

**HUBBELL TRADING POST
NATIONAL HISTORIC SITE
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Resources Management Plan

and

Environmental Assessment

Hubbell Trading Post **National** Historic Site

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11/05/82
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Introduction

The Resources Management Plan (RMP) for Hubbell Trading Post is a key planning document describing constraints upon Park Management as well as outlining required research work projects needed to best maintain the historical character and integrity of this site.

The RMP is an integral part of the General Management Plan and the Statement for Management. These plans dovetail together and identify the problem area as they relate to the park's resources. The objectives stated in the Statement for Management are supported by identified research proposals and resource needs in the RMP.

In the past 15 years since Hubbell Trading Post was established as a National Historic Site some resource preservation work has been accomplished. However, much of the important work that will affect the future management of this site is yet to be done. This historic site is at its infancy in terms of getting the necessary research accomplished to build on the interpretive themes announced in the Interpretive Prospectus. Historic Structures Reports for the historic buildings need to be completed so we can respond efficiently and effectively to negate any resource degradation that is occurring today. A cyclic maintenance program that we are trying to initiate is dependent on these reports so we do not alter the historic fabric unnecessarily.

Hubbell Trading Post National Historic Site is a primary cultural resource that is truly unique in the National Park system. No other park has an active living history presence as the operation of the Trading Post does.

All of our research proposals and **work** projects are designed to complement and enhance the operation of the Trading Post.

As a cultural resource, we are governed by several legislative mandates which influences the operation of this historic site. They are:

1. The Antiquities Act of 1906
2. The National Parks Service Organic Act of 1916
3. The Historic Sites Act of 1935
4. The National Historic Preservation Act of 1966
5. The National Environmental Policy Act of 1969
6. Executive Order 11593 on May 13, 1971
7. The Historical and Archeological Data Preservation Act of 1974
8. Public Law 89-148 dated August 28, 1965
9. Archeological Resources Protection Act PL 96-95

Management Objectives

1. Protect the natural and cultural remains from loss through programs of stabilization, maintenance, protection, and as necessary, restrictions covering the allowable types and degrees of visitor and other uses of the site.
2. Perpetuate the concept of a "living" trading post that continually responds to the current needs of local Navajos and visitors while maintaining quality of merchandise and preserving the historic appearance and atmosphere.
3. To enable visitors to gain insight into the park's unique cultural significance through a varied and balanced interpretive program that focuses on intercultural exchanges which have occurred and will occur among the Indians, traders, and visitors.

4. Promote the National Park Service mission of natural and historical resource conservation by cooperating with other Federal agencies, the Navajo Tribe, the State of Arizona and the Ganado community.

Part I

Cultural Resources Management Program

Hubbell Trading Post National Historic Site

Overview and Needs

Purpose of the Park-

Hubbell Trading Post National Historic Site as established by Public Law 80-148, August 28, 1965, to preserve the structures and lands associated with, and content of, and to continue operation of, a "Living". Trading Post founded in 1876 and continuing in operation to this day.

The purpose of the park is further delineated in the National Park Service Organic Act of 1916, as: "To conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations."

Data Base and Resource Problem Needs

Our data base can be characterized by saying that we have enough information to present a part of the Hubbell story but an incomplete story in terms of who the family was, their impact on the reservation and why their business thrived for so long. Our information base is not thorough enough to totally implement our Interpretive Prospectus nor are we able to develop or expand on our interpretive themes in the Visitor Center in terms of displays and exhibits.

From a resource preservation standpoint we need to redirect our energies and develop a maintenance staff that is resource oriented and which can react to specific problems with our historic buildings. Historic Structures Reports and Preservation Guidelines are either incomplete or non-existent thus handicapping our response in dealing with identified resource problems.

In the past there has been *too* much dependence on using the Preservation Crew to solve our problems for us. Gone are the days for this luxury and now is the time to develop an in-house capability for response.

As has been illustrated here, we lack the necessary information needed to react interpretively and from a maintenance perspective. With the implementation of this plan we can attack all our problems on a positive and professional basis and build our programs to the point where the Hubbell story is complete and resource degradation is not a worry.

Accomplishment to Date

The past few years has seen some strides in developing an information base. Historic Structures reports were begun, furnishing plans were done for the barn and the home, a soil survey was completed and much resource preservation work was accomplished on several of the historic structures.

People in the past have interviewed local residents about the Hubbell operation and the Hubbell Papers have been reviewed and catalogued at the University of Arizona.

The emphasis has been to develop the resources available to do the required research that we are asking for now. Much of what we need is to collate that information and to put it in a useable format in addressing several of our problems.

Hubbell Trading Post National Historic Site was established in 1965 and still some of the basic research is needed so we can move ahead with the development of our park programs. This plan hopefully provides direction for management to pursue.

Overview and Needs

In terms of our Resources Management Program for Hubbell Trading Post, we are deficient in two areas of resource preservation: preserving our cultural resources and conducting basic research. These are the two areas that we will focus on for the next five years. We will accomplish all our resource preservation projects as identified in the plan which includes preservation of farm wagons and equipment, preservation of the bunkhouse (HB-5) and preservation of the sheds and corrals complex. Work will be accomplished by the regional preservation crew, the Hubbell maintenance crew and 1.2 manyears of day labor help. These projects are worth \$110,000.

As a part of this preservation emphasis, historic structures reports and a preservation guide will be written as a part of these projects. We are also hopeful of completing two very important research packages that are crucial in the implementation of our Interpretive Prospectus. They are the Management of the Farmlands Study and the Ethnohistory and Hubbell Business Study. Museum displays, exhibits and the interpretive themes for Hubbell cannot be fully developed until this research is done. This of course means we are not meeting the basic mandate of orientating our visitors fully to the total resource. Costs for these studies are a total of \$49,000 and two manyears of labor to accomplish the plans.

Cultural Resources Management Actions by Priorities

A. Critical Problems . (Potential Significant Resource Problems)

Projects which require **immediate** attention to **protect** known or newly discovered cultural resources are given the highest priority (Resource Preservation)

C-01 Sheds and Corrals Complex

C-02 Farm Equipment

C-03 Stabilization of **HB-5** (Bunkhouse)

C-04 Management of Farmlands

C-05 Management of Museum Collections

B. Less Significant Problems

The second priority grouping recognizes savings and additional preservation through improved methods of operation (Management Decisions).

C-07 Preservation Guide

C. Data Base Information

The third category of priorities provides for increased knowledge of cultural resource **values**. This information will better satisfy the interpretive needs of the visitor

C-06 **Research** - Ethnohistory and Hubbell Business

C-08 Preservation of Archeological Resources

C-09 **Historic** Structures Reports

C-10 Furnishing **Plans**

C-11 Administrative History

C-12 Carrying Capacity **Study**

Cultural Resources

Activities and Five Year Programming Sheet

Project Title	Priority	1383 M.Y. Cost	1984 M.Y. Cost	1985 M.Y. Cost	1986 M.Y. Cost	1987 M.Y. Cost	Total Cost
Sheds and Corrals Complex	1	.6 \$35,000	.6 \$35,000				\$ 70,000
Farm Equipment	2	.8 \$35,000					35,000
Stabilization HB-5	3	.1 \$ 5,000					5,000
Management of Farmlands	4	1.0 \$24,000					24,000
Management of Museum Collections	5	2.0 \$41,000	2.0 \$41,000	2.0 \$41,000	2.0 \$41,000		205,000
Research - Ethnohistory Hubbell Business	6		1.0 \$25,000				25,000
Preservation Guide	7			1.0 \$35,000			35,000
Preservation of Archeological Res.	8			.5 \$ 9,000	.3 \$ 5,000		14,000
Historic Structures Reports	9			1.0 \$25,000	1.0 \$25,000		50,000
Furnishing Plans	10				.6 \$18,000		18,000
Administrative History	11					.7 \$15,000	15,000
Carrying Capacity Study	12					.3 \$ 7,000	7,000

Project Statement Title: Sheds and Corrals Complex

C-01 (formerly project 16)

I. Statement of Problem

There has been little stabilization done on the sheds and corrals complex since the National Park Service took over Hubbell Trading Post in 1967.

The entire structures **are** in danger of collapsing. Along with the stabilization work, Historic Structures Reports need to be completed to document the use of this part of the resource.

A. Background Information

The sheds and corrals played a major part in the Hubbell's agricultural enterprise. It **was** an active area: at times there were up to 10,000 head of sheep in the corrals **and** pasture, hay stacks filled the barnyard, and a variety of farm machinery was stored and protected.

Today the sheds and corrals are in extremely poor condition with walls leaning and collapsing due to rotting timbers. Many historic objects, including the farm machinery, are still stored in this area. Due to the condition of the sheds, these structures offer little protection. This lack of protection is causing accelerated deterioration of the farm equipment and other items stored in the complex. We are losing a cultural resource which contributes to the interpretation of the Hubbell story.

II. Alternative Actions and Probable Impacts

A. Current Management Action (No Action)

Because of the lack of resources nothing has been done to stabilize this area. If a wall is in **danger** of collapsing we try to **shore** it up as much as

possible to delay the inevitable. This is only a preventive action and does not solve the problem. Limited stabilization has been done in the past but not enough to deter the degradation of this resource.

B. Major Stabilization of Structure - Recommended Action

There is only one feasible alternative to protecting the sheds and corrals complex. We need a major stabilization effort. After this is done we need to set up a routine cyclic maintenance program to assure that these structures maintain their integrity and that major problems do not occur in the future.

Several things need to be done to complete the stabilization effort of caring for the sheds and corrals-

1. Complete Historic Structures Reports. 10-238 Pkg. #127
2. Stabilization of sheds and corrals complex identified in the Program Formulation System for Planning, Studies, and Development Pkg. A-17 for \$35,000. 10-238 Pkg. #142 \$35,000.
3. Initiate Cyclic Maintenance Program to sustain this resource.

Project Statement Title: Farm Equipment Stabilization

C-02 (formerly project 17)

I. Statement of Problem

The farm equipment **has** had little protection from a conservation/preservation standpoint. A major part of the farm machinery collection is located out-of-doors in the Hubbell compound. Due to the climatic extremes of winter and **summer**, deterioration is accelerated and there is danger of losing this cultural resource. This part of our resources is unprotected due to the lack of proper storage facilities. Indications are that our storage problem will be remedied in **FY-84** with the construction of a new building for storing this part of the collection.

A. Background Information

Since the National Park Service acquired Hubbell Trading **Post** National Historic Site, there has been no attempt to preserve the farm equipment due to lack of funds or higher priority resource needs. Farming was an important activity at Hubbell. Loss of the farm machinery **would** make interpreting this **aspect** of daily activities **more** difficult. The farm equipment was acquired for different reasons: some pieces were actually used in the farming operation, while others **may** have been obtained by Roman Hubbell as collector's items. Until a farm lands study is completed, it will be impossible to determine for **what purpose** the machinery was purchased.

II. Alternative Actions and Probable Impacts

A. Current Management Action (No Action)

Nothing is currently being done to preserve the farm equipment. This action will result in loss of the machinery. A storage facility for this part of

the collection will be constructed in FY-84 through the PRIP Program.

B. Recommended Action

Determine which pieces of farm equipment were used during the fanning period of 1900-1930 through the initiation of a study. We also need to start and maintain a preservation program for the farm equipment. This project is considered a high priority for Hubbell Trading Post National Historic Site, and is on the Regional list of priorities of significant resources needing attention.

1. 10-238 issued and active for study of farm equipment (Pkg. #128) for \$9,000.
2. Preservation of farm equipment and machinery is identified in the Program Formulation System for planning, studies and development Pkg. A-52 for \$60,000. 10-238 submitted and approved Pkg. #140 for \$75,000.

C-03

I. Statement of Problem

The bunkhouse is slowly deteriorating and is in need of major stabilization work. One interior wall and one exterior wall have major fractures through which daylight **can** be seen. This is one of the historic buildings within the compound that desperately needs stabilization.

A. Background Information

The bunkhouse (HB-5) housed *some* of the Hubbell employees who worked in the cultivated **fields** and in other jobs around the Hubbell compound.

The building **has** been used for storage since the National Park Service acquired the site. No preservation or stabilization work has been done on this building. This building is in the worst shape of all buildings in the Hubbell compound **yet** it is on **the** List of Classified Structures and warrants the necessary attention that the LCS designation demands.

II. Alternative Actions and Probable Impacts

A. Current Management Action (No Action)

To continue to do no stabilization work is unacceptable. Eventually the building will deteriorate beyond repair and we will lose a part of our cultural resource and a means by **which** to interpret the Hubbell story.

B. Stabilization of HB-5 - Recommended

Stabilize and protect the building to prevent further deterioration.

Establish a cyclic maintenance program which will curb further deterioration.

This will **preserve** the building as required by **legislative** mandates and enable us **to use it for storage** and/or other appropriate **purposes.**

A 10-238 will be developed to **request** perservation and stabilization work.

Project Statement Title: Management of Farmlands Study

C-04

I. Statement of Problem

Approximately 110 acres of farm land are lying fallow and becoming overgrown with bindweed and tumbleweed and thistle. Many of the irrigation system's headgates are inoperable, berms have broken down, remaining fruit trees need pruning and are dying from lack of water and a prairie dog colony has become well established and is growing. A determination needs to be made whether we will put the fields back into cultivation or not. The farm lands study would address this issue and would provide us the background information that we need to retain our water rights with the Navajo Nation.

A. Background Information

Information regarding the farming operation at Hubbell Trading Post is sparse and scattered. Various interviews with local informants and Hubbell family members indicate that Hubbell started farming the area in the early 1900's and continued farming to some extent into the late 1920's or early 1930's. In the early years, Hubbell dry-farmed the area. Then he funded part of the construction of the Ganado Lake dam in conjunction with the federal government. Irrigation ditches were built throughout Ganado. Hubbell used this water by adding an irrigation system to his land, including a holding reservoir, ditches, head and weir gates, and terraced fields. Crops planted over the years included alfalfa hay, corn, potatoes, chilies, beans, and apple and peach trees. Some of the crops, especially the alfalfa Hay, he sold in the trading post. Others he used to feed his livestock, workers, and family.

Although large scale farming had ceased by the 1930's, water from Ganado Lake was still used for the vegetable garden near the Hubbell home until the mid 1970's. At that time the irrigation system at Ganado Lake became inoperable and has up until this time not been repaired.

Within the last year pressure has been put on the Navajo Tribe by the State of Arizona and the Federal Government to develop the water resources. Presently there is an effort to reactivate Ganado Lake and its sundry activities such as irrigation for the community farms. When this is completed, the Navajo Tribe hopes to develop a farm cooperative which will be the clearing house for water allocation, sharing of machinery and maintaining the water system.

It is imperative that we are able to identify our water needs based on estimated cultivated land that we may have in the future if any.

II. Alternative Actions and Probable Impacts

A. Current Management Action (No Action)

No cultivation is taking place in the fields. Nothing is being done to save the fruit trees, curb the growing prairie dog colony, repair the irrigation system, or clear the exotics. A proposal for a farmlands study was submitted for funding to Southwest Parks and Monuments Association in early 1982. The Board of Directors will vote to fund or not to fund the project in the Board meeting in November, 1982.

B. Alternative Actions - No Action

We can maintain the present status quo in the use of the farmlands which means leaving them as they are; but this does not solve a long range problem

of managing 110 acres of land that was cultivated for approximately thirty years. If the irrigation system is reactivated and we cannot respond in terms of identifying our water needs we may forfeit any water rights we had in the past and will have to renegotiate with the Navajo Tribe.

C. Complete Farmland Study - Recommended Action

Thoroughly research **and** report the extent and nature of the Hubbell operation. Under the mandate of maintaining a "living" trading post atmosphere should we consider putting the fields back into cultivation as in past **years?**

This study will solve a couple of **problems** for us. We will have a **basis** to say to the Navajo Tribe "Yes, we need 2 1/2 acre feet of water per acre of land cultivated not to exceed 400 acre feet as in the past." Also we are dirt poor in knowledge about this **aspect** of the operation. Completion of this study will greatly enhance our interpretive programs and help us formulate a plan of action to preserve this part of our **resources** which are **now** being neglected.

A 10-238 has **been** completed and is active; Pkg. #163 for \$24,000.

This package may have to be revised.

Project Statement Title: Management of Museum Collections

C-05

I. Statement of Problem

The collection at Hubbell Trading Post National Historic Site consists of approximately 100,000 ethnographic, archeological, historic and fine arts objects. Continuous management is required to bring the collection up to established Park Service Standards and to professionally maintain it at those standards. Additional storage is also needed to properly care for and store this rather extensive collection,

A. Background Information

The collection at Hubbell Trading Post National Historic Site is the largest and most valuable in the Southwest Region. Items are stored under varying conditions; in a relatively controlled storage room, in outbuildings, and out-of-doors. Items are on permanent exhibit in the Hubbell Home and the Trading Post. Both HB-1 (Trading Post) and HB-2 (Home) are without environmental controls. Fluctuations in temperature and relative humidity are severe (during winter in the Trading Post, the temperature ranges from 60 F to 90 F daily.) Special project money has afforded the opportunity to do contract conservation on many objects. However, these objects, if exhibited, are returned to the same environment that caused the deterioration initially.

Cataloguing of objects is time consuming. Only 6,500 items have been catalogued to Standards. There remain approximately 93,500 objects.

At the current rate, with a full-time Curator and one seasonal on the staff, it will take 93 years to completely catalogue the collection. Until that time, there can be no complete accountability.

Because of the limited staff, progress in upgrading the care and maintenance of the collection is very slow. Much time is spent performing basic maintenance and management: housekeeping, periodic inspection of individual objects, inventory, loans, gifts, reports, administrative duties, monitoring environment, on-site conservation and upgrading storage facilities. Little time remains for cataloguing, documentation, and resources.

II. Alternative Actions and Probable Impacts

A. Current Action

Progress is being made in improving the storage of objects, housekeeping and maintenance, records, contract conservation, and cataloguing. We are maintaining a minimum response in caring for the Hubbell collection which means we will lose historic fabric.

B. Continue Current Management Action

Continue minimum maintenance and care of the collection. This will result in the possible loss of historic material/fabric: resources that are nonrenewable. No complete accountability of the collection will be feasible.

C. Bring Collection up to National Park Service Standards - Recommended Action

To bring the entire collection up to Park Service Standards and to maintain it professionally, more funds and person-hours are required and the following need to be included in the management

1. Update and revise the Collection Management Plan (1975) to reflect changes that have occurred; (i.e. enlarged storage area,) and to include the **Management** of collections in the Trading Post.

2. Monitor the temperature and relative humidity of the storage and **exhibit** areas. Establish a stable controlled environment through **the** installation of appropriate equipment. (Due to extreme conditions, Trading Post **will** have top priority)

3. Install **and** maintain a museum security system appropriate to the significance and value of the collections. Appraise the objects periodically so that the documented value reflects the current market.

4. Accession and catalogue articles in accordance with National Park Service museum records procedures. More person hours required than currently available.

5. Exhibit items to minimize deterioration and handling while maintaining the historic atmosphere (without visual intrusion of display **supports**).

6. **Construct** additional storage **facility** with environmental control;; to eliminate storage of collection in outbuildings and meat room. This will bring storage facilities up to National Park Service standards **if** environmental controls are **also** installed in the Hubbell Home and Trading Post.

7. Provide **an-site** or contract conservation of objects to maintain the items in **satisfactory** condition for their preservation and intended use.

8. Research available sources to authoritatively identify and authenticate each object and its historic context.

9. Continue periodic inspection of individual objects and routine maintenance; prepare and follow a Maintenance Manual that outlines scheduled housekeeping and cyclic conservation requirements,

10. Research the feasibility of computerizing the collection making sure it will be compatible with the National Catalogue system. Implement the **system**.

A-10-238 has been submitted **and** is active for an additional storage facility; Pkg. #150, dated 06/15/81 for \$100,000 estimate. This is **pending** amendment of D.C.P.

A 10-238 has been **submitted** and is pending approval for additional conservation **work** for \$125,000.

I. Statement of Problem

A complete and accurate research of the history of Hubbell Trading Post is necessary to properly interpret the resource to the public. Decisions regarding the management of the cultural resources and continuing business of the trading post are also affected by knowledge of its history.

A. Background Information

The research conducted on Hubbell Trading Post thus far has been piecemeal and incomplete. There are approximately 100,000 papers related to business transactions of the Hubbell business in the archival collection at the University of Arizona. They have not all been read and analyzed with a summary written about their contents. Some 50 interviews of local inhabitants were conducted by the Curator of Hubbell Trading Post National Historic Site in 1972, but the information gained has not been collated and summarized. There are numerous other possible informants in the local area, but age is taking its toll and soon this oral information will be lost permanently. There are also surviving Hubbell family members from whom information can be obtained. Taped interviews have been conducted with both Dorothy Hubbell and LaCharles Eckel, but the information should be collated with other information and interviews. Other information remains scattered in library resources, county historical records, the records in the Navajo Tribal Research Section, Saint Michaels Mission, and other areas.

II. Alternative Actions and Probable Impacts

A. Current Management Action (No Action)

There is no research being done. Staff members must consult many resources on site for information.

The information base for interpretive programs and resource management decisions is incomplete, thus contributing to an incomplete and inaccurate interpretation of the site to the public. No interpretive exhibits or publications will be developed without proper research. Resource management and business operation decisions will be hampered by lack of historical information. Information known by individuals will be lost permanently.

B. Research History and Produce Report - Recommended Action

Comprehensive research should be completed with the information concentrated and organized into a written **report** which will be comprehensible to the layman. The report will be invaluable to interpretive planning, as future interpretive exhibits and programs depend on prior thorough and accurate research. Decisions regarding the management of the cultural resources and the present trading business can be made more accurately once this information base is provided.

This project consolidates three research proposals to eliminate cost and time. Inclusive of this proposal are the Ethnohistoric Study, the Post 1930's Study and the Hubbell Business Study. There is so much overlap that these three areas can be covered in one study.

The following **are** questions which need to be **answered** through this research:

1. How did Hubbell's background and personality affect the development of his business and relationship with the Indians?

2. What were the intercultural dynamics involved in trader-Indian interactions? Specifically, what were some of the ways Hubbell was affected by the Indian culture as a trader and how did he affect the Indian culture? ,
3. How did the development of events in Ganado relate to the development of Hubbell Trading Post?
4. How was Hubbell's business affected by national events, such as the Great Depression, stock reduction, World War I and II, the coming of the railroad, automobiles, etc?
5. What was the development and history of the complex of trading posts which Hubbell owned or operated? What was the nature of the intercultural relations in the communities where these posts were located-- Oraibi, Cornfields, Chinle, Keams Canyon, etc?
6. How did the Ganado trading post relate to these other businesses?
7. What was the administrative and business history of the Ganado post from its beginning to 1967 when the National Park Service purchased it? Such aspects as the transportation systems, marketing, advertisement, nature of goods and competition with other traders will be considered. Comparisons between the operation of the Ganado post and other trading posts will be drawn.
8. What roles did the entire Hubbell family have in operating the business, such as Roman and Dorothy Hubbell, Lorenzo Jr., and other relatives?

9. How **did** Hubbell's multi-roles as politician, sheriff, and host affect the development of **his** business? How did his playing host to international and national **visitors** affect Indian culture and his business?

^a
The history of the farming **operation** need not be addressed, as this is proposed in the **Farmlands** Management Project.

A 10-238 for researching the Post 1930's to 1967 **has** not been submitted.

A 10-238 for Ethnohistoric Study submitted and approved, Pkg. #159 for \$23,000.

A 10-238 for Hubbell Business **Study** submitted and approved, Pkg. #158 for \$35,000.

These studies will be **covered** under one 10-238 and will be resubmitted for perhaps half the cost of doing **them** separately.

Project Statement Title: Historic Preservation Guide

C-07

I. Statement of Problem

The historic structures of Hubbell Trading Post are constructed of material such as adobe, rock, and **wood**. Because of the mixture of these three materials we have continuous needs for repair. We *are* trying to set up a cyclic maintenance program but **are** handicapped in that a preservation guide is nonexistent for our historic structures. We need to know how to proceed and how to react in terms of dealing with these historic resources.

A. Background Information

There is a variety of historic structures within the historic compound that were constructed in the late 1800's and early 1900's. They range in complexity from a multi room house to the sheds and corrals area. These structures are in various states of repair where major stabilization work has been done (HB-3-the barn) to the sheds and corrals complex where little to no work has been accomplished other than to **keep** the fences from falling down.

There is a variety of **problems** that need attention from a cyclic maintenance standpoint so they do not become major. These include leaking roofs, cracked walls, eroding stucco, peeling paint, viga degradation, crumbling walk ways and walls and other nuisances that **make** a place look run down.

In the past, the Hubbell maintenance crew has been reluctant to work on the historic resources for fear that will corrupt the historic fabric. Working on these resources has been considered the eminent domain of the Regional preservation crew.

Many projects that could be accomplished by the Hubbell maintenance crew are not being done simply because there are no guidelines to follow. A preservation guide worked out between the Region and Park would go a long way in reacting to ~~deter~~ resource corruption.

II. Alternative Actions and Probable Impacts

A. Current Management Action

Up until now we have reacted only to problems but have had little success in establishing a cyclic maintenance program. A better delineation of responsibility for certain types of projects has been worked out with the Regional preservation crew. We will attack more of the obvious problems and begin to compile a preservation guide to assist us in maintaining our resources. A more definite and in-depth guide will need to be done so the integrity of our resources is not corrupted.

B. Develop and Implement a Preservation Guide - Recommended Action

A Historic Structures Preservation Guide needs to be developed to identify major and minor problems. We need to develop a systematic approach so that minor problems are eliminated before they become major stabilization threats. With the development of a guide we can then begin to train our maintenance crew in some of the project type work that we are so dependent on Region to do for us. The whole idea is to develop a professional approach to maintaining our resources utilizing the system (106 and triple-X process) to our advantage as well as maintaining the historic integrity of our buildings.

A 10-238 has not been issued to date but will be done shortly.

Project Statement Title: Preservation of Archeological Sites

C-08

I. Statement of the Problem

An archeological survey^a of the area conducted in the fall of 1978 and the subsequent report identified 14 archeological sites within the boundaries of Hubbell Trading Post National Historic Site. All sites are subject to erosion caused by animal grazing, the action of the Pueblo Colorado wash, and weather. Vandalism of the sites is also possible.

A. Background Information

The cultural affiliations of the sites include prehistoric Basketmaker and Pueblo, historic Navajo, and historic Anglo-American. All sites have been disturbed to some degree by construction of buildings, trenching for pipelines, farming, and erosion. The Archeological Assessment recommends that no further work be undertaken on any of the sites, with the exception of the following, which, due to their locations, may be impacted by future development or severe erosion:

HUTR-1: The complex of 10 historic buildings and the associated surface and subsurface deposits make up this site. Both prehistoric and historic artifacts have been discovered within the area, especially when subsurface disturbance (trenching for gas and water lines) was monitored. The foundations of the Leonard buildings where Hubbell first started his trading business are also included in this site, with the potential of giving us more information regarding their original structure and use.

HUTR-1 has been heavily disturbed by subsurface trenching, construction, and plowing. Most recently, stabilization projects in the summer of 1982 required trenching between the Hubbell home and trading post and north of the Hubbell home porch.

HUTR-10 This Basketmaker 111-Pueblo I site is located along a 100 meter area on the western boundary. Part of the site was destroyed by the National Park Service in excavating fill dirt in 1971. The tributary arroyo which borders the site has contributed to the exposure and erosion of lithic and sherd scatter. Three burials have been excavated from slab-lined cysts since 1375, and possible pithouses have also been located. Although the Archeological Assessment states that the majority of this site lies outside our western boundary, the exact location of the boundary still remains unclear. Erosion of the site seems to have accelerated within the last two years.

HUTR-14 This Pueblo I-III site is located at the extreme southeast corner of the boundary. A dense concentration of sherds and lithic artifacts was recorded. An irrigation ditch begun by Hubbell was evidently rerouted to the north of the site when cultural material was encountered. The site has been disturbed by some farming and grazing.

HUTR-4 Known as the Sand Dune Site, this multi-component site dating from Pueblo III to contemporary Navajo and Anglo use borders the Pueblo Colorado Wash for about 100 meters. A tributary arroyo borders its west end. Although the Archeological Assessment identified no severe erosional problem, it has nonetheless become evident over the last several years that erosion has become severe. From April, 1979

to the present time about 4 feet of the bank fell into the wash below, taking with it some artifacts and parts of some features. In November of 1981, the Navajo Lands Group archeologist excavated the remains of a shallow pit house when evidence of a stone lined cyst appeared on the exposed bank edge and was in danger of being lost. Besides the effects of erosion, the site has also been disturbed at its east and west ends by the grading of shallow ditches.

HUTR-5 Wide Reed Ruin is a relatively large Pueblo III ruin with plazas, kivas, and over 50 rooms. It's located on the south bank of the Pueblo Colorado Wash just east of the entrance road bridge. It was partially excavated in the early 1970's to salvage data which was endangered by the cutting of the wash below. Backfilling and bank stabilization, including the placement of gabions below seem to have slowed down the erosion process. However, further erosion is possible and there is also a good opportunity for vandalism due to its location near the entrance road.

II. Alternative Actions and Probable Impacts

A. Current Management Action

All sites are monitored periodically throughout the year for evidence of further erosion and damage by vandalism. Plowing and ground disturbing activities are prohibited near all sites with the exception of HUTR-1 where stabilization work was conducted in the summer of 1982. This work was closely monitored by an archeologist. If a feature or concentration of sherds and lithics appears on the surface where there is visitor traffic, then dirt is piled on top of the area to cover the exposed feature or objects.

When other features are in danger of being permanently lost, such as along the bank of the Pueblo Colorado Wash at HUTR-4, Sand Dune Site, then the observation is brought to the attention of the Regional Archeologist and the areas are excavated as funds become available.

B. No Action

This alternative is unacceptable as it implies non-conformance with certain legislation, policies, regulations, and guidelines requiring us to preserve and protect archeological remains.

Recommended Action

Continued monitoring of these resources is essential. We will be alert to possible illegal excavations and will backfill any area to preserve it unless there is a determination made that excavation is necessary. There are two primary sites to be concerned about.

HUTR-10 As our western boundary is not clearly marked, it is hard to determine the appropriate actions for this site other than monitoring for erosion. The west boundary should be clearly marked. If the site or portions of it lie outside the park's boundary, then cooperative efforts with the Navajo Tribe should be undertaken to reduce erosion and/or salvage data. If the site lies within our boundary, then a thorough evaluation of the site should be made which will include recommendations for erosion control and/or salvage of the site.

HUTR-4 The rate of erosion of the Sand Dune Site should continue to be measured. This was accomplished several years ago by placing wooden stakes 10 feet from the edge of the bank and noting how much of

the **bank** disappeared the following year. Continuing with this system can produce a gross estimate of the rate of erosion. As full excavation of the site and **erosion** prevention can be very costly, excavation will continue on a salvage basis until enough data is accumulated so that a decision can be **made** whether full excavation or preservation in place is to occur.

A separate project for an Erosion Control Study proposes to study the effects of erosion on all archeological sites.

A 10-238 has **been** submitted and is active, Pkg. \$158 for \$120,000 for erosion control.

A 10-238 has been submitted and is active, Pkg. #129, for \$14,000.

Project Statement Title: Historic Structures Reports

C-09

I. Statement of Problem

Immediately after the National Park Service acquired Hubbell Trading Post National Historic Site, Historic Structures Reports were prepared for management of the buildings. These reports are incomplete and need detailed, up to date, information on the structural histories of the buildings, as well as a history of use and occupancy, and a documentation of the changing appearance of the grounds surrounding the buildings.

A. Background Information

Although Historic Structures Reports have been completed for most of the buildings in the Hubbell Historic Compound, these reports were prepared in the 1960's without the benefit of **data** that has become available subsequently through interviews with the Hubbell family members and through organization of the Hubbell Papers. **Through the years**, additional information about the structures has been gained through completed preservation work.

The grounds immediately surrounding the historic structures of the Hubbell **Compound** have changed throughout the historic period (1876-1967). Some of this information can be found in historic photographs and in family interviews, but we lack a comprehensive report of the changes.

II. Alternative Actions and Probable Impacts

A. Current Management

As historic preservation is completed, the Historic Structures Reports are updated, other than this, there is no research being conducted on building use and **occupancy** or on the changing appearance of the grounds;

B. Preparation of Historic Buildings Studies - Recommended Action

Prepare a study of the history of the construction, the use and occupancy of the buildings and the changing appearance of the grounds around each of the following structures: HB-1 through 13.

If the above studies were conducted and completed, the information gained would not only benefit the interpretive staff at Hubbell Trading Post National Historic Site but would also be useful to preservation crews in making decisions concerning preservation and stabilization activities and in the development of a cyclic maintenance program. Of utmost importance, management decisions on the use of these historic buildings will be greatly facilitated.

A 10-238 has **been** submitted and approved for Historic Grounds Study Pkg. #163 for \$3,000.

A 10-238 **has** been submitted and approve² for Historic Structures Review Pkg. #162 for \$46,000 over a **two** year period.

Project Statement Title:, Preparation and Implementation of Furnishing Plan
For HE-1, HB-2, HB-3

C-10

I. Statement of Problem

A study needs to be conducted to document how HB-1, HB-2, and HB-3 were furnished throughout their periods of historic use. Then a time period for furnishing each **structure** needs to be determined and an appropriate furnishing Plan prepared. Only after this process is completed will it be possible to furnish the Barn, ~~Home~~ and Trading Post as they should be.

A. Background Information

In 1972 a Furnishing Plan was written for the ~~Home~~ by Dave Brugge, then curator at Hubbell Trading Post National Historic Site. The time period **set** for the entire Home was Pre-1930 - to reflect, as closely as possible how it appeared when John Lorenzo Hubbell **was** living. Currently only the **Hall** and Bedrooms of the Home attempt to adhere to the 1372 plan. Some objects such as the woodburning stoves have not **been** replaced in the Bedrooms. Included in the plan many **features** (bathrooms, fireplaces) that were **co** - **structed** after 1930 were removed from these areas. The Bathroom, Maid's Room, Dining Room, and Cook's Room are either furnished to the 1967 period or not furnished at all. The kitchen has a variety of time periods included in **it thus** leading to an inaccurate portrayal of the Hubbell Home furnishings to the visitors. The Trading Post (HB-1) has never had a Furnishing Plan prepared. Objects have been rearranged since 1967 by various National Park Service **personnel** and traders. The Barn (HB-3) had a Furnishing **Plan** prepared in 1979, but **it has** not been implemented due to incomplete information about **the** structure and its intended use.

There has not been a comprehensive study documenting changes in furnishings for any of the three structures.

II. Alternative Actions and Probable Impacts

A. Current Management Action

Presently we *are* attempting to implement the 1972 Furnishing plan. This is only a partial reaction to a more needed planned action that includes HB-1-2-3.

From an interpretive standpoint, **we** are only partially correct in the placement of furnishings in the Trading Post. Until **we** have a Furnishing Plan **that** documents HB-1 and the changes over the years we will continue to be inaccurate and misleading to our visitors.

We are presently storing part of the museum collection in the barn until we get a new storage facility built possibly in FY-84. When this building is completed, the collection in the barn will be moved as much as possible. At this time we will **begin** implementation of the Furnishing Plan that has been done for the Barn.

B. Document Furnishing Changes; Prepare a Plan and ~~Implement~~ - Recommended Action

This alternative would proceed as follows:

1. A written report will be prepared documenting the historic changes in furnishings that have occurred in HB-1, HB-2, and HB-3. Research would involve use of photographs, interviews, and other available records.
2. A management decision will be made determining what time period each structure will represent. Three main decisions **will** be made: 1. Will the time period for the Home reflect pre-1930 or circa 1967? or both?

2. Will the Trading **Post** be 'frozen' at one time period? Or will it reflect the 'living' Trading Post concept of a continually changing entity and **reflect** the personality and business needs of current traders? and 3. Will the Barn continue to be used for storage of museum objects? Or will visitors be allowed inside all or part of the building?

3. A Furnishing Plan for each structure will be prepared to reflect the chosen time period.

4. The Furnishing **Plan** will be implemented using objects from museum storage. Items will be acquired from other sources if these items are necessary for the implementation of the plan.

Following this alternative **would** allow for the placement of objects as historically accurately as possible, using available information. It would also provide background information for interpretive use.

A 10-238 has been submitted and approved Pkg. #167 for \$5,300.

I. Statement of Problem

A history of **the founding and** management of Hubbell Trading Post National Historic Site **and the operation of** the trading post business since 1967 needs to be **compiled** for management **and** interpretive purposes. What have been the impacts both to Hubbell's and the town of Ganado?

A. Background Information

Although Hubbell Trading Post National Historic Site was established by Congress in 1965, for as many as 10 years prior to that date Arizona **national** and state representatives, Dorothy Hubbell, and other interested individuals **lobbied** hard for the area **to** become a part of the National Park System. Since the National Park Service acquired the site in 1967, there have been seven superintendents and four **traders**. Each **individual has had an** effect on the business and the management of the site. No record **has been** established to document the changes and the **impacts that these people have** left behind.

Hubbell Trading **Post National Historic Site** must have had an impact on the town of **Ganado when it was** given national **recognition**. What were **those** impacts and did the **town** of Ganado profit from the change from private ownership to **becoming** a Federal property?

II. Alternative Actions and Probable Impacts

A. Current Management Action (No Action)

The historical record regarding the founding and management of this site is now and will continue to remain obscure as time passes. This may lead us to misinterpret actions of **past** superintendents and give inaccurate information to the public regarding the establishment of Hubbell Trading Post as an historic site. We need to have a steady course in management of these resources and the ability to build on our interpretive themes.

Documentation of the history and management of the trading post business since 1967 has been neglected, thus causing us to potentially lose an important part of our interpretive story dealing with current Indian-trader interactions. It may also hamper present business decisions. Knowledge held by traders and superintendents who have worked here, and the individuals who helped establish this site may be permanently lost.

B. Research and Write Administrative History (Recommended Action)

Research library sources, newspaper clippings, and park files and interview past superintendents, **traders**, and individuals **who** helped this site become part of the National **Park** System. Write a report summarizing the politics behind Hubbell Trading Post becoming a National Historic Site and an overview of management's directions since 1967. Also describe how the different **traders since 1967 changed** the business in terms of *products* being sold, interactions with the Indians, and methods of management.

This will enable us to make a permanent and accurate record of the management of the site, its founding, and the management of the trading post. We will then be able to make sounder management decisions today and give accurate information to the public.

A 10-238 has been initiated and is active, Pkg. #151 for \$15,000 dated 10/26/76.

Project Statement Title: Preparation of a Carrying Capacity Study
C-12

Statement of Problem

There is an increasing impact on our **primary** resources such as the Trading Post **and** the Hubbell home. Approximately 160,000 visitors walk through the Trading Post annually and **about** 10,000 people **tour** the Hubbell home. There **are** obvious **impacts** on these resources and certain **safety** considerations that have to be made. We are uncertain what the carrying capacity of these structures is- and only have a fire marshall's estimate that **74** people is the most **that** should **be** in the Trading Post at a time.

A. Background Information

Both the Trading **Post** and the Hubbell **home** have wooden floors, The Hubbell **Home** had **its** original flooring laid down in 1902 and duplications of the original rugs adorn the floors **throughout** the home **today**. The Trading Post's floors have been replaced **several** times over the **years** and portions have been covered by plywood to minimize wear and to protect the historic fabric. Both buildings, HB-X and 2, contain valuable museum collections and the Trading Post **has** a merchandise inventory in excess of \$300,000.

The carrying capacity for fire safety for the Trading Post and wareroom is 74 people, but this **may** be too **many** people to maintain security for the collection and inventory. People **travel** to Hubbell's in a variety of modes including **buses**. The mainstay of the business are the Navajo patrons, **When** all groups of people visit the Trading Post at the same time, conditions can be rather **crowded** in the Trading Post. Tours through the Hubbell home are limited to 15 people **on** a ranger **guided** excursion. This number of **people** is sometimes difficult for **the** interpreter to control and watch because of the many rooms

in the home. The numbers of people in both buildings makes it difficult to protect against theft.

II. Alternative Actions and Probable Impacts

A. Current Management Action

Other than establishing a carrying capacity for fire safety by the local fire chief, nothing else **has been** done to determine people-limits from the theft or resource degradation standpoint.

B. Develop Carrying Capacity Study for the Trading Post and Hubbell Home - Recommended Action

Study **the** effects of visitation on **both** structures and determine **how** to mitigate those effects. Because this is an historical area and there is sane limitation on what we can do with entry ways into the buildings, this may affect the safe limits for people being in the buildings. In terms of the age and type of fabric there may be a breaking point where resource degradation may be accelerated. The carrying capacity study will contribute greatly *towards* preserving these two primary **cultural** resources of Hubbell Trading Post National Historic Site.

A 10-238 has been ~~submitted~~ and approved which is Pkg. \$157 for \$5,000.

All that is needed is funding to initiate the study.

Overview and Need

Hubbell Trading Post National Historic Site is one of the primary cultural resources in the Southwest Region. As a cultural resource there are some **natural** phenomena that **have** affected our ability to effectively manage this resource. In the past soil, grading, and plant surveys have been **accomplished**.

The most pressing problem **today**, however, is erosion which is affecting both our cultural and natural resources. **We have major problems along** the Pueblo Colorado **which** runs through our north boundary and is impacting several archeological sites as well as posing a threat to our entrance road. Other resources such as the irrigation ditches, boundary line, Hubbell fields **and** parking lots are also subject to the erosive **effects** of rain, **wind**, and water.

Grazing is also a problem which contributes to erosion and degradation of our cultural and natural resources. Grazing of horses, cattle and sheep will be eliminated by better fencing of our boundaries. If **we** eliminate the grazing, the vegetation will better flourish and reduce the **erosion** of the resources described above.

We are pushing to have the Erosion Control Study done within the next five years which will also include implementation for **the** plan. Costs are \$120,000 and two **many** years of help.

Natural Resources Management Actions By Categories

III. Those actions which would initiate new maintenance activities:

N-01 **Erosion Control**

Impact Evaluation: ^a **This action** is not anticipated to have a significant or measurable impact. If such should be indicated an action plan and environmental assessment **would** be prepared before proceeding.

Actions I and II do not apply to anything on line for Hubbell Trading Post National Historic Site.

Natural Resources

Activities and Five Year Programming Sheet

Project Title	Priority	M.Y.	1983 Cost	M.Y.	1984 Cost	M.Y.	1985 Cost	M.Y.	1986 Cost	M.Y.	1987 Cost	Total Cost
Erosion Control	1	1.0	\$60,000	1.0	\$60,000							\$120,000

Project Statement Title: Erosion Control

N-01

I. Statement of Problem

Archeological resources, the farmlands and irrigation system, and the main entrance road have all been and continue to be impacted by erosion caused by grazing, weather, and the actions of the Pueblo Colorado Wash.

A. Background Information

Archeological sites bordering the Pueblo Colorado Wash are the sites most seriously threatened by erosion. HUTR-4, the Great Sand Dune Site, lost 4 feet of dirt into the wash between April, 1979 and the present time. Along with it went artifacts and features which could have contributed to the knowledge of the nature of the site. HUTR-5, Wide Reed Ruin, also borders the wash and underwent salvage excavations in the early 1970's because the site was endangered by the cutting of the wash below. Back-filling and bank stabilization, including the placing of gabions below, has slowed down the erosion process, but this may have shifted the erosion problem further downstream to the Great Sand Dune Site. HUTR-10, bordering a tributary arroyo along the western boundary, has had three slab-lined cysts containing burials and numerous shexds and lithics exposed in recent years because of erosion. The other eleven archeological sites have been impacted to a lesser degree by erosion.

The terraced farmlands and irrigation system have been impacted by water runoff. The irrigation ditches are becoming filled with dirt and the weir gates are totally inoperable.

The main entrance road travels east-west and at same points lies within 30 yards of the Pueblo Colorado Wash. A portion of the road consists of a bridge which goes over a tributary arroyo leading to the Pueblo Colorado Wash. In August of 1982, heavy rains caused erosion around the pilings of the bridge, which required emergency backfilling and the placement of more gabions to prevent loss of the bridge. The rest of the entrance road remains threatened by the gradual encroachment of the Pueblo Colorado Wash.

11. Alternative Actions and Probable Impacts

A. Current Management Action

Erosion of the archeological sites is being monitored periodically throughout the year. Otherwise, no study of the erosion problem is being conducted.

B. Study Erosion Control and Implement Recommendations

Study the erosion problem. Determine most effective control measures that are feasible. Determine if salvage excavations are needed at threatened archeological sites. By doing this, we **would** be protecting the archeological resources, irrigation system, and entrance road and bridge. A study such as this would **require** expertise beyond our current means at this park.

1. A 10-238 has been submitted and is active for a 2 year period, Pkg. #158, for \$120,000.
2. Erosion control study needed to determine plan of action.

Department of the Interior

National **Park** Service

Finding Of NO Significant Impact

Hubbell Trading Post National Historic Site

Southwest Region

Determination: It is determined that all actions outlined within this document are maintenance and research in character and do not significantly affect the natural environment. Therefore in accordance with the following paragraph from Environmental Assessments and Statement Guidelines (**NPS-12**, December 22, 1976, Chapter 3 pages 1 and 2),

"Routine maintenance and operation of parks, small changes in programs for managing resources and providing for visitor use, and similar continuously occurring minor actions - - - must be taken in ways that ensure protection and enhancement of environmental impacts is not required."

No Environmental Assessment will be prepared.

Recommended by:	<u>W. G. Feltner</u>	<u>1/19/83</u>
	Chief, Natural Resources, Region	Date
Recommended by:	<u>Richard W. Sellar</u>	<u>11/12/82</u>
	Chief, SW Cultural Resources Center	Date
Concurred by:	<u>Jack Necheles</u>	<u>1/20/83</u>
	Associate Regional Director, Operations	Date
Approved by:	<u>Robert J. ...</u>	<u>1/21/83</u>
	Regional Director, Southwest Region	Date

A. SCOPE OF COLLECTION FOR HUBBELL TRADING POST

The purposes of maintaining a museum collection at HUTR are to **preserve** important historic objects related to the Hubbell Trading Post and to interpret the significance of the Hubbell Trading Post as an agent of commerce and acculturation. The collection at HUTR must relate to the **area's** capabilities to preserve it properly and to potential use of **the** collection for research, documentation and interpretive purposes.

Most of the specimens considered necessary and desirable to be included in the HUTR collection are found at the site at this **time**. It is not expected that any active collecting will be undertaken to complete the collection. The only objects that need to be purposefully acquired are those required to complete the furnishing plans. Objects already on the premises will be included in the collection only if they relate to the identified interpretive themes or have some future use in exhibit, research or documentation of the Hubbell family.

This scope of collection is in need of revision as is the whole collection Management Plan. There are projects such as Furnishing Plans that need to be completed before **we** can honestly say we need these items as a part of **the** collection. With a **revision** of the plan, we will have to make some decisions and decide for sure that we **are** setting the period for interpretations at 1930 before, or after. This will have a great deal to do with additional collecting if necessary.

B. LEVEL ONE INFORMATION BASE CHECKLIST

Topography - There is a USGS map at 1:24000 of the Ganado Quadrangle and enlarged aerial photograph from Boyay Engineering. However, a basemap of the area has not been made.

Geology - Hydrology report by Cooley, in Hubbell library, has useful data on local geology.

Land use and Ownership - See page 16 of Master Plan for land Classification plan and page 17 for map.

Soils - An intensive soil survey of the Site was accomplished in 1978 by Earth Environmental Associates of Albuquerque. Copies are available in Denver Service Center, the Division of Natural Resources Management in Santa Fe, and at the park headquarters.

Wildlife - Public Health Service-Indian Health Service have completed a report of trapping rodents on the Historic Site in a study of bubonic plague carriers. Personnel from the Division of Natural Resources Management have examined the Historic Site and there is no reason to believe that there are any threatened or endangered animals on the Site. Vertebrate life is more-or-less restricted to those types of animals which are commonly found in rural-fanning areas. There is no critical habitat for animals on the Historic Site.

Cultural - Survey done by Dave Brugge. No base map or consolidated maps of utilities and various trenching. As build drawings of Historic Building - 2 completed by SWR Cultural Resources.

Vegetation - A vegetation map to the community level was completed in 1978 by staff of the Museum of Northern Arizona in Flagstaff. Although there are no plant lists per se, no particular need exists for them at the current time. Copies of these studies are available at the Denver Service Center, the Division of Natural Resources Management in Santa Fe, and at the park headquarters.

External Influences These influences are annunciated in the Statement for Management.

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OUTLINE OF PLANNING REQUIREMENTS

AREA: Hubbell Trading Post National Historic Site

List of studies:

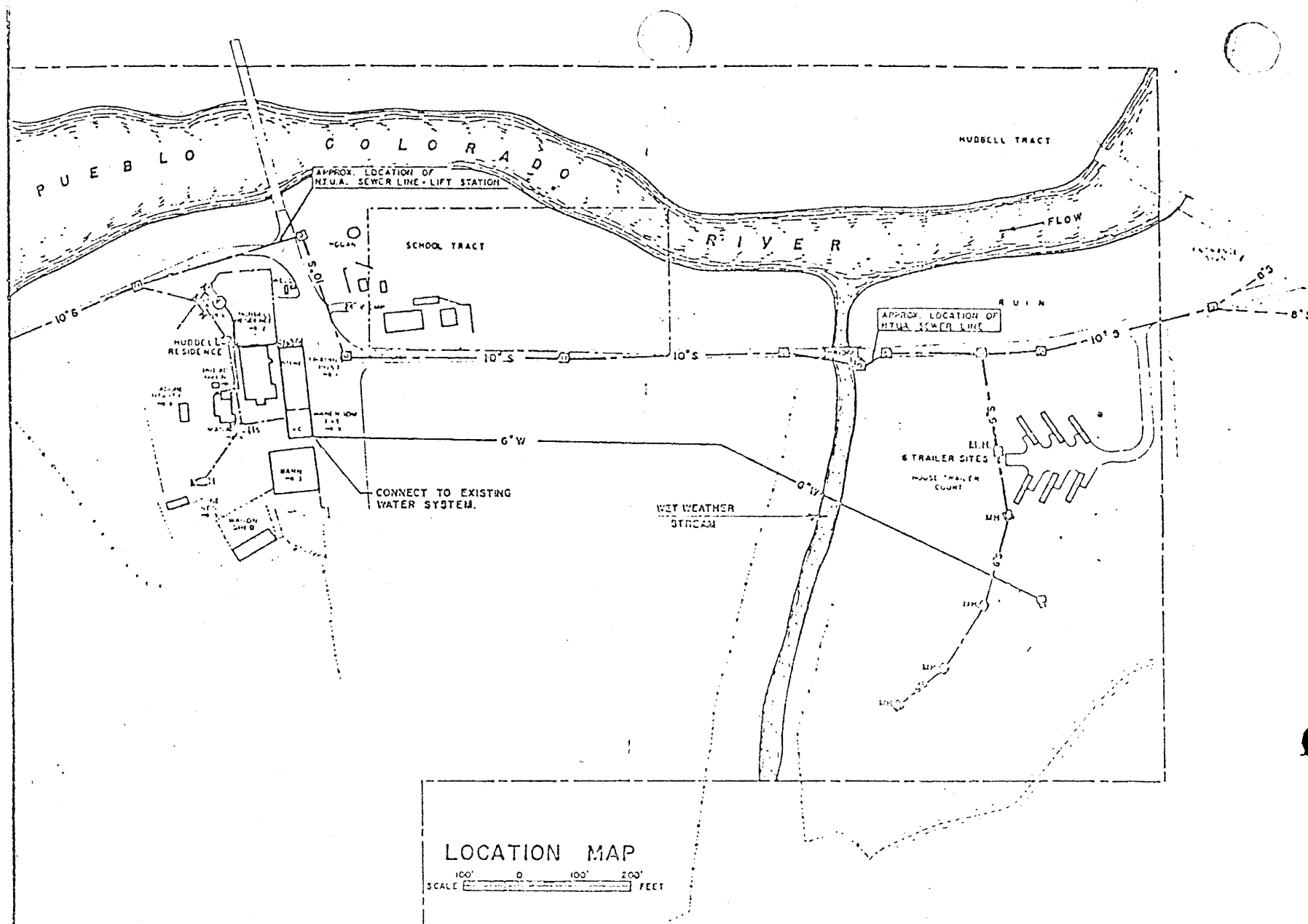
1. HUIR - Wareroom Furnishing **Study**
Benjamin Levy, 7/30/68
Fails to deal with problems of continued operation.
2. SPECIAL REPORT OF HUBBELL TRADING POST, CANADO, ARIZONA
Robert M. Utley, 1/59
(Part of National Survey of Historic Sites and Buildings).
Background data, still relevant.
3. WIDE REED RUIN
James E. Mount, 1973
Background Info.
4. HISTORIC STRUCTURES REPORT, PART II: HUBBELL TRADING POST, HOME (HB-2)
Kove, Simmonds, and Brugge 6/71
Fairly current, details need to be spelled out.
5. HISTORIC STRUCTURES REPORT, PART II: HUBBELL TRADING POST, HISTORICAL
DATA SECTION
Benjamin Levy, 5/15/68
Background Info.
6. HISTORIC STRUCTURES REPORT, PART II: HUBBELL TRADING POST, (HB-1)
and **WAREROOM** EXTENSION (HB-9)
Kove and Simmonds, 8/70
Suggest revision to eliminate contact station proposal.
7. HUIR ARCHEOLOGICAL **GRADE** TESTING REPORT.
Gerald R. Gates, 1973
Background Info.
8. HUIR FURNISHINGS **STUDY**: THE HUBBELL HOME.
Brugge, 1/72
Substantially current and **accurate**.
9. HUIR INTERPRETIVE PROSPECTUS
Brown, 4/67 Approved
Needs updating
10. HUIR MASTER PLAN, DRAFT 4/69
Generally Relevant as to Development Needs.

11. HUIR INTERPRETIVE PROSPECTUS, November 1980
12. HUIR DEVELOPMENTAL CONCENT PLAN
Denver **Service Center**, August 1980
13. HUIR **ASSESSMENT OF ALTERNATIVES FOR**
DEVELOPMENT, CONCENT PLAN
Denver **Service Center** March 1979.
14. HUIR STATEMENT FOR **Management**
February 1979
15. HUIR COLLECTION MANAGEMENT PLAN
Division of Museum **Services**
Harpers Ferry **Center**

Water Resources Management Profile
for
Hubbell Trading Post National Historic Site

Recommended by:  8/25/82
Superintendent, Hubbell Trading Post NHS, Date

Approved by: Robert L. Kerr SEP 2 1982
Regional Director, Southwest Region, Date



LOCATION MAP

SCALE 100' 0 100' 200' FEET

Hubbell Trading Post National Historic Site Water Resources

This drawing is in compliance with the U.S. Public Health Service requirements.		APPROVED BY: <i>[Signature]</i> 5/2/75	
APPROVED BY: <i>[Signature]</i> 5/2/75		REVISIONS: 2/1/75	
DESIGNED BY: <i>[Signature]</i>		DRAWN BY: <i>[Signature]</i>	
CHECKED BY: <i>[Signature]</i>		DATE: 5/2/75	

I. Physical Description of Water Resource

1. Watershed: Pueblo Colorado Wash runs through the northern part of the Hubbell Trading Post National Historic Site. The Pueblo Colorado drains nearly 1,250 square miles of Defiance Plateau, to the north and east of the Trading Post (Gregory, 1916). The Trading Post is located in the groundwater basin designated Lower Colorado Region 15, ASA 01, Sub-basin Pueblo Colorado Wash.
2. Climate: Average annual precipitation at the Trading Post is about 11 inches, and temperatures range from an average of 70.4°F in July to 23.2°F in January, with extremes recorded as 95°F and 18°F (NOAA, 1979). The country surrounding the Trading Post is high desert grading into pinon-juniper woodland to the south, but the historic site itself has a riparian character deriving from its location on the Pueblo Colorado Wash.
3. Geology: The bed and banks of the Pueblo Colorado are composed of Late Pleistocene to recent alluvium. On either side of the wash in the vicinity of the Trading Post, one encounters the Monitor Butte member of the Chinle Formation, consisting of siltstone, sandstone, and lime-pellet conglomerate (USGS, 1968). The alluvial materials contain water, but quality varies widely over short distances and these shallow wells are susceptible to pollution by sewage, irrigation return flows, or other sources. The Monitor Butte formation is a poor aquifer. The Trading Post well taps the underlying De Chelly sandstone at 150 feet. The De Chelly formation is a reasonably productive water-bearing rock.
4. Soils: Soils at the Trading Post appear to be deep loamy, clayey, or sandy soils over alluvium, with slow to moderate permeability. In some locations, the clays present may result in a high shrink-swell potential. The sites with slow permeability may cause problems with septic tanks, and the moderately permeable sites offer some limitation to location of sewage lagoons. The soils are not ideal for unsurfaced roads. However, none of these limitations are insuperable.
5. Estimate of Quantity: The Pueblo Colorado flows perennially as far as Ganado. Not far below the Trading Post, it becomes an ephemeral stream. An early estimate of flow in the Pueblo Colorado placed low flow at about two cubic feet per second (cfs) (Gregory, 1916). It was gaged in 1954-55: flow levels varied between 9.28 cfs and 9.92 cfs at the measuring station about 5 miles upstream of Ganado (USGS, 1968). Flood flows are much greater, filling the channel bank to bank and causing serious erosion problems.

A small, unnamed wash runs north through the eastern portion of the Historic Site and enters Pueblo Colorado less than 1000 feet east of the Trading Post. It flows only in response to rainfall, but causes substantial erosion problems when in flood.

The old Hubbell family well is dug 30 feet into the alluvium at the Trading Post compound. Its production characteristics are unknown.

The Headquarters well was installed by the Park Service in February 1968. Drilled 340 feet into the De Chelly sandstone, the static water level is at 22.5 feet below ground surface. It is capable of producing 500 gpm, but the capacity of the pump installed in the well is only 35 gpm. The well serves not only the Historic Site, but also the town of Canado through the Navajo Tribal Utilities Authority. Average daily use at the Historic Site was estimated at 2700 gpd in 1977, with peak usage at about 3400 gpd.

6. Water Quality: Pueblo Colorado - unknown, but at low flow there appears to be some pollution by sewage or livestock.

Unnamed Wash - flood flow quality unknown.

Hubbell well - when last tested (1970), it was so polluted with sewage that the fecal coliform bacteria in the water sample were too numerous to count.

Headquarters well - a chemical analysis is attached. The well is sampled biweekly for coliform bacteria as an indicator of organic pollution, and the tests are consistently negative.

7. Water As It Supports the Purposes of Historic Site:

The Pueblo Colorado perpetuates the historic setting of the Trading Post, not only through the flows within the wash but by maintaining a high enough water table to support the riparian vegetation around the banks and the historic buildings. The Hubbell orchards and a garden near the residence are irrigated, also in the interests of maintaining the site's historic character.

Water from the Headquarters well is used for visitor drinking water and for sanitation purposes, for a sprinkler fire protection system. It is also used as the water supply for the households of Park Service employees (55-60 people, including family members). National Park Service agreement with the NTUA arranges for the Hubbell Headquarters well water to be used in the Canado Municipal System, in exchange for NTUA maintenance of the historic site water distribution system.

ENVIRONMENTAL CONSULTANTS, INC.

391 NEWMAN AVE. • P. O. BOX 2037 • CLARKSVILLE, INDIANA 47130 • TEL. (312) 282-8481

National Park Service
Southwest Region
Post Office Box 722
Old Santa Fe Trail
Santa Fe, New Mexico 87501
Attn: Gary Moore

Date- 29 January 1975

E.C.I. # 2145

Sample Description-

Water sample marked: Sinkin Hubbell
Home HB-2; 5-24-74 by Roberto Ortega.
Mail to: Hubbel Trading Post, Supt.
Post NHS, P.O. Box 298, Granado, Ariz

P.O. No. PX 7000-4-0349

Job No. 7427-02

86505

Color	<u>2</u>	Pt.-Co. units	Lead	<u><0.030</u> mg/l
Specific conductance	<u>480</u>	µmhos	Magnesium	<u>9.855</u> mg/l
Turbidity	<u>4</u>	J.T.U.	Zinc	<u>0.715</u> mg/l
Acidity	<u>Nil</u>		Phenols	<u>0.004</u> mg/l
Hardness	<u>244</u>	mg/l	Surfactants	<u>0.180</u> mg
Sulfate	<u>36</u>	mg/l	Manganese	<u><0.008</u> mg/l
Chloride	<u>37.5</u>	mg/l	Mercury	<u><0.001</u> mg/l
Cyanide	<u><0.01</u>	mg/l	Silver	<u><0.002</u> mg/l
Fluoride	<u>0.03</u>	mg/l	Sodium	<u>20.59</u> mg/l
Arsenic	<u><0.010</u>	mg/l	Nitrate	<u>3.20</u> mg/l
Barium	<u><0.030</u>	mg/l	Alkalinity	<u>219</u> mg/l
Bismuth	<u>0.015</u>	mg/l	pH	<u>7.84</u>
Calcium	<u>27.50</u>	mg/l	Phosphorus	<u>0.02</u> mg/l
Chromium	<u><0.008</u>	mg/l	Silica	<u>25</u> mg/l
Copper	<u><0.008</u>	mg/l	Dissolved solids (Non-filterable)	<u>41</u> mg/l
Cadmium	<u>0.027</u>	mg/l	Selenium	<u><0.01</u> mg/l

Remarks:

Suggest resample for phenols.

8. Floodplain Erosion Assessment: Flooding hazard at the Trading Post is extreme. Annual floods in the Pueblo Colorado and the unnamed wash flowing north to the Pueblo Colorado cause bank erosion at every season. Flows in the unnamed wash are causing erosion near the footing of the bridge on the entrance road to the Historic Site. Gabions have been placed at right angles to the flow, immediately downstream of the bridge. The upstream set of gabions is well placed and virtually filled in with sediment; the lower has been displaced during a high flow and will not serve to control erosion in the next period of flooding.

Even at low flow, the Pueblo Colorado undercuts the bank on which the Trading Post is located, dislodging archeological remains embedded in the bank at the Great Sand Dune site. Erosion stake measurements at that site show a loss of 7 feet of bank in about 4 years. Some 400 feet of the southern bank of Pueblo Colorado has been armored with a double tier of gabions, starting about 50 feet downstream of the main road bridge and ending about 75 feet short of where the unnamed wash enters Pueblo Colorado. The downstream toe of the bank work is undercut but the rest appears stable. The bank protection work appears to be successful at protecting the entrance road and the Wide Reed Ruin archeological site; however, the Great Sand Dune Site near the Visitor Center is continuing to erode. A floodplain study with specific recommendations for mitigating measures is definitely in order.

II. Management of Water Resource and Legal Aspects:

1. Historical and present water management:

- a) There is evidence of prehistoric irrigation systems all along the Pueblo Colorado (Gregory, 1916).
- b) The Hubbell family used a 30-foot well as a source of water for household purposes (see 15). In 1903, Hubbell constructed a reservoir adjoining his land to irrigate 160 acres. (The reservoir is not a part of the Hubbell property today.) Ten years later, due partially to Hubbell's efforts, the Bureau of Indian Affairs started work on the Canado Irrigation Project using the natural Canado Lake as the reservoir. The project was to provide water to irrigate 707 acres. In May 1913, Hubbell signed a contract with the Secretary of the Interior, exchanging his own irrigation system and water rights to the U. S. in return for a share of the Canado Irrigation Project. By the same contract, Hubbell agreed to pay a proportionate share of the construction, operation, and maintenance costs of the project. Hubbell's water right in the Canado Project worked out to 400 acre feet.
- c) Present water management is summarized in Section 17.

2. Water Management Authorities:

Controlling water quantity allocation:

Arizona Department of Water Resources
99 East Virginia
Phoenix, Arizona 85004
(602) 655-1557

Contract for water rights questions:

Dan Maugham (602) 655-1557

For hydrologic data:

Bill Briggs (602) 655-1557

Water quality management:

Arizona Department of Health Services
Bureau of Water Quality Control
1740 West Adams, Room 200
Phoenix, Arizona 85007

Contract for water quality standards and monitoring:

Jack Bale (602) 255-1180

3. Water Rights:

As a result of Hubbell's arrangement with the U.S. to gain a share of the Canado Irrigation Project, the Trading Post Historic Site has rights to 400-acre feet of irrigation water from the Canado Project. The project has been inoperative for decades, but this should not have abrogated the right, since non-use of the water was due to destruction of the canals by floods, and not to negligence or disinterest on the part of the property owner. The Navajo Nation is proposing to restore the Canado Irrigation Project as part of an effort toward establishing beneficial uses of water on the reservation so as to retain Indian reserved water rights.

The Park Service registered the Headquarters well on 6/14/82 with the State of Arizona. Receipt of the formal right to water from that well will await adjudication of groundwater rights in the Pueblo Colorado Basin.

III. Water Resource Problem (Actual/Potential)

1. Flooding and erosion: A floodplain management study is needed in order to devise a means to protect the cultural resources and the physical plant at Hubbell Trading Post Historic Site.

2. Water use arrangement with NUTA: In accordance with Special Use Permit J-7420-2 issued on August 25, 1975, the Historic Site has put its Headquarters well on line in the Ganado Municipal water system in exchange for NTUA's servicing the system in the Historic Site when need arises. The Park Service has paid pumping costs; it has not been charged any water use fees. At the time of writing, water meters were being installed for the Historic Site, including individual Park Service employee residences. NTUA is preparing to bill the Park Service for use of the municipal water system on the basis of usage measured by the meters. Some equitable cost structure needs to be developed to reflect the contribution of the Park Service to the Ganado Water System (providing the water) and of the Navajo Tribe (providing the servicing).
3. Irrigation of Historic Fields: Assuming that irrigation water becomes available from the Ganado Irrigation Project or some other source, the Park Service has plans to irrigate approximately 110 acres of Hubbell's fields. A study is planned to determine the feasibility of restoring canals and weir gates that would irrigate the property. A potential problem to consider associated with renewed irrigation is that return flows may be supercharged with nutrients and if discharged into Pueblo Colorado could change the character of the wash.
4. Impact of Change in Land Use in Watershed: A particular concern centers on whether all new municipal development in Ganado in the watershed of the Trading Post will be connected to a sewer system, or whether developers will be allowed to deal with waste disposal individually. In the latter case, it is felt that pollution of wells and water courses could ensue.

It is also important to recognize the possible increase in erosion hazard that could accompany development in Ganado.

IV. Strategies for Water Protection:

HUTR-W-1: Floodplain and Erosion Study. Carry out a floodplain management study for Hubbell Trading Post, with specific recommendations as to bank protection along the Pueblo Colorado Wash and the north-flowing unnamed wash at the entrance road bridge.

HUTR-W-2: Water Agreement. As authorized by Special Use Permit J7420-2 develop a written agreement between NPS and NTUA concerning water rates.

HUTR-W-3: Water Quality-Irrigation Water. In the irrigation plans developed for the Trading Post, consider how return flows will be treated.

HUTR-W-4: Monitor land-use changes. Where potential problems cannot be negotiated at the local level, report them to the Region so that they can be resolved through discussion between administrative levels of the Park Service and the Navajo Tribe.

References Cited:

- Gregory, H.E. 1916. The Navajo Country: A geographic and hydrographic reconnaissance of parts of Arizona, New Mexico, and Utah. U.S. Geological Survey Water Supply Paper #380.
- NOAA, 1979. Climatological Data: Annual Summary, Arizona. NOAA (National Oceanic and Atmospheric Administration) Environmental Data and Information Service, National Climatic Center, Asheville, NC.
- USDA Soil Conservation Service, 1970. General soil map, Apache County, AZ. In cooperation with Apache Soil Conservation District.
- USGS, 1968. Regional Hydrogeology of the Navajo and Hopi Indian Reservations, Arizona, New Mexico, and Utah. USGS Professional Paper 521-A. Prepared in cooperation with the Bureau of Indian Affairs and the Navajo Tribe.

Interview:

Ed Gastellum, Superintendent, Hubbell Trading Post - 6/23/82.

Determination

It is determined that none of the actions outlined above significantly affect the natural environment nor cause controversy.

NO ENVIRONMENTAL ASSESSMENT WILL BE PREPARED.

Recommended by: Garland Moore August 17, 1982
Southwest Regional Hydraulic Engineer Date

Concurred by: L. Charles G. Patta 8/25/82
Superintendent, Hubbell Trading Post NHS Date

Concurred by: (Sgd', Jack Neckels SEP 2 1982
Associate Regional Director, Park Operations, SWR Date

Approved by: Robert I. Kerr SEP 2 1982
Regional Director, Southwest Region Date

memorandum

DATE: November 10, 1982

REPLY TO
ATTN OF: Resources Management Plan Coordinator, Southwest Region

SUBJECT: Resources Management Plan Comments

TO: Superintendent, Hubbell Trading Post

Your new plan looks good; however, I have a couple of comments:

- ✓ 1. Table of Contents: List projects individually so they may be more easily found without having to go through the whole plan.
2. Overview: All irrelevant, introductory information can be dropped. Rather simply outline to first 3-5 priority projects that you plan to handle in the next 3-5 years and indicate time frames, additional manpower and finance requirements to accomplish them.
3. Project Numbers: Should read: "HUTR-C-01."

Prepare another Table of Contents and Overview section. I'll add "HUTR-" to your project numbers.

Am forwarding the plan to Cultural Resources for their comments.


Gerard A. Hoddenbach



United States Department of the Interior

NATIONAL PARK SERVICE

SOUTHWEST REGION

P.O. Box 728

Santa Fe, New Mexico 87501

IN REPLY REFER TO:

H30(SWR-PCH)

JAN 18 1983

RECEIVED
TRADING POST

2 2 1983

Memorandum

To: Superintendent, Hubbell Trading Post

From: Chief, Division of History, Southwest Region

Subject: Review of Resource Management Plan

Sorry for the delay in reviewing your Resource Management Plan. Your plan arrived while I was on vacation and accidentally got buried on someone's desk. I was very pleased with the revision. You and your staff have put a lot of work into the plan and it reflects the labor. I have only a few comments.

In your next revision, you may want to consider adding a thumbnail sketch of the significance of the resources for baseline information for WASO users/reviewers. There are so many small historical areas that a brief description of the park provides context for bureaucrats who have never visited the areas.

Under Project Statement, "Stabilization of Bunkhouse, HB-5," you might want to explain why no action would be unacceptable. The building is a part of the primary resources and of original fabric. You can also reference the National Historic Preservation Act of 1966 and the park's enabling act. Ironical that NPS has stabilized and utilized secondary resources before the primary ones.

I was glad to see that you merged two of the three overlapping history studies. The two business histories easily fit together, but the ethnohistory should be separate or, we may have only the Navajo economic history not a full ethnohistory.

Dave Brugge's comments follow:

Page 12 - A Historic Structures Report on the Bunkhouse (HB-5) is also needed and should be listed here.

Pages 21-24 - The proposal to combine the ethnohistory and the business history disturbs me a bit, as I think quite separate skills will be needed for the two, skills which I do not believe likely to appear in one person. The ethnohistory study must be done by a scholar with a good knowledge of Navajo culture and culture history. The business history will have to be based on a thorough knowledge of business methods, especially an ability

to understand and analyze business records. The one person of whom I am aware who might be qualified, Dr. William Y. Adams, is not likely, in my opinion, to be willing to undertake such a broad study for \$26,000.00, nor do I really think the two could be effectively combined. If the two should be combined, the effect would probably be a very narrow view of the interaction between the Hubbells and the Navajos, limited largely to economic phenomena which I think would be true to a greater degree than we would want even if we could get Adams to do the study. Unless he actually did what were essentially two relatively separate studies bound under one cover.

Page 28, Paragraph 2, line 6 - At least two of the salvaged burials were in simple pits, not in slab-lined pits.

Page 34, paragraph 2, line 7 - I know of no fireplaces being removed since NPS acquired the site. As far as I am aware, the only features removed have been the bathrooms in bedrooms I east and II east and the partition closing off the access between the two in the walk-through closet.

Page 45, paragraph 2, line 11. See "page 28, paragraph 2, line 6" above.

Bibliography - this should include all items cited in the text. Reports by Cooley on hydrology and by PHS on rodents need to be listed.

Melody Webb