

DRAFT

POTENTIAL IMPACTS ASSOCIATED WITH IMPROVEMENTS TO COUNTY ROAD 7950

Prepared for Chaco Culture National Historical Park

By

**Jonathan Upchurch, P.E., P.T.O.E., Ph.D.
National Park Transportation Scholar**

June, 2005

Draft: This document may be revised as additional information becomes available.

INTRODUCTION

Chaco Culture National Historical Park is located in a remote portion of northwestern New Mexico, roughly equidistant from Farmington, Gallup, and Albuquerque.

The Park was originally established as a National Monument in 1907 as one of the first areas receiving protection under the Antiquities Act. It was re-designated as Chaco Culture National Historical Park by Congressional legislation in 1980 and was designated as a World Heritage Site in 1987.

The Park preserves and protects premier examples of Ancestral Puebloan culture for the enjoyment of future generations.

CURRENT ACCESS TO THE PARK

The Park is currently accessible by three different routes, each of which requires driving on relatively unimproved roads for distances of 16, 20, and 33 miles. These routes are described on the Park's website as follows.

"The preferred and recommended access route to the park is from the north, via US 550 (formerly NM 44) and County Road (CR) 7900, and CR 7950.

"From the north, turn off US 550 at CR 7900--3 miles southeast of Nageezi and approximately 50 miles west of Cuba (at mile 112.5). This route is clearly signed from US 550 to the park boundary (21 miles). The route includes 5 miles of paved road (CR 7900) and 16 miles of rough dirt road (CR 7950).

"From the south, two routes access Chaco from Highway 9, which runs between Crownpoint, Pueblo Pintado, and Cuba. Both routes can vary from very rough to impassable. Not recommended for RVs. If you are traveling from the south, please call ahead for the latest conditions.

"Via Hwy 57: This turnoff is located on Highway 9, 13 miles east of Highway 371, at the former Seven Lakes Trading Post. (20 miles of dirt)

"Via Pueblo Pintado: At the community of Pueblo Pintado, turn north on Navajo 46 for 10 miles (rough dirt). Turn left on County Road 7900 for 7 miles (rough dirt). Turn left on County Road 7950, and follow the signs for 16 miles (dirt) to the park entrance. (33 miles of dirt)

"The northern and southern routes include 16, 20, and 33 miles of dirt roads, respectively. These sections of road are infrequently maintained, and they can become impassable during inclement weather. "

The remote location and the condition of the access roads undoubtedly influences the number and type of visitors who choose to visit Chaco. In turn, the relatively small number of visitors affects the nature of the visitor experience at Chaco.

CHANGES IN ACCESS DURING THE PAST 10 YEARS

Over the past 10 years there have been changes in access to the Park. Until the year 1996 the Park was accessible via two routes: from the north via State Route 57 from Blanco Trading Post on U.S. Route 550, and from the south via State Route 57 from Seven Lakes.

In January, 1996, State Route 57 was closed at the Park's north boundary. Concurrent with that closure, County Road 7950 became a route of access to the Park from the northeast. County Road 7950, connecting with County Road 7900, provided access from U.S. 550 at a point three miles southeast of Nageezi. County Road 7950 also offered the possibility of access to the Park via a third route leading from Pueblo Pintado, a community to the southeast of Chaco. State Route 57 from the south continued to serve as an access route to the Park.

Prior to 1996, State Route 57 from the north offered a 25.9 mile drive from paved U.S. 550 to the loop road in the Park. None of this route was improved and it offered driving conditions similar to that on State Route 57 to the south and on County Road 7950 today.

The 25.9 mile unimproved route from U.S. 550 on State Route 57 was effectively replaced by a 23.7 mile route from U.S. 550 via County Roads 7900 and 7950. Of this 23.7 miles, the first 4.9 miles on County Road 7900 were chip sealed (hard-surfaced) in about 1996 (according to Park staff) and the 2.8 miles between the Park's northeast boundary and the Visitor Center had been paved prior to 1996. The remaining 16.0 miles were unimproved in 1996 and continue to be unimproved to this day.

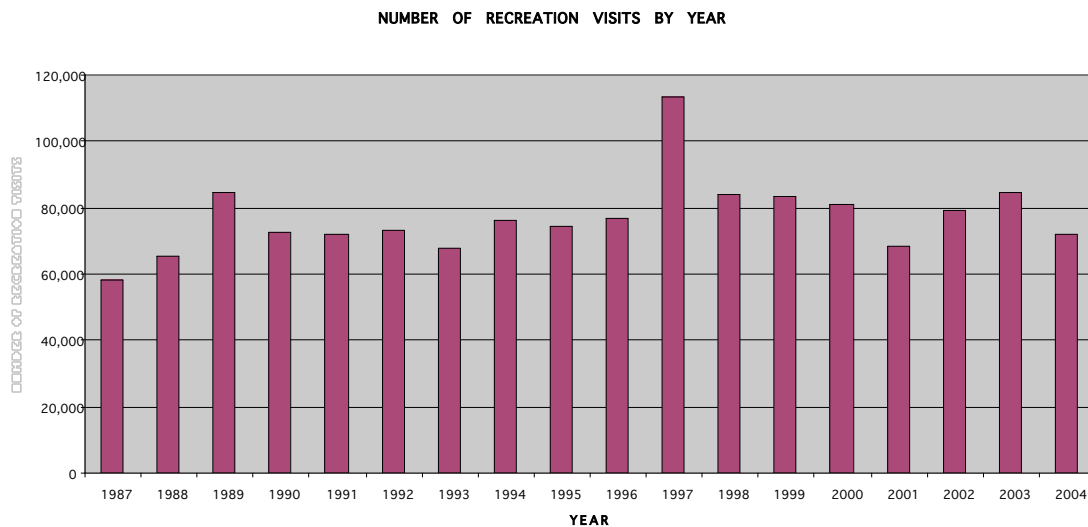
Thus, the closing of State Route 57 and the opening of County Road 7950 replaced a 25.9 mile unimproved access route with a 22.7 mile access route composed of 6.7 miles of hard-surfaced road and 16.0 miles of unimproved road. The opening of County Road 7950 also offered a new, third, route of access to Chaco from Pueblo Pintado, although it is the route with the greatest mileage (33 miles) of unimproved road (compared to 16 miles and 20 miles of unimproved road on the County Road 7950 and State Route 57 south routes of access).

VISITATION

The annual number of recreation visits is shown in the table below (Source: NPS Public Use Statistics Office website). During the past seven years recreational visits have averaged 78,898, ranging from a high of 84,621 in 2003 to a low of 68,527 in 2001. During the past 17 years visitation has ranged from 65,398 to 84,621, with the exception of the year of 1997 when 113,336 recreational visits are reported. The Park staff has expressed skepticism with the 1997 data. The skepticism may be justified because monthly statistics show that nearly all of the increase (relative to a few preceding years) occurred during a single month of the year.

1987	57,988
1988	65,398
1989	84,433
1990	72,675
1991	72,203
1992	72,976
1993	67,867
1994	76,173
1995	74,664
1996	76,868
1997	113,336
1998	83,805
1999	83,337
2000	81,015
2001	68,527
2002	79,171
2003	84,621
2004	71,812

The following figure also shows the number of recreational visits for 1987 through 2004. The graph shows a fairly stable number of visitors over the period of 18 years. The year



1989 and the year 2003 were almost equal in visitation. It is helpful to compare the apparently stable visitation at Chaco with the visitation at other Parks in the region. To make that comparison, the visitation at 29 National Park Service units located within 250 airline miles of Chaco were reviewed. On the average, visitation declined by 12 percent at those 29 units from 1989 to 2003. Thus, Chaco's visitation actually increased 12 percent relative to other Parks in this region of the country.

There was no apparent long-term change in the number of recreational visits to Chaco as a result of the new access route via County Road 7950 opened in 1996. This suggests that potential visitors who were deterred by the prospect of a 25.9 mile drive on an

unimproved road were also deterred by the prospect of a 16 mile drive on an unimproved road.

PROPOSED ROADWAY IMPROVEMENTS

San Juan County has plans to improve County Road 7950 with a chip seal surface throughout the 16.0 mile length of currently unimproved roadway. This improvement would provide a continuous hard-surfaced roadway all the way from U.S. 550, via County Roads 7900 and 7950, to the northeast entrance to the Park. The existing “dry river bottom” crossing of Escavada Wash (located three miles northeast of the Park boundary) is planned to remain as a dry river bottom crossing.

The first three miles of chip seal (beginning at the intersection with County Road 7900 and extending southwestwardly) is planned for construction in July, 2005. The remaining 13 miles is planned for improvement using funds made available from a bill reauthorizing federal highway and transit programs. The legislation is currently (as of June 11, 2005) in conference committee between the House and Senate. The timing of the improvement to the remaining 13 miles is uncertain because the federal funding will be dispersed over a five year period from FY 2005 through FY 2009.

CHANGES IN VISITATION DUE TO ROADWAY IMPROVEMENTS

How much will visitation change when a hard-surfaced road reaches Chaco? The answer to this question will be useful in two ways. First, it will be useful in predicting and assessing the impacts on the Park that will need to be evaluated in the environmental compliance for the roadway improvement project (it is expected that federal funds will be used for the road improvements and that, therefore, an environmental compliance document will be required). Second, the answer will be useful in helping Chaco to anticipate the measures that the Park may need to take to serve a possibly higher level of visitation.

To help answer the question of whether visitation will change, the history of visitation at six National Park Service units in the Four Corners states was reviewed. Those units, referred to as “Study Parks” are:

- Capitol Reef National Park
- Canyon de Chelly National Monument
- Navajo National Monument
- Canyonlands National Park
- Natural Bridges National Monument
- Hovenweep National Monument

Each of the Study Parks, earlier in their history, was accessible only by an unimproved road or roads. Eventually, a paved (hard-surfaced) road or roads reached each Park. An

increase in visitation was observed at each of the Study Parks when periods before and after the roadway improvements were compared. The following pages describe the changes in visitation at the Study Parks associated with the arrival of a hard-surfaced roadway.

Data on the annual number of recreational visits for each Study Park were obtained from the NPS Public Use Statistics Office website (data for individual districts within Canyonlands National Park were obtained from that Park). Information on the years in which roadways leading to the Study Parks were paved were obtained from multiple sources – Park administrative histories, information provided by the Utah Department of Transportation, and annual highway maps published by states and private sector map publishers. The historical highway maps were viewed at the map collections of the Arizona State University and University of Utah libraries.

It was recognized that some of the change in visitation at a Study Park could simply be part of a regional trend. For that reason, increases in visitation at Study Parks were adjusted (normalized) so that computed increases would not be misleadingly high. For each of the six Study Parks, the trend in visitation at other nearby Parks in the region (these other nearby Parks will be referred to as “Peer Parks”) was determined and changes in the Study Parks’ visitation were adjusted to discount the regional trend. This adjustment will be illustrated in the analysis for each Study Park.

Other nearby Parks were not selected as Peer Parks if they were known to have unusual factors affecting visitation. For example, a nearby Park was disqualified if it also had access roadway improvements during the same time period.

The peers for each of the six Study Parks are shown in the following table.

<u>Study Park</u>	<u>Peer Parks</u>
Capitol Reef National Park	Bryce Canyon National Park Cedar Breaks National Monument Zion National Park
Canyon de Chelly National Monument	Petrified Forest National Park Grand Canyon National Park Mesa Verde National Park
Navajo National Monument	Mesa Verde National Park Grand Canyon National Park Wupatki National Monument Petrified Forest National Park

continued on next page

<u>Study Park</u>	<u>Peer Parks</u>
Canyonlands National Park	Arches National Park Colorado National Monument Mesa Verde National Park Capitol Reef National Park
Natural Bridges National Monument	Arches National Park Capitol Reef National Park Mesa Verde National Park
Hovenweep National Monument	Mesa Verde National Park Arches National Park Canyon de Chelly Nat'l. Monument

The increase in visitation experienced by each Park is described on the following pages.

Capitol Reef National Park

Capitol Reef National Park is served by Utah State Route 24, which passes through the Park from west to east. The paved roadway approaching Capitol Reef from the west was paved to the town of Torrey before 1953 (Torrey is about 5 miles from the Park boundary and 11 miles from Park Visitor Center in Fruita – the location at which counts of recreation visits have most likely been made). Five miles of roadway between Torrey and Fruita was paved after 1954 and before 1956. The final six miles of paving to reach Fruita was completed in June, 1957.

The study method used for Capitol Reef, as well as for Canyonlands National Park, and Navajo and Canyon de Chelly National Monuments, is to compare the visitation two years prior to a roadway improvement with visitation two years following a roadway improvement.

At Capitol Reef, the average annual visitation for the years 1953 through 1955 was 10,130 (a three year average was used in this case because 1955 had a lower visitation than the two preceding years). The annual visitation in 1959 was 89,600.

The group of peer Parks for Capitol Reef consists of Bryce Canyon National Park, Cedar Breaks National Monument, and Zion National Park. The combined visitation of these three Parks increased from 750,000 in 1955 to 982,000 in 1959. As shown below, the increase in visitation at Capitol Reef was 575 percent more than the increase experienced at the Peer Parks in a four year period.

	Capitol Reef	Peer Parks
1955 visitation (Capitol Reef is the average for 1953 to 1955)	10,130	750,000
1959 visitation	89,600	982,000
Ratio of increase in visitation - 1959 divided by 1955	8.85	1.31
Adjusted increase in visitation at Capitol Reef	8.85 / 1.31 = 6.75	
The increase in visitation at Capitol Reef was 575 percent more than the increase experienced at the Peer Parks		

Various portions of Utah State Route 24 to the east of Capitol Reef were paved in various years between the late 1950's and 1967. A continuous paved roadway finally extended from Capitol Reef to Hanksville and Green River (a distance of 84 miles) by 1967. By 1969 Capitol Reef's annual visitation had reached 210,600, more than double the 1959 visitation.

Canyon de Chelly National Monument

In 1958 the closest paved road to Canyon de Chelly was about 39 miles to the south, near the town of Ganado. In 1959, what is now U.S. Route 191 was paved from near Ganado to a point near the community of Chinle, a point a few miles from the Monument.

At Canyon de Chelly the annual visitation in 1957 was 13,200. In 1961 the annual visitation was 26,500.

The group of peer Parks for Canyon de Chelly National Monument consists of Grand Canyon, Mesa Verde and Petrified Forest National Parks. The combined visitation of these three Parks increased from 1,962,000 in 1957 to 2,151,700 in 1961. As shown below, the increase in visitation at Canyon de Chelly was 83 percent more than the increase experienced at the Peer Parks in a four year period.

	Canyon de Chelly	Peer Parks
1957 visitation	13,200	1,962,000
1961 visitation	26,500	2,151,700
Ratio of increase in visitation - 1961 divided by 1957	2.01	1.10
Adjusted increase in visitation at Canyon de Chelly	2.01 / 1.10 = 1.83	
The increase in visitation at Canyon de Chelly was 83 percent more than the increase experienced at the Peer Parks		

Additional improvements were made to the regional roadway network in the early 1960's. By 1965 a paved road (what is now U.S. 191) extended north from Canyon de Chelly to connect with U.S. 160 (paved in 1961). Providing additional paved approaches to Canyon de Chelly, these improvements were likely responsible for some of the subsequent increases in visitation. In 1966 Canyon de Chelly's annual visitation was 344,300, thirteen times its 1961 visitation.

The Administrative History of Canyon de Chelly National Monument describes improvements on roads accessing the Monument. It also includes the following.

“An article by O.F. Oldendorph, containing information on Canyon de Chelly, appeared in the May 1968 issue of National Parks Magazine. The sentiments of the author were reminiscent of those expressed in the 1930's concerning visitation. The author appeared to be upset with the influx of visitors because of paved roads. He believed that if roads to national parks were dirt highways, this would discourage the type of visitor who littered and caused unnecessary trouble. He declared:

“Nothing discourages the overnight campground-hopper as much as fifteen miles of dirt road. Nothing else is so welcome to the truly interested visitor, for he knows that at the end of the rough road he will be camping with people who share his interest in the park.”

Navajo National Monument

Navajo National Monument was very isolated until the early 1960's. In 1957, for example, the closest paved roadway was 70 miles away.

By September of 1962 U.S. Route 160, connecting U.S. Route 89 near Tuba City, Arizona with Kayenta, Arizona, the Four Corners, and Cortez, Colorado, had been paved and opened to travel. This route brought a hard-surfaced roadway to within about 15 to 20 miles of Navajo National Monument.

On July 24, 1965 a 10 mile paved roadway, on new alignment, was opened connecting U.S. Route 160 with the Monument's visitor center.

At Navajo National Monument the annual visitation in 1963 was 7,900. By 1967 it was 60,900. As stated in the Monument's Administrative History, “with the completion of the paved roads to the Visitor Center in 1965, the number of visitors increased exponentially.”

The group of peer Parks for Navajo National Monument consists of Grand Canyon, Mesa Verde and Petrified Forest National Parks, and Wupatki National Monument. The combined visitation of these four Parks increased from 2,733,800 in 1963 to 3,139,200 in 1967. As shown below, the increase in visitation at Navajo was 571 percent more than the increase experienced at the Peer Parks in a four year period.

	Navajo	Peer Parks
1963 visitation	7,900	2,733,800
1967 visitation	60,900	3,139,200
Ratio of increase in visitation - 1967 divided by 1963	7.71	1.15
Adjusted increase in visitation at Navajo National Monument	7.71 / 1.15 = 6.71	
The increase in visitation at Navajo was 571 percent more than the increase experienced at the Peer Parks		

Canyonlands National Park – Needles District

Canyonlands was designated a National Park in September, 1964. The Park is geographically separated into three parts (administered as Districts) by the canyons of the Green and Colorado Rivers. The Needles District and the Island in the Sky District account for 95 percent of the current visitation to the Park. Both Districts were originally accessible only by graded roadways that were later paved.

The access road leading to the Needles District (Utah State Route 211) is a 38 mile long road extending from U.S. Route 191. This road was paved over a period of about two years and was completed in 1971.

Although visitation by District is not available for 1969 through 1973, reasonable estimates can be made based on visitation data for subsequent years. It is estimated that the Needles District received 11,195 visitors in 1969 and 37,497 visitors in 1973.

The group of peer Parks for Canyonlands National Park consists of Arches, Capitol Reef and Mesa Verde National Parks and Colorado National Monument. The combined visitation of these four Parks increased from 1,272,800 in 1969 to 1,478,600 in 1973. As shown below, the increase in visitation at the Needles District was 189 percent more than the increase experienced at the Peer Parks in a four year period.

	Needles	Peer Parks
1969 estimated visitation	11,195	1,272,800
1973 estimated visitation	37,497	1,478,600
Ratio of increase in visitation - 1973 divided by 1969	3.35	1.16
Adjusted increase in visitation at Needles - Canyonlands NP	3.35 / 1.16 = 2.89	
The increase in visitation at the Needles District was 189 percent more than the increase experienced at the Peer Parks		

Of the peer Parks for Canyonlands, Arches National Park had a significantly higher increase in visitation than the other peer Parks (Arches increased 69.1 percent in four years from 1969 to 1973) . If Arches is used as a sole Peer Park, the increase in visitation at the Needles District was 98 percent more than the increase experienced at Arches in the four year period.

	Needles	Arches as Peer Park
1969 estimated visitation	11,195	162,600
1973 estimated visitation	37,497	274,900
Ratio of increase in visitation - 1973 divided by 1969	3.35	1.69
Adjusted increase in visitation at Needles - Canyonlands NP	3.35 / 1.69 = 1.98	
The increase in visitation at the Needles District was 98 percent more than the increase experienced at Arches		

Canyonlands National Park – Island in the Sky District

The access road leading to the Island in the Sky District (Utah State Route 313) is a 33 mile long road extending from U.S. Route 191 to Grand View Point. The first 14 miles of this road, which provided access to Dead Horse Point State Park, was paved prior to 1965. The remainder of the road (19 miles) leading to Island in the Sky and Grand View Point was paved during the winter of 1985 – 1986.

Visitation by District in Canyonlands is available for the mid-1980's. The Island in the Sky District received 42,479 visitors in 1983 and 80,104 visitors in 1987.

The group of peer Parks for Canyonlands National Park consists of Arches, Capitol Reef and Mesa Verde National Parks and Colorado National Monument. The combined visitation at these four Parks increased from 1,503,216 in 1983 to 1,994,540 in 1987. As shown below, the increase in visitation at the Island in the Sky District was 42 percent more than the increase experienced at the Peer Parks in a four year period.

	Island in the Sky	Peer Parks
1983 visitation	42,479	1,503,216
1987 visitation	80,104	1,994,540
Ratio of increase in visitation - 1987 divided by 1983	1.89	1.33
Adjusted increase in visitation at Island in the Sky - Canyonlands NP	1.89 / 1.33 = 1.42	
The increase in visitation at Island in the Sky was 42 percent more than the increase experienced at the Peer Parks		

Vistation to the Island in the Sky District subsequently increased to 114,278 visitors in 1988 and 150,641 visitors in 1989. The 1989 visitation was three and one-half times the 1983 visitation.

Natural Bridges National Monument

Natural Bridges National Monument is served by a network of roadways in southeastern Utah. Utah State Route 95 extends for 124 miles from U.S. route 191 near Blanding to State Route 24 at Hanksville. Utah State Route 261 connects Route 95, near the Monument with U.S. Route 163 near Mexican Hat, a distance of 34 miles. Utah Stae Route 275 is a five mile long access road connecting Route 95 with the Monument's visitor center.

The above-described network of roadways was paved in a somewhat piecemeal fashion from about 1968 to about 1976 (there is still one unpaved section a few miles long). Because of the piecemeal fashion, it is not possible to state that paved roadways reached the Monument in a specific year. It is possible, however, to observe a long-term trend, beginning before (essentially) any of the roads were paved, and ending after the network was completely hard-surfaced.

Natural Bridges' annual visitation in 1964 was 10, 500. Fifteen years later, in 1979, the visitation was 78,564.

The group of peer Parks for Natural Bridges consists of Arches, Capitol Reef, and Mesa Verde National Parks. The combined visitation of these three Parks increased from 536,600 in 1964 to 1,032,415 in 1979. As shown below, the increase in visitation at Natural Bridges was 289 percent more than the increase experienced at the Peer Parks in a fifteen year period.

	Natural Bridges	Peer Parks
1964 visitation	10,500	536,600
1979 visitation	78,564	1,032,415
Ratio of increase in visitation - 1979 divided by 1964	7.48	1.92
Adjusted increase in visitation at Natural Bridges National Monument	7.48 / 1.92 = 3.89	
The increase in visitation at Natural Bridges was 289 percent more than the increase experienced at the Peer Parks		

Hovenweep National Monument

Hovenweep National Monument is served by a network of state and county roadways in southeastern Utah and far southwestern Colorado. As recently at 1992 there were no paved roads within 10 miles of the main unit (Square Tower Ruin) of Hovenweep. In that year San Juan County (Utah) paved one of the roads leading to Square Tower Ruin.

It is interesting to note that the Superintendent's report for 1992 states, after reporting that the road has been paved, that "The monument is experiencing a change in the kind of visitor that comes here, from the independent type to one that requires more in the way of services."

Subsequent to 1992 additional roadways in the network serving Hovenweep were paved in San Juan County and through McElmo Canyon in Colorado. Each of these roads was paved by the late 1990's. There remains one unpaved 20 mile approach road serving Hovenweep from the northeast, from U.S. Route 191 at Pleasant View, Colorado.

Because multiple paved approaches to Hovenweep were completed over a period of years, it is difficult to show an effect on visitation over the short term. However, like Natural Bridges National Monument, it is possible to observe changes in visitation over a period beginning before the nearby roads were paved, and ending after most of the roads were completely hard-surfaced (the one exception being the road to Pleasant View).

Hovenweeps's annual visitation in 1989 was 26,798. Ten years later, in 1999, the visitation was 47,593.

The group of peer Parks for Hovenweep consists of Mesa Verde and Arches National Parks, and Canyon de Chelly National Monument. The combined visitation of these three Parks increased from 1,756,961 in 1989 to 2,357,764 in 1999. As shown below, the increase in visitation at Hovenweep was 32 percent more than the increase experienced at the Peer Parks in a ten year period.

	Hovenweep	Peer Parks
1989 visitation	26,798	1,756,961
1999 visitation	47,593	2,357,764
Ratio of increase in visitation - 1999 divided by 1989	1.78	1.34
Adjusted increase in visitation at Hovenweep National Monument	1.78 / 1.34 = 1.32	
The increase in visitation at Hovenweep was 32 percent more than the increase experienced at the Peer Parks		

Summary of Findings for Six Study Parks

Each of the six Study Parks (seven locations when the two Canyonlands Districts are considered) experienced a substantial increase in visitation, apparently related to roadway improvements. These substantial increases are after adjustment for trends in visitation in other nearby Parks (Peer Parks). The table on the following page summarizes the findings from the six Study Parks.

Although none of the Study Parks provides a perfect match to conditions at Chaco Culture National Historical Park, all of the Study Parks had the most important

characteristic – a roadway being improved from a graded gravel or dirt surface to a hard-surfaced road.

Taken as a group, these seven examples suggest the likelihood of a substantial increase in visitation if, and when, the access road to Chaco Culture National Historical Park becomes hard-surfaced.

STUDY PARK	YEAR THAT ACCESS ROADS WERE IMPROVED	LENGTH OF ROADWAY IMPROVEMENT	INCREASE IN VISITATION AFTER ADJUSTING FOR REGIONAL TREND
Capitol Reef National Park	1957	6 miles	575 percent increase in four year period
Canyon de Chelly National Monument	1959	34 miles	83 percent increase in four year period
Navajo National Monument	1965	10 miles	571 percent increase in four year period
Canyonlands National Park - Needles District	1971	38 miles	189 percent, or 98 percent, increase in four year period, depending upon Peer Parks selected
Canyonlands National Park - Island in the Sky District	1985	19 miles	42 percent increase in four year period
Natural Bridges National Monument	~ 1968 to ~ 1976		289 percent increase in fifteen year period
Hovenweep National Monument	1992 to ~ 1996		32 percent increase in a ten year period

The experience at the six Study Parks suggests that many visitors make a decision to visit, or not visit, a Park based upon the type of road surface (unpaved versus hard-surfaced / paved) on the road leading to the Park. Most visitors, in their trip planning, rely on recently published highway maps and road atlases to determine whether a road is paved or unpaved. As access roads to the six Study Parks began to appear as paved on highway maps, travelers made the choice to visit these Parks. It is expected that a similar phenomenon will occur after the access road to Chaco is hard-surfaced.

Although the “dry river bottom” crossing of Escavada Wash is planned to remain as a dry river bottom crossing, this fact will be unknown to those doing trip planning with the aid of highway maps. Those travelers will make their decision to travel to Chaco based upon their observation that a hard-surfaced road leads to the Park. The fact that there will be no bridge across Escavada Wash is not expected to be a factor in the initial decision to visit Chaco. The unbridged crossing will likely impede visitation only in the same way that it now does – when a traveler arrives at a flooded crossing.

Among the seven examples, there is a substantial range in the increase in visitation, from a 32 percent increase over ten years at Hovenweep, to increases of 571 percent and 575 percent over four years at Navajo National Monument and Capitol Reef National Park.

The Study Park with the most recent experience is Hovenweep National Monument, which experienced an increase of 32 percent (relative to its Peer Parks) over a ten year period. There are multiple reasons that Chaco Culture National Historical Park could experience a larger increase in visitation than did Hovenweep if the Chaco access road is improved to a hard surface.

1. Chaco enjoys a significantly more renowned reputation than does Hovenweep. Chaco is a World Heritage Site, has been the subject of multiple television documentaries, and has much larger archeological sites than does Hovenweep. For these reasons it is a more attractive location to visit.
2. Chaco has a much larger “local” area population to draw from. When the roads to Hovenweep were paved, the surrounding counties within a 175 mile drive via paved roadways had a population of 369,000 (2000 Census). The population of the counties surrounding Chaco, within a 175 mile drive via hard-surfaced roads, is 1,216,000 (2000 Census).
3. Chaco is located closer to a major U.S. numbered highway with higher traffic volume than is the case for Hovenweep. The Chaco visitor center is located 21 miles from U.S. 550, a four-lane highway. Hovenweep is located 30 miles from U.S. 191 in Utah, 40 miles from U.S. 491 in Colorado, and 39 miles from U.S. 160 in Colorado. All three of these U.S. numbered routes are two-lane roads.

IMPACTS ASSOCIATED WITH PROPOSED ROADWAY IMPROVEMENTS

Based on experience at other Park Service units, it is anticipated that improved access may lead to increased visitation to Chaco. It is also anticipated that improved access will also result in changes to the types of vehicles coming to Chaco. Currently, very few recreational vehicles (motor homes and travel trailers) choose to visit Chaco because of the unimproved road. A hard-surfaced road would remove this impediment.

An increase in visitation would have a multitude of impacts on the Park. Although this is not a complete list of impacts, they include the following.

Park Infrastructure

- Existing water supply facilities may not meet an increased demand.
- Existing water treatment facilities may not be able to handle increased wastewater production.
- The existing electric supply, which is barely adequate to meet existing needs, may not meet an increased demand.
- Existing parking lots have been observed to be overflowing during peak season at current levels of visitation. Increased levels of visitation would exacerbate the problem. And, because greater numbers of recreational vehicles would be anticipated, each of which consumes more parking space than a passenger car, the deficiency in parking spaces will be further amplified.
- The capacity of comfort stations may be inadequate for increased visitation.

- The existing campground has very few sites designed to serve recreational vehicles; most of the pullouts are too small to serve more than the shortest motorhomes or travel trailers.
- The existing campground may not have enough sites to serve demand. There are no other nearby campgrounds to serve the public.

Park Staffing

Existing Park staffing may be inadequate to serve a higher level of visitation.

Visitor Experience

The current level of visitation allows the Park to be managed in a way that allows visitors substantial freedom to visit archeological sites unaccompanied by a uniformed ranger.

The levels of visitor use allow visitors a relatively quiet enjoyment of their Park experience. Higher levels may require a different form of visitor management to protect the cultural resources. A different form of management, or even a simple increase in the level of visitation will change the nature of the visitor experience.

Cultural Resources

Increases in visitation may result in increased adverse impacts to the Park's cultural resources.