STATEMENT OF FINDINGS
Chaco Culture National Historical Park
Visitor Center Renovation

FOR
Executive Order 11988 Floodplain Management

Recommended: _____ *2/12/2009*
Superintendent, Chaco Culture National Historical Park Date

Concurred: _____ 3/25/09
Chief, Water Resources Division Date

Approved: _____ 3/31/09
Director, Intermountain Region **Date**

Statement of Findings for Executive Order 11988
(Floodplain Management)

Renovation and Rehabilitation of
Chaco Culture National Historical Park
Visitor CenterlHeadquarters Building

Introduction

Proposed Action

Under the provisions of Executive Order 11988, the National Park Service has a "responsibility to evaluate potential effects of any actions it may take in a floodplain; [and] to ensure its planning program and budget requests reflect consideration of flood hazards and floodplain management.". Additionally, DO-77-2 and its procedural manual, PM-77-2, provide guidance on how to prepare a Statement of Findings for projects that come under the rubric of the Executive Order.

The National Park Service is planning to rehabilitate and renovate the Chaco Culture National Historical Park's visitor center/headquarters building in northwestern New Mexico. This facility is the only visitor contact station in the park. Visitors come to the center to pay entrance and camping fees, receive orientation to the park, see the park film and artifacts associated with Chaco in the park's small museum and attend lectures and special events. The center also includes a museum and exhibits where museum objects are displayed. Because the building was a prototype for the NPS "Mission 66" program and is now over 50 years old, the park consulted with the State Historic Preservation Office (SHPO) concerning its eligibility for listing on the National Register of Historic Places. In a May 27,2008 letter, the SHPO concurred in the park's finding that the building has lost integrity as a result of numerous alterations and is not eligible for listing on the National Register.

The visitor center is now in poor condition. The electrical wiring and control panels are undersized and inadequate for the loads they carry. The wood window and door frames are in varying states of deterioration-some wholly rotted through. The interior ceilings are stained, moldy and damaged as a result of roof and pipe leaks. The floor is cracked and uneven which allows access by rodents to the detriment of health and safety for both visitors and staff in this hanta virus prone area. The carpet is stained, tom and worn out. The heating and cooling systems are so inadequate that variations of up to twenty degrees are possible between parts of the building. The HV AC system is so noisy that meetings cannot take place when the blower is on; the units are obsolete, rusted, and leaking, as well. Replacement parts for them

are no longer available. The flat roof has leaked repeatedly, even after the membrane was replaced in 2004. To keep the roof from leaking (and damaging electronic equipment, library materials and priceless Chacoan artifacts), all the HVAC components need to be removed from the roof and placed on the ground adjacent to the building.

Phased repairs are not recommended by the consulting engineers because of the interrelationship of the building components. The building is not currently energy efficient and the rehabilitation may provide an opportunity to improve its efficiency as well as its utility.

Site Description

Chaco Culture National Historical Park is a World Heritage site located in a remote area surrounded by the Navajo Reservation. The park is located at an elevation of 2066 m. (6200 feet) in northwestern New Mexico in a sparsely populated, semi-desert area. Chaco Canyon and the lower Gallo Canyon can be described as rim rock canyon walls with relatively flat, alluvial floors dissected with deep gullies. There is a long history of efforts to stabilize the gullies within the park in order to protect the Great House ruins and numerous cultural sites within the park..

The Visitor Center/Headquarters Building is located on the canyon floor of Chaco Canyon approximately 50 meters from the north canyon wall at a point where the canyon is relatively wide. It is approximately 1300 meters from Fajada Butte (a major geographic feature) and 1550 meters from the west canyon wall to the southwest.. The visitor center is located at the outer edge of the 500-year floodplain as calculated in 1982 by Simons and Li Associates (Floodplain Maps for Chaco Culture National Historical Park). The soils are sandy/clay alluvium and highly erodible.

According to the park's 1985 General Management Plan, "the visitor center is on the fringe of the 500-year floodplain of Gallo Wash. Under this extreme event, it is estimated that water would rise to about 0.6 m. (about 2 feet) above ground level around the building." [GMP, page 32]. Because the calculations of the floodplain were done over 25 years ago, the park attempted to obtain more recent FEMA floodplain maps to see if the more recent calculations also included the building in the 500-year floodplain. Unfortunately, the park area has not been mapped by FEMA, so the 1982 data is the best data available. The 500-year floodplain is the "regulatory" floodplain for this action because the visitor center contains irreplaceable records, a museum, and some archeological artifacts(DO-77-2).

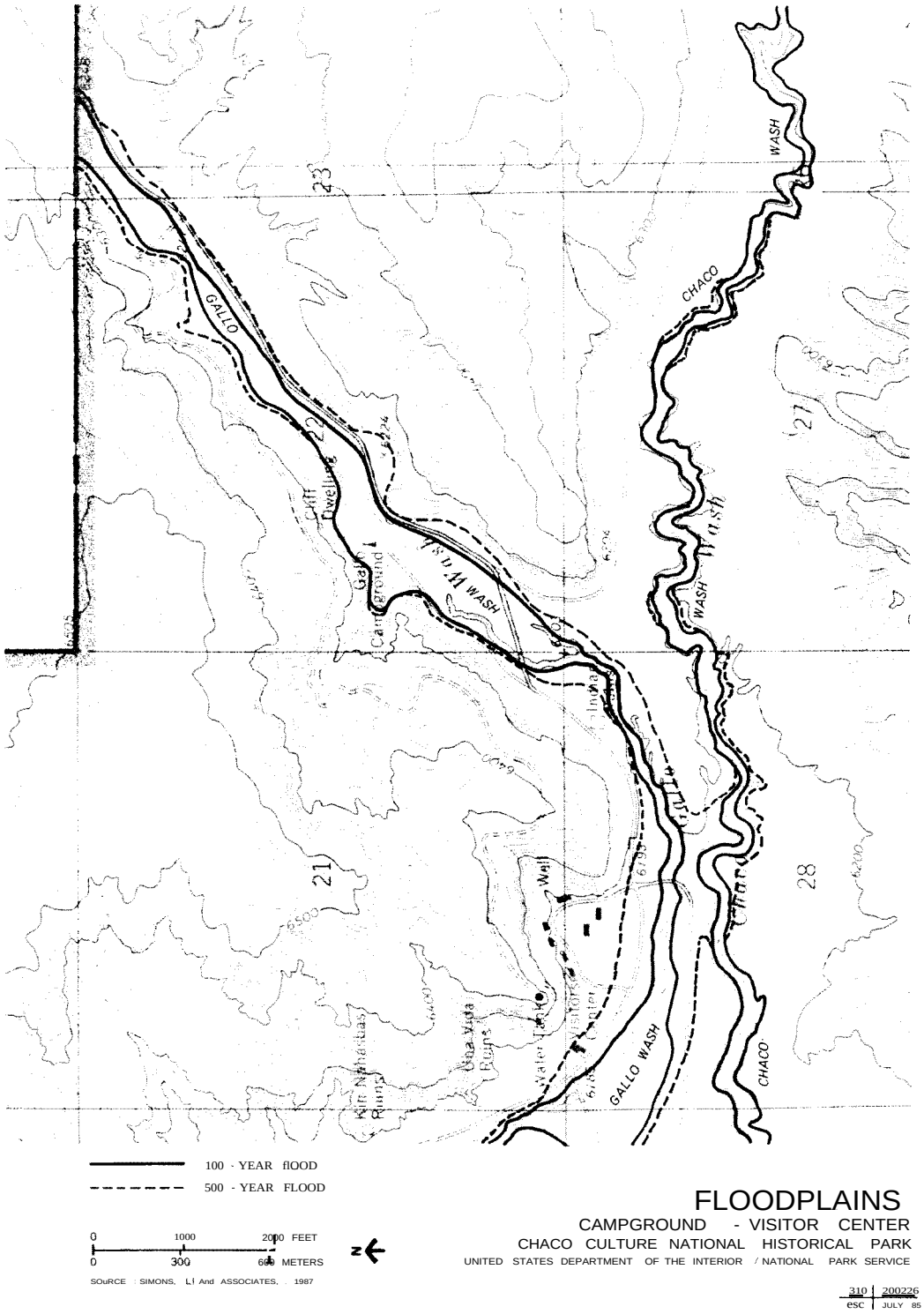
General Characterization of the Floodplain and Flooding

Chaco Wash and its tributaries drain a 398,240 acre watershed that is sparsely vegetated and has in the past been severely overgrazed. There generally appears to be less stock use in the watershed now than 25 years ago. Annual rainfall is approximately 7.5 inches.

Precipitation tends to be distributed unevenly over the year with most coming in the form of July and August thunderstorms. There is little vegetation in the canyon - primarily shrubs,

forbs and grasses. In the past, in an effort to control erosion, cottonwoods were planted in Chaco Wash. Most are now senescent and there is little evidence of recruitment.. The high clay content of the soils and the infrequent but heavy precipitation events leads to rapid runoff.. It also causes accelerated erosion including soil pipes and destructive gullies.

A map that shows the relationship between the 500-year floodplain and the visitor center location is appended below. (Chaco GMP, 1985)



Justification for Use of the **Floodplain**

Description of why the proposed action must be located in the Floodplain

The proposed project is a renovation of an existing building. The park had initially planned to address each building deficiency in sequence. It became clear that so many different aspects

of the building needed to be remediated; it made economic and engineering sense to address them simultaneously.

The park conducted a value analysis facilitated by the IMR Facility Management Division and in cooperation with park stakeholders in August, 2008. At that time, a number of different alternatives were considered, including completely removing the building. Using a Choosing by Advantages decision model, the proposed action was selected as providing the greatest advantages at the lowest incremental cost. The alternative of replacing the entire building at the current location was briefly considered and rejected because its cost was expected to be significantly greater than the other alternatives with relatively few additional advantages. In addition, the team believed that there was a low probability of accomplishing (including obtaining funding for) the alternative in a timely manner. An alternative of moving the visitor center to a location wholly out of the floodplain was not considered because the costs of providing utilities - electrical, phone, water, sewer lines, and propane lines -- to an alternative location was considered to be cost prohibitive, especially because of the concentration of cultural resources in the park.

Description of Site-Specific Flood Risk

Recurrence Interval

Based on the 1982 calculations, the building is on the fringe of the 500-year flood plain.

Hydraulics (depths, velocities)

According to another 1982 Simons and Li study, "The hydraulic data indicates that depths of flow for events through the 100-year storm are, for the most part, contained within the wash." They calculated discharges from about 188 cfs for the 2-year flood to about 5,230 cfs for the 100-year flood. Rick Inglis, WRD hydrologist, stated in 2008, "Equations for the 500-year flood were extrapolated to be about 20,000 cfs. He noted, in consultation with WRD hydrologist, Mike Martin, that experience indicates that 500-year floods are usually within about 150 percent of the 100-year flood or about 8,000 cfs.

Time required for flooding to occur

Since the park has had no experience with a 500-year flood on Gallo Wash, it is not known how much warning time would be available to the park. The major concern would be the potential effects to museum objects. In the 500-year event, flood waters in the visitor center would reach 2 feet in depth around the building (GMP, 1985) Since all the museum objects are located in reinforced glass cases well above ground level, the park has concluded that there is some likelihood of effect but that the likelihood of damage to the museum objects is not high.

The location of the park in a canyon environment inevitably suggests that there are conditions in which the floodplain location of the visitor center may be affected by flooding. Warning time is believed to be low, perhaps in the range of tens of minutes to a few hours.

The fact that the building is on the outer edges of the SOO-yearfloodplain where water velocities are likely to be lower would suggest that adverse effects may be somewhat attenuated.

Flood Mitigation Contingencies

In the SOO-yearevent, flood waters in the visitor center are estimated to reach 2 feet in depth around the building (GMP, 1985). Since all the museum objects are located in reinforced glass cases well above ground level, the park has concluded that there is some likelihood of effect but that the likelihood of damage to the museum objects is not high. In an effort to minimize hazards to human life and property, the park will prepare a flood preparedness and evacuation plan. Park staff will be familiar with the plan and be able to react quickly to flooding conditions by informing the public of appropriate actions.

Summary

The National Park Service concludes that there is no practicable alternative placement for the Visitor Center in a reasonably foreseeable timeframe and that its renovation and rehabilitation at its current site is warranted. The project will likely result in the continuation of short to long-term, mostly minor, direct and indirect, adverse effects on water resources and floodplains. The National Park Service, therefore, finds that this project is in compliance with Executive Order 11988: "Floodplain Management" and NPS DO-77-2.