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ENVIRONMENTAL IMPACT
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TECHNICAL REPORT FL-91-11

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US Army Corps
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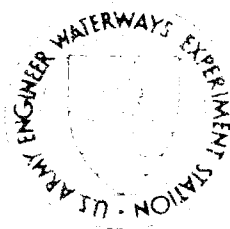
HISTORIC PROPERTY PROTECTION
AND PRESERVATION AT US ARMY
CORPS OF ENGINEERS PROJECTS

by

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August 1991

Final Report

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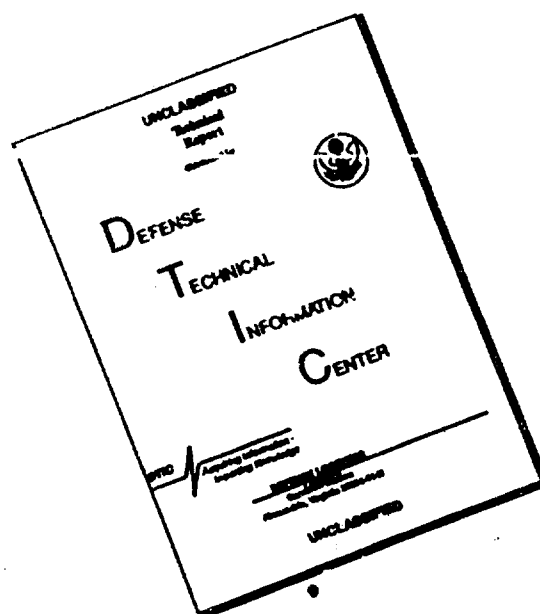
Prepared for DEPARTMENT OF THE ARMY
US Army Corps of Engineers
Washington, DC 20314-1000

Under EIRP Work Unit 32357

Monitored by Environmental Laboratory
US Army Engineer Waterways Experiment Station
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1. AGENCY USE ONLY (Leave blank)	2. REPORT DATE August 1991	3. REPORT TYPE AND DATES COVERED Final report		
4. TITLE AND SUBTITLE Historic Property Protection and Preservation at US Army Corps of Engineers Projects			5. FUNDING NUMBERS EIRP WU 32357	
6. AUTHOR(S) Roger D. Grosser				
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) US Army Engineer District, Kansas City 700 Federal Building, Kansas City, MO 64106-2896			8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) US Army Corps of Engineers, Washington, DC 20314-1000 USAE Waterways Experiment Station, Environmental Laboratory 3909 Halls Ferry Road, Vicksburg, MS 39180-6199			10. SPONSORING/MONITORING AGENCY REPORT NUMBER Technical Report EL-91-11	
11. SUPPLEMENTARY NOTES Available from National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161				
12a. DISTRIBUTION AVAILABILITY STATEMENT Approved for public release; distribution unlimited			12b. DISTRIBUTION CODE	
13. ABSTRACT (Maximum 200 words) This study was conducted to assist Corps of Engineers historic property managers in identifying site impacts and selecting site protection and preservation strategies at operation and maintenance (O&M) projects. Additionally, the study reviews how the Corps' internal structure and its assigned missions are integrated in the historic preservation process at O&M projects. Each Corps District was contacted to obtain information on the types of O&M projects in the District, the major impacts to historic properties at these projects, and past and ongoing protective techniques used to mitigate these impacts.				
14. SUBJECT TERMS CE project lands Historic properties Site impacts			15. NUMBER OF PAGES 68	
			16. PRICE CODE	
17. SECURITY CLASSIFICATION OF THIS REPORT UNCLASSIFIED	18. SECURITY CLASSIFICATION OF THIS PAGE UNCLASSIFIED	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT	

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The study was conducted under the direct supervision of Dr. Nickens, who was serving at WES under an Intergovernmental Personnel Act agreement with the University of Colorado during the time of the study. The work was performed in the Water Resources Engineering Group, Environmental Engineering Division (EED), EL, Dr. John J. Ingram, Chief. The work was performed under the general supervision of Dr. Raymond L. Montgomery, Chief, EED, and Dr. John Harrison, Chief, EL.

Commander and Director of WES during preparation of the report was COL Larry B. Fulton, EN. Technical Director was Dr. Robert W. Whalin.

This report should be cited as follows:

Grosser, Roger D. 1991. "Historic Property Protection and Preservation at US Army Corps of Engineers Projects," Technical Report EL-91-11, US Army Engineer Waterways Experiment Station, Vicksburg, MS.

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CONVERSION FACTORS, NON-SI TO SI (METRIC)
UNITS OF MEASUREMENT

Non-SI units of measurement used in this report can be converted to SI
(metric) units as follows:

<u>Multiply</u>	<u>By</u>	<u>To Obtain</u>
acres	4,046.873	square meters
cubic yards	0.7645549	cubic meters
feet	0.3048	meters
inches	2.54	centimeters
miles (US nautical)	1.852	kilometers
miles (US statute)	1.609347	kilometers
tons (2,000 pounds, mass)	907.1847	kilograms
tons (mass) per acre	0.224	kilograms per square meter

HISTORIC PROPERTY PROTECTION AND PRESERVATION AT US ARMY
CORPS OF ENGINEERS PROJECTS

PART I: INTRODUCTION

Background

1. The US Army Corps of Engineers (USACE) is charged with the management of about 12 million acres* of water and land at over 470 projects throughout the United States. These projects contain some 52,000 miles of shoreline and over 4,400 recreation areas. The projects have been authorized for both single and multiple purposes, which include flood control, navigation, hydropower, water supply, water quality, recreation, and fish and wildlife management.

2. For the past several decades, the Corps has been involved in massive water resource development projects; however, as construction of new projects has diminished, there is now increased responsibility to provide effective management strategies for natural and cultural resources at these completed projects. One of the resources, historic properties, is to receive equal consideration with other resource management objectives because of Federal laws and directives. A historic property is defined in Engineer Regulation (ER) 1130-2-438** as any prehistoric or historic object, site, structure, building, or district included, or eligible for inclusion, in the National Register of Historic Places. The term includes any artifacts, records, and remains that are related to and located within such properties. Situated on Corps of Engineers projects throughout this nation are an estimated 70,000 prehistoric and historic archeological sites. Many projects constructed prior to passage of the historic property legislation of the 1970s have had few systematic surveys conducted to identify archeological sites located on project lands. At more recently constructed projects where relatively complete inventories of historic properties exist, passive programs have been employed to manage these resources. Both of these situations have

* A table of factors for converting non-SI units of measurement to SI (metric) units is provided on page 4.

** Complete citations for Legislation, Regulations, and Guidance Documents referred to in the text are provided in Appendix A.

resulted in adverse impacts to these resources from routine operation and maintenance (O&M) activities.

3. Although the recognition of such impacts to archeological sites is not altogether obvious, once they are identified a suitable strategy to mitigate the effects of these impacts must be found. In the past, mitigative approaches have consisted of simple avoidance or data recovery efforts. The concept of preservation in place via proactive means has only recently been viewed as a viable path to mitigation of adverse impacts.

4. To address the problems of impacts to historic properties and to develop management strategies to alleviate these negative effects, a workshop was held in 1984. Dr. Roger Saucier, Program Manager of the Corps Environmental Impact Research Program (EIRP) at the US Army Engineer Waterways Experiment Station (WES), convened the meeting. Participants included archeologists and environmental specialists from the Corps of Engineers, National Park Service, and several universities. As a result of this workshop, a scope of work was drafted that proposed tasks and subtasks to be achieved that would provide management guidelines and strategies for the in situ preservation of historic properties at Corps projects. Funding was obtained in 1985 to initiate a research program at WES entitled "Field Preservation of Cultural Sites," which is under the purview of the EIRP. Among the objectives of this program are the compilation and distribution of information on the potential causes of impacts to historic properties and the development of strategies to protect sites from these recognizable impacts. Since the program was initiated, positive and substantive results have been achieved. Several technical reports have been published to disseminate information to resource managers on the recognition of potential impacts to historic properties and to outline strategies to mitigate the effects of these impacts.

5. In addition, a notebook has been developed that focuses on archeological site protection and preservation methods (US Army Corps of Engineers 1990). This document is composed of a series of technical notes to be used by personnel who are responsible for managing and maintaining historic properties. Each note provides specific examples of site impacts and, when appropriate, applicable management strategies to mitigate the impacts. The notebook is in a loose-leaf format so that additional examples can be provided by historic property managers, and the information disseminated to other resource managers.

6. Federal involvement in the preservation of this nation's historic properties is nearly a century old. Recognizing the significance of the archeological site of Casa Grande, Arizona, Congress passed legislation in 1890 to protect it from acts of destruction. However, the focus of in situ site preservation has not been really developed until very recently. Much of the historic property work of the 20th century has been directed toward the excavation of sites and the analysis of data recovered from these investigations. The need to excavate sites to elucidate the cultural histories of this nation was understandable in the past, since no other means were available due to a lack of written records by Native American peoples. In addition, these apparently endless resources did not seem in jeopardy of being depleted. However, major construction projects initiated by the Federal Government in the 1930s and continuing until the present have had a substantial impact on these once abundant resources.

7. A plentiful supply of a resource, regardless of whether it is organic or not, does not by itself lend to its conservation. Certainly, the demise of the American buffalo, which roamed in herds of millions prior to their reckless slaughter and near extinction in the 19th century, and the total extinction of the passenger pigeon, whose flocks once darkened the skies, are obvious reminders that unchecked exploitation of a resource can lead to its demise. There is a notable difference, though, between the destruction of archeological sites and biological resources. While biological resources have the capacity to renew themselves, archeological sites do not. Once a given historic property is destroyed, that part of the resource base can never be renewed. Realization of this fact prompted the public and then Congress to act to provide the necessary legal mandates to protect and preserve these resources. However, even with the legislation that has been enacted, the number of historic properties is still diminishing. Federal undertakings do consider the impact these activities will have on archeological sites. However, historic property legislation, for the most part, does not extend to sites located on private land where loss of sites is also severe. It is therefore imperative that preservation strategies be employed to the maximum to preserve these resources whenever and wherever there is Federal involvement.

8. For the professional involved in archeological research, the need to save these resources for the future should be readily apparent. Field and laboratory techniques have changed substantially during the 20th century.

However, much information was lost in the field prior to the development of new analytical and dating techniques. Techniques employed in archeological research 50 years ago appear relatively simple and archaic when compared to today's methods. Similarly, techniques that are used today may well seem primitive in comparison with those that will have been developed and be in use 50 years from now. Given the accelerated destruction of archeological sites today, data recovery should be the last alternative chosen to preserve historic property remains, since once these sites are excavated, they will not be renewed. As more sophisticated data recovery methods are developed and new kinds of information are extracted, interpretive and educational return will also accrue from these resources, which will ultimately benefit the public in its understanding and perception of the past lifeways of prehistoric and historic Americans.

Purpose and Scope

9. The present study was undertaken to assist Corps of Engineers historic property managers in identifying site impacts and selecting site protection strategies at operation and maintenance projects. Another aim of this study was to review how the Corps' internal structure and its assigned missions are integrated in the historic preservation process at O&M projects.

10. Although there have been previous efforts to employ in situ archeological site protection measures, much of the information relating to these efforts is either unpublished or widely scattered throughout the extant literature. A review of pertinent literature was undertaken to identify methods that have been used for site protection and to determine the success of these efforts. However, much of the work relating to site protection strategies was found to be unreported. In order to obtain data that would be useful to Corps historic property managers, it was decided to contact each Corps District and solicit information regarding impacts to historic properties at O&M projects and management strategies that have been used to protect those sites. At least one historic property or environmental manager was contacted at each District by telephone.

11. The information requested included: (a) the types of O&M projects in the District, (b) the major impacts to historic properties at these projects, and (c) the protection techniques that were being used to mitigate these impacts. There is substantial variance between Districts, not only in

the employment or lack of preservation strategies for historic properties, but also regarding inventory and evaluation of these resources. For example, in one District that has over 200,000 acres of project lands to manage, only 6 percent of these lands has been inventoried.

12. Implementation of strategies to protect historic properties is difficult in this situation where the database is meager and impacts on archeological sites are unknown. There also exists a disparity between what cultural resource managers believe is their responsibility toward those archeological sites that are being impacted by project operations but which are situated on land that is not owned in fee by the Corps. This problem will be discussed later in the section on site impacts.

13. Lack of communication between various Corps elements can result in sites being neglected. However, the majority of Corps Districts have good rapport between the elements that are charged with the responsibility for managing project historic properties. Nevertheless, it is essential that all District elements continue to coordinate their efforts to achieve a successful historic property management program. The primary goal of this project, then, is to make resource managers aware of the variety of impacts that adversely affect historic properties by routine O&M activities and to provide a range of strategy options so that historic property protection measures can be implemented that are compatible with other project resource management objectives.

PART II: LEGAL BACKGROUND

14. Federal commitment to preserving this nation's historic properties did not commence until the first decade of the 20th century. In response to increasing vandalism and destruction of archeological sites located on public lands, Congress enacted, in 1906, the Antiquities Act and accompanying uniform rules and regulations. The Act required that a permit be obtained prior to examination and excavation of sites located on lands under the jurisdiction of the Secretaries of Agriculture, Interior, and War, and that these permits be granted to responsible scientific and educational institutions or their authorized agents. In addition, the law provided penalties for those who would remove objects of antiquity without a permit. Paragraph 2 of the accompanying rules and regulations specified that: "No permit for the removal of any ancient monument or structure which can be permanently preserved under the control of the United States in situ, and remain an object of interest shall be granted." Thus, Congress had taken the first measure to protect in place historic properties located on lands under the jurisdiction of the United States.

15. Additional historic property laws were slow in emerging, and it was not until 1935 that Congress enacted the Historic Sites Act. In this legislation, Congress declared that "it is national policy to preserve for public use historic sites, buildings and objects of national significance for the inspiration and benefit of the people of the United States." The Secretary of the Interior, through the National Park Service, was given the lead role as steward of this country's cultural resources, which enabled this agency to later establish the Historic American Building Survey, Historic Sites Survey, the Historic American Engineering Record, and the National Historic Landmarks Program. Congress was emphasizing in this legislation that the Federal Government had a responsibility to "Restore, reconstruct, rehabilitate, preserve and maintain historic or prehistoric sites, buildings, objects, and properties of national historical or archeological significance."

16. It was also during the 1920s that the Federal Government was planning for the construction of over 250 dam and reservoir projects in some 29 states. This country's involvement in World War II temporarily halted construction of these projects, but with the conclusion of the war in 1945, construction was begun. Although the period from 1945 until the mid 1960s was one of cooperation between the Federal Government and the professional

archeological community, the emphasis of the fieldwork was to salvage materials from archeological sites rather than in situ preservation. However, funding was never sufficient to meet the demands for either salvage or site preservation (Grosser 1981). The Reservoir Salvage Act of 1960 (Public Law 86-523) furthered the policy that was set forth in the Historic Sites Act of 1935 (Public Law 74-292). The legislation provided for the preservation of historical and archeological data that would otherwise be lost or destroyed by the construction of a dam by any Federal agency. The Secretary of the Interior was to be notified of dam site location and the area to be inundated prior to initiation of construction activities by the instigating Federal agency. A survey of the affected lands would be conducted to determine if historical and archeological data existed that should be preserved in the public interest. If such data existed, the Secretary could enter into contracts with professionally qualified individuals or institutions to collect and preserve the information.

17. One of the most significant pieces of historic preservation legislation passed during the 20th century was the National Historic Preservation Act of 1966, as amended (Public Law 89-665). This Act, among other things, provides for an expanded National Register of Historic Places and establishes the Advisory Council on Historic Preservation. The real authority and power the Advisory Council has regarding historic preservation matters is specified in Section 106 of the Act. The Advisory Council shall comment on any action of a Federal agency "having direct or indirect jurisdiction over a proposed Federal or Federally assisted undertaking...or prior to the issuance of any license...that may affect any district, site, building, structure or object included in the National Register." Procedures of the Advisory Council to comply with this section are contained in 36 CFR 800. What is of importance is the definition of the word "undertaking," which is enumerated in Section 800.3. "Undertaking" means any

Federal action, activity, or program or the approval, sanction, assistance or support of any other action, activity or program including but not limited to... (2) New and continuing projects and program activities: directly undertaken by Federal agencies; or supported in whole or in part through Federal contracts, grants, subsidies, loans, or other forms of funding assistance; or involving a Federal lease, permit, license, certificates or other entitlement or use.

The implications of this definition regarding Corps of Engineers authorized responsibilities at O&M projects will be discussed subsequently. A later

change in Section 106 allows that a property determined eligible for the National Register be given the same consideration as a property listed on the Register.

18. The National Environmental Policy Act of 1969 (Public Law 91-190), which took effect on 1 January 1970, provided for the preparation of an Environmental Impact Statement (EIS) for any major Federal action that would impact the quality of the human environment. The Act specified that it was the responsibility of the Federal Government to "preserve important historic, cultural, and natural aspects of our national heritage," and that consideration of the impact of any substantial Federal undertaking on the historic and cultural environment be included in the EIS.

19. Executive Order 11593, which was later incorporated as Section 110 of the National Historic Preservation Act Amendments of 1980 (Public Law 89-665), provided specific directives to all Federal agencies regarding the protection of historic properties.

20. Section 1 of the Executive Order stated that

The Federal Government shall provide leadership in preserving, restoring, and maintaining the historic and cultural environment of the Nation. Agencies of the executive branch of the Government...shall (1) administer the cultural properties under their control in a spirit of stewardship and trusteeship for future generations, (2) initiate measures necessary to direct their policies, plans and programs in such a way that Federally owned sites, structures and objects of historical, architectural or archeological significance are preserved, restored and maintained for the inspiration and benefit of the people....

21. Although the Executive Order required that by 1 July 1973, all Federal agencies "locate, inventory and nominate to the Secretary of the Interior all sites, buildings, districts and objects under their jurisdiction or control that appear to qualify for listing on the National Register of Historic Places," it did not specify how this was to be accomplished, especially since no money was allocated to Federal agencies to perform these tasks.

22. One of the most important Federal mandates regarding historic preservation is the Archeological and Historical Preservation Act of 1974 (Public Law 93-291), which amended the Reservoir Salvage Act of 1960 (Public Law 86-523). Prior to these amendments, previous mandates and directives required Federal agencies to consider what impact their undertakings would have on historic properties as well as to preserve these properties. However, most agencies did not have funds authorized to inventory, evaluate, and preserve archeological sites that would be affected by construction projects. This Act

provided for the first time a consistent level of funding of up to 1 percent of the total amount authorized for a project to be expended for the preservation of historical and archeological data. To illustrate the impact of this mandate, 10 years prior to the passage of this law, \$350,000 was the total funds available for historic property investigations in the entire Missouri River Basin. In 1975, sums in excess of that amount were allocated for the excavation and analyses of data from a single site. As a result of this law, funding was finally secured for historic preservation at Federal construction projects.

23. The American Indian Religious Freedom Act of 1978 (Public Law 95-341) made it a policy of the Federal Government to protect and preserve for Native Americans their inherent right of freedom to believe, express, and exercise their traditional religions. In addition, the law directed Federal departments, agencies, and other instrumentalities to consult with native traditional religious leaders to determine if changes were necessary in the Government's policies and procedures to protect and preserve Native American cultural and religious practices. Native American rights included, but were not limited to, access sites, use and possession of sacred objects, and freedom to worship through traditional ceremonies.

24. Although scientific data recovery was the primary means of mitigating loss of archeological sites due to Federal construction projects, there were limited means of protecting sites on Federal lands that were being destroyed by vandals and depredators. To prevent the loss and destruction of these resources, Congress enacted in 1979 the Archeological Resources Protection Act (ARPA) (Public Law 96-95), which was later amended. Among the provisions of ARPA was the prohibition against excavation or removal of archeological resources from Federal lands without a permit issued by the Federal land manager. If any individual should attempt to vandalize an archeological site or counsels, procures, solicits, or employs any other person to do so, he/she could be fined, if convicted, up to \$10,000 and/or be imprisoned for 1 year for the first offense. A second conviction may result in a person being fined not more than \$100,000 or imprisoned for not more than 5 years, or both. In addition, information concerning site locations is considered confidential and exempt from the Freedom of Information Act. Implementing regulations for the Corps of Engineers were issued in 1984 by the Department of Defense as 32 CFR 229. These regulations provide details on permit application, issuance, and suspension and on prohibited historic property acts and

accompanying civil and criminal penalties for offenses on Federal and Indian lands.

25. Although not specifically a historic preservation law, the Water Resources Development Act of 1986 (Public Law 99-662) under Section 943 authorized the Secretary of the Army "to preserve, restore, and maintain those historic properties located on water resources development lands under the jurisdiction of the Department of the Army if such properties have been entered into the National Register of Historic Places." Guidance on implementing Section 943 was issued on 21 May 1987 by the Executive Director of Civil Works for the Corps of Engineers. It was determined that not only sites listed on the National Register were to be preserved, restored, and maintained, but any historic property on water resources development projects determined eligible for the Register was to be given equal consideration.

26. Prior to passage of the Abandoned Shipwreck Act of 1988 (Public Law 100-298), the disposition of sunken vessels came under marine law and, as such, salvage rules applied to these resources rather than historic property rules and regulations; however, passage of the law gave jurisdictional control of shipwrecks located on submerged lands to the states. Submerged lands include not only those areas extending for at least 3 nautical miles off the coast of a state, but also the natural lakes and rivers of a state.

27. Two recent legal developments will have a significant future bearing on the manner in which the Corps ensures the protection of records and remains recovered from archeological sites. The first of these has to do with "curation of Federally-Owned and Administered Archeological Collections" (36 CFR Part 79) and establishes definitions, standards, procedures, and guidelines to be followed by agencies to preserve collections of prehistoric and historic material remains and records recovered in conjunction with Federal projects and programs. Engineer Regulation (ER) 1130-2-433, "Collections Management and Curation of Archeological and Historical Data," outlines the Corps methodology for complying with this regulation.

28. The second development is the recent enactment of the Native American Grave Protection and Repatriation Act of 1990 (Public Law 101-601). This act, when implemented, will cover acquisition and disposition of two categories of artifacts and remains: (a) human remains and associated funerary objects and (b) unassociated funerary objects, sacred objects, and objects of cultural patrimony. The Act outlines the types of inventories and artifact

summaries that will be required for each category and provides a process for repatriation, when necessary.

29. Historic property laws applicable to Corps of Engineers' O&M projects, as well as other Federal agencies' projects, have been developing since the first decade of the 20th century. A gradual evolution has occurred where Federal involvement in preserving our nation's historic properties has changed from a rather limited, passive role to one with far-ranging and dynamic participation by all Federal agencies. Although the focus of previous historic property investigations on Federal lands has been primarily for site excavation and data collection, future efforts need to be directed toward in situ site protection whenever possible if this nation's cultural heritage is to be preserved for future generations.

PART III: CORPS OF ENGINEERS CIVIL WORKS PROJECTS

30. The Corps of Engineers' involvement in Civil Works projects began in 1824 when Congress appropriated \$75,000 to improve navigation in the Ohio River and to remove snags from the Ohio and Mississippi Rivers. Later, in 1879, Congress created the Mississippi River Commission, which was given jurisdiction over flood control and navigation work on the lower Mississippi River. Further legislation by Congress over the past century has provided the basis for the Corps as the leading agency in water resource management in this country. Since the Federal Government became involved in water control projects, the Corps has been responsible for the improvement and maintenance of nearly 22,000 miles of inland and coastal waterways. In addition, the Corps has constructed and now operates approximately 560 dams and water control structures and regulates in part 88 non-Corps dam projects.

31. Water resource projects are authorized by Congress for either single- or multiple-purpose objectives, which include flood control, hydro-power, navigation, water supply, water quality, recreation, and preservation or enhancement of fish and wildlife. To understand what potential impacts may occur to historic properties at O&M projects, it is necessary to review the types of water resource projects the Corps is responsible for managing.

Navigation Improvements

32. Recognition by the Federal Government of the economic importance of providing a network of navigable waters for interstate commerce was confirmed in the Constitution and in subsequent Supreme Court decisions in the 19th century.

33. Since most rivers cannot provide adequate waterflow and channel dimensions throughout the year to accommodate commercial navigation traffic, the Federal Government has been involved in accomplishing this in part through the construction and maintenance of locks and dams, harbor areas, canals, and reservoirs and with dredging and channel stabilization work. Navigable waters of the United States can be defined as "those waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce" (Engineer Pamphlet 1165-2-1, p 11-3). Navigable rivers such as the Ohio, Arkansas, Tennessee, and upper Mississippi are examples of waterways

that have been changed as free-flowing streams to a series of pools by the construction of numerous locks and dams (Petersen 1986, p 268). To maintain the necessary channel depth for commercial traffic, water is impounded in a pool above the dam so that river traffic can pass unimpeded to the next dam upstream. Manipulation of the pool levels which results in raising and lowering the water level contributes to wetting and drying cycles on streambank soils. This factor can have serious consequences for historic properties located on tributary rivers; these ramifications will be discussed later.

34. Commercial traffic has increased substantially on many waterways over the past two decades. For example, in 1967 it was predicted that by 1980 300 million tons of freight would be transported on the Mississippi River; however, by 1980 over 440 tons of freight was actually being moved (Petersen 1986, p 298). Given the heavy commercial traffic on this country's inland waterways, the impact on shoreline historic properties due to erosion caused by wave action is enormous.

35. The regulation of water flow to assist navigation on the Missouri River differs from the Mississippi, Ohio, and Tennessee Rivers in that large multipurpose dams were constructed on the main stem to provide adequate flows of water during the navigation season. In addition, structures such as dikes and revetments were constructed to concentrate the water into a single channel to maximize the depth.

36. To assist in deepening and widening of navigation channels, major dredging operations have been conducted by the Corps of Engineers since the latter part of the 19th century. Within the Corps' annual budget, dredging of channels and harbors is the largest item for expenditure of funds. Although the Corps operates a dredging fleet, most dredges in the country are maintained and operated by private industry. Dredging equipment today is classified as either mechanical or hydraulic. Essentially, mechanical dredges use a bucket or dipper to excavate bottom materials, which are then transported to a disposal area. Hydraulic dredges, on the other hand, remove dredged material by means of suction pipes and pumps. Dredged material is then disposed of in either open water or conveyed to a disposal site. During the course of a year, the Corps dredges more than 350 million cu yd of material to maintain necessary channel depths.

37. A recent guidance letter (Dredging Guidance Letter 88-02) was issued by the Office, Chief of Engineers, regarding policy and procedures for the conduct of underwater historic resource surveys for maintenance dredging

and disposal activities. The guidance letter states that "It is Corps policy not to conduct historic property surveys at existing, previously constructed, and routinely maintained navigation projects." However, it is also recognized that some projects were constructed prior to the enactment of historic preservation laws and regulations. At these projects, when "there is reasonable cause to believe that historic properties may or are being" impacted by dredging operations, a literature and archival search should be conducted." In addition, where advanced dredging, channel modification, or new or enlarged disposal sites are required, a literature search will be necessary to identify submerged historic properties. If the literature search reveals that historic properties have been or could be affected by maintenance dredging and disposal activities, underwater surveys in those specified areas are required. It is therefore recognized by the Corps that although some navigation projects have been operating for years, this situation does not preclude additional historic property investigations if there is a reasonable cause to believe that historic properties may or are being impacted by project operations. All new navigation projects do require archival research and, if necessary, underwater surveys.

38. In addition to the canalized waterways such as the Ohio, upper Mississippi, and Arkansas Rivers, where the Corps is responsible for operation and maintenance, canals have also been constructed by the Corps, including the Chain of Rocks and Arkansas Post canals and the Tennessee-Tombigbee Waterway. The latter project, constructed between 1972 and 1985, required the removal of extensive quantities of material for the three sections excavated (approximately 230 miles). Not only was the construction project one of the largest built by the Corps in this country, but substantial funds were used for the excavation and preservation of historic properties that were to be impacted by the undertaking.

Flood Control and Reservoir Improvements

39. Congressional involvement in flood control matters did not evolve until the latter half of the 19th century. Flooding of the Mississippi River prompted Congress to authorize in 1850 a study for a plan for flood control and navigational improvements at the river's mouth. Two separate studies were conducted, one by Colonel Stephen Long and Captain Andrew Humphreys of the Corps of Topographic Engineers and the other by Charles Ellet, an eminent

engineer of his day. In Ellet's report, which was submitted to Congress in 1852, he recommended the construction of reservoirs on the Mississippi tributaries to reduce flooding. The report authored by Long did not make any recommendations to Congress. Later, Humphreys and Lieutenant Henry Abbot compiled a document that was submitted to the Chief of the Topographic Engineers in which they concluded that Ellet's conclusions were in error and that only by the construction of levees could flooding of Mississippi be prevented. This philosophy in dealing with flood control measures was to be the Corps' position into the 20th century.

40. In 1879, Congress established the Mississippi River Commission, which was given control over navigation work and flooding on the lower Mississippi River. The creation of this Commission marked a growing commitment of the Federal Government to develop an inland waterway and flood control system.

41. However, it was not until 1917 that Congress passed the first flood control act. In addition to appropriating funds for this work on the lower Mississippi, Congress appropriated \$5.6 million for a flood control project on the Sacramento River, California. Due to extensive flooding of the lower Mississippi River in 1927, when 250 to 500 lives were lost, Congress passed the Flood Control and Protection Act of 1928, which authorized the compilation of a comprehensive plan for flood control of the Mississippi River and its tributaries. Maintaining the position that only levees would prevent flooding and that reservoirs would not (or that they were not cost-effective) was no longer defensible. Levees had not been successful in containing the Mississippi River.

42. Congress enacted the Flood Control Act of 1936 (Public Law 74-738), in which Section 1 declared that flood control was a proper Federal activity and that improvements for flood control purposes were in the interest of the general welfare. Section 2 of the Act stated that Federal work on flood control measures would be under the direction of the Secretary of the Army and under the supervision of the Chief of Engineers. This law gave the Corps of Engineers responsibility for Federal flood control projects throughout the country. Subsequent to this legislation Congress authorized, and the Corps built, over 350 reservoirs in this country primarily for flood control. However, it is unlikely that all these reservoirs would have been constructed if flood control was the sole purpose.

43. Corps involvement in the development of hydropower facilities began in the 1930s as part of a national program for comprehensive water resource development. By 1982, hydropower facilities existed at approximately 100 Corps projects, or were under construction.

44. Two types of dams and reservoirs incorporate hydropower as a project purpose--storage and run-of-river. A storage project that has sufficient capacity to regulate streamflows on a seasonal basis is generally multipurpose. The other type, run-of-river, has limited capacity relative to volume of flow and is primarily developed in connection with navigation projects. At some of these projects, power releases downstream from the dam have caused substantial erosion problems, which ultimately impact on historic properties. This circumstance and its implication will be discussed later.

45. The Flood Control Act of 1944 provided the impetus for Corps involvement in water supply. Section 6 of the Act authorized the Secretary of the Army to dispose of surplus storage water available at reservoirs for domestic and industrial uses. Section 8 of the Act provided that the Corps reservoirs may include irrigation purposes in 17 western states. In addition, Section 301 of the Water Supply Act of 1958 provided that storage may be included for present and future municipal or industrial (M&I) water supply in Corps projects. Several of the Corps' multipurpose reservoir projects west of the Mississippi River include irrigation as a project purpose, and as such, provide necessary water to increase the regular streamflows required to meet irrigation needs in downstream areas.

46. Storage rights for M&I water supply are specified in a long-term contractual agreement between the Corps and the users. Normally the user will have storage rights between fixed limits of reservoir levels. Although the user has the right to withdraw water contained in the storage levels, the Corps has reserved rights to regulate this withdraw if it would impinge on specified project purposes. There is a significant potential to impact historic properties on project lands if, for example, water storage was increased to meet water supply requirements. Inundation and erosion of sites that previously were minimally affected by normal project operations would occur if water storage was increased.

47. Another purpose for which Corps reservoir projects are authorized is to enhance water quality. Even if water quality is not an authorized purpose, projects must operate for water quality to some extent during the entire life of the project. The goal of the Corps water quality policy is at a

minimum to comply with all Federal, State, interstate, and local water quality requirements. This policy is based on the Clean Water Act of 1977, Section 60 (Public Law 95-217), and Executive Order 12088, "Federal Compliance with Pollution Control Standards." A successful water quality program at any project is the result of cooperation, coordination, and continuous input from individuals who have expertise in the biological, chemical, and physical variables as they relate to the project environment.

48. In addition, the Federal Water Pollution Control Act Amendments of 1972 (Public Law 92-500) established a national policy of eliminating all pollutant discharges into US waters by 1985. Section 404 of the Act authorized the Corps of Engineers to administer a permit program for the disposal of dredged or fill material into the nation's waters.

49. Recognition of the importance of fish and wildlife management at projects also began with the Flood Control Act of 1944. Section 4 authorized providing facilities in reservoir areas for public use, including conservation of fish and wildlife. The Fish and Wildlife Coordination Act of 1946 (Public Law 79-732), which was amended in 1958, provided that wildlife conservation be given equal consideration with other project water resource programs and that proposed work affecting any body of water be coordinated with both the US Fish and Wildlife Service and the State wildlife agency. Recommendations made by the Service and State agency are to be given full consideration, and measures for wildlife purposes, including mitigation measures, are to be adopted. The Act also requires that adequate provision be made for the use of project lands and waters for the management of wildlife resources, including their development and improvement.

50. In addition to dam construction and impoundment of water in a reservoir, flood protection can be achieved by the use of floodwalls, levees, pumping plants, and drainage control structures. Of these structures, levees have the most potential for impacting historic properties.

51. Levees may be classified or described based on various criteria. These criteria include their use or purpose, method of construction, or the type of lands being protected. Borrow areas used for levee construction should be situated on the river side of the levee, and their depth will depend upon the groundwater table, environmental factors, and the depth of suitable embankment material. In the construction of levees, consideration must be given to potential impacts on historic properties. Since a levee must withstand (among other things) erosion, overtopping by flood flows, and water

pressure for periods of a few days to a few weeks, suitable fill is necessary for construction. Shallow, wide borrow areas are preferred because impacts to the environment will be minimal and haul distances will be short. Historic properties can potentially be situated in the borrow areas or located under the future level alignment. In addition, vehicles used to haul the fill from the borrow area to where the levee is to be constructed may also impact surface archeological sites.

52. Additional legislation affecting the management of fish and wildlife resources on project lands includes the Federal Water Project Recreation Act-Uniform Policies (Public Law 89-72) and the Endangered Species Act, as amended (Public Law 97-304).

53. The first Act (PL 89-72) requires that full consideration be given to opportunities for recreational development at water resource projects. However, facilities will be constructed by the Federal Government and a cost-sharing sponsor on a fifty-fifty basis. Once the project is operational, the sponsor will be entirely responsible for maintenance, operation, and management of the facilities. The Act also requires that if there is no cost-share sponsor, facilities for recreational development will not be provided except those justified to serve other project purposes or as needed for public health and safety. In addition, if after 10 years there is still no local sponsor, the land may be used for other project purposes or sold to its immediate prior owner or heirs. Essentially the Act declared that the Federal Government was not to take responsibility for the maintenance and management of recreational facilities at water resource projects authorized after 1965. The Act also affirmed that local sponsors would, on a partnership basis with the Federal Government, shoulder one-half of the construction costs for recreation facilities that would ultimately benefit those in proximity to the project.

54. The Endangered Species Act requires that Federal agencies, in consultation with the US Fish and Wildlife Service, use their authorities for the conservation of endangered and threatened species and take necessary action to ensure that project operations are not likely to jeopardize designated species or destroy and modify their critical habitat. The Act also prescribes a consultation process between the Federal agency involved in an undertaking and the Secretary of Interior, Secretary of Commerce, or Secretary of Agriculture for establishing programs for the conservation of endangered or threatened species.

PART IV: HISTORIC PROPERTY RESOURCE MANAGEMENT IN THE CORPS OF ENGINEERS

55. The Corps of Engineers presently consists of 12 major subordinate commands (Divisions) and 36 District offices nationwide. Each of the Division Offices has a Division Commander who is responsible for administering the programs that have been assigned to him by the Commander, USACE. The Division Commander in turn assigns the missions to the District offices that are under his command; the District is in essence the operating arm of the Division. Although the organizational structure of the Districts may vary slightly, the basic composition of each office is shown in Figure 1.

56. Each Division element within a District has ascribed functions and responsibilities to accomplish the assigned missions. Several offices have direct or indirect responsibilities for the District's historic preservation program at O&M projects, including Operations, Engineering/Planning, and Real Estate.

Operations Division

57. The Operations Division, including project offices, has the ascribed primary role in the preservation of historic properties at O&M projects. As specified in ER 10-1-3, "Organization and Functions, Divisions and Districts," one of the responsibilities of the Operations Division is to conduct "historic and archeological resource investigation surveys, assess potential effects of proposed work on such resources, and perform other related activities required by law in connection with regulatory activities and the operation of civil works projects." In addition, the Operations Division is "Responsible for all aspects of operations, maintenance, and administration of water resource projects and associated resources, including the natural, developed, historic and archeological resources."

58. Further recognition of the operations element responsibility for the historic preservation program is contained in ER 1130-2-438, "Project Construction and Operation, Historic Preservation Program." This document states, "As with other resources on Corps managed lands, the management, preservation and protection of historic properties rests with the Operations element acting on behalf of the District Commander."

59. Historic preservation is an integral component of the Natural Resource Management Program at O&M projects. One of the goals of this program

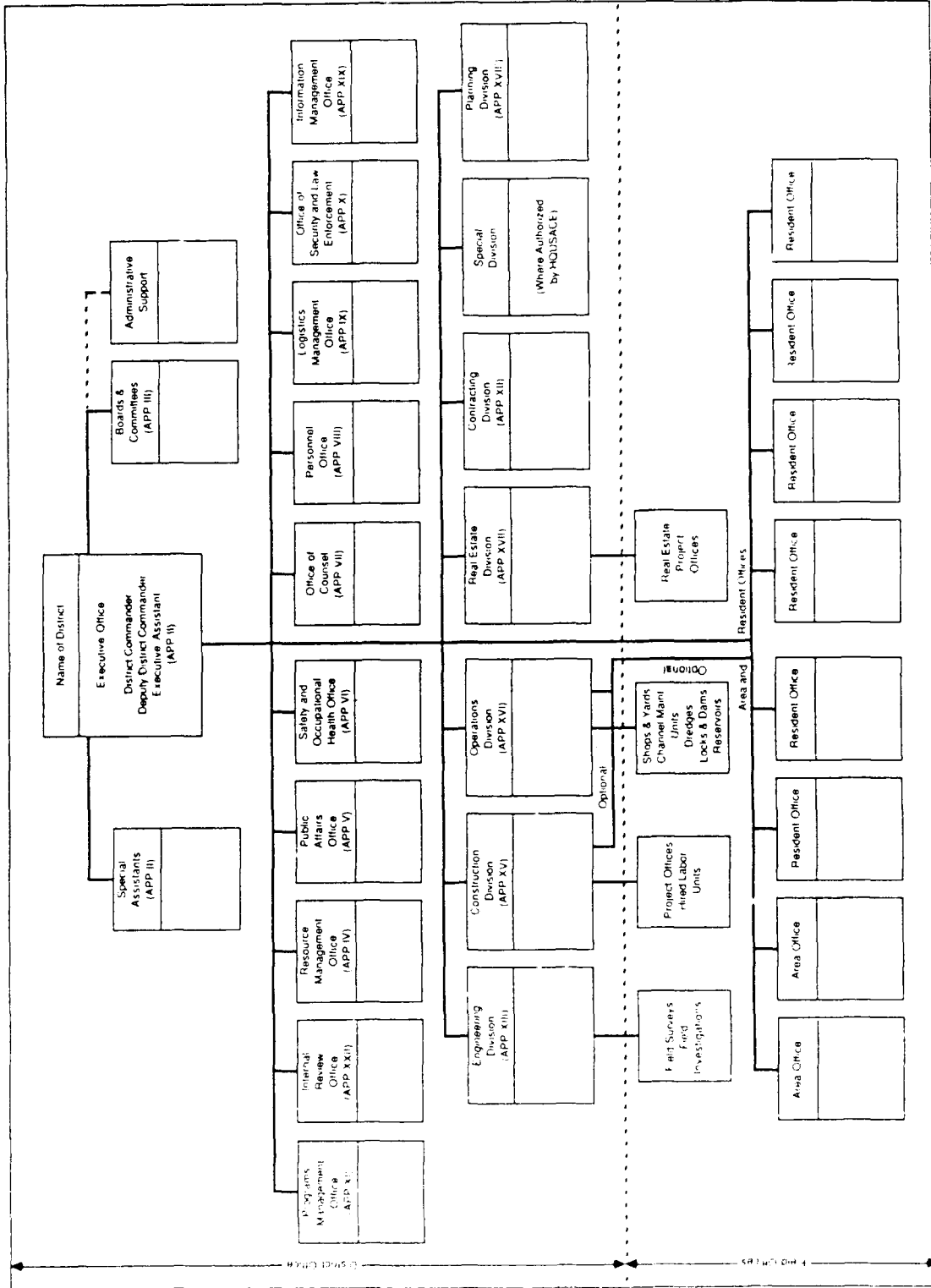


Figure 1. Organizational structure of the Corps of Engineers District (Engineer Regulation 10-1-3)

as stated in ER 1130-2-400 ("Project Operation-Management of Natural Resources and Outdoor Recreation at Civil Works Water Resource Projects"), is to manage resources on land and water administered by the Corps to ensure their continued availability.

60. Project lands are used for a variety of purposes. The nearly 12 million acres of land and water the Corps manages, which comprises 1 percent of all Federal lands in the United States, records over 30 percent of the recreation visitation in this country. Recreation is then one of the primary activities for which the Corps manages its land and water resources. Other recognized management responsibilities include fish and wildlife, forest/range, mineral, and timber sales. Although some project lands are used for agricultural crop production and grazing, these uses are not recognized as project purposes, but rather are considered an interim use of the land.

61. In addition to the Corps' management role of project resources, project lands and waters are made available to states for fish and wildlife management, which also includes construction and maintenance of structures and facilities. The potential impacts to historic properties as a result of lands leased/licensed to the states are substantial. It is imperative that Field office personnel and District office staff review any yearly plans prepared by a state to determine what the potential impacts may be on historic properties. Plans for any development submitted by a state should be detailed enough so that effects on archeological sites can be readily identified and appropriate action initiated to mitigate any future negative impacts.

62. District and Field office staffs require continuous exchange of information and coordination of activities to ensure a successful resource management program. However, it should be recognized that Field office personnel are the managers of project resources and that District office staff provide input of their professional specialties to the Field office to ensure that the best possible management strategies will be implemented.

63. To make this connection work efficiently, the District staff should include a historic property specialist as well as a project staff member who has been trained in historic preservation matters.

64. As stated in ER 1130-2-438, "Project and Resource Managers are urged to designate one or more project staff members as a liaison between the District and field office regarding all historic preservation matters." It is expected that the designees will receive necessary training in historic preservation and be knowledgeable of historic properties at their projects. It

is, however, the responsibility of the District office historic property specialist to coordinate the program with State and other Federal Agencies involved in historic preservation matters. Whether managing archeological sites or other natural resources at the projects, a symbiotic partnership between the District and Field office staffs must exist to have a successful management program. A District's historic preservation program is developed by the interchange of information between the various historic property managers. It is imperative that these managers review ongoing activities and assess future preservation plans on a regular basis rather than coordinate only when a crisis arises. The success of management programs will largely depend on the ability of the resource managers to work together as team players and not as independent, mutually exclusive entities.

65. Both the District and Field office historic preservation staffs are responsible for reviewing documents relating to licenses, leases, permits, land exchanges, excess lands, or any outgrants for project or easement lands whose issuance has the potential to impact historic properties. These offices will coordinate their findings with the Real Estate element and, if compliance activities are necessary, the District office operations element will initiate and accomplish the required work with other Federal and non-Federal offices.

66. A review of agricultural and grazing leases prior to their reissuance should be completed by both Field and District office resource managers to assess what impacts may occur at historic properties. It is often erroneously assumed, for example, that because an agricultural field has been plowed for years, archeological sites have already been destroyed and therefore no further damage will take place. While it may be true that the cultural context surface has been disturbed, one should not automatically assume that subsurface features and materials below the plow zone lack integrity. Certainly, continued plowing may in time destroy intact subsurface features; however, only by systematically testing a site can it be determined if there are intact significant archeological remains worthy of preservation.

67. Additional project office responsibilities for the protection of historic properties have been codified in 36 CFR 327.14(a) ("Rules and Regulations Governing Public Use of Corps of Engineers Water Resources Development Projects"). Project personnel who have been given authority under Title 36 can issue a citation to anyone on project lands who is responsible for the "Destruction, injury, defacement, removal or any alteration of public property including but not limited to developed facilities, natural formations, mineral

deposits, historical and archaeological features." Punishment for a violation under Title 36 may result in a fine of not more than \$500 or imprisonment for not more than 6 months, or both. Presently, Corps of Engineers project personnel do not have citation authority under the Archaeological Resources Protection Act. Enforcement of suspected ARPA violations would proceed from either the Criminal Investigation Command or the appropriate Federal Marshal. Although not subject to civil or criminal penalties of ARPA, the collection of arrowheads from the surface of project lands is prohibited by Title 36.

68. A memorandum dated 10 March 1989 was issued by the Director of Civil Works for metal detector use at Corps of Engineers water resource projects.* Metal detector use is permitted on beaches or other previously disturbed areas that do not contain or are not likely to contain archeological, historical, or paleontological resources. Since District Engineers can restrict metal detector use to areas where historic properties do not exist, the potential to vandalize these resources can be minimized. Title 36 has not yet been revised to reflect this policy change nor have the consequences of violating this policy been codified.

Planning and Engineering Divisions

69. In most Corps of Engineers' District offices, a Planning Division element has been established independent of the Engineering Division. Justification for creating a separate Planning Division is contained in ER 10-1-3; however, some Districts still retain a Planning Branch in the Engineering Division. In a Corps-wide review of personnel involved in historic preservation matters, it was found that nearly all archeologists, cultural resource specialists, and anthropologists are employed in either the Planning or Engineering Division. Only three Districts have historic preservation staff in their Operations Divisions, with two of the offices dealing directly with water resource projects.

70. During the 1970s and 1980s, when new construction projects were still being built by the Corps, and with the enactment of the Archeological and Historic Preservation Act of 1974, which provided for 1 percent of funds authorized for a construction project to be expended on data recovery or

* Memorandum, 10 March 1989, BG Patrick Kelly, "Metal Detector Use Policy for the US Army Corps of Engineers," CECW-ON, Washington, DC.

in situ preservation of archeological materials, the Planning or Engineering Division was the District element responsible for conducting historic property activities. As projects were completed and changed to an operational status, the responsibility for continuing compliance activities with historic preservation mandates and directives was generally retained by the Planning or Engineering Divisions.

71. Recognition of Planning or Engineering Division's historic preservation role is usually contained in District regulations and in ER 1130-2-438. Although the latter regulation specifies that the Operations element is responsible for managing historic properties at O&M projects, "it is expected that much or most technical guidance and support will be provided by planning element archeologists or historic property specialists...Operations and Planning elements will closely coordinate and cooperate in these undertakings." In addition, individual Corps Districts may have regulations which ascribe a historic preservation role to either the Planning or Engineering Division. For example, Appendix T of the Kansas City District's Regulation 10-1-3 specifies that the Planning element "will conduct comprehensive cultural resource studies to identify architectural, archeological, and/or historic properties on project lands." The Planning element also recommends and implements compliance action for mitigation or preservation of significant cultural resources and develops, negotiates, and administers cultural resources contracts. Regardless of which District element has the lead role in historic preservation matters, the Operations and Planning or Engineering Division cooperate and coordinate their historic property activities at O&M projects to establish a successful resource management program. The separation of responsibilities for preservation work at O&M projects assigned to two District elements could result in a duplication of effort and a miscommunication of information between the offices, resulting in a disorganized or directionless historic properties program. Because of the potential for variance among the Divisions, it is critical that the Planning or Engineering and Operation elements including the project office regularly meet to discuss the direction, priorities, and goals of the preservation program. Each element must know the needs of the other elements and be responsive to them.

Real Estate Division

72. As the lead element responsible for managing and administering real estate contracts, the Real Estate Division has a critical role in the District's historic preservation program. The Real Estate element is primarily responsible for negotiating and administering all property grants of project lands, with the exception of lakeshore use permits. Since there is a considerable potential to impact historic properties on grant lands, the Real Estate element is cognizant of this situation and has developed regulations to deal with the potential problems through Historic Property specialists in other Division offices.

73. In the Real Estate Handbook 36 CFR 644.317 and Real Estate 32 CFR 643.28-30, there is a recognition of the requirements to comply with Executive Order 11593 and with the National Historic Preservation Act of 1966 (Public Law 89-665), as amended. Further policy guidance for the real estate element is contained in ER 405-1-12 (Real Estate Handbook). Chapter 8, Section 1, of this regulation specifies the procedures that the District's Real Estate Division should follow when considering lands for outgrants. For historic properties included in or eligible for the National Register of Historic Places, "Federal agencies must take into account the effect of any undertaking or outgrant on such historic property and must afford the Advisory Council on Historic Preservation reasonable opportunity to comment on such action before they approve expenditure of any funds or issue any outgrants." It is therefore necessary that the Real Estate element coordinate all outgrant considerations with the Operations element and the Project offices. The regulation further states that, "Outgrant assemblies will incorporate a statement covering the historical, cultural, and archeological considerations given the proposed action." The proposed outgrant action must consider what effects may occur on historic properties on or eligible for the National Register and must also determine whether any unrecorded archeological sites are present on the land. The presence of archeological sites will be determined after a historic property survey is conducted. However, past activities (such as having used the land for borrow) or the nature of the terrain (for instance, steep-sided rock outcroppings) may preclude the need for a survey. Each outgrant action is handled on a case-by-case basis and must be coordinated with the element(s) responsible for approval or for preparing the determination of eligibility.

74. The regulation further specifies that "The following cultural protection condition shall be added when cultural, archeological, or historical artifacts may be discovered":

That the grantee shall not remove or disturb, or cause or permit to be removed or disturbed, any historical, archeological, architectural or other cultural artifacts, relics, vestiges, remains or objects of antiquity. In the event such items are discovered on the premises, the grantee shall immediately notify the District Engineer, _____ District, and the site and the material shall be protected by the grantee from further disturbance until a professional examination of them can be made or until clearance to proceed is authorized by the District Engineer.

75. In addition to coordinating proposed outgrants of land with other District elements, the Real Estate Division is responsible for issuing permits for archeological excavations on project lands to qualified individuals or institutions. To implement the Archeological Resources Protection Act, the Corps of Engineers assumed responsibility for the issuance of permits in 1985 and designated the Real Estate element as the office to fulfill this mission (see ER 405-1-12, Section 8-65). Applicants for ARPA permits must submit an application form with the information required in 32 CFR 229.6 and 229.8, "Protection of Archeological Resources: Uniform Regulations." The District Real Estate office coordinates with other elements in the District office to determine the availability of project lands for the requested permit activity. Technical review of the application will be handled by a specialist in historic preservation to be designated by the District and Division Commanders for each office. Processing of the permit should be accomplished by all District elements within 90 days.

Field Project Offices

76. At Corps water resource projects, personnel employed and responsible for managing the project's resources consist of individuals with diverse backgrounds. Generally, the personnel structure for managing these resources can be separated into two primary elements. For each new project, excluding specifically designated facilities such as locks and powerhouses, a manager is assigned shortly after the initiation of land acquisition. This manager will be responsible for coordinating with various District elements the aspects of planning, design, construction, and other project activities. Once

construction is completed, the resource or project manager will be responsible for all aspects of operations, maintenance, and administration of a project as well as management of its natural and historic property resources.

77. To assist the project manager in fulfilling his responsibilities of management and administration of project resources, a staff of rangers are employed whose expertise covers a range of disciplines, such as wildlife biology, forestry, archeology, outdoor recreation planning, and agronomy. This cross section of expertise will allow the resource manager the opportunity to employ these diverse skills for successful management of the project's resources.

78. It should be apparent then that it is the Project office and not the District office that will be in charge of the day-to-day management of these resources. Therefore, to have a successful historic property program, it is essential that Project and District office staff communicate and coordinate all activities that may potentially impact these resources.

PART V: RESOURCE MANAGEMENT AT OPERATIONAL PROJECTS

79. According to ER 1130-2-438, "Historic preservation is an equal and integral component of resource management at operating Civil Works projects. As such, historic preservation should be given just and equal consideration along with other resource objectives in preparation and implementation of Master Plan and Operational Management Plan (OMP) documents."

80. The Master Plan, which is the primary document to guide the development and use of natural and man-made resources at each Corps of Engineers Civil Works project, is prepared by an interoffice/interdisciplinary team. Generally the team is comprised of members from the Planning, Real Estate, and Operation Divisions along with project personnel. The goal of the master plan is to document the maximization of benefits to be derived from effectively managing project resources. It is Corps of Engineers policy that the master plan provides "direction for project development and use and as such is a vital tool for the responsible stewardship of project resources for the benefit of present and future generations; and...[to] promote the protection, conservation and enhancement of natural, cultural and man-made resources" (ER 1130-2-435, "Project Operation-Preparation of Project Master Plans").

81. Allocation of project land for specific authorized purposes has been compartmentalized into lands for operations, recreation, fish and wildlife, and mitigation. However, the basic working unit in which resources are managed is dependent upon land classifications that are ascribed to the land allocation categories.

82. Six classifications for allocated project lands are recognized: project operations, recreation, mitigation, environmental-sensitive areas, multiple resource management, and easement lands. However, land use should be restricted in these areas to primarily recreation-low density and should not include agricultural or grazing uses.

83. During the development of master plans, updates, or supplements to the plan, the historic property manager is part of the interdisciplinary team compiling the document. During this process, it is the responsibility of the historic property manager to identify those resources on project lands that need to be managed in a manner compatible with other resource management objectives. It should be understood from the outset of the master planning process that, although it is critical to protect as many historic properties as possible to preserve these resources for the future benefit of the public,

in situ preservation of archeological sites cannot be given greater priority than other management goals on project lands, nor is protection of these resources to be given less consideration. As stated in ER 1130-2-435, "The master plan shall cover all resources including but not limited to fish and wildlife, vegetation, cultural, aesthetic, recreational." As part of the master planning team, the historic property manager provides an analysis of archeological resources in sufficient detail so that future land classification decisions and establishment of resource objectives can be made. The initial success of a historic property program will depend on how well the resource manager is able to identify and articulate the needs of those resources under his/her stewardship and on how well the manager can work as a "player" on the master planning team.

Operational Management Plan (OMP)

84. The Master Plan is the document that directs the use, development, and management of the natural and man-made resources of a project, while the OMP is the document that describes how the objectives specified in the Master Plan will be implemented and achieved. The OMP includes a statement on the funds that will be required to accomplish the stated programs, the time frame within which these objectives will be accomplished, and the manpower needs for these tasks.

85. All Corps projects require the preparation of an OMP, which should, if possible, be updated every 5 years. Historic property managers are responsible to input into this document the implementation plan that will accomplish the cultural resources program as explained in the Master Plan.

86. Although the Historic Property Management Plan (discussed below) for each project will contain more specific data than the OMP, scheduling activities, projected time frameworks, and necessary funding must be incorporated in the OMP to ensure that the plan will be treated as an integrated element of the total natural resources management program.

Historic Properties Management Plan

87. The document that contains the comprehensive historic properties program for each operational project is the Historic Properties Management Plan (HPMP). As stated in ER 1130-2-438, the HPMP is to "provide a

comprehensive program to direct the historic preservation activities and objectives at each project." Each Corps of Engineers operational project is to develop a plan which will then be incorporated into the project OMP. The responsibility to produce the HPMP rests with the Operations element; however, this plan is accomplished in coordination with other Corps elements. The present structure of the Corps and the ascribed responsibilities of the various elements illustrate the need for coordination and cooperation between elements. Traditionally, management of the historic properties program for each District has been the responsibility of the Planning or Engineering Divisions. Currently, only three of the Corps' 36 Districts have historic property personnel within the Operations Division. The remainder of the Districts that have historic property specialists rely on those personnel within the Planning element. It is therefore necessary that personnel from the Planning, Operations, and Project offices who have historic properties responsibilities work together to develop a comprehensive HPMP. None of these elements can work independently of the other. Inclusion of project-level personnel to help develop the HPMP cannot be overemphasized since they have the day-to-day responsibilities for historic property management.

88. Each HPMP is to include a number of elements and/or activities regarding historic property resources. Some of the primary information required for each plan includes:

- a. A list of identified historic properties at each project.
- b. Maps showing the location of sites and areas that have been surveyed or remained to be surveyed. It should be emphasized that these maps are for Project and District office personnel only and are not to be released to the public.
- c. A summary of the type of field investigations conducted and the methods used to identify and evaluate historic properties at the project. Although some projects may have been entirely surveyed to identify historic properties, the survey strategies that were employed need to be identified and evaluated to determine their completeness and effectiveness. In addition, methods used to evaluate sites for National Register eligibility must be examined to judge the appropriateness of the field techniques used to make the determination.
- d. Identification of impacts either potential or existing on known archeological sites and in the unsurveyed portions of project land. Recognition of past, present, and future use of project lands in relation to known historic properties and unsurveyed portions of project land should be included so that management decisions can be made in a context that integrates all project resource objectives.

- e. The National Register status of all identified historic properties. Three categories are recognized for National Register status of historic properties: (1) Ineligible, (2) Eligible/ Listed on, and (3) No determination. For management purposes, only the latter two categories will be critical since there is no legal responsibility for any agency to manage ineligible sites.
- f. Compilation of ranking and scheduling of historic preservation priorities and activities for identified sites. At recently constructed operational projects, relatively complete inventories of historic properties may exist. At projects completed prior to the passage of historic property legislation since the mid-1960s, there may be substantial data voids of identified archeological sites. This situation does not preclude the need to make managerial decisions regarding known resources. Having a complete database of all historic properties resources is a situation that is infrequent for most operational projects. However, it is not always feasible nor is it necessary to have a complete site inventory in order to manage known sites on project lands. Resource managers must recognize that structuring of work priorities for known sites should occur simultaneously with the identification of previously unknown sites. These processes need to be done in conjunction with one another, not one to the exclusion of the other. Thus, the resource manager should specify which sites need evaluation to determine eligibility and those sites which need other forms of managerial strategies to protect or mitigate project or natural impacts.
- g. Preliminary cost estimate to accomplish remaining activities. A determination of the budget required to accomplish individual work items will be important in structuring and scheduling work priorities. Funding needs for historic property work must be considered in relation to the needs of other resource management objectives at a project since historic property management is an integrated element of the total resource management program. Cost estimates should be projected for at least a 5-year period and will have to be adjusted or changed as the work is completed or deferred.

Resource Management Funding

89. The document that provides guidance to the various Corps elements in compiling budgets and ranking work priorities is Engineer Circular 11-2-156, "Annual Program and Budget Request for Civil Works Activities, Corps of Engineers." This Circular is divided into various subappendixes; Subappendix C-2 details the policy and procedural steps for budget development at operation and maintenance projects.

90. The work item or task is the smallest unit of work for O&M programming purposes. For example, replacing the public bulletin board located in a recreation area at a project is a work item. These tasks can then be further grouped into a larger aggregate called work function, which may consist of, for example, maintenance of all bulletin boards in 10 recreational areas at a project. The next ordering of work is the funding level, where a determination is made of the criticality or importance of the work to be accomplished. The levels are ranked numerically from 1 to 5, with 1 being the highest rank.

91. Funding levels are then grouped into categories that generally correspond to future cost account numbers. The final group is that of the project level, since work must be authorized in specific projects to be funded.

92. The rankings or establishment of priorities within a funding level of the work function package are initially accomplished by the various Divisions at the District level. Once forwarded by the Districts to their Division office, the budgets and work items are reviewed and priorities are established for the entire Division.

PART VI: IMPACTS TO HISTORIC PROPERTIES AT CORPS PROJECTS

93. In assessing the effects to historic properties at Corps O&M projects, it is necessary to define what constitutes an undertaking and resulting impacts. The Advisory Council on Historic Preservation has addressed this issue in 36 CFR, Part 800, "Protection of Historic Properties." This regulation, which implements the National Historic Preservation Act of 1966, as amended (Public Law 89-665), directs Federal agencies to consider what effects an undertaking by an agency may have on historic properties. An undertaking is defined as

any project, activity, or program that can result in changes in the character or use of historic properties, if any such historic properties are located in the area of potential effects. The project, activity, or program must be under the direct or indirect jurisdiction of a Federal agency or licensed or assisted by a Federal agency. Undertakings include new and continuing projects, activities, or programs and any of their elements....

Therefore, an impact that may be the result of an undertaking is any Federal action that can affect or potentially affect a historic property, whether or not that property is located on Federal land. If the Federal agency is responsible for licensing, leasing, or providing any other form of permitting action that may result in the alteration of a historic property, that agency is responsible for considering the potential results of the action on the property.

94. Federal agency responsibility for assessing impacts and implementing action to remedy negative effects on historic properties is an issue that has not been clearly resolved. Disagreements have arisen on this issue where agencies have questioned whether they have responsibility for actions that occur on land that the agency does not own in fee.

95. At Corps of Engineers lake projects where land is held in fee or in easement, ER 1130-2-438 is quite specific. Paragraph 7f of the referenced regulation states that

On lands held in fee by the Federal government under the administration and jurisdiction of the Corps of Engineers, District Commanders shall ensure that historic properties are given full consideration in all management and construction activities. The District Commander has full responsibility within existing statutes, administrative guidelines and policy to protect, preserve, manage, and/or mitigate damage to

historic properties on project lands. These responsibilities include but are not limited to the following actions: real estate grants and land disposals, recreational development, wildlife management, construction, and operation and maintenance. On lands held in less than fee by the Federal government under Corps of Engineers jurisdiction, the District Commander has the same responsibility for historic properties whenever activities generated by the Corp. will have an adverse impact on those properties. If Corps action will impact the property, the Corps is empowered to acquire necessary real estate interests to enable it to carry out the intent of Congress in mitigating adverse impacts to historic properties resulting from Corps activities.

96. On fee lands, the Corps has total responsibility to protect, preserve, manage, or mitigate adverse impacts to historic properties. On easement lands the Corps has the same responsibility "whenever activities generated by the Corps will have an adverse impact on these properties." This responsibility would include such adverse effects as downstream erosion due to navigation and hydropower activities as well as flooding and sloughing easements which the Corps may need for project operations.

97. In regard to navigation projects, the regulation declares that "No post construction investigations are required unless the Corps retains lands, easements or structures, or unless impacts to historic properties attributable to Corps operations are identified."

98. Responses to our inquiry from Corps Districts nationwide differ in determining what impacts to historic properties are attributable to Corps operations. For example, there is little disagreement regarding dredging operations. New disposal sites will be surveyed to determine if historic properties may be present. In the case of advanced maintenance dredging, a literature search is required to identify any possible shipwrecks that may be impacted.

99. On the other hand, the question as to whether there is Corps responsibility or what the Corps can do about impacts of erosion on shoreline sites due to water traffic and the fluctuation of pool levels has not been widely established. It can be argued that if it were not for the Corps' operation and maintenance activities on this country's waterways by use of both structural and nonstructural means, the impacts on bank sites would not be as severe. This position does not negate the argument that erosion would still occur regardless of the Corps mission to maintain and promote navigation. Sites will erode, regardless of whether the Corps is involved in O&M work on

navigable rivers; however, there is without question an acceleration of this process by Corps participation in this work. Gramann (1981), in his work with resource managers along the upper Mississippi River system, has provided information on the most serious threats to historic properties in this region. In his survey Gramann found that the main cause of erosion to bank sites is river traffic associated with commercial and recreational vehicles. Apparently, wave action caused by commercial traffic in the navigation channel is a greater cause of shoreline erosion than ice action, spring flooding, wind-driven waves, or recreational boat wakes. However, in the backwater areas and side channels, recreational traffic poses a greater threat to these resources.

100. The second major impact to archeological sites at navigation projects is due to the fluctuation of pool levels, which causes water to back up on tributary rivers and induces erosion or mass wasting of the soils. In addition, fluctuation of pool levels contributes to erosion by killing shoreline vegetation, which results in an unstable bank. Uprooting of trees has occurred in these instances, and has severely destroyed sites located on the banks of these tributary streams.

101. It is apparent that Corps operations at navigational projects both directly and indirectly impact historic properties. However, there are varying opinions among Corps Districts regarding responsibility for impacts to archeological sites at these projects.

102. The prevailing philosophy of many Corps Districts concerning navigation projects is that the Corps has little or no responsibility for impacts to historic properties if the land on which these sites are located is not held in fee by the Government. This policy is contrary to the Corps historic property regulation (ER 1130-2-438) and to the National Historic Preservation Act of 1966, as amended (Public Law 89-665).

103. Determining which are the direct and the indirect impacts to historic properties resulting from the Corps operation of navigation projects should not create problems in determining responsibility. Both types of impacts must be considered by historic property resource managers if the Corps is to be in compliance with its own regulation and Federal legislation. Property ownership or lack of it does not preclude any Federal agency from mitigating impacts to historic properties that are attributable to that agency's operations, whether that involvement is through construction, power generation, navigation, or the issuance of a license, lease, permit, or any other

consenting document. For Federal agencies, there is no absolution of accountability based on the lack of property ownership.

104. As previously mentioned, Corps Districts across the country were contacted by phone to solicit information regarding the major threats to historic properties at O&M projects and to identify the management strategies that are being employed to protect archeological sites in situ. The following discussion summarizes these responses.

105. The most universal impact on historic properties at O&M projects is erosion. Variables that account for erosion will differ between types of water resource projects, kinds of local soils, and geographic location. Certainly, shoreline erosion is a major contributing factor to loss of archeological sites at lake and navigation projects. Although this erosion is due in part to natural processes such as wind/wave action and frost-thaw cycles, project operations contribute significantly to this process. Lake drawdowns or fluctuation in lake levels for project purposes such as flood control, hydropower, or irrigation can completely destroy vegetation cover that served as a buffer between wave action and shoreline soils. Reduction of the vegetative cover will create unstable shoreline that erodes more easily and therefore more severely impacts shoreline sites. As previously mentioned, river traffic at navigation projects and the manipulation of pool levels for navigation will also result in the disturbance and eventual destruction of shoreline historic properties. By the very nature of Corps projects, shoreline bank erosion will always be a primary factor leading to loss of archeological sites.

106. Protection strategies to alleviate the impacts caused by shoreline erosion can vary from low-cost/low-maintenance approaches to prohibitively expensive techniques. Consideration of employing and implementing these strategies can be accomplished in conjunction with achieving other recognized project purposes such as wildlife management and recreation. However, in many instances, in situ protection strategies for shoreline sites will not be possible, and data recovery is the only viable solution.

107. Agricultural practices on project lands can also contribute significantly to erosion of soils. It has been estimated that in regions of the upper Midwest, eastern Washington, and the Mississippi River Valley where agricultural activities occur, soil loss can exceed 10 tons/acre/year (MacDonald 1990). Over the course of several decades this activity could result in a substantial lowering of the ground surface and the exposure of

archeological sites to natural and man-induced impacts. As noted previously, continued plowing of a field where an archeological site is located will eventually destroy the spatial relationship of cultural material. However, at projects that were constructed prior to the enactment of historic property legislation of the 1970s and 1980s, much of the land that is included in the agriculture lease program has not been surveyed to identify archeological sites. As a consequence, the number and types of sites that are being disturbed daily on project lands are not known, but they are believed to be significant. Since agricultural activities are not designated project purposes, but represent interim use of the land, care must be taken not to allow such practices on lands that have not been properly inventoried for historic properties.

108. In addition, since project lands are licensed to State fish and wildlife agencies, review of annual plans must be undertaken to ensure that current and future activities are not impacting historic properties. If these lands have not been surveyed and the proposed State plan proposes ground-disturbing work, then it is the responsibility of the District Office historic property manager and/or the State agency to inventory the lands. A condition requiring land to be surveyed if it has not already been accomplished should be included in the lease agreement with the state.

109. Timber sales are a recognized management objective at many Corps O&M projects. These sales are conducted by the Real Estate element for timber valued at greater than \$1,000. Potentially negative impacts to historic properties can result from this activity. The construction of haul and skid roads, landings, and work camps will produce ground disturbances that can adversely impact archeological sites. Dragging logs over ground (usually by heavy power equipment) will also cause substantial disturbances to any sites in the pathway of this operation. Consideration must be given to these potential impacts prior to initiation of this activity. Areas where these operations are to occur must be surveyed to identify any historic properties that might be impacted. Changes in plans can be effected if the locations of sites are known well in advance. Cooperation between various District elements, including Real Estate, Operations, Planning, and the Project Office, is necessary to ensure that resources are not impacted by this operation.

110. One of the most damaging impacts to historic properties at O&M projects is vandalism. Acts of this nature have been classified by Rought (1987, p 38) into three categories. The unintentional or casual vandals are

ones that collect artifacts as a hobby or accidentally find a surface artifact and pick it up as a curiosity item. Although seemingly harmless, these vandals can inflict serious damage to archeological sites; their actions, if unchecked, could destroy large numbers of significant historic properties. However, mitigating the impacts caused by these vandals is not as difficult when compared with the other two groups.

111. The second category of vandal is the intentional or premeditated type. This individual loots archeological sites for personal satisfaction or monetary gain. Such vandals apparently know where most of the "good" sites are located in a region and are fully aware of the illegality of their collecting and excavating activities on public land. For this reason they will work quickly and effectively in their efforts to remove cultural artifacts. Using probes, shovels, and in some cases power equipment to vandalize sites, they represent a greater threat to historic properties than any of the other types of vandals. Measures to combat impacts on archeological sites by this group will be discussed subsequently.

112. The final category of vandals is the destructive type. Individuals in this group destroy archeological artifacts/sites simply for the sake of destruction. There is no monetary gain to be made from their activities, and their motivation varies. Their actions may be the result of a grudge they have against the Government, allowing them to get back at the source of some real or imagined injustice. Or there may be a complex psychological reason that motivates them to express their aggression in such a manner. Successful efforts to curtail activities by this group are difficult to implement, and some actions, such as use of physical force, may be considered illegal.

113. Recreational development is recognized as an authorized purpose for O&M projects. According to the Federal Recreation Fee Report 1988, (US National Park Service 1989), the Corps of Engineers records the second largest visitation hours of all Federal agencies. Although responsible for managing less than 2 percent of the Federal land base (about 12 million acres of the total 650 million Federal acres), the Corps provides over 30 percent of the recreational opportunities on Federal lands. Table 1 gives a comparison of visitation and acreage for recreation by the major Federal land management agencies.

Table 1
Visitation and Land Management for Recreation for
Major Federal Land Management Agencies

<u>Agency</u>	<u>Visitation (million visitor hours)</u>	<u>Acres (million)</u>
Forest Service	2,908	190.8
Corps of Engineers	2,290	11.7
National Park Service	1,375	79.6
Bureau of Land Management	461	270.4
Bureau of Reclamation	293	6.4
Fish and Wildlife Service	81	90.4
Tennessee Valley Authority	<u>81</u>	<u>1.0</u>
	7,489	650.3

114. Given the large number of visitation hours for recreational activities at Corps projects, the potential impacts to historic properties are enormous. In addition, to enhance the opportunities for greater public use of project resources, recreational development may consist of the construction of various facilities and roadways. All of these activities may be as cumulatively destructive to historic properties as natural processes.

115. Fish and wildlife management strategies (of the Corps or of a State agency to whom lands are leased or licensed) may range from the creation of terrestrial and aquatic habitats for food and protection of certain animal species to the planting of vegetation to reduce shoreline erosion. Although these programs are designed to maintain a project's natural resources, the potential adverse impacts these activities may have on historic properties must be recognized by resource managers.

116. The goals of these management programs are a little different than the goals of effective historic property management. However, based on information gathered during the survey of Corps historic property managers, activities associated with recreation and fish and wildlife practices have adversely impacted significant archeological sites at O&M projects.

117. To a lesser extent, several other impacts to historic properties at O&M projects need to be considered. Although standing structures were removed from most lake projects constructed prior to the passage of historic

property legislation in the 1970s and 1980s, there still remain historic structures at lock and dam projects and at recently constructed lake projects. In addition, isolated foundations as well as remains of former town sites exist on project lands. These resources are often ignored and receive attention only when they become safety hazards. Neglect of standing structures will result in their deterioration and eventual collapse or removal. Adaptive reuse of these structures is an alternative management strategy preferable to benign neglect; however, obtaining a local sponsor or the necessary funds to renovate the structures remains a problem not easily overcome. Examples of preservation strategies that have been employed by Corps Districts for these resources will be discussed in the following section.

118. Bottle collecting and use of metal detectors also pose a problem for a number of Corps Districts. Abandoned houses or former town sites have become the focus for those engaged in this pursuit to dig for and retrieve historic collectibles. Although collectors may believe they are pursuing a legitimate hobby, which they are, the removal of these artifacts from Government land does constitute a violation of Title 36. In addition, these activities are also destroying potentially significant historic data that will be useful in the construction of former local and regional lifestyles.

119. Destruction of sites occurs whenever activities that disturb surface contextual relationships of cultural remains take place. Off-road vehicles, grazing, levee realignment, terracing, clearing and grading, and quarrying operations have occurred at historic properties at O&M projects. Although individually these activities may not seem significant, they have collectively damaged and continue to erase considerable portions of the historic property record.

120. Although the survey of Corps District historic property managers resulted in a substantial list of adverse impacts to historic properties at O&M projects, those activities discussed above constitute the greatest damages to archeological sites at these projects. A more extensive listing of activities that have an adverse impact on historic properties can be found in Thorne, Fay, and Hester (1987).

PART VII: IMPACT MITIGATION AT CORPS O&M PROJECTS

121. While gathering information from Corps Districts relating to protective strategies used on historic properties at O&M projects, it became quite evident that diverse, innovative, and imaginative techniques have been and continue to be employed by resource managers. However, much of this information has not been disseminated throughout the agency or to other agencies responsible for historic property management. As a result of collecting these data, a listing of strategies that can be used either singularly or in combination to protect historic properties at Corps projects has been developed (Table 2).

Table 2
Protective Strategies for Historic Properties
Used at O&M Projects

Adaptive reuse	Polyurethane/gravel cover
Adopt-a-site Program	Public education/pamphlets
Avoidance	Reburial
Berm walls	Restoration/relocation
Citation issuance	Riprap revetment
Concrete blocks and boulders	Road closure
Deletion of land from license/lease	Sheet piling
Earth burial	Signing
Gravel burial	Site reconstruction
Gunite	Site fencing
Historic American Buildings Survey, Historic American Engineering Record documentation	Sodding/natural vegetation
	Vegetation burial
Interpretation	Vegetation shoreline plantings
Nesting cover	Wire mesh burial

122. Although the impacts noted in Part VI are examples gathered from all types of O&M projects, the above protection strategies are being used primarily at Corps lake projects. In the implementation of preservation strategies, there has been a biased selection to protect certain kinds of historic

properties over others. Certainly, the more spectacular monuments with standing architectural or large earthen or stone mounds have been protected from impacts such as commercial development and vandalism. However, surface and buried prehistoric sites, vernacular architectural structures, and historic loci lacking standing architecture have not been a primary focus of preservation strategies. Rather than in situ preservation of those sites, the emphasis to mitigate impacts on these resources has been in the realm of excavation and recordation through drawings and/or photographs. Implementation of an in situ protection strategy entails a long-term management commitment, an obligation that will require personnel and funding far into the future. Recognition of the intrinsic value of sites that are not spectacular generally leads to their being ignored and left unprotected. However, the types and quantity of data that can eventually be obtained from these resources is as important as that obtained from the more visually sensational sites. In addition, archeologists and other resource managers have a propensity to evaluate the future of these less spectacular sites in terms of immediate research gratifications and cost comparisons between excavation and preservation. Neither of these variables should be used solely in determining whether a site will be protected.

123. As stated previously, site preservation can be viewed as the creation of a repository for past human behavior that remains to be tapped when new and enlightened research questions and/or data recovery strategies emerge. Many of the research and field techniques employed today will be considered primitive in a few decades. In the future, the situation will arise where it is possible to substantively and significantly broaden our understanding of past human behavior by minimally destroying the prehistoric record through excavation. It should be obvious that a dollar value cannot be ascribed to the limitless possibilities in the future for a more thorough understanding of past human behavior.

124. To accomplish protection of significant historic properties when personnel and funding levels inhibit the implementation of expensive strategies, low-cost, low-maintenance techniques must be used in the present and near future.

125. Within the Corps of Engineers, strategies that have been used with varying degrees of success at various O&M projects are discussed below. The emphasis on these techniques is based on the reality of the present situation where funding and personnel are limited.

Public Awareness

126. Responsibility for protecting and preserving our nation's historic properties cannot rest primarily with Federal, State and local resource managers. Funding limitations and lack of sufficient personnel make the task of site protection difficult for Government resource managers. Since most historic preservation legislation was enacted ultimately to benefit the public, it is with them that stewardship for these resources must also rest. The public should and must be included in a partnership with Government resource managers if protection of historic properties is to be successful.

127. Two of the principal factors responsible for historic property disturbances and destruction at O&M projects are erosion and vandalism. Given the geographical extent of many projects, the impact of these two variables on archeological sites often goes undetected until irreparable damage has been done. To assist in the surveillance and monitoring of sites that may be impacted by intentional vandalism and natural causes, the Corps of Engineers Resource Volunteers Program can become the "eyes and legs" for resource managers to gather and report information on site disturbances. Specific details of how this program is implemented, and its policies and nature of services, are contained in ER 1130-2-432, "Project Operation, the Corps of Engineers Resource Volunteers Program." Too often the vast resource base of volunteers, whether individual or organizational, remains untapped. This human resource, if trained and closely worked with, can provide a reservoir of assistance that can help curtail negative impacts on historic properties at O&M projects.

128. Most recreational visitors to projects have no intention of disturbing or destroying the cultural resources of the area. Many of these visitors may casually or inadvertently collect artifacts that are visible on the ground surface. Nevertheless, the removal of these cultural remains does constitute a negative impact on archeological sites. Several Corps Districts have found that publication and distribution of brochures that explain the need to protect sites, the impact of artifact collection on sites, and the laws and regulations protecting historic properties have produced positive reactions from the public. If the public is treated as a cooperating partner in the protection of historic properties, resource managers will be able to use another positive element in their efforts to preserve significant sites.

Citation Issuance

129. Although most project visitors will not intentionally collect or destroy cultural resources, there are exceptions. Under CFR 36, Part 327, "Rules and Regulations Governing Public Use of Corps of Engineers Water Resource Development Projects," rangers with appropriate authority can issue a citation to anyone who destroys, defaces, alters, or removes any historical or archeological feature. A violator convicted of such an offense is subject to a fine of up to \$500 or imprisonment for not more than 6 months, or both. Issuance of a citation, conviction of the offense, and publication of the results of the conviction in the local newspaper will get the attention of those who violate or would violate this regulation. Knowledge of the consequences associated with conviction for violations is often sufficient warning to present and potential violators.

Avoidance

130. Although often cited as a site-protection strategy, avoidance of a resource does not protect it, but merely delays the decision-making process to a future date, a time when protection may no longer be feasible. Avoidance of a resource is preferable to excavation or destruction of the property; however, it is only the first step in the process of deciding how best to protect a resource.

131. At many O&M projects, routine activities impact both known and unknown historic properties. For example, those projects where the agricultural share-cropping program is used as a land management strategy will daily impact and destroy archeological sites. Removal of these sites from the agricultural program essentially will avoid impacts associated with this program to the affected sites. However, impacts such as surface erosion and artifact collection may continue to destroy this resource. Therefore, some strategy must be implemented whereby potential negative impacts can be mitigated.

Site Burial

132. A strategy that is gaining acceptance for historic property protection is intentional site burial. Site burial not only has the potential to reduce natural impacts to a site, but also to discourage collection of surface

cultural materials from would-be vandals. Whether a site can best be preserved by burial will depend upon several variables, including potential negative impacts to underlying cultural deposits as well as the cost involved to complete this operation. The decision to bury a site will be made on a case-by-case basis, weighing the positive benefits as well as the negative impacts against each other. However, once it has been determined that burial is an effective means for site preservation, a variety of materials (such as vegetation, gravel, earth, wire mesh, and dredged material) can be used singularly or in combination.

133. Timber sales is a recognized management objective at O&M projects. As discussed previously, the activities associated with timber sales can have a negative impact on historic properties. However, the disposal of the slash remains can aid in protecting archeological sites. It is a relatively inexpensive proposition to haul slash remains to sites identified in areas adjacent to where timber removal and associated activities are occurring or to other identified archeological sites in the project area. It also would not be inappropriate to include a stipulation in the contract that would require the successful bidder to dispose of the slash remains to specified areas where historic properties could be protected by site burial.

134. In collecting information from Corps Districts involved in dredging operations, there is a near-standard practice to survey areas for future disposal sites, and if an archeological site is identified in the proposed area, to avoid it. However, this practice has the potential to expose the identified site to future negative impacts such as vandalism or erosion. A more profitable alternative is not necessarily to avoid the site, but rather to bury it with the dredged material. Care must be taken to ensure that the dredge material is not polluted and that burial does not preclude future investigations at the site. It must be understood that if a burial technique is employed that would deny future accessibility to the resource, the proposed method should not be used.

135. In their report on archeological site preservation, Thorne, Fay, and Hester (1987) provide examples of site burial using a variety of techniques and materials, including conterminous concrete slabs, granite, articulated concrete block mattresses, cellular blocks, asphalt mixes, and interlocking blocks. Although these methods may have applicability in site preservation, the expense involved in utilizing these materials and techniques

is often prohibitive as is the difficulty in placing these materials at the site that will adequately ensure preservation of the resource.

136. Earth burial has been one of the more widely used methods for site preservation, and it is also one of the least expensive techniques available. This method has been employed at sites that are exposed to surface erosion, an impact that not only displaces buried cultural material, but also exposes the remains so that random collection and intentional vandalism can occur. In utilizing this method it is necessary to know the nature of the buried cultural remains. Earth burial may have the potential to cause decomposition of organic remains if, for example, the material used for burial is too acidic for the underlying soil. It is therefore necessary that the fill material used for site burial be compatible with the soil that is being protected. Generally, if the fill is in proximity to the site being buried, there should be few adverse impacts to the underlying materials that are not already occurring in the matrix in which they are buried. A filtering material such as gravel or filter fabric can be placed between the surface being impacted and the overlying fill material. This material is primarily used to delineate the original ground surface from the added material so that there will not be confusion as to the context of cultural materials during future investigations at the site. In addition, the filtering material is useful as a buffer to potential impacts that may occur during the site burial process. For example, at site 23BE260 located at the Harry S. Truman Dam and Reservoir Project, Missouri, a 2-in. layer of gravel was placed over the site prior to the placement of a 4-in. layer of fill material (Figure 2). This 2-in. gravel layer not only provided a stable surface for the power equipment used to place the 4-in. fill layer, but will provide a prominent horizon to delineate the original surface if future excavations are conducted at the site.

137. At present there has been a lack of monitoring of these buried sites to determine what, if any, adverse impacts occur to the underlying deposits. Experiments are now being conducted to determine these impacts; if the results show that the impacts are negligible or can be controlled, site burial may be a more utilized preservation strategy in the future. Any postburial monitoring program must at a minimum be conducted on a regular basis to determine the surface condition of the site and to record whether the site surface has been stabilized. If the surface has not been stabilized, additional site burial measures will be required.



a. Depositing fill materials



b. Spreading fill materials

Figure 2. Depositing and spreading fill materials on site 23BE260, Harry S. Truman Dam and Reservoir, Missouri (photos courtesy of Paul R. Nickens)

138. Burial of a site per se is only the first step in protecting that resource. Some form of vegetative cover should follow, which can take the form of grasses or plants that will add stability to the ground surface and camouflage or cover any surface cultural materials that could be observed. Woody vegetation should be discouraged, since the root system of many tree species can substantially displace and destroy the context of buried deposits. Planting vegetation to camouflage a site is an inexpensive strategy and one that can be used in conjunction with other programs such as those associated with wildlife management, soil conservation, and recreation.

Structures

139. Structural remedies to protect historic properties from adverse impacts have been employed by several Corps Districts; however, the primary variable that restricts the use of this strategy is cost. Generally, funds to structurally protect a historic property are far more excessive than the costs to perform data recovery in the form of excavation. The following examples are from two Corps Districts that employed structural resolution to mitigate historic properties.

140. Strawberry Island, which lies in the Snake River in the State of Washington, contains the Miller site, which has over 130 pithouse remains. Erosion in the form of bank slumpage of large sediment blocks was destroying sections of this significant site. The erosion was the result of wave action induced by barge traffic and pool-level fluctuations. The Walla Walla District initiated a plan to protect the site, using a structural remedy rather than excavation. Berm walls were constructed around the eroding south banks of Strawberry Island, which effectively inhibited the erosion induced by barge traffic and pool fluctuations (Figure 3). Subsequently, natural vegetation developed along the shoreline, which provided habitat areas for fish and wildlife purposes. By the construction of the berm, erosion was effectively stopped, a significant historic property was protected, and fish and wildlife habitat was created. Employment of a structural remedy may be justified if multiple resource objectives will be achieved, since the berm walls cost over \$250,000 in 1983 and the cost of a similar strategy today, if used only to protect a historic property, would be prohibitive.

141. Pompion Hill Chapel, a brick structure constructed in 1763, is located on the bank of the East Branch Cooper River, South Carolina.



Figure 3. Protective features at the Miller site (45FR5), McNary Reservoir, Washington (photo courtesy John Leier, US Army Engineer District, Walla Walla)

Continuous bank erosion problems were threatening to destroy the chapel, which was listed on the National Register of Historic Places. The Charleston District studied the problem and developed several alternative structural and nonstructural solutions. Although this historic property was not located on Corps of Engineers project land, Congressional authority to investigate the situation and fund a protection strategy is contained in Section 14 of the Flood Control Act of 1946, as amended by Section 27 of the Water Resources Development Act of 1974.

142. This Act states that the Secretary of the Army can expend up to \$750,000 on a single project "for the construction, repair, restoration, and modification of emergency streambank and shoreline protection works to prevent damage to highways, bridge approaches, and public works, churches, hospitals, schools, and other non-profit public services," when in the opinion of the Chief of Engineers such work is advisable.

143. The Charleston District devised four alternative solutions to remedy the erosion problem associated with the Pompion Hill Chapel. The alternative implemented, which was also the most inexpensive one, consisted of the placement of a granite riprap revetment with a thickness of 2.5 ft over a 9-in. layer of bedding material. Berkeley County, South Carolina, and the Corps of Engineers entered into an agreement to construct the necessary site-protection measure at an estimated initial cost of \$149,400.

Adaptive Reuse/Interpretation/Relocation-Reconstruction

144. Many Corps of Engineers O&M projects were constructed prior to the enactment of modern historic property legislation beginning in the 1960s. As is the standard policy, standing structures were generally removed from project lands during construction. Although most buildings were removed, there still exist on project lands some structures as well as standing walls and foundations.

145. One of the most successful Corps of Engineers historic structure preservation efforts occurred during the construction of Blue Marsh Lake in Berks County, Pennsylvania. The Gruber Wagon Works, which was built in stages between 1882 and 1911, manufactured wooden farm wagons until the 1950s. When the Corps obtained the land on which Gruber Wagon Works was located to construct Blue Marsh Lake, the buildings were one of the most complete and unaltered complexes of its kind in existence. Because of the historical significance of the structure, in 1976 the Corps received special funding from Congress to relocate and restore the complex. The Corps also entered into an agreement with Berks County which stipulated that, after the buildings were relocated and restored, ownership would be transferred to the county, which would maintain the complex and operate it as a museum. The disassembly, transportation, and reassembly of the complex was not only successful, but the subsequent operation of the buildings by Berks County has made the complex a major historical attraction in the region.

146. At the Harry S. Truman Lake project in Missouri, a similar effort was made to preserve/reconstruct one of the last remaining historic structures located on project lands. The Hooper house, a 19th-20th century farm home, a property determined eligible for the National Register, was the focus of a Memorandum of Agreement between the Corps, the State of Missouri, and the Advisory Council on Historic Preservation. Because of the deteriorated

condition of the structure and its relatively inaccessible location, it was decided to remove as many architectural elements as possible and incorporate them into a reconstruction of the structure near the project's visitor center. In addition, a smokehouse and summer kitchen, which were previously destroyed by fire, were also reconstructed from information provided by Hooper family members. The complex is used today to recreate Ozark life as it was 80 years ago.

147. Initiative for implementation of interpretive programs can be successful even with limited staff and funding. At the Union Village Dam in Thetford, VT, rangers at the project prepared a pamphlet interpreting the remains of a small village. Although foundations are all that remain of the village, the pamphlet does provide visitors with an informative history of the area and preserves historical data that might otherwise be lost.

148. Cooperative funding by different elements may also result in the preservation of historic structures. The Mangum-Sandling House (Figure 4), located at the Falls Lake project in Raleigh, NC, is an 1830s structure listed on the National Register of Historic Places. Although efforts to preserve this house for reuse continued for nearly a decade, an agreement was finally reached between the Wilmington District and the State of North Carolina to share the cost of renovation of the building, which would then serve as a residence for a State ranger.

149. Reuse of whatever structures remain on project lands rather than construction of new ones should be given highest priority. According to the National Historic Preservation Act of 1966, as amended (Public Law 89-665):

The heads of all Federal agencies shall assume responsibility for the preservation of historic properties which are owned or controlled by such agency. Prior to acquiring, constructing, or leasing buildings for purposes of carrying out agency responsibilities, each Federal agency shall use, to the maximum extent feasible, historic properties available to the agency. Each agency shall undertake, consistent with the preservation of such properties and the mission of the agency and the professional standards established pursuant to section 101(f), any preservation, as may be necessary to carry out this section.



Figure 4. The Mangum-Sandling House, after rehabilitation, Falls Lake Project, North Carolina (photo courtesy Richard H. Lewis, US Army Engineer District, Wilmington)

Shoreline Revegetation

150. A method that is gaining more acceptance to combat shoreline erosion is revegetation. The Waterways Experiment Station has been conducting studies on the use of various types of plants to stabilize lake shorelines (Allen 1990). Revegetation has certain advantages over structural remedies, the primary one being low cost. The initial cost of planting is inexpensive; however, labor costs could be considerable. A simple way to reduce labor costs would be the promotion and use of volunteer groups. Certainly there are groups like the Cub Scouts, Boy Scouts, and civic and recreational groups that can and do volunteer for such projects. Often the efforts at revegetation have been conducted to prevent shoreline erosion and promote fish and wildlife habitats without regard to protecting archeological sites.

151. In those Districts that are using or will use shoreline revegetation to retard erosion, the opportunity is there to maximally utilize interrelated disciplines to achieve similar objectives. Coordination by various

District elements to obtain similar goals has not been the hallmark of the Corps Natural Resource Management Program. However, the wildlife and fisheries biologists, foresters, and archeologists can achieve discipline goals by cooperating and by coordinating their activities with one another.

152. Historic property funding can augment other natural resource management programs if the erosion prevention efforts and wildlife habitat development are also protecting a significant archeological site. Given present-day circumstances, where funding for the Natural Resource Management Program is not a priority item, those who work in this program must be cognizant of what the others are doing and develop an integrated cooperative program.

153. Although there have been some success stories with shoreline revegetation, some problems are associated with this technique. Fluctuating water levels, drought, and extended inundation are variables that have been responsible for disrupting many of these replanting programs. It is therefore critical that a revegetation project be monitored so that remedial efforts can be implemented to protect the plants from negative impacts.

Signing/Fencing/Road Closing

154. Three strategies often used in combination to protect historic properties are signing, fencing, and the closing of roads. Fences have been used to restrict vehicular traffic to a historical property and to retard vandalism (Figure 5). Chain-link, steel, wood, and barbed wire fences have been used with varying degrees of success. However, to effectively prevent disturbances to a site, fencing cannot be the only method of protection used. At one archeological site in the Mobile District, fencing has been used along with warning signs to keep all visitors from entering the area. In addition, anyone caught trespassing is issued a citation that can carry a fine of up to \$500.

155. There is disagreement on the use and effectiveness of signs. Interpretive signs are a necessary part of an effective historic preservation program for the public. Standing structures, foundations, habitation rock shelters and caves, standing historic fences, earthen and rock mounds, rock art, and numerous other historic properties can be included in a historic preservation program. However, care must be taken to exclude from this program the sites which, because of their secluded location or vulnerability,



Figure 5. Fencing of site 23HE448 at Harry S. Truman Dam and Reservoir, Missouri. Site lies in the heavily vegetated background. The foreground area is part of a parking lot associated with a boat-launching facility (photo courtesy of US Army Engineer District, Kansas City)

would be easily subjected to vandalism. Making the decision whether to include or exclude sites in an interpretive program is not an easy exercise. However, maximum use should be made of extant historic properties at a project in any interpretive program since the public should benefit as much as the professional if support for historic preservation is to be maintained.

156. There are both pros and cons for using warning signs to notify the public about the consequences of disturbing an archeological site on project lands; however, sufficient studies have not been conducted to determine whether these signs are effective. Certainly, warning signs draw attention to resources, but so do interpretive signs. Much of the general public will not collect artifacts or disturb historic properties if they are warned that such an act is a violation of the Corps Title 36 regulation or the Archeological Resource Protection Act. Although a pamphlet is distributed at most project offices specifying what the public can and cannot do on project lands, it would be naive to believe that many visitors take the time to read the pamphlet during a visit to the project. It would seem more effective to inform the public about historic properties in places that have substantial visitation (beaches, boat ramps, campground picnic areas, and visitor centers). Signs probably should not be placed in the immediate vicinity of a site. Most of the spectacular sites at a project are already known by serious collectors. Signs may not have any impact on discouraging this group of visitors to the project; rather, surveillance of these resources by project rangers may be the only effective means to inhibit disturbances to these properties. It is to the visitor who goes to the project to use and enjoy the recreational opportunities and facilities that signs should be directed. It is this group that will respond in a positive manner to protect these properties once they are informed of the fragile and nonrenewable nature of these resources and that penalties exist for disturbing the resources.

Reburial

157. With the recent passage of Public Law 101-601, the "Native American Graves Protection and Repatriation Act," there is a likelihood that skeletal remains as well as associated funerary objects may no longer be curated in a collection center, but rather may have to be reburied. The full ramifications of this Act are not known at this time; however, reburial per se does not necessarily mean that these items will no longer be preserved or that

these materials will not be of any future benefit to the profession or the public.

158. In a recent example of reburial at Smithville Lake, Missouri, the Kansas City District and representatives from five Native American tribes cooperated in the reinterment of a collection of individuals excavated during the construction of the lake. The remains from this collection had previously been professionally studied and reported on, and the fragmentary nature of these individuals would preclude the application of most future analytical techniques. The representatives from the Native American tribes that participated in the reburial provided funding for a modest interpretive stone marker that was placed where the remains were reinterred.

159. Other examples of recent reburial of human remains come from the Omaha District where Richard Berg (1988) has documented three South Dakota cases: (a) the reinterment of approximately 500 Native American skeletons from the prehistoric Crow Creek site, (b) remains from a Euro-American historic cemetery, and (c) reburial of several hundred individuals' remains excavated along the Missouri River since the 1940s. The Omaha District also has procedures in place to handle reburial of newly discovered human remains which continue to be exposed by erosion of Corps reservoirs along the Middle Missouri River. For each of the cases noted above, as well as newly discovered burials, provisions are made for intensive analysis of the materials before they are reinterred. All work is fully coordinated with either the descendants or the relevant Native American group and the State of South Dakota.

PART VIII: SUMMARY

160. All Federal agencies have been mandated by Congress to establish programs to mitigate impacts to historic properties that may be caused by a particular agency's actions. In the past three decades, agencies have placed an emphasis on mitigation through excavation or graphic and photographic documentation. Although these efforts do in part preserve the cultural record, a historic property once mitigated in this manner is permanently erased.

161. Some daily activities at Corps of Engineers projects impact and destroy significant historic properties. Development of recreational areas, fish and wildlife management practices, construction, and water fluctuation, as well as other actions, endanger historic properties on project lands. Identification of impacts on historic properties is the highest priority in a project's historic property management program.

162. Once identified, it is the resource manager's responsibility to determine a strategy that will best mitigate ongoing impacts at the historic property. Many situations will preclude in situ preservation of a site. However, the resource manager should first begin the decision-making process by reviewing a variety of in situ preservation strategies; only when it has been determined that none of these methods can effectively be implemented should data recovery be considered.

163. A successful historic preservation program can be accomplished only with input, coordination, and dedication by an integrated, interdisciplinary team. The team should include representatives from the Field office and Planning, Operations, Real Estate, and Engineering areas, as well as other District elements. Communication between all these offices is a prerequisite to effective management of historic properties at O&M projects.

164. As the Corps of Engineers and other Federal agencies develop their environmental programs for the last decade of the 20th century, all management elements must be cognizant that historic properties resources are just as fragile and easily destroyed as biological ones; however, historic properties lack the capacity to reproduce as do biological resources. Once a decision has been made to use a strategy other than in situ preservation to mitigate impacts to a prehistoric site or to use recordation and destruction of an architectural resource rather than renovation/relocation/reuse of that site, these resources will no longer physically exist. Not all significant historic

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APPENDIX A: LEGISLATION, REGULATIONS, AND GUIDANCE DOCUMENTS

Code of Federal Regulations 32, Part 229, "Archeological Resources Protection Act of 1979, Final Uniform Regulations."

Code of Federal Regulations 36, Part 79, "Curation of Federally-Owned and Administered Archeological Collections."

Code of Federal Regulations 36, Part 327, "Rules and Regulations Governing Public Use of Corps of Engineers Water Resource Development Projects."

Code of Federal Regulations 36, Parts 643 and 644, "Real Estate Handbook."

Code of Federal Regulations 36, Part 800 (Advisory Council on Historic Preservation), "Protection of Historic Properties."

Dredging Guidance Letter 88-02. 13 March 1989. "Policy and Procedures for the Conduct of Underwater Historic Resource Surveys for Maintenance Dredging and Disposal Activities."

Engineer Circular 11-2-156, "Annual Program and Budget Request for Civil Works Activities, Corps of Engineers."

Engineer Circular 405-1-71, "Real Estate. Implementation of Archeological Resources Protection Act Uniform Regulations."

Engineer Pamphlet 1165-2-1, "Digest of Water Resources Policies and Authorities."

Engineer Regulation 10-1-3, "Organization and Functions, Divisions and Districts." US Army Engineer District, Kansas City.

Engineer Regulation 405-1-12, "Real Estate Handbook."

Engineer Regulation 1130-2-400, "Project Operation, Management of Natural Resources and Outdoor Recreation at Civil Works Water Resource Projects."

Engineer Regulation 1130-2-432, "Project Operation, The Corps of Engineers Resource Volunteers (CERV) Program."

Engineer Regulation 1130-2-433, "Collections Management and Curation of Archeological and Historical Data."

Engineer Regulation 1130-2-435, "Project Operation, Preparation of Project Master Plans."

Engineer Regulation 1130-2-438, "Project Construction and Operation: Historic Preservation Program."

Executive Order 11593, "Protection and Enhancement of the Cultural Environment," 16 USC 470.

Public Law 59-209, "Antiquities Act of 1906," 16 USC 431-33.

Public Law 70-301, "The Flood Control and Protection Act of 1928," 33 USC 702a.

Public Law 74-292, "Historic Sites Act of 1935," 19 USC 461-67.

Public Law 74-738, "Flood Control Act of 1936," 33 USC 701.

Public Law 79-732, "Fish and Wildlife Coordination Act of 1946," as amended, 16 USC 661.

Public Law 85-500, "River and Harbor and Flood Control Act of 1958," 43 USC 390.

Public Law 86-523, "Reservoir Salvage Act of 1960," 16 USC 469-469c.

Public Law 89-72, "Federal Water Project Recreation Act of 1965-Uniform Policies," 16 USC 460-1-12.

Public Law 89-665, "National Historic Preservation Act of 1966," 16 USC 470-470 m, as amended, 16 USC 460b, 470i, 470l-470n.

Public Law 91-190, "National Environmental Policy Act of 1969," 42 USC 4331 et seq.

Public Law 92-500, "Federal Water Pollution Control Act Amendments of 1972," 33 USC 1251.

Public Law 93-291, "Archeological and Historic Preservation Act of 1974," 16 USC 460.

Public Law 95-217. "Clean Water Act of 1977," 33 USC 1251.

Public Law 95-341. "American Indian Religious Freedom Act of 1978," 42 USC 1966.

Public Law 96-95, "Archeological Resources Protection Act of 1979," 16 USC 470aa.

Public Law 97-304, "Endangered Species Act Amendments of 1982," 16 USC 1531 et seq., amends Public Law 93-205.

Public Law 99-662, "Water Resources Development Act of 1986," 16 USC 661.

Public Law 100-298, "Abandoned Shipwreck Act of 1988," 43 USC 2101.

Public Law 101-601, "The Native American Grave Protection and Repatriation Act," 25 USC 3001.

US Army Engineer District, Kansas City, "Planning Historic Preservation," Regulation 10-1-3, Appendix T.