

affiliation," the State Director rejected as "pre-decisional" the Tribe's request for consultation meetings. *Id.* at 0868.

Although the State Director did not view the FWS vault, an FWS archaeologist concluded the vault, in conjunction with record keeping and study facilities provided by the Museum and FWS, met "the standards for curation facilities set forth in 36 CFR 79.9" and was "highly secure from theft, vandalism, fire, and other disasters." AAR 0864, 0868. Nevertheless, the State Director rejected the Tribe's request to reinter the remains in the vault based on his "assessment" that the vault "does not meet the facility requirements of 36 CFR 10." *Id.* at 0868. The record contains no explanation of this "assessment" or the State's Director's disagreement with the FWS analysis, and the regulation cited by the State Director has no bearing on the matter.

In November 1999 the State Director wrote to the Tribe reminding it of the December deadline for submitting additional materials. AAR 0918. The Director wrote "the time has come to make a final decision on the cultural affiliation of these remains," and he intended to do so "in January 2000". *Id.* In the meantime, the Tribe had reported to the Review Committee it was preparing information to submit to BLM in December, but that its requests for ongoing consultation had been rejected. AAR 0932. The Committee recommended BLM "continue consultation with the . . . Tribe." *Id.*

On December 16, 1999, the Tribe submitted eight reports authored by seven different scientists to BLM in support of its request for repatriation of the Spirit Cave remains. *See* AAR 0941-0942. Two weeks later, on December 29, 1999, the Tribe submitted a memorandum

summarizing its position and the reports. AAR 0944-0980. The memorandum explained that the reports submitted by the Tribe and other evidence in the record established the following propositions:

(1) [the Spirit Cave] remains and the associated funerary objects were discovered within the aboriginal territory of the Northern Paiute, *i.e.*, they were discovered on lands whose only known occupants were our ancestors; (2) [the Spirit Cave remains] share[] distinctive biological features with contemporary Native Americans, and the attempt to use cranial measurements to show that he was not "Native American" has no scientific validity; (3) prehistoric and historic burial patterns in the Great Basin provide affirmative evidence of cultural continuity over thousands of years and thus support our claim of cultural affiliation; (4) the origin stories of our people and the names used by Ute-Aztec people to refer to themselves provide evidence of our origin in the Great Basin thousands of years ago; (5) the hypothesis that Numic-speaking peoples replaced a prior and distinct culture in the Great Basin is not supported by available scientific evidence, and there is no other affirmative evidence to support a theory of cultural replacement in the Great Basin; and (6) DNA and serum albumin studies, while of very questionable use in this matter, are consistent with our claim of cultural affiliation.

Id. at 0947.

BLM's Nevada State Director acknowledged receipt of the Tribe's materials on January 14, 2000. AAR 1924. Despite the State Director's prior commitment to make a decision in January, he now stated "it would be inappropriate for me to commit to making a decision at this time." *Id.* The Director stated BLM had "spent considerable time reviewing documentation supporting the position that the Spirit Cave human remains are not culturally affiliated with an existing Tribe," and would now need to give "thorough and careful consideration to the Tribe's submissions." *Id.* The Director also stated he had forwarded the Tribe's submissions to the Nevada Museum for review and comment "in the interests of impartiality," but again rejected the Tribe's request for further consultation. *Id.*; *see also* AAR 1926.

On January 24, 2000, the Museum responded to BLM's request for comments on the Tribe's submissions. AAR 1925. The Museum stated its staff "respects the opinions of the scholars retained by the [Tribe], and recommends that their views be given serious consideration for your decision." *Id.* The Museum added it believed "the Spirit Cave remains are, indeed, Native American, but we cannot, at this time, provide additional scientific information relevant to your decision." *Id.* Two months later, the Museum formally withdrew its 1996 request to conduct DNA research and radiocarbon dating on the remains. AAR 1976.⁶

After the Tribe objected to the State Director's denial of its request for further consultation, AAR 1927, BLM agreed to a single additional meeting with the Tribe. *See id.* at 1929-1931, 1970-1971. The State Director and his assistant attended the meeting, but none of the BLM staff who had worked on the Spirit Cave matter or who would author BLM's determination, were present. *Id.* at 1768. BLM did not discuss its view of the evidence or describe any aspect of its analysis. *Id.*

L. BLM's Determination.

1. Overview; Background Sections and Legal Analysis.

⁶ In March 2000, a researcher from the University of California at Davis made a new request to conduct DNA research on the various human remains held by the Nevada Museum, including the Spirit Cave remains, and reiterated that request in August 2000. AAR 1932-1933, 2181. However, one of the reports submitted by the Tribe, authored by a leading DNA researcher, concluded that the inability to conduct a DNA study on the Spirit Cave remains in particular, given the number and geographic distribution of other Paleo-Indian remains available for study, would be of limited scientific import. AAR 1092-1095. Two other scientists who prepared a report for the Tribe independently came to a similar conclusion. *Id.* at 0993. The record does not indicate the UC-Davis researcher has renewed his request since 2000 or that any other request to study the Spirit Cave remains has been made.

In August 2000, eight months after receiving the Tribe's submissions, BLM's Nevada State Office issued a 111-page determination and an accompanying 36-page paper regarding biological aspects of the Spirit Cave remains. AAR 1978-2130, 2153-54. In transmitting the determination to the Tribe, BLM's Nevada State Director stated the remains "predate contemporary Northern Paiute Tribes and cannot reasonably be culturally affiliated with any of them." *Id.* at 2153. The State Director acknowledged that, under NAGPRA, a tribe "may make a claim regarding human remains and associated funerary objects which are determined unaffiliated," but stated that, if the Tribe wished to make such a claim, it should "respond by October 2, 2000 with a written statement of any new evidence supporting [its] position." *Id.* The State Director's letter does not explain the basis for this deadline, and no such deadline is set forth in NAGPRA. *Id.*; see 25 U.S.C. § 3005(a)(4).

Pat Barker, Cynthia Ellis (formerly Cynthia Pinto), and Stephanie Damadio wrote the BLM determination, and Ms. Damadio also wrote the biological paper. AAR 1978, 2093. The determination has six sections: (1) background; (2) legal issues; (3) necessary elements and decision criteria; (4) evidence; (5) summary of the evidence; and (6) determination. *Id.* at 1979-1980. The background section makes no reference to Barker and Pinto's opposition to NAGPRA; the coordination meeting between Barker and Dansie in 1994, at which Barker directed Dansie to list any remains more than 3,000 years old as unaffiliated; the extensive study and analysis of the remains undertaken by the Museum; the facial reconstruction of the remains and its subsequent public display; or the agreement by BLM staff in October 1996 with the Museum's conclusion that the remains were unaffiliated. See *id.* at 1982-1985. As to the last

point, the determination instead asserts BLM reached a "preliminary conclusion" that the remains were not culturally affiliated with any contemporary group in the Fall of 1998. *Id.* at 1984. Moreover, while the background section describes consultations with Nevada tribes up to January 1999, *id.* at 1983-1984, it does not report any tribal consultations after the Fallon Tribe retained experts and submitted reports in support of the Tribe's claim later that year, nor does it mention the Tribe's requests for such consultations or the Review Committee's recommendations that they be conducted. *Id.* at 1984-1985.

The sections on legal issues and decision criteria discuss the standards prescribed by NAGPRA and its implementing regulations. They state that, "because of the prehistoric age of the remains in question, they represent the remains of a Native American person as defined by NAGPRA." AAR 1986; *see also id.* at 1987. However, in discussing the "cultural affiliation" requirement, they do not discuss: (1) the meaning of the phrase "earlier identifiable group" or "shared group identity"; (2) the dictionary definition of the term "group"; (3) the phrase "identifiable group" as used in the ICCA; or (4) the Indian canons of construction. *See id.* at 1985-1989. And, while acknowledging the Tribe could seek review of BLM's decision from the Review Committee, they do not mention the Committee's dispute-resolution responsibilities or suggest any mechanism by which BLM itself would consider the Committee's findings and recommendations. *Id.* at 1986.

2. BLM's Analysis of the Evidence.

Archaeology – Culture History. The evidence section separately addresses nine types of evidence: (1) archaeological (including material culture history, textiles, burial practices, and

Numic expansion archaeology); (2) biological; (3) kinship/genealogy; (4) geography; (5) linguistics; (6) anthropology; (7) historic; (8) expert testimony; and (9) other. AAR 1979-1980. The determination's discussion of material culture history, as reflected in the archaeological record, begins with a summary of the accepted division of the Holocene geological epoch into three parts: the early Holocene, from 10,000 to 7,500 years before present ("BP"); the middle Holocene, from 7,500 to 4,500 years BP; and the late Holocene, from 4,500 to 500 years BP. *Id.* at 1995. In presenting this summary, the determination relies on two primary sources: Grayson (1993) and Elston (1986). *Id.* at 1995-2000.

The determination does not mention the Desert Culture concept, the initial, overarching statement regarding the nature of prehistoric Great Basin lifeways developed by Jesse Jennings. AAR 1738-1739. The concept reflected a coherent pattern Jennings recognized in scores of archaeological sites throughout the arid west, including an implied core of shared artifacts, clusters of tools, and technology geared to the special environments of the west. *Id.* Jennings' intent was to emphasize a basic and pervasive unity of lifeway implied by artifacts found in sites throughout the Great Basin. *Id.* Although significant regional variation has since been recognized, the Desert Culture concept continues to be employed by Great Basin anthropologists and archaeologists to identify the prehistoric occupants of the region. *Id.*

Early Holocene. According to the determination, during the early Holocene, the climate was cooler and moister than today, and the environment was dominated by widespread shallow lakes and marshes. AAR 1995. In the Spirit Cave area, the environment was dominated by desiccation of Lake Lahontan into remnant lakes (Pyramid, Walker, and Winnemucca) and

extensive marshes (such as Lovelock and Stillwater). *Id.* Pine and sagebrush were giving way to shadscale and greasewood, and sub-alpine conifers were retreating up the mountains. *Id.* From a human point of view, the Great Basin may never have been more productive than during the early Holocene. *Id.*

Nevertheless, the determination states the archaeological evidence from the early Holocene is relatively sparse, generally limited to surface quarry sites, lithic sites, and shallow cave deposits in sites like Spirit Cave. *Id.* Archaeologists argue people lived in valley bottoms, around lakes and permanent water sources, and subsisted by hunting large mammals and collecting small animals and easily gathered marsh plants. *Id.* at 1995-1996. Marsh plants were the staple plant food and small animals (rodents, rabbits, and waterfowl) the staple meat source; pinon pine had not yet invaded the region and upland areas were sparsely used. *Id.* at 1996. The dominant technology for hunting big game was spears; nets and snares were probably used to collect small animals. *Id.* According to the determination, there is no evidence of plant processing with ground stone tools; sites with evidence of housing, storage pits or other structures are unknown (probably due to sampling error); and no known rock art sites have been dated to the early Holocene. *Id.*

The determination asserts that, “[o]ther than these gross generalizations, there is no evidence from the early Holocene that one can use to identify a human group that is distinct from other human groups that may have lived in the area.” AAR 1996. In particular, BLM asserts there is no evidence showing which languages were spoken, and no details of social or political organization, territorial boundaries, kinship patterns, or world view. *Id.*

BLM's assertion contrasts with the Museum's finding that the Spirit Cave remains "are culturally quite distinctive and identifiable as an archaeological culture," AAR 0138, a finding that is supported by the "wealth of information" that has been obtained by study of the Spirit Cave remains and funerary objects. *See id.* at 0628. The Spirit Cave studies have provided information about the lifestyle, diet, textiles, clothes, and burial practices of the people who buried their dead in Spirit Cave in the early Holocene. *See pp.* 74-76 below. Dansie, Touhy and others concluded the "Spirit Cave burials represent lacustrine based Hunter-Gatherers of Early Holocene Age in the Oasis area of North American, as defined by (Kirchoff 1944)." AAR 1734. Linguists and archaeologists have traced the origins of Numic languages and peoples to people occupying the western Great Basin at the time of, and before, the Spirit Cave burials. *See pp.* 82-84 below. And, the biological evidence from the Spirit Cave remains provides further evidence for that link. *See pp.* 63-65, below. BLM discusses none of this, or the overarching Desert Culture concept, in asserting it cannot identify an earlier group to which the Spirit Cave remains belonged.

As discussed above, NAGPRA's regulations provide that "distinct patterns of material culture manufacture and distribution methods," may be used to identify an earlier group, 43 C.F.R. § 10.14(c), with no requirement that the group's language, social or political organization, territorial boundaries, kinship patterns or world view be documented. Despite this regulation, the broad meaning of the term "group," and the applicable canons of construction, BLM does not explain why it finds the absence of documentation regarding such matters as social and political organization persuasive.

Similarly, BLM gives no consideration to the evidence that the early Holocene occupants of the western Great Basin, as a whole, comprised an identifiable group. The very sources on which BLM relies identify and analyze these people as a group, with a distinctive material culture (including lithic technology and textiles) and a distinctive adaptation to their desert marsh environment. *See* AAR 1996 (in lithic technology, Early Holocene dominated by stemmed and fluted points; textiles include distinctive "warp-face-plain-weave"); *see also id.* at 1738-1740 (discussing distinctive Great Basin stemmed point sites, which have been dated from 11,200 to 7,500 years ago, the lake and marsh adaptations of the people occupying these sites, identified by archaeologists as the "Western Pluvial Lakes Tradition," and the evidence indicating the Spirit Cave remains are from this group).

BLM also suggests the groups occupying the western Great Basin in the early Holocene may have "died out, or migrated away," noting that stemmed and fluted spear points do not survive into later periods, a lack of ground stone processing equipment that dominates later periods, the presence of warp-face-plain-weave textiles that are limited to the early Holocene, and the absence of coiled basketry. AAR 1996. However, the changes to which BLM refers did not occur simultaneously, as one would expect if the groups responsible for them had died out or migrated away, but were staggered over time. *See id.* at 1740-1746. For example, the projectile points all overlap in time, and their progression can be seen as a logical development over time, from atlatls and spears in the early Holocene, to the development and adaptation of smaller spears and darts during the middle Holocene, and finally to the development of the bow and arrow during the late Holocene. *Id.* at 1745 n.10. Similarly, as we discuss below, changes in

textiles do not coincide with, but instead overlap, other changes in the archaeological record. Moreover, BLM simply overlooks evidence of ground stone processing equipment during the Early Holocene. *See* AAR 1739B (chances seem good that ground stone implements generally found in small numbers at some stemmed point sites were used for plant processing).

Notably, the sources on which BLM relies do not conclude from changes in material culture that the people occupying the western Great Basin in the early Holocene died out or migrated away *en masse*. For example, Elston states the “major adaptive change in the western Great Basin,” which occurred near the end of the early Holocene, was “most likely in response to environmental variation and changing resources in the early Holocene.” Exh. I at 138 (Elston (1986)). According to Elston, the exploitation of a more diverse resource base, including the processing and storage of seeds – not human extinction or migration – explains more complex settlement patterns, functional variation in site types, the use of rock walls or other devices for hunting drives, and the production of rock art in later periods. *Id.*

Grayson emphatically rejects the notion that changes in the archaeological record reflects the extinction or migration of human populations. In a report prepared for the Tribe, Grayson rejects the claim that changes in human adaptations over time demonstrate a lack of cultural affiliation: “if prehistoric archaeology has demonstrated anything during the last 100 years, it has demonstrated how remarkably adaptive people are, and how sensitively human adaptations change in response to the varied challenges posed by the environments in which they live.” AAR 1058. The determination’s discussion of the early Holocene does not acknowledge these views, and makes no attempt to balance its discussion of changes in the archaeological record in

the period after the early Holocene with a discussion of the environmental and other factors that likely explain those changes. *Id.* at 1995-1996.

Middle Holocene. In its summary of the middle Holocene (7,500 to 4,500 years BP), the determination notes that, by the beginning of this period, large lakes and marshes had disappeared along with ice-age big game; fully modern shadscale communities had been established; and settlement moved away from lakes and rivers. AAR 1996. Beginning about 6,500 years BP, pinon pine becomes available, pine nuts replace or compliment marsh plants as a dietary staple, and upland areas are heavily occupied and used for subsistence. *Id.* at 1996-1997. Smaller notched dart points, used on thrown darts to hunt mountain sheep and antelope, replace stemmed and fluted spear points. *Id.* at 1997. In the Spirit Cave area, people lived in smaller groups dispersed widely throughout the full range of available habitats; base-camp sites were utilized long enough to develop midden deposits, circular house structures, storage pits, and other features; rock art sites appear; and there is evidence of extensive trade outside the region. *Id.* Beginning about 4,600 years BP, Lovelock Cave is occupied and it, along with other caves and rockshelters, are used for equipment caches, food storage, and burials. *Id.*

Like its analysis of the early Holocene, the determination asserts that “[o]ther than textiles . . . , the introduction of ground stone food processing technology, and thrown dart hunting technology, there is no evidence that establishes the identity and cultural characteristics of any distinct human group. . . . There is no evidence showing which language or languages were spoken in the middle Holocene and no evidence suggesting details of social or political organization, territorial boundaries, kinship patterns, religious beliefs, or world view.” *Id.*

Again, however, BLM does not explain why it believes such evidence is required by NAGPRA, and gives no consideration to whether the middle Holocene occupants of the western Great Basin as a whole constitute an identifiable group, especially in light of the distinctive textiles, food-processing tools and lithic technologies found in the archaeological record.

BLM does suggest these technologies “represent a break in the cultural continuity between the early Holocene and later periods.” However, it again disregards the views of scholars – including those on whom it purports to rely – who see these technologies as the result of adaptations to new environmental conditions, not as the result of a population replacement. In addition to Elston, discussed above, Horting sees the introduction of coiled basketry, which is associated with small seed processing, as being “reflective of broad environmentally-related adaptive strategies to climatically changing and geographically restricted floral resources.” See AAR 1742. Grayson sees the rise in the abundance of grinding stones in the middle Holocene (again, BLM ignores evidence that grinding stones were present, albeit in smaller numbers, in the early Holocene) not as the result of a wholesale turnover of the peoples occupying the region, but of the change in the climate and its effect on the resources available to them. *Id.* Grayson also notes that “[o]nce grinding stones become common in Great Basin archaeological sites, they remain so throughout the rest of prehistory, emerging as key plant processing tools during early historic times.” *Id.*

The determination does discuss Grayson’s suggestion that there was a hot and dry period of about 1,000 years between the time when rich early Holocene resources supported by widespread shallow-water systems were largely gone and when pinon pine reached the central

and western Great Basin. AAR 1997. If so, BLM reasons, it is likely there were significant human population declines in the region, with areas abandoned between 7,500 and 6,500 years BP. *Id.* Elston and others cited by Grayson have noted that sites dated to this time period are rare in the archaeological record. *Id.* at 1998.

The determination acknowledges that Grayson attributes the reduced use of caves during this period to the loss of marsh and wetland resources and to habitation movement from caves near marshes to other locations, such as open sites adjacent to springs that remained well watered. *Id.* However, BLM then concludes, with no further analysis, that these movements “indicate[] significant cultural discontinuity between the early Holocene and the late Holocene.” *Id.* What Grayson actually suggested was not that people or cultures had abandoned the Great Basin, but that they had abandoned the caves and “were utilizing other, and presumably better watered, locations.” AAR 1743. Fagan’s work in southeastern Oregon supports this hypothesis, and Grayson concluded that it reflects an occupational pattern that has held *throughout* the Holocene: where shallow water was abundant, population densities were high; where water was scarce, population densities were low. *Id.* at 1743-1744.

BLM fails to discuss the findings of other scholars who do not see the reduced use of caves at the beginning of the middle Holocene as evidence of cultural discontinuity. Connolly, Fowler and Cannon found “a persistent tradition of basket-making among peoples resident along the northwestern margins of the Great Basin [throughout the Holocene], who took advantage of resource abundances in the Basin when available, and who may have retreated to better-watered westerly valleys and uplands during periods of relative resource scarcity in the Basin.” AAR

1741. They found this evidence consistent with the model proposed by Aikens for the Great Basin as a whole, of “cyclical ‘expansions and contractions of . . . peoples across the tension zone between [the] Great Basin and surrounding environments.’” *Id.*; *see also id.* at 1753-1755. And even the Museum’s scientists, Don Touhy and Amy Dansie, have seen a link between the early Holocene lacustrine adaptations reflecting in the Spirit Cave remains and later lakeside cultures in the western Great Basin, finding the former occupants “subsist[ed] on the same basic food stuffs as their successors,” and had “many similarities to the Lovelock Culture 5,000 years later.” *Id.* at 1734-1735. Touhy and others thus have suggested “the early [Holocene] lacustrine adaptations formed the nascent stage for the later lakeside Archaic cultures.” *Id.* at 1744. BLM mentions none of this in its determination.

Late Holocene. In its summary of the late Holocene, BLM notes that marshes, meadows and shallow lakes again increase in valley bottoms, but settlement focuses on upland areas. AAR 1998. Ground stone plant-processing tools become abundant, and large quarry sites are mined to support bifaces, which are widely traded. *Id.* The archaeological record contains extensive evidence of habitation sites as well as of large pit houses with repeated periods of use. *Id.* Houses contain hearths, storage pits and burials. *Id.* Lovelock wickerware textiles, tule duck decoys, coiled basketry, and twill/twined water bottles appear in the archaeological record. *Id.* At the end of the late Holocene, thrown darts are replaced by the bow and arrow, and hunting shifts to an emphasis on capturing rabbits and other small game. *Id.* Big game hunting shifts from group hunting drives for mountain sheep and antelope to individual deer hunting. *Id.* Around 600 years BP brownware pottery appears and 1,000 years BP Lovelock wickerware

disappears. *Id.* Houses become smaller and shallower and do not have internal features; caves continue to be used for caches and are again used for burials. *Id.*

The determination acknowledges Grayson's finding that, "between 5,000 and 4,000 years B.P., the archaeological record begins to look very much as if it could have been created by people living much the way some Great Basin native people lived when Europeans first encountered them," but proceeds to reject it. *Id.* at 1999. In so doing, the determination fails to discuss the bases for Grayson's conclusion. Grayson noted, for example, that houses that date to early in the late Holocene are much like those known from the region historically (including in *Toidikadi* territory). AAR 1744-1745. Similarly, the intensive use of a broad array of environments, which is reflected in late Holocene sites, is fully characteristic of native peoples in the Great Basin at the time of contact. *Id.* at 1745.

Instead of confronting Grayson on the merits, the determination quotes a passage from a 1982 article by Thomas, in which he says "most of the major sites in the Great Basin lack significant Paiute-Shoshoni components." AAR 1999; Exh. J at 166 (Thomas). The determination takes this passage out of context, on two levels. First, the passage appears in a brief discussion of the Numic expansion hypothesis, *i.e.*, the hypothesis that Paiute and Shoshone people, as well as other Numic speakers, expanded into the Great Basin about 1,000 years ago. *Id.* at 165-66. Thomas's point was that archaeologists actually know *very little* about Numic archaeology because there are very few "[s]ingle-component Paiute and Shoshoni sites." *Id.* at 166. Thomas concluded, in a passage not mentioned by BLM, "archaeological support for a putative Numic expansion remains almost *pure speculation.*" *Id.* (emphasis added).

Moreover, the primary purpose of Thomas's paper was "to point out the consistency between the ethnography and the archaeology of the central Great Basin." *Id.* Thomas had long been interested in whether Julian Steward's ethnographic description of the Western Shoshone accurately described the Great Basin Culture Area in the period before European contact. AAR 1707.⁷ According to Grayson, Thomas found that the system Steward described "had operated in the Reese River Valley for the past 4,500 years," and led other scholars to conclude that "Numic speaking people have been in the central Great Basin throughout the late Holocene." *Id.* In the paper cited by BLM, Thomas reiterated his finding: "I know of no archaeological data from the central Great Basin which cannot be comfortably subsumed under Steward's ethnographic model." Exh. J at 163 (Thomas). BLM's determination does not mention this point, or consider its significance with respect to cultural continuity during the late Holocene.

The only other sources BLM cites in rejecting Grayson's finding are Elston's 1982 and 1986 articles. *See* AAR 1999. BLM cites these articles for the proposition that the archaeological record evolves through the late Holocene, and only in the last 1,000 years or so does it strongly resemble ethnographic cultural descriptions. *Id.* However, the thesis of Elston's 1982 article was that *neither* a population replacement model nor a climatic change model satisfactorily explains changes in the archaeological record in the western Great Basin. Exh. K

⁷Anthropologists group peoples in "culture areas" based on similarities in such things as the nature of their subsistence pursuits, sociopolitical organization, material manufactures and religion, and have long recognized the Great Basin Culture Area as "a spatial grouping of peoples far more similar to one another than they were to peoples in adjacent culture areas." AAR 1689, 1703-1709. As one ethnographer described it, the Great Basin is a "distinctive geographic and environmental region as well as a *unique Native American cultural province.*" *Id.* at 1709 (emphasis added).

at 186 (Elston (1982)). Instead, he suggested a model showing changes in material culture to be affected by population density and climatic variation better represented the archaeological record. *Id.* Although Elston discusses changes that occurred in the late Holocene, *id.* at 197-98, he also discusses unifying characteristics throughout the "Archaic" period (roughly corresponding to the middle and late Holocene), which resemble those identified by Jennings in formulating the Desert Culture concept, including the basic Archaic tool kit, settlement pattern and subsistence strategy. *Id.* at 187-89. BLM does not mention these unifying elements in its determination. Likewise, as discussed above, in his 1986 article Elston sees the "major adaptive change" in the western Great Basin as having occurred between the pre-Archaic and Archaic periods, about 8,000 years BP, a change which was "most likely in response to environmental variation and changing resources." Thus, Elston's articles are not inconsistent with Grayson's finding that there are broad similarities in the material culture record over the past 5,000 years or so, nor do they support the hypothesis that the major changes that occurred before then, or the less substantial changes since then, were the result of a wholesale population replacement. *See, e.g.,* Exh. I at 186 (Elston (1986)) (discussing conflicting views of Numic expansion versus *in situ* Numic development, and stating they are "not easily resolved in archaeological terms").

As it did for the early and middle Holocene, the determination asserts "there is no evidence to show how many different groups lived in the region during the late Holocene and no way to determine which of these groups, if any, died out, migrated away, or survived to have descendants." AAR 1999. BLM suggests ceramics, bow hunting technology and coiled basketry, which appear in the Great Basin near the end of the late Holocene, "may have been

brought in by migrants from elsewhere.” *Id.* It adds there “is no evidence showing which language or languages were spoken in the late Holocene and no evidence suggesting details of social or political organization, territorial boundaries, kinship patterns, religious beliefs, or world view.” *Id.* It then concludes – contrary to Grayson, Thomas and Elston – that there “is *nothing* in the culture history of the Late Holocene to show that cultural materials and practices similar to historic native peoples appear in the archaeological record until about 1,000 years B.P.” *Id.* (emphasis added).

In these statements, BLM again relies on factors not controlling under NAGPRA, fails to consider whether the occupants of the western Great Basin as a whole constitute an identifiable group, disregards the conclusions of the scholars on whom it purports to rely, and completely ignores other evidence in the record. The most systematic effort to determine the relationship between the Northern Paiute and the prehistoric late Holocene occupants of the western Great Basin was undertaken by Grosscup. AAR 1746. He recognized it is impossible to prove a direct genetic relationship between these groups in an absolute sense, but found that the “the degree of probability [of such a relationship] is *very high*.” *Id.* (emphasis added).

Grosscup compared historic and pre-historic Northern Paiute sites with those of the earlier “Lovelock Culture” and found “a great similarity between the two lots.” *Id.* at 1746-1747.⁸ The occurrence of duck decoys in both Lovelock assemblages and the ethnographic

⁸ Among the material culture items found in both the Lovelock assemblages and among the Northern Paiute ethnographically are the following: rabbit net; club; bow and arrow; bird net; stuffed bird decoy; ice pick; gorge fishhook; angled fishhook; hook made of bone; stone sinker; digging stick; conical seed beater; basketry seed beater; stone seed knife; storage in pit; storage in cave; cave dwelling; cave burial; compound fire drill; bark bundle slow match; large stone

records is particularly noteworthy. As Grosscup observed, "the "northern Paiute stuffed skin decoys are almost identical to archaeological specimens from Lovelock, Ocala and Humboldt Caves," and "[a]lthough widely reported, decoys of this type appear to have no archaeological history elsewhere." *Id.* at 1747. Given the substantial overlap in items of material culture, Grosscup found it "obvious that the economy of the Lovelock people was the same as that pursued by the Northern Paiute." *Id.*

Grosscup recognized that most of the traits archaeologists have considered "highly distinctive of the Lovelock Culture," such as Lovelock wickerware, do not occur ethnographically, but he noted that some of them do occur in the ethnographic record, and that some of the absent traits, including wicker basketry, seem to have been lost shortly before contact. *Id.* Grosscup believed that, when "it is kept in mind that the Lovelock Culture has been extant in this area for over two and a half thousand years, the archaeological occurrences which are not known ethnographically are not surprising." *Id.* at 1748. For example, the atlatl was supplanted by the bow and arrow over most of North America, but there must have been some cultural continuity. *Id.* Moreover, the traits that have been identified as being distinctively Paiute do not manifest themselves at the same time, making the hypothesis that they were introduced by the migration of a new people into the area unlikely. *Id.* On the basis of this and

mortar; stone pestle; metate; mano; looped stick mush stirrer; unhafted flint knife; broken cobble for cutting or chopping; bone scrapers; awl-humerus; awl-cannon bone; awl-ulna; stone drill; bone drill; hammerstone; arrow with foreshaft; stone arrowpoint; painted arrow; feathered arrow; sling; coiled basketry; two strand twining; twined tule bags; twined tule mats; fur blankets; feather blankets; Olivella beads; abalone beads; animal claw pendants; pine nut beads; bone tubes; moccasins; woven sandal; tubular stone pipe; horn rattle; hoof rattle; and one stop bone whistle. AAR 1746-1747.

other evidence, Grosscup concluded "there is evidence that Northern Paiute culture derives, at least in part, from the antecedent Lovelock Culture and has been in existence in west-central Nevada for several thousand years." *Id.*

There is no mention of Grosscup's article in BLM's determination.

Summary and Evaluation. BLM concludes that while the changes in material culture found in the archaeological record may be "in response to significant environmental change," there is "sufficient discontinuity such that it is unlikely that the tribes occupying the Spirit Cave area in historic times are from the same culture as the people who buried their dead in Spirit Cave in the early Holocene." AAR 1999. As discussed, this conclusion fails to take into account significant elements of continuity, is at odds with the opinions of scholars on whom BLM purports to rely, and is inconsistent with the views of other scholars whose work BLM ignores.

Archaeology – Textiles. BLM's analysis of textiles relies heavily on the work of Adovasio, Pedler, and other scholars who "recognize basketry technology as a unique cultural marker." *E.g.* AAR 2000. BLM focuses first on Lovelock wickerware, citing Adovasio and Pedler (1994) for the proposition that the "appearance and disappearance of this textile from the Western Great Basin demonstrates a rare technological turnover within a regional basketry sequence characteristic of population replacement." *Id.* BLM does not address the views of other scholars, such as Grosscup, who disagree with this conclusion based on an analysis of the full archaeological record. Nor does BLM address the theoretical challenge to this proposition offered by Grayson:

[I]t is asserted that differences in textile technologies between two populations necessarily imply differences in ethnicity, such that ancestral-descendant relationships are excluded (see, for instance, Adovasio and Pedler 1994). It is this . . . assertion that is extremely problematic, and it is problematic because it has never been shown that ancestral-descendant relationships have not and cannot exist if two peoples possess different textile technologies. Without such a demonstration, arguments about the lack of historic continuity between human populations that are based on differences in textile technology, or in any aspects of textile manufacture, have no logical validity.

Id. at 1059. And, BLM does not consider evidence that provides other explanations for the appearance and disappearance for Lovelock wickerware. *See id.* at 1747-1748 n.11 (noting evidence that Lovelock wickerware was developed locally from simple twining, and may have disappeared because the baskets did not wear well and were not a popular trade item).

BLM then turns to the work of Fowler and Dawson (1986), who, along with Adovasio, suggest differences between ethnographic Northern Paiute basketry (which was predominantly twined and, allegedly, did not include coiled baskets) and archaeological basketry support the Numic expansion hypothesis. AAR 2001. Here, BLM ignores the more recent work of Connolly, Fowler and Cannon, who found a “remarkable degree of continuity” in basketry forms and structures throughout the Holocene in the northern Great Basin. *Id.* at 1741. Likewise, it ignores Fowler’s observation, in her 1992 ethnography of the *Toidikadi*, that, in their manufacture and use of basketry, these people “*are linked tightly with other Great Basin peoples in the recent as well as the distant past, for basketry has been a major hallmark of cultures in the region for at least 10,000 years.*” *Id.* at 1729, 1741 (emphasis added).

BLM next turns to Adovasio’s development of “at least three distinct prehistoric basketry manufacturing regions within the Great Basin,” and his chronological reconstruction of textile types in the “Western Basin Basketry Region” during the Holocene. AAR 2002-2004. Although

BLM concludes from this that changes in textile types do not support cultural continuity, *id.* at 2004-2005, it gives no consideration to the existence of a distinct western basketry region – with a textile chronology that differs from those elsewhere in the Great Basin – as providing evidence of a shared group identity among the residents of the western region. It is also noteworthy that the first stage in Adovasio's reconstruction runs from 9,000 to 4,500 BC, *i.e.*, from about 11,000 to 6,500 BP, *id.* at 2002-2003, and thus overlaps the major adaptive changes Elston (and BLM) found near the end of the early Holocene. BLM does not consider the significance of this evidence of continuity in textiles during a period in which it finds other evidence of cultural discontinuity. Such evidence suggests that the changes BLM identified were most likely the product of human adaptation and ingenuity, not population replacement.

Similarly, BLM's determination does not address the significance of the fact that, from the time of the Spirit Cave burial to the *Toidikadi*, the people of the western Great Basin have used twining techniques to manufacture textiles, *id.* at 2054; all of the twining techniques utilized in the Spirit Cave textiles appear to continue at least to some extent into the ethnographic period, *id.* at 1741; and the key element of the textiles, two-ply S-spun Z-twist cordage wefts, has remained the same. *Id.* As even the Museum's Touhy and Dansie (along with other scholars) have noted, twined mats such as those found with the Spirit Cave remains "were used extensively in the western Great Basin dating from rather recent times to as far back as 9460 B.P," and "twined twisted fur robes were common throughout Great Basin prehistory into the historic era, usually rabbit fur." *Id.*

BLM cites works by Fowler in 1988 and 1989 and by Stewart in 1941 for the proposition that Northern Paiute women did not make coiled baskets until relatively recently. AAR 2005. However, in her 1992 *Toidikadi* ethnography, Fowler states: "Coiling at Stillwater, as well as in many other Northern Paiute areas, was confined to serving bowls and boilers in the pre-contact period." Exh. A at 131 (Fowler). BLM does not address this evidence of prehistoric coiling in Northern Paiute communities, and instead relies on the alleged absence of coiling in finding the textile evidence does not support affiliation. AAR 2005.

The known or likely *uses* of textiles by the individual buried in Spirit Cave, as determined by the Museum's scientific analyses, for fishnets or baskets, containers, and robes, all continue into ethnographic times. *Id.* at 1733-1735. However, like other elements of shared group identity in the textile record, BLM makes no mention of this in its determination.

Archaeology – Burial Practices. The Tribe submitted a report from Professor Roderick Sprague in support of its repatriation request. AAR 1102-1166. Professor Sprague had studied Plateau burial patterns, especially the southern Plateau and its articulation with the northern Great Basin, as well as burial patterns in other areas surrounding the Great Basin, for 45 years. *Id.* at 1102. For this case, Professor Sprague undertook a comprehensive review of the available archaeological, ethnohistorical and ethnographic evidence of burials in the Great Basin Culture Area, something that had never previously been done. *Id.* at 1103.

Professor Sprague's review "disclosed a Great Basin pattern, with extensive time depth, of an emphasis on inhumation, especially in rocky areas, with the infrequent but regular use of cremation." *Id.* at 1103. The archaeological materials Sprague reviewed included descriptions

of burials in Lovelock Cave, Elephant Mountain Cave, and the Stillwater Marshes, as well as Spirit Cave. *Id.* at 1103-1110. Although the "sample size" was limited, "the few burials found from the earliest to the historic period all fall in a general pattern of mixed inhumation, cremation, and rock crevice disposal." *Id.* at 1109. This pattern was "defined as much by what is lacking as what is present," that is, burial practices from other areas – such as tree or platform disposals, the use of canoes, burial sheds, cists, cairns or multiple cremation hearths – are not found in the Great Basin. *Id.* "The pattern, as is typical of all culture areas, is one of variation within defined limits." *Id.*

Professor Sprague then turned to Great Basin historical period burials. AAR 1110-1117. Although he cautioned that these burials may be affected by the impact of Euro-American culture, *id.* at 1116, Sprague found "striking just how stable and uniform the basic burial pattern is in the Great Basin," with the variability limited to "minor fluctuations in the frequency of such traits as cremation to inhumation." *Id.* at 1117. Overall, Professor Sprague concluded:

The Great Basin demonstrates a surprising consistency in burial patterns that is unusual in Native North America, especially when compared to the surrounding cultural areas. It is thus concluded that the long and consistent burial pattern of inhumation in soil and rocky areas mixed with cremation not only does not support the conclusion of a prehistoric migration or other cataclysmic culture change but is a positive indication of cultural continuity from the earliest dated human remains to the historic period. The archaeological, ethnohistorical, and ethnographic evidence, as revealed in the literature, all clearly lead to the conclusion that [the Spirit Cave remains are] affiliated with the modern Fallon Paiute-Shoshone Tribe.

Id. at 1118.

BLM's discussion of burial practice evidence from the archaeological record is devoted to an attempt to refute Professor Sprague's report, contending the pattern Sprague described does

not hold for the Spirit Cave, Lovelock Cave, Elephant Mountain Cave, the Stillwater Marshes or the Carson-Humboldt Sinks area. AAR 2005-2011. Although the two Spirit Cave burials involved inhumation in a rocky area, BLM asserts the Spirit Cave cremation “probably represents a different burial tradition” and is unlikely to be from the same group as the earlier burials, because it took place 300 years later. *Id.* at 2006. As a threshold matter, the presence of inhumation and cremation events in Spirit Cave is, of course, entirely consistent with the pattern documented by Sprague. Moreover, BLM’s assertion that different “groups” performed the burials and cremation ignores the textile evidence. In its discussion of textiles BLM asserted basketry technology is “a distinct cultural marker” and, unlike projectile point styles, “entire constellations of basketry elements do not diffuse or spread.” *Id.* at 2000. Since the unique warp-face-plain-weave textiles associated with the Spirit Cave burials were *also* associated with the Spirit Cave cremation, the textiles strongly suggest, by BLM’s criteria, that the burials and cremation were performed by the same culture. *See* AAR 1994 (describing warp-face-plain weave textile used to construct mats in which the Spirit Cave remains were wrapped) *and* Exh. L at 19 & Table 2 (Fowler et al. (2000)) (noting one of the bags containing cremated remains “was contained within the smallest plain weave bag”). In asserting two different groups performed the burials and cremation, BLM fails to address the textile evidence.

BLM’s treatment of the Lovelock Cave burials is also troubling, revealing both its distortion of the sources on which it relies and its omission of all views that conflict with its own. BLM cites a report by Ferguson for the Smithsonian Institution’s National Museum of the American Indian, which was considering whether to repatriate human remains from Lovelock

Cave. Exh. M (Ferguson). As BLM notes, Ferguson's report describes three Lovelock Cave burials. AAR 2006-2007; Exh. M at 12-14. BLM claims:

In his analysis of the evidence associated with these Lovelock burials related to their affiliation under NAGPRA, Ferguson concluded that "the preponderance of the evidence does not enable a scholarly conclusion to be made about the cultural affiliation of the human remains and associated grave goods [from Lovelock Cave] in the museum's collection" (Ferguson 1996:30).

AAR 2007. BLM adds that Ferguson "could not connect the Lovelock Cave burials to the ethnographic people from the area." *Id.*

There are two problems with this analysis. First, Ferguson made no attempt to connect the Lovelock Cave burials to those of ethnographic people from the area. Writing three years before Sprague, his report contains no analysis of Great Basin burials in the archaeological and ethnographic record, and simply does not comment on the Great Basin burial pattern described by Sprague. While the *details* of the three contemporaneous Lovelock Cave burials are different from *each other* as well as those of other Great Basin burials, they all fit the general pattern Sprague described of inhumation and some use of cremation. AAR 1862-1863. Indeed, a scholar on whom BLM relies, Korburi, found the Lovelock Cave burials exhibited the same pattern as those in Spirit Cave:

The [Lovelock Cave] internments were often flexed to semi-flexed and covered with basketry (or placed in basketry) and/or were wrapped in tule mat bundles. Additional human burials recovered from the Carson Sink area (Spirit and Fish Caves) *exhibited the same burial custom* (cf. Wheeler and Wheeler 1969).

Exh. N at 189 (Korburi) (emphasis added).⁹ BLM makes no mention of this.

⁹ Korburi noted the presence of cremations in Spirit Cave, and stated it was not yet known whether "these distinctive burial traditions co-existed within the same culture or suggest two

Second, in quoting Ferguson's conclusion, BLM quotes only the first sentence in a paragraph in which Ferguson goes on to explain that, while "[s]ome anthropological data suggest the Lovelock Culture is totally unrelated to any contemporary Indian tribes[, o]ther anthropological data suggest there is a cultural continuum between the Lovelock Culture and the Northern Paiute." Exh. M at 30 (Ferguson). Likewise, BLM fails to mention Ferguson's statement (in the same paragraph) that traditional history presented by the Northern Paiute "could well be the deciding factor in reaching a conclusion about cultural affiliation," and his statement (in the following paragraph) that, "[e]ven though cultural affiliation can not be unambiguously determined, the preponderance of the evidence indicates that the Northern Paiute Indians have a stronger cultural relationship to the human remains and associated grave goods from Lovelock Cave than any other Native American group." *Id.* at 31. Nor does BLM disclose that, after consultation with the Northern Paiute, the National Museum of the American Indians repatriated the human remains from Lovelock Cave to the Lovelock Paiute Colony. AAR 1862.

BLM asserts the Elephant Cave burials also represent a different burial tradition, even though they too involve inhumation and limited use of cremation. AAR 2008-2009. BLM points to the presence of "tightly flexed bundle burials," and the presence of extensive grave goods with young individuals, supposedly indicating a degree of social stratification not characteristic of the Northern Paiute. *Id.* at 2008. However, BLM provides no evidence to suggest flexed positions are indicative of cultural differences; as Sprague observed in a rebuttal report, "[w]orld-wide there are thousand[s] of sites with burials interred at essentially the same

different cultures." *Id.* As discussed above, the textiles provide compelling evidence they co-existed within the same culture.

time that range from flexed to semi-flexed to extended.” AAR 1863. And, BLM failed to respond to Sprague’s showing that extensive grave goods have been found with child burials in very egalitarian groups, and that it was therefore improper to assume that the presence of such grave goods was evidence of a stratified social system. *See* AAR 1107, 1863.

BLM also discusses burials unearthed by flooding in Carson Sink and Stillwater Marsh in 1985, and Korbori’s 1981 summary of burials in the Carson-Humboldt Sinks areas throughout the archaeological record. AAR 2009-2010. Although the former involve earth inhumation, BLM suggests they do not fit Sprague’s pattern because they were not found in rocky areas and none were cremated. *Id.* at 2009. BLM reaches the same conclusion with respect to the burials analyzed by Korbori, even though they involved both inhumation in rocky areas and a cremation. *Id.* at 2010. Again, it appears BLM is relying primarily on differences in detail, such as whether and how the body was flexed, but presents no evidence to suggest such details are of cultural significance. And, as noted, BLM simply disregards Korbori’s conclusion that the Lovelock and Spirit Cave burials exhibit the same burial pattern.

BLM’s discussion of ethnographic burial practices appears later in its determination. AAR 2028-2030. BLM does not address the Basin-wide evidence discussed by Sprague, *id.* at 1110-1115, but focuses specifically on the Northern Paiute and the Toidikadi. BLM begins with an excerpt from Fowler and Liljeblad, who described Northern Paiute burial practices generally as follows:

The body of the deceased was removed from the house, wrapped in skins with the legs flexed in front or behind, and taken to the hills. It might be placed in a rock crevice or cave, or it might be buried on a hillside. The person’s personal goods were interred as well. Seeds and beads were often sprinkled over the grave. At Walker River and Mono

Lake, the possessions of the deceased might be burned at the graveside. Burning of the deceased was reserved for individuals suspected of witchcraft.

Id. at 2028. BLM acknowledges this description “could be interpreted as having several similarities with the burials from Spirit Cave.” *Id.* at 2029. BLM does not address the fact that it is also fully consistent with the pattern Sprague documents throughout the archaeological record.

BLM then turns to “a more detailed later account of specific practices among the Northern [sic] Paiute from Stillwater Marsh,” AAR 2028, which it quotes from Fowler’s ethnographic account of the Toidikadi:

Members of the family gathered in or near the home of the deceased. A male relative wrapped the remains in his/her robe, or in crossed layers of pond moss and/or algae collected from a dry pond, and prepared to remove them from the house. With one or two additional persons to help carry the remains, this person selected a burial area, preferably in the sand hills west and north of Stillwater or in a rocky area in the foothills to the east. A hole was dug in the sand, or the rocks were removed in such a way as to receive the deceased. Digging sticks and other pieces of wood were used in excavating. The remains were interred in either an extended or flexed position. The personal property of the deceased, such as his bow and arrows, or her gathering baskets, was interred as well. Sagebrush was piled over the grave and a fire started and allowed to burn completely. This was felt to disguise the grave from predators. The remains themselves were not cremated in this fire, that practice being attributed on occasion by Wuzzie George and Alice Steve to people at Walker River, and also to the Sai’i, enemies of the Cattail-eaters. People purposefully forgot the exact location of these graves, and never visited them on purpose.

Id. at 2029. BLM asserts, with no explanation or analysis, that this description “bears almost no resemblance to the Spirit Cave Burials” and is “also different from the burials reported from Elephant Mountain Cave and Lovelock Cave, but may be similar to those reported for the Stillwater Marsh area.” BLM does not address the fact that this description is consistent with the pattern Sprague documents, involving elements of inhumation, with an emphasis on rocky areas, and some use of cremation (albeit by nearby Northern Paiute groups). Nor does BLM address the

other similarities to the Spirit Cave burials, such as wrapping the remains in his or her robe, the use of sagebrush, and the specific use of rocky areas in the foothills east of the marshes (*i.e.* an area that includes the location of Spirit Cave).

BLM's attempt to distinguish Fowler's description of *Toidikadi* burial practices, which BLM asserts are unlike the Spirit Cave burials, from Fowler and Liljeblad's description of general Northern Paiute burial practices, which BLM concedes are similar to the Spirit Cave burials, is noteworthy. In so doing, BLM is suggesting the *Toidikadi* are culturally distinct, by BLM's analysis, from the Northern Paiute. Since the *Toidikadi* are Northern Paiute, part of the Northern Paiute people recognized by the ICC as an identifiable Indian group, it seems apparent that BLM is focused on details while ignoring larger factors that unify the *Toidikadi*, the Northern Paiute, and the prehistoric occupants in the western Great Basin.

Numic Expansion Archaeology. In the final subsection of the determination addressing archaeological evidence, BLM provides a summary of some of the arguments that have been advanced for and against the Numic expansion hypothesis. AAR 2011-2013. BLM does not attempt to reconcile these competing arguments, and in particular does not respond to any of the arguments against the Numic expansion hypothesis. However, BLM notes that, at a 1994 conference on the Numic expansion model, Madsen and Rhodes divided researchers into three categories. *Id.* at 2012. According to BLM, these categories consist of the following:

One is the traditionalists, who agree with Steward and Lamb and see archaeological and linguistic evidence of an expansion of Numic speaking peoples around 1000 years B.P. . . . The second position is labeled Basinist, in that, these researchers see evidence that proto-Numic speaking, or Numic, speaking peoples occupied all or part of the Great Basin as long as 5,000 years B.P. and since then have alternately occupied and abandoned parts of the region in response to environmental changes. . . . The third group

at the conference, labeled as the Peripheralists . . . argue that the expansion occurred about 1000 years B.P. and extended beyond the boundaries of the physiographic or cultural Great Basin.

Id. at 2012-2013. BLM then asserts that Madsen and Rhodes argued “there is a consensus, but not unanimity,” among Great Basin scholars that “Numic expansion probably occurred during the past several thousand years.” *Id.* at 2013. On this basis BLM concludes the available archaeological evidence “tends to support the model and indicates that there [*sic*] is likely that non-Numic speaking people or peoples (possibly Hokan or Peneutian speakers) lived in the Spirit Cave area before the ancestors of the Northern Paiute arrived, some time in the past several thousand years.” *Id.*

There are several problems with this analysis. First, as noted, BLM never confronts the arguments regarding the Numic expansion hypothesis on the merits. Second, it implies that, under what Madsen and Rhodes label as the “Basinist” perspective, Numic (or proto-Numic) speaking people first arrived in the Great Basin sometime after the Spirit Cave burials. In fact, scholars that hold this view see a Numic (or proto-Numic) presence in the Great Basin 11,000 years ago. One of the “Basinist” scholars discussed by Madsen and Rhodes, Melvin Aikens, explains:

There is no doubt at all that people were established throughout the far west by at least 11,000 years ago, when we see the beginnings of a desert culture tradition like that carried by Uto-Aztecan peoples down to the present day.¹ In the case at hand, granting the superphylum relationships just mentioned could reasonably carry the thread of linguistic continuity argued in this paper back into the earliest phase of desert culture occupation in western North America. As Goss (1977) pointed out, this is the most parsimonious hypothesis by which to link archaeological and linguistic prehistory in the desert west, and no factual evidence suggests a better idea.

¹I have previously argued . . . that speakers representing the Numic branch of Uto-Aztecan, people who are *classical exemplars of the Desert Culture tradition*, probably occupied the Great Basin since the time Numic first emerged from the preceding Uto-Aztecan continuum. In the Great Basin center of the Numic homeland, archaeological evidence shows a major upswing in human presence starting about 3500 years ago. *Around the better-watered peripheries of the Basin, archaeological evidence carries back human occupation more than 11,000 years. Adopting the perspective of Goss (1977), it is likely that these people were ancestral Uto-Aztecan.*

AAR 1754 (emphasis added).

Third, BLM misstates the “consensus” view on which it purports to rely. As Madsen and Rhodes explain, the “consensus” view is based on geography: “it seems that *most* of the participants in this volume can agree that there was an expansion of Numic populations throughout *most* of the Numic territory in the last thousand years or so.” Exh. O at 214 (Madsen and Rhodes) (emphasis in original). As illustrated by Madsen and Rhodes, the geographic area of consensus lies largely outside of Nevada, and *does not* include the Spirit Cave region:

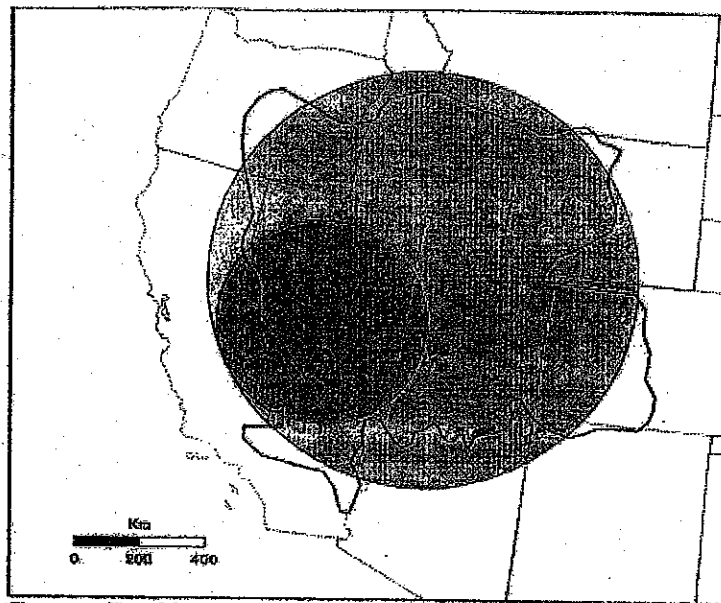


Figure 2.4.4 View of the Numic expansion: areas of consensus (large circle) and disagreement (small circle).

Id. at 217. Moreover, in discussing the *lack* of consensus over the Numic expansion hypothesis in the “small circle,” Madsen and Rhodes note this “is an area where *hunter-gatherers have operated in reasonably similar ways (and here is where the argument is) over thousands of years. . . .* When the sequential archaeological record is composed of *technologically similar hunter-gatherers*, whether within or outside the Basin . . . , we may not presently be able to distinguish between population replacement and in situ development.” *Id.* at 214-15 (emphasis added). This statement provides evidence of shared group identity – hunter-gatherers operating in similar ways over thousands of years – in the western Great Basin, and does not support BLM’s population replacement conclusion.

Biology. BLM’s discussion of the biological evidence begins with a series of caveats, which lead it to conclude that biological evidence cannot be expected to provide unequivocal conclusions of shared group identity. AAR 2013-2014. Nevertheless, BLM believes “general overall trends may be derived” from biological studies. *Id.* at 2014.

BLM then describes the pre-contact human skeletal remains available for study from the Great Basin. AAR 2014-2015. Although there were few studies of such remains until recently, extensive flooding in the early to mid-1980s exposed “archaeological materials,” more than doubling the number of such remains. *Id.* BLM notes that different “micro clines” across the Great Basin have led to different subsistence patterns, “though not necessarily diverse biological make up.” For example, an early study found “a basic homogeneity” in the Great Basin population, with minor regional differences, while a more recent study noted three Great Basin

samples, from Stillwater, Malheur, and Great Salt Lake, “are very similar in morphology, as they are in inferred behavioral patterns.” *Id.* at 2014-2015.

Notably, BLM never explores the significance, in term of shared group identity, of the “basic homogeneity” in pre-contact Great Basin populations. One of the recent studies BLM cites, Brooks and Brooks (1990), does so. The authors analyzed 250 human remains from Stillwater Marsh dating to about 3,000 years BP, and concluded: “Their similarity and comparability with other Great Basin skeletal remains, especially from the northern and central areas of Nevada, indicate that a relatively homogenous, robust people occupied this region of the Nevada Great Basin from perhaps 3,000 BP to the time of Euroamerican contact, *with no evidence of replacement by other peoples or migration.*” AAR 1758-1759 (emphasis added). BLM never discusses this conclusion, either in its analysis of the biological evidence, in the context of its claims that the Lovelock culture represented a distinct population that was replaced by the Northern Paiute about 1,000 years ago, or in its other considerations of the Numic expansion hypothesis.

After noting that various studies have been conducted on the Spirit Cave remains, BLM then turns to a discussion of “biological affiliation,” examining five types of evidence: cranial analyses; dental morphology; DNA; serum albumin; and hair. AAR 2015-2024. We address each in turn, and then discuss biological evidence not discussed at all in BLM’s determination.

Biology – Cranial Analyses. Among the scientists who studied the Spirit Cave remains, some measured the cranium and compared the results to those for other Paleo-Indians as well as those for modern groups. *See* AAR 1736. One of the reports the Tribes submitted to

BLM, by Professors Alan Goodman and Debra Martin, reviewed these craniometric analyses. *Id.* at 0981-1035E, 1736-1737. Goodman and Martin are professors of biological anthropology and co-directors of the U.S. Southwest and Mexico Program at Hampshire College in Amherst, Massachusetts. *Id.* at 0981, 1029-1035E.

Professors Goodman and Martin found the craniometric analyses to be irrelevant to the question of cultural affiliation. AAR 0987-0990; *see also id.* at 1896-1899. They first noted that the craniometric study by Jantz and Owsley found the cranial morphometrics of the Spirit Cave remains fell outside the range of variation of *all* modern populations. Given this finding, the study cannot shed light on the biological (let alone cultural) affiliation of the remains. *Id.* at 0987-0988, 1986. This finding is not surprising, and provides no support for a finding of cultural discontinuity, because, among other reasons: (1) craniometric measurements are highly variable and affected by conditions during life such as diet, developmental musculo-skeletal forces, and cultural practices such as cradle-boarding; (2) *all* known populations that span thousands of years in one region, with *unbroken cultural continuity*, have changed in morphology; and (3) based on literature showing changes in dental and cranial morphology with the shift from nomadic hunting and gathering to sedentary agriculture, one would expect that a 9,000-year-old individual would *not* look like or be measurably similar to indigenous people during the last thousand years. *Id.* at 0988-0989, 1896-1898. As Goodman and Martin pointed out, “[t]here are many physical anthropologists that advocate an opposite position from Jantz and Owsley, that is, that craniometric dimensions are not good measures of population affiliation.” *Id.* at 0989, 1898.