
Submission in Testimony on Protection of Chaco

Memorandum 15 April 2019

To: Chairman Raúl Grijalva, Alan Lowenthal, Deb Haaland, House Committee on Natural Resources

CC: Peter Gallagher

From: Anna Sofaer, President, Solstice Project; Richard Friedman, archaeologist & GIS Analyst; Robert Weiner, archaeologist; Phillip Tuwaletstiwa, former NOAA geodesist; and Petuuche Gilbert, formerly of Acoma Pueblo Land Office

We are writing with concern that recent archaeological understandings of the broader reach of the Chaco culture of New Mexico are not being incorporated into public policies, nor into decisions by agencies responsible for Chaco's protection and preservation. This lack of attention to Chaco's invaluable cultural resources is particularly alarming at this time; leasing for development of energy resources in the Chaco cultural region has moved rapidly closer to Chaco Canyon in recent years; grazing and ongoing erosion are also erasing the legacy of the Chaco culture. Approaching Chaco today you are confronted with drilling and fracking rigs and flares, creating noise, air, and groundwater pollution.

We propose several actions to protect Chaco's sacred landscape:

- Enactment of current bill S. 1079, to establish a 10 mile protective "buffer zone" around fragile Chacoan ruins, roads and shrines;
- Analysis of LiDAR data of the buffer zone recorded by the Bureau of Land Management (BLM), to inform future protection efforts and expand understanding of the Chacoans landscape relationships;
- Increased support to the National Park Service's infrastructure to protect and preserve Chaco cultural resources.

Background: 1,000 to 1,200 years ago, the Chaco people developed a complex culture of monumental ritual architecture and elaborately designed astronomical works. The Sun Dagger site on top of Fajada Butte in Chaco Canyon, rediscovered by the Solstice Project, precisely records the solar and lunar cycles; and the alignments of numerous Great Houses also commemorate these cycles. The Sun Dagger site has been called "an American Stonehenge" by *Science 80*, a publication of the American Association for the Advancement of Science. The remarkably beautiful and intricately designed ruins of Chaco Canyon and the extensive network of Chaco's ancient roads have been designated a UNESCO World Heritage site. Recent studies reveal that that Chaco Canyon was a powerful center with influence across the entire Four Corners region—nearly 40,000 square miles—that holds more than 150 Chaco-styled Great Houses.

Our research group, the Solstice Project, www.solsticeproject.org, has brought awareness to the public and the scholarly community of the Chaco culture's remarkable pattern of astronomical alignments and to the profound significance of their elaborately engineered 'roads.' The Chaco culture invested enormous resources of labor and planning to create these corridors of 30 foot width in remarkably straight trajectories across the barren desert—altogether hundreds of miles of them. We have shown that many of these 'roads' appear to have been built as “cosmographic expressions” connecting the Chaco Great Houses and shrines to astronomically significant directions and special features of the landscape. Extensive evidence that the roads held spiritual meaning for the Chaco people is seen in the abundant ceramic offerings left in the roads and at their associated shrines. Many roads extend far beyond the protective boundaries of the Chaco Culture National Historical Park. This comprehensive, sacred landscape web must be protected. If mitigating measures are not taken, destructive impacts on the fragile Chaco roads will worsen over time.

Recent energy development has included modern roads crossing the ancient Great North Road. Studies have shown that the Chacoans created this elaborate 35 mile corridor from Chaco Canyon to Kutz Canyon to connect their ceremonial center to the direction north. For descendant Puebloan people it holds profound spiritual significance; as Paul Pino, from the Pueblo of Laguna, says in *The Mystery of Chaco Canyon* (2000): “To the north is where our point of origin begins, the point where we came into this world. In essence, that north line, that north road connects us back to the creator.”

In concern for the preservation of the Chacoans' invaluable road features the Solstice Project conducted LiDAR (aerial LASER scanning technology) of the Great North Road. These recordings showed the remarkable effectiveness of LiDAR technology to precisely document the subtle and fragile Chaco 'roads.' There is an urgent need to apply this technology in the face of the current harmful impacts to the Chaco 'roads'—especially to those sites and 'roads' located beyond the National Park Service boundaries. (See our specific proposal here, www.solsticeproject.org/Preserving_Chaco/The_LiDAR, and in our addendum to this memo).

We recommend the following measures to improve protection of Chaco's cultural resources: The currently proposed *Chaco Cultural Heritage Area Protection Act*, S. 1079 should be brought to this Committee and the full House of Representatives for review and approval. The bill states that the Bureau of Land Management (BLM) must cease permitting new oil and gas leases and wells within the Chaco Cultural Heritage Withdrawal Area, a boundary 10 miles beyond the current Chaco Culture National Historical Park boundaries. Recognizing the broad geographic expanse of the Chaco sites and roads, the Solstice Project suggests that this withdrawal area could well be extended to include a 20-mile protective buffer zone around the Park, and 10-mile buffer zones around outlying Chaco Great Houses.

In creating its plan in 2014 for expanded energy development in the San Juan Basin, the Bureau of Land Management (BLM) committed to develop a Resource and Management Plan Amendment (RMPA) to govern all future oil and gas leases and to provide mitigating measures for cultural resources. Without

fulfilling their mandate to complete this crucial document, the BLM has sold in the past 5 years, and plans to sell, thousands of acres of oil and gas leases in the Chaco region. Already covering about 90% of the leasable land north of Chaco Canyon, this energy development is advancing closer and closer to Chaco Canyon, whilst conservation groups, archaeologists, and descendant Pueblo and Navajo people have expressed grave concerns over its destructive impacts. No further energy development in the Chaco region should be activated before the RMPA is completed, reviewed, and approved by tribal parties.

We suggest in the attached addendum this critical action for Chaco's protection: analysis of LiDAR recordings inside the ten mile "buffer zone" that were conducted by the BLM and the USGS. Support for this effort would follow the responsible precedent of the BLM's 1980s study of the region to the north of Chaco Canyon when it was threatened with possible coal development. This excellent study revealed the elaborate 35 mile Great North Road and the profound significance of roads to the ancient Chacoans. Much of the area adjoining Great Houses in the "buffer zone" is only beginning to be analyzed with LiDAR; this data requires much further evaluation, along with on-the-ground truthing by experienced archaeologists. These efforts should proceed and their findings appropriately deter further leasing. (See addendum attached to this memo, as well as https://solsticeproject.org/images/pdfs/84-FriedmanEtAl2017_ChacoRoadsLiDAR_FirstView.pdf)

We also urge mitigating actions by the BLM to prevent and repair the problems of public health hazards in surrounding communities already encroached upon by intense energy development. We further support a shift in the region's economy to job-creating, sustainable energy enterprises.

We urge that greater resources be provided to the National Park Service to support a vital visitor facility in Chaco Canyon and to have fuller staffing for maintenance of its fragile ruins. A World Heritage site with Chaco's remarkable international recognition merits this dedication of resources. It is shocking that at this time, the Park apparently due to limited staff is closed to visitors at 4:00 pm. (The current closing policy puts visitors' safety at risk and makes the ruins vulnerable to vandalism.) Professional archaeologists and naturalists who were once on the staff and residents in Chaco Canyon, along with the superintendent, are no longer present. Protection and care for this unique heritage of Ancient America is vital to our understanding and appreciation of one of the great cultural treasures and sacred landscapes of our past.

For testifiers' biographies, see: www.solsticeproject.org/Mission_People/Our_Mission

LiDAR Proposal to Document Chaco ‘Roads’

Proposal for Analysis of LiDAR recordings conducted by the Bureau of Land Management in 2014 across the Chaco Culture National Historical Park and the ten mile “buffer zone” surrounding the park

We prioritize this analysis to focus on Great House complexes that likely have extensive ‘roads,’ shrines, and landscape relationships outside the National Park boundaries, and that are vulnerable to impacts of energy development in surroundings areas. Without full knowledge of the wider relationships of these complexes, their roads and connections to outlying sites and landforms are at risk of damage and destruction. Each of these Great House complexes is a major node of the Chaco system and likely to have webs of extensive connections to the wider Chaco world.

Background: We reported in a recent paper (see link) “on the results of the first and highly effective use of airborne Light Detection and Ranging (LiDAR) technology to document Chaco roads—linear surface constructions found in association with ritual or public architecture of the ancient culture that inhabited 38,610 sq. miles of the Four Corners region between approximately AD 600 and 1300... The great extent of these features—expressed in hundreds of miles of constructed segments, with typical widths of 30 feet and rigorously straight alignments in some instances up to 35 miles—demonstrate a large-scale investment of labor and planning by the Chacoan people. However, roads have received less attention than other topics within Chaco research due to several factors: their ephemeral surface expressions requiring specialized training for their identification, remote locations, and frequent extension beyond the boundaries of site-based archaeological studies. The potential for detecting Chaco roads diminishes each passing year, as sedimentation, erosion, deposition, and increased encroachment of modern society, including energy development, rapidly remove the visible traces of these cultural resources” (https://solsticeproject.org/images/pdfs/84-FriedmanEtAl2017_ChacoRoadsLiDAR_FirstView.pdf).

We now propose analyzing the 2014 LiDAR recordings by the BLM of areas surrounding these key Great Houses located in the inner area of the Chaco region and within the buffer zone: Pueblo Pintado, Peñasco Blanco, Kin Bineola, and Kin Klizhin. In recognition of the monumental stature of these particular Great Houses, they received their own National Park Service designations—with boundaries closely surrounding the ruins. *However these protective boundaries were created without our current knowledge of the extensive road and landscape relationships of typical Great House complexes.* Therefore the surrounding road and shrine features of these four key buildings are not protected under National Park Service status; rather they are located on a “checkerboard” landscape under the jurisdiction of other federal agencies (BLM or BIA), or under tribal, private, or state ownerships. These owners might not highly prioritize cultural protection or archaeological survey. At this time there is no guarantee that the required archaeological

surveys of sites sold for development within this region will include the broader look at significant landscape relationships of Great Houses and their ‘roads.’ However, analysis of LiDAR can provide this information.

This LiDAR analysis should begin with two particular Great Houses, Pueblo Pintado and Peñasco Blanco, that are near potential energy development. Kin Bineola and Kin Klizhin are also within the 10-mile buffer and should be studied because their roads, like most Chaco ‘roads,’ are suffering from grazing and erosion, as well as potential energy development nearby. In addition, the road relationships of these noted Great House complexes extend far beyond not only the NPS boundaries, but possibly in some cases beyond the boundaries of the buffer zone. Ground verification is also essential to follow the LiDAR analysis of these sites. The data and analysis of this project must be shared with parties concerned with potential development and changes in these areas.

The Solstice Project has advocated for protection of the Greater Chaco Landscape since our founding in 1978, and we recognize threats to Chaco’s ancient roads as the most urgent issue at this time. Since the buffer zone can create an area of protection for these sites, we strongly urge it to be legislated as a boundary of permanent protection. The massive Great House complexes and road relationships suggest profound insights into the concerns and values of a remarkable ancient American civilization. They are critical to research of the Chaco culture and public education about this underappreciated civilization of the ancient United States.