big task. This ancient community consisted of three great houses, three triwalled structures, and an extensive series of satellite sites integrated by prehistoric roadways. Excavations were conducted by Earl Morris on behalf of the American Museum of Natural History, in New York, from 1916 to 1927. As the project was winding down, the museum donated the site to the American public, and the national monument was established by presidential proclamation in 1923.

Some excavations have been done by National Park Service (NPS) personnel over the years, but recently, the emphasis has been on backfilling rooms that had been left open to the elements. Backfilling is preceded by architectural documentation and tree-ring dating. Other recent activities include archaeological survey, ruins stabilization, and analysis of collections from previous excavations.

Like Salmon Pueblo, Aztec is situated on the north bank of a perennial river in a setting very different from Chaco Canyon. An ancient irrigation system connected the Animas River to arable lands near Aztec. Another similarity between Aztec and Salmon that contrasts with Chaco is the relatively short-lived occupation toward the end of the Chacoan cultural sequence. The initial occupations were late in the eleventh century. Settlement at Aztec started with a cluster of unit pueblos on the mesa top overlooking the valley, and construction of Aztec North—a large, unusual structure that can be regarded in most respects as a great house. Aztec North was built about the same time as Salmon, but it appears to have been made primarily of adobe rather than the sandstone characteristic of Chacoan sites. Although adobe is uncommon in Chacoan buildings, many smaller sites in the Animas Valley were constructed entirely of adobe or adobe augmented with wood or cobbles. One nearby site excavated by Morris featured a kiva lined with sun-dried adobe bricks; another site consisted of a small, adobe-walled pueblo.

In other respects, Aztec North has a typical great house layout with a massive D-shaped roomblock enclosing an elevated plaza. Since it has not been excavated, archaeologists have simply inferred that Aztec North is a great house. A major roadway leads directly from it to a huge triwalled building situated midway between the larger masonry great houses in the valley below. This feature and other aspects of the ancient cultural landscape clearly identify Aztec North as a focal point in the evolving community.

Overview of Aztec West Ruin, with reconstructed great kiva at top and Hubbard triwalled structure at lower right.

Morris devoted most of his attention to the largest building, a classic Chacoan great house known as Aztec West. While some adobe was used in its construction, most of the building consisted of Chaco-style sandstone masonry incorporated into thick, core-and-veneer walls. The E-shaped roomblock, with a narrow arc of rooms enclosing the elevated plaza on the southeast, resembles Aztec North in layout, reinforcing the idea that the earlier building was also a great house, even if local building traditions were used instead of standard Chacoan masonry.

Aztec West is a massive three-story roomblock that was constructed between A.D. 1100 and 1130. With more than 1,000 tree-ring dates, most construction can be firmly assigned to two short building episodes: the central core and attached east wing, circa 1110 to 1120; and the west and probably south wings, circa 1118 to 1130. About 400 rooms were produced by this concerted effort. Incremental construction, remodeling, and subdividing large Chacoan rooms into smaller chambers created about 100 more rooms over the next century and a half. Aztec West's more than

500 rooms and its compact building mass exceed those of Salmon, though they are similar in layout and area. With slightly more than 2.5 acres encompassed by the roomblocks and bounded plaza areas, both great houses rival the greatest of all—Pueblo Bonito—which encompassed three acres. Considering that Pueblo Bonito was built in stages over a period of 300 years, the rapid construction of Aztec and Salmon can be attributed to highly organized building projects that must have utilized skilled engineering and work crews (see page 6).

Similarities notwithstanding, Aztec West is part of an extensive planned community, while Salmon is essentially a solitary great house with neither satellite Chacoan structures nor substantial contemporaneous sites in proximity. Aztec West is complemented by another three-story masonry great house 400 feet to the east that appears to have been started around 1115 to 1120, slightly later than Aztec West. The subsequent building history is unlike that of Aztec West. Whereas nearly all the tree-ring dates from Aztec West are clustered between 1100 and 1130, those from Aztec East show multiple clusters and an overall spotty, continuous distribution over almost 170 years. In contrast to rapid construction at Aztec West and Salmon, Aztec East was an ongoing construction project oriented around a Chacoan core; roof construction or repairs as late as 1270 are evident in the tree-ring record. A prolonged period of construction is further suggested by a segmented, modular arrangement, differing sharply from the nucleated design of Aztec West and Salmon.

Although major construction continued at Aztec East long after the close of the classic Chaco era, the well-planned multistory architecture, core-and-veneer walls, and sandstone masonry style show a continuation of great house attributes well after the demise of the Chaco regional system and the end of great house construction at Chaco. Blocked-in kivas and some aspects of wall and roof construction are slightly different from those of Chaco-era buildings, but they nevertheless reflect continuity in architectural evolution that is distinct from contemporaneous vernacular architecture elsewhere at Aztec.

Only 14 of the estimated 300 rooms at Aztec East have been excavated. However, much of the standing architecture is in good condition. Thirteen ground-floor rooms are preserved by perfectly intact roofs, and several collapsed roofs have been identified. Comparable preservation is present at Aztec West, where 20 perfectly preserved roofs remain; additional examples that have not survived to the present day were described by Morris. The exceptional condition of these great houses makes them outstanding candidates for both on-site study and artifact analysis. The excavations at Aztec West yielded huge quantities of perishable artifacts (see page 11), raw materials, and debris, in addition to the usual nonperishable items.

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Northeast section of Aztec West Ruin upon completion of major backfilling in area excavated by Earl Morris during the early 1900s.

Morris envisioned the settlement history of Aztec as two migrations separated by a lengthy period of abandonment. He lacked absolute dating methods, ceramic typologies, and theoretical advancements in site formation that guide our current analysis of stratigraphy, architecture, and artifacts. Still, his observation that pottery and other cultural elements could be separated into assemblages that resembled those from Chaco Canyon and Mesa Verde was astute. He argued correctly that Chaco-dominated assemblages were earlier than those he described as Mesa Verdean. However, neither evidence of intervening abandonment nor a second distinct migration can be verified by current research. Instead, deposits of sterile sand that he noted seem to be a by-product of major remodeling and reorganization of the original building in conjunction with a shift from a largely ceremonial to residential site function. This reorganization occurred just as construction of the great house was nearly complete, probably in the 1130s.

Interestingly, Paul Reed thinks that Salmon went through a major reorganization about the same time as Aztec (see pages 1–5), coinciding with the departure of Chacoan inhabitants and a distinct shift to local occupation. At Aztec, however, Chacoan dominance continued with extensive architectural renovations in the mid- to late 1100s, characterized by masonry styles and architectural features identical to the original construction. Additional Chacoan kivas were incorporated into the reorganization. The shift to local San Juan–style kivas and architectural traditions at Aztec West occurred much later than at Salmon, probably in the early to mid-thirteenth century. Even after this time, the Chacoan architectural tradition persisted at Aztec East.

Understanding Chaco: A Digital, Archival Approach

Steve Plog and Carrie Heitman
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MANY ASPECTS OF Chacoan prehistory remain unclear due to the inaccessibility of unpublished excavation records and photographs for the earliest excavations and explorations. As a result, key unanswered questions about the nature of Chaco itself and individual Chaco villages and towns—small- rather than large-scale issues—have become more, rather than less, significant over time. Despite the magnitude of the excavations at Pueblo Bonito and Pueblo del Arroyo and the amount and range of materials recovered, our knowledge of why these sites were built and how they were used remains remarkably uncertain or, at best, highly contested.

To explore some of these questions, in June 2002, the School of American Research, in Santa Fe, invited 12 Southwestern archaeologists and information science specialists to explore the creation of a digital research archive of information from the Chaco Canyon region.

As an initial step toward accomplishing this goal, the group suggested that the effort concentrate on a small set of diverse sites: Pueblo Bonito, Bc 50, Bc 51, Bc 53, and Aztec Ruins. In 2003, the research proposal for the Chaco Digital Initiative was generously funded by the Andrew W. Mellon Foundation, with further support from the Institute for Advanced Technology in the Humanities at the University of Virginia, in Charlottesville.

To date, we have compiled extensive information from 17 collections nationwide, including the Latin American Library at Tulane University, in New Orleans; the Smithsonian's National Anthropological Archive, in Washington, D.C., and the American Museum of Natural History, in New York. In April 2005, we released an inventory database of the compiled collections information on our website. Since that time, we have begun to work with the Chaco Culture National Historical Park (CCNHP) Tribal Consultation Committee to develop the best practices with regard to the dissemination of archaeological data online. Over the last two years, we have also worked closely with the CCNHP to digitize roughly 50 years of "before and after" stabilization image documentation, which will be available for researchers' use. In addition, funds from the Mellon Foundation grant have gone toward the digitization of the Neil M. Judd and Frank H. H. Roberts photo collections at the National Anthropological Archive and the University of New Mexico/School of American Research field school photographs at the Maxwell Museum of Anthropology, in Albuquerque. We ultimately hope to include the excavation images from the Hyde Exploring Expedition and Earl Morris's work at Aztec Ruins, which will allow researchers greater access to these important images.

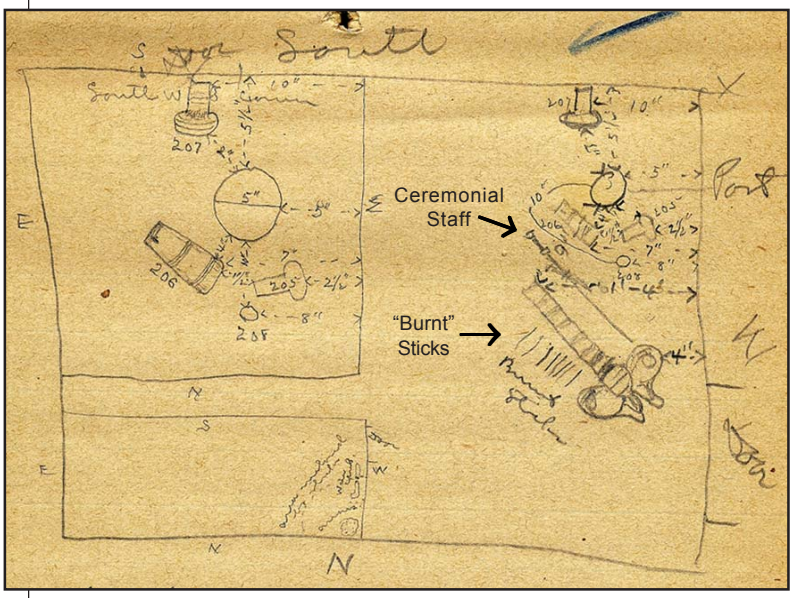
Excavated eastern portion of Pueblo Bonito, showing unused foundation walls exposed by trenches on the northeast side of the ruin (lower left). Photo by O. C. Havens, 1923; reproduced courtesy of the National Anthropological Archives, Smithsonian Institution.

We are currently in the final development stages of the relational database. Once data entry is completed, this database will integrate information from the archival sources into a query-driven and web-accessible relational database, which is due to launch in early 2008.

In a paper presented at the 2006 Southwest Symposium in Las Cruces, New Mexico, we explored how recently acquired archival documents might shed new light on old research questions. The paper focused on two important issues: the often-debated question of the numbers of inhabitants, both for the canyon as a whole and for individual great houses, and the role of ritual in Chacoan society. A more complete version of that paper is currently in development; in the space remaining, we would like to briefly consider the potential of archival resources to help address these issues.

To date, estimates of population levels within the canyon as a whole or even for particular great houses have varied tremendously, with recent studies increasingly proposing small (50 to 125 people) populations at great houses. Consistent with these estimates has been the long-recognized, but inadequately understood, paradox of the limited numbers of burials recovered during excavations at Chetro Ketl, Pueblo Alto, Pueblo Bonito, and Pueblo del Arroyo. The result, as Gwinn Vivian has noted, is that current understandings of Chaco often suggest "vacant cities, festive pilgrims, and wholesale consumption of goods in brief but periodic events at canyon great houses." Taking one such unique example under consideration, the northern burial complex in Pueblo Bonito, how can archival sources help us better understand some of these issues?

Mounting narrative evidence from the archives suggests that pervasive looting took place in the "burial mounds" on the south side of the canyon from the 1890s to the 1930s. These mounds were, quite plausibly, the refuse mounds associated with small house sites like Bc 50 and Bc 51. The frequency of burials and associated grave goods was noted by Marietta and Richard Wetherill, Warren Moorehead, Frederick Putnam, Alfred Tozzer, William Farabee, Edgar Hewett, and Neil Judd. In his field journals, George Pepper also recorded the frequency with which Wetherill and his crew would return with whole pots from sites on the south side during his excavation tenure at Pueblo Bonito.



This drawing of a section of room 32 in Pueblo Bonito at Chaco Canyon was done by archaeologist George Pepper in 1896.

Taken cumulatively, these sources suggest a greater number of human remains dating roughly to the Chaco era existed and that the two dense burial clusters in Pueblo Bonito may have had even greater significance in relation to extramural burial practices. Who was buried in Bonito and why?

The cover of George Pepper's 1896 field journal for rooms 32 and 33 in Pueblo Bonito, at Chaco Canyon.

Located in the oldest portion of Pueblo Bonito in an interconnected complex of four rooms (28, 55, 32, and 33), the northern suite arguably contained the most remarkable assemblage of materials ever recovered from the Greater Southwest. Previous considerations of the disarticulated and articulated human remains in both suites (the northern and the western) have concluded that the fragmentary remains were the result either of flooding or vandalism. In the northern cluster, Pepper argued that water was to blame. However, field drawings from his 1896 notebook (such as the one reproduced here) show intact stratigraphy in room 32—the room through which water would need to have flowed to ever reach room 33. His field drawings also reveal that the fragmentary human remains from room 32 included intact grave offerings. For example, the right side of the figure at the left shows a pelvis and spinal column. Note the line of "burnt" sticks to the left of the spinal column and the ceremonial staff to the right.

While these provocative sources do not bring closure to a century of debate, they do give researchers new data to work with for those up to the challenge of deciphering handwriting and pulling together pieces from an ever-incomplete puzzle. Perhaps the relatively small numbers of great house burials are not indicators of great house population levels, but rather, a specialized form of burial practice that was limited primarily to certain individuals. We need not assume that all great house residents were necessarily buried within the great house itself. Some may have been buried in the abundant small house mounds, for example, that were contemporaneous.

In time, we hope the aggregation of these resources will lead to a greater understanding of Chacoan prehistory. For more information on the Chaco Digital Initiative and to download a selection of original field notes and drawings, please visit our website at www.chacoarchive.org.

Chaco and Mesa Verde

R. Gwinn Vivian

Archaeologist Cathy Cameron recently questioned the long-term archaeological practice of using "Chaco and Mesa Verde as terms for geographically distinct culture groups." Instead, she proposed that what we might be seeing was "a temporal expression of a widespread social (and perhaps political) system."

I suspect that this cultural dichotomy of the greater San Juan Basin was engendered by a couple of historic factors. First, I can think of only two archaeologists, Richard Wetherill and Alden Hayes, who worked extensively in the core zones of both areas. This lack of familiarity by most archaeologists with the prehistory of both Chaco and Mesa Verde produced a compartmentalization of the greater region into Mesa Verde and Chaco sectors.

Second, the division between these two areas was enhanced by the work of Earl Morris and Cynthia Irwin-Williams in the San Juan River Valley, midway between the core areas of the Mesa Verde and Chaco. Although they both drew primarily temporal distinctions between Chacoan and Mesa Verdean occupations in this transitional zone, those distinctions were often inferred by subsequent archaeologists to be cultural differences. Moreover, Morris's focus was north of the San Juan, and Irwin-Williams's fieldwork was principally south and east of the San Juan.

This "mid-zone" region was the focus of the Center for Desert Archaeology's 2004 Salmon Working Conference held in Farmington, New Mexico. Archaeologists attending this meeting acknowledged the importance of cultural ties between the middle and northern sectors of the greater San Juan Basin. Moreover, signaling a shift from earlier thinking, there was general acceptance of continuous occupation of the Salmon and Aztec West great houses rather than temporally segmented occupations previously associated with Chacoan and Mesa Verdean populations. This suggested that Chaco and Mesa Verde may not have been as distinctive culturally as previously thought.

In a paper given at the conference, Mark Varien and his colleagues used data from several excavated sites in the Mesa Verde area to support Bill Lipe's premise of a regional settlement system that he called the "San Juan pattern." The San Juan pattern intriguingly parallels Gordon Vivian's concept of a Northern Pueblo continuum. If Lipe and Vivian are correct, both Chaco and Mesa Verde stem from an early, basic puebloan pattern. Vivian called developments in Chaco, "Cultural experiments or deviations that failed as they strayed from the main course of Northern Pueblo history." Lipe sees Chacoan florescence as an experiment in sociopolitical hierarchy that ended with the onset of a long and severe drought in the A.D. 1130s. Both see Chacoan and Mesa Verdean cultural evolution as based on what Varien and others term "existing foundations that emphasized the autonomy of households or small groups of related households." Lipe thought the San Juan pattern ended in Mesa Verde with the depopulation of that area in the late 1200s. Vivian traced the Northern Pueblo continuum into the northern Rio Grande drainage. I have argued that this movement into the Rio Grande may be reflected in the Tewa concept of duality that could have emerged in the Northern San Juan Basin in ancient times. If so, we may have a starting point for better understanding the roots of both Mesa Verdean and Chacoan cultural systems.

See the Center for Desert Archaeology website for more information: <http://www.cdarc.org>

The Center for Desert Archaeology, a private, nonprofit organization, promotes stewardship of archaeological and historical resources through active research, preservation, and public outreach. The Center is a 501(c)(3) organization and is supported through donations, memberships, and grants from individuals, foundations, and corporations. Center members receive an annual subscription to *Archaeology Southwest*, substantial discounts on other Center publications, opportunities to participate in archaeological projects, and invitations to special lectures and events. For more information or to join, contact Linda Pierce, Programs Manager, at 520.882.6946, or lpierce@cdarc.org.

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Back Sight


Kevin Reed

Paul Reed inside kiva 96W at Salmon, in front of sealed Chacoan door.

FCS IS SHORT FOR "Fantasy Chaco Scholar." Used in emails and planning documents, the FCS concept was ultimately transformed into a flesh-and-blood archaeologist named Paul Reed.

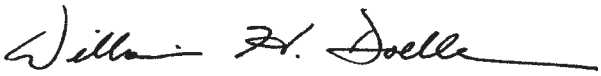
In August 2000, Lynne Sebastian, Patrick Lyons, Linda Pierce, and I took a road trip around northwest New Mexico prior to the Pecos Conference. We were seeking ways to expand the geographic scope of the Center for Desert Archaeology from our point of origin in Tucson. While visiting Salmon Pueblo, we heard a compelling story from Executive Director Larry Baker, who was helping to bring the organization back onto firm financial ground. Seeing the massive volumes of the unpublished report on the Salmon excavations and hearing Larry's goals to re-establish a research program at Salmon Pueblo were the raw material that fed our FCS visions on that trip and thereafter. And the Salmon Pueblo history as a community-based effort was a perfect fit with the Center's mission.

Six months later, Lynne Sebastian and I interviewed Paul Reed in the living room of Lynne's house north of Albuquerque. Just a short time later, Paul moved into his downstairs office at Salmon. Paul's performance has been remarkable. He assessed the massive task before him and then began solving problems. He cajoled or otherwise convinced authors to revisit chapters they had written decades before. He recruited new analysts to update studies of key artifact classes, such as ceramics, or to address important collections, such as the perishable materials from Salmon. Paul was the prime author of a successful $175,000 Save America's Treasures grant that served to rebox and rehouse the Salmon collections in a proper curation facility.

Throughout these efforts, Paul worked to expand the research context of Salmon. Partnerships with Aztec Ruins National Monument and with other researchers were pursued. As a result of his considerable applied energy, the publication of the Salmon Pueblo excavation volumes does not mark the end of our partnership with Salmon. Instead, it is a major milestone in a partnership that is already implementing new research under a National Science Foundation grant to place Salmon, Aztec, and other contemporaneous sites in the regional context of the Middle San Juan. This is a true preservation archaeology partnership—one that includes research, public outreach, and preservation.

I believe that it is a measure of a compelling institutional mission when someone like Paul Reed adopts that mission and advances it through his personal commitments. He has received help, especially from Larry Baker, but he has carried much of the burden on his own shoulders. I extend my personal thanks to Paul and look forward to further expanding the Center's preservation archaeology mission.

back sight (băk sīt) n. **1.** a reading used by surveyors to check the accuracy of their work. **2.** an opportunity to reflect on and evaluate the Center for Desert Archaeology's mission.



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