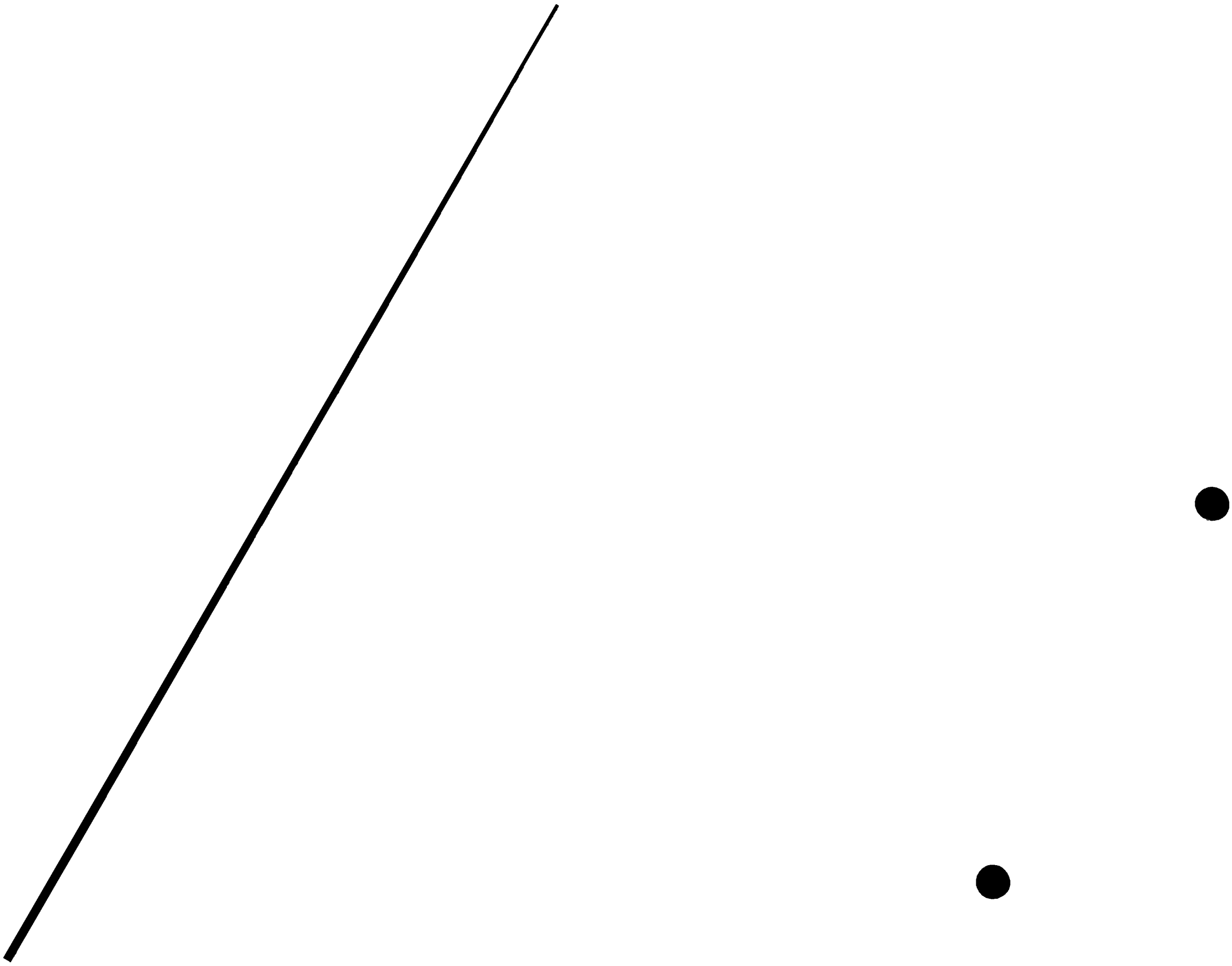
The FEDERAL Archeology PROGRAM

Report to Congress for 1988-90

U.S. DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
DEPARTMENTAL CONSULTING ARCHEOLOGIST
ARCHEOLOGY AND ETHNOGRAPHY PROGRAM
WASHINGTON, D.C.
1995



The Federal Archeology Program: Report to Congress for 1988-90

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Mission: As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural and cultural resources. This includes fostering wise use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department also promotes the goals of the Take Pride in America campaign by encouraging stewardship and citizen responsibility for the public lands and promoting citizen participation in their care. The Department also has a major responsibility for American Indian reservation communities and for the people who live in Island Territories under U.S. administration.

Bruce Babbitt
U.S. Department of the Interior Secretary

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EXECUTIVE SUMMARY

Public Education and Participation. The Forest Service "Passport in Time," and the Bureau of Land Management "Adventures in the Past" were established as outstanding volunteer programs. Private citizens were provided more opportunities to take part in professionally supervised investigations on Federal lands. Land management agencies actively participated in State-based programs such as the Arizona Site Stewards and Alaska Archeology Week.

Recommendations

☞Federal programs should, as part of fulfilling their mandate, establish national education initiatives and activities, particularly to increase participation by avocationals' and the general public's awareness of archeological protection needs in public project planning.

☞Private citizens need more nontechnical publications that display the information values retained in sites, and that provide information about techniques for the physical and legal protection of privately owned archeological sites.

☞Build private-public partnerships to increase private participation in Federal outreach programs.

Efforts to Fight Looting and Preserve the Archeological Record in Place. Between $1 million to $2 million was spent in archeological law enforcement annually increasing the identification of looting incidents, site monitoring and surveillance. Over 900 incidents of archeological looting violations were documented on Federal and Indian lands in 1990, a 30% increase from 1988 and twice that from 1985. The number of arrests and prosecutions for violations are declining, while convictions were relatively constant.

Recommendations

☞Train law enforcement and prosecution professionals how to complete archeological enforcement casework.

☞Coordinate law enforcement efforts between land management agencies to develop regional strategies to combat looting.

Interagency Cooperation in Information Exchange. Federal agencies utilized partnerships and cost-share programs to leverage more resources for research and public outreach activities. The National Archeological Database administered by NPS was being made available as an online system to disseminate information on archeology reports. Notification to Tribes of proposed archeological work that could harm sites of religious or cultural significance increased approximately 40%-50% and is over 5 times more notifications than had been reported in 1985.

Recommendations

☞Improve interagency use of computerized databases' for research and public information and share this information with other nations, Tribes, States, Certified Local Governments, and private organizations and individuals.

☞Utilize archeological information from Federal, Tribal, State, local, and private sectors to design and implement the most appropriate management program for Federal and Indian lands and for federally authorized projects.

☞Complete regional overviews of archeological programs, making better use of scarce Federal, Tribal, State, local, and private funds to manage resources.

Site Inventories and Investigations. Compliance-related archeological investigations costing roughly $50 million per year were reported. An estimated 55,000 Federally authorized archeological investigations were conducted annually which is triple the number reported in 1985. About 25 million acres, less than 4% of the Federal and Indian lands, has been inventoried thoroughly enough to identify all of the archeological properties evident on these lands. Only 4.7% of the estimated 9 million archeological sites on Federal and Indian lands have been identified and about 6% have been formally evaluated for the National Register. Under ARPA Section 14, added in 1988 (P.L. 100-555), 6 of the 13 key Federal agencies have begun the process of agency-wide planning for systematic inventories of their lands.

Recommendations

☞Review the current status of archeological inventories with resource overviews and predictive models to design and implement cost-effective and well directed field inventories and plans for dealing with unexpected discoveries of buried archeological materials.

☞Evaluate the backlog of known archeological sites for listing in the National Register.

☞Identify archeological sites on public or private lands as National Historic Landmarks and World Heritage sites, and to monitor the condition of designated Landmarks and protect their long-term integrity.

Curation of Collections and Records. Publication of the 36 *CFR* 79 regulations about the management of collections from Federal and Indian lands focused agency attention on these issues. Agencies initiated training courses in archeological curation and collections management, specifically oriented to implementation of the 36 *CFR* 79 regulations.

Recommendations

☞Begin a comprehensive inventory of collections, records, and reports from Federal and Indian lands and projects, including both those in public repositories and those in private collections to preserve better the remnants of the archeological record that have already been removed from their original context.

☞Provide adequate curatorial facilities that meet the requirements of 36 *CFR* 79, and to train curatorial staff in appropriate curation skills, methods, and techniques.

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ACKNOWLEDGEMENTS

The National Park Service (NPS) particularly appreciates the effort of all the agency staff members who provided data for this report, from the field to the Washington and Denver office levels. Response to the Federal archeology program questionnaire, on which this report is largely based, requires irreplaceable archeologist and law enforcement staff time and expert judgement, which are appreciated in making this report a credible document.

This report was developed under the overall guidance of Jerry R. Rogers, NPS Associate Director, Cultural Resources, the Departmental Consulting Archeologist (Bennie C. Keel, 1988; Douglas H. Scovill, 1989-91; Francis P. McManamon, 1991-), and Francis P. McManamon, Chief, NPS Archeological Assistance Division (AAD), Washington. George S. Smith, then of the NPS AAD, requested and collected the 1988 data reported here, and Ruthann Knudson, NPS AAD, requested and collected the 1989 and 1990 data in this report and created the dBASE III PLUS structure for the 1988-1990 database. The questionnaire response data were entered into the computer by LaTia V. Adams and Tim Gordon, NPS AAD. J. Emlen Myers, National Council of State Historic Preservation Officers (NCSHPO) consultant to NPS AAD, manipulated the data to create the tables and figures. NPS AAD reviewers of the report draft manuscript included Veletta Canouts, Roger S. Friedman (NCSHPO consultant), Patricia C. Knoll (NCSHPO consultant), Bruce Penner (NCSHPO consultant), and Richard C. Waldbauer; Dan Haas, Shawnee National Forest, reviewed a portion of the draft.

Special thanks are due to those who provided individual case studies; Melissa Connor, NPS Midwest Archeological Center; Michelle Hope, Minerals Management Service, Alaska State Office; Bob King, Bureau of Land Management, Alaska State Office; Timothy A. Kohler, Washington State University; Patricia Martz, California State University, Los Angeles; Bill Metz, U.S. Air Force Center for Environmental Excellence; Jill A. Osborn, U.S. Forest Service, Washington, and Gordon Peters, U.S. Forest Service, Superior National Forest; Melanie Stright, Minerals Management Service, Washington; Curtis H. Tomak, Indiana Department of Highways; and Bill Willingham, U.S. Army Corps of Engineers North Pacific Division. John Sprinkle, Jr., Louis Berger & Associates, Inc, (LBA) consultant to NPS Interagency Resources Division, assisted with the development of a case study on an LBA project.

Bobby Daniels, Management Analyst of the Office of Government Worldwide Real Property Policy, General Services Administration, Washington, provided invaluable real property acreage data. Michael Kaczor of the Economics and Social Sciences Division, Soil Conservation Service (SCS), U.S. Department of Agriculture, Washington, provided useful information about the SCS' involvement with archeological resources on private lands.

THE FEDERAL ARCHEOLOGY PROGRAM

Since archeological remains are the traces and remnants of peoples' past, with proper investigation, analysis, and preservation these remains give us unique information about the human past. They allow us, for example, to appreciate the superb wood-working skills of the Makah Indians on the shores of the Olympic Peninsula 800 years ago, the extensive trade systems of the mid-continent centuries ago, and the habits and Old World ties of Chinese miners in the Northern Rockies in the 1880s. Some archeological sites may be as important to some for their spiritual value as for the information they contain.

Many archeological sites contain artifacts and materials for which there are no contemporary written observations. Descriptions and interpretations of the manufacture, use, and distinctive characteristics of these artifacts and materials require archeological investigations. Archeological resources may be "prehistoric" or "historic" as those terms are generally used to denote periods before and after the common use of written records. They may be found in or on the ground ("terrestrial" remains) or underwater ("submerged" remains). They include movable artifacts, such as tools, clothing, jewelry, pottery, and furniture, as well as prehistoric structures such as houses, temples, trails, hunting blinds, fish weirs, and the partial remnants of these and other kinds of structures. Historic period shipwrecks are archeological resources, as are prehistoric and historic period food remains and paleoenvironmental remains such as pollen, insects, soils, landforms, and volcanic ash. All of these materials reflect patterns of the past from which can be derived information about people and the natural and social world in which they lived, and in which the cultures that we have inherited today developed. The protection and prudent use of these archeological resources are part of the Federal government's public trust responsibilities.

Program Scope

Authorities

The authorities for the Federal archeology program are listed in Figure 1.1. The program had its statutory origins in the Antiquities Act of 1906, which applied to "lands owned or controlled by the Government of the United States" (Section 1). The Departments of Interior, Agriculture, and War were

Figure 1.1. Federal archeology program authorizations, regulations, guidelines.

Abandoned Shipwreck Act of 1987: P.L. 100-298, 102 Stat. 432, 43 USC 2101 et seq.

Abandoned Shipwreck Act Final Guidelines, 55 FR 50116 (1990).

American Indian Religious Freedom Act: P.L. 95-341 (1978), 92 Stat. 469, 42 USC 1996.

Antiquities Act: P.L. 59-209 approved June 8, 1906 (59th Cong. 1st sess. *Senate Doc.* Ch. 3060, p. 225 [1906]), 34 Stat. 225, 16 USC 431-433.

43 CFR 3: Uniform Rules and Regulations Prescribed by the Secretaries of the Interior, Agriculture, and War to Carry Out the Provisions of the "Act for the Preservation of American Antiquities," approved June 8, 1906 (59th Cong. 2d sess., *Senate Doc.* No. 396, Pt. 1, pp. 320-322 [1907]).

Archaeological Resources Protection Act (ARPA): P.L. 96-95 [October 31, 1979] as amended by P.L. 100-555 [October 18, 1988] and P.L. 100-588 [November 3, 1988], 93 Stat. 721, 16 USC 470aa et seq.

ARPA Uniform Regulations 18 CFR 1312 (Tennessee Valley Authority), 32 CFR 229 (Defense), 36 CFR 296 (Agriculture), and 43 CFR 7 (Department of the Interior) as all were amended [52 FR 47721]; additional amendments to these Uniform Regulations were proposed in 1991 (56 FR 46259). The Department of the Interior also has Supplemental Regulations to 43 CFR 7(7) [52 FR 9165; 1987] in response to ARPA Section 10(b).

36 CFR 79: Curation of Federally-Owned and Administered Archeological Collections (55 FR 37616). This rule, written by the National Park Service (NPS), Department of the Interior, is issued under the authority of Section 101(a)(7)(A) of the National Historic Preservation Act and Section 5 of the Archaeological Resources Protection Act.

Archeological and Historic Preservation Act: P.L. 93-291 (1974, 88 Stat. 174), amending the Reservoir Salvage Act, 16 USC 469.

Archeological and Historic Preservation Act of 1974 Statement of Program Approach (44 FR 18117)

Department of Transportation Act of 1976, 49 USC 1653(f), generally known as §4(f); codified at 49 USC 303 (1982)

Historic Sites Act: P.L. 74-292 (1935) as amended by P.L. 89-665 (1966) and P.L. 94-422 (1976), 49 Stat. 666, 16 USC 461-467.

National Environmental Policy Act (NEPA): P.L. 91-190 (1970), 80 Stat. 852, as amended; 42 USC 4321 et seq.

40 CFR 1500: Preparation of Environmental Impact Statements: Guidelines (43 FR 55990, corrected by 44 FR 7788)

National Historic Preservation Act (NHPA): P.L. 89-665 [1966], 80 Stat. 915 as amended by the National Historic Preservation Act Amendments (P.L. 96-515 [1980], 94 Stat. 2987; P.L. 102-575 Title 40 [1992], 106 Stat. 4600), 16 USC 470. P.L. 96-515 Section 208 authorized a mechanism for waiving the 1% limits in the Archeological and Historic Preservation Act. Sec. 110 codified E.O. 11593.

36 CFR 60: National Register of Historic Places (48 FR 46306). NPS's National Register of Historic Places regulations that include (Section 60.4) criteria for evaluating a property's eligibility for the National Register; "significance" criteria. These criteria are not involved in ARPA protection of archeological resources, which themselves may or may not be Register-eligible.

36 CFR 800: Protection of Historic Properties (51 FR 31115). Advisory Council on Historic Preservation's regulation on compliance with NHPA's Section 106.

Secretary of the Interior Standards and Guidelines for Archeology and Historic Preservation (48 FR 44716).

Guidelines for Federal Agency Responsibilities, Under Section 110 of the National Historic Preservation Act (53 FR 4727). These were issued by the Secretary of the Interior in consultation with the Advisory Council on Historic Preservation.

National Trust for Historic Preservation Act: P.L. 81-408 (1949), 63 Stat. 927, 16 USC 461.

Native American Graves Protection and Repatriation Act (NAGPRA): [HR 5237] P.L. 101-601 (1990), 104 Stat. 3048, 25 USC 3000-3013, 18 USC 1170.

Outer Continental Shelf Lands Act: P.L. 83-212 (1953), 67 Stat. 462, 16 USC 1331-1356.

Reservoir Salvage Act: P.L. 86-523 (1960, 74 Stat. 220) as amended by the Archeological and Historic Preservation Act of 1974 (P.L. 93-291, 88 Stat. 174), 16 USC 469.

authorized by this statute to issue permits regulating archeological activities on public and Indian lands, but there was no coordination of overall government archeological activities (Lee 1970; Lister and Lister 1981, 1983). The statute also provided a basis for setting aside and protecting areas as National Monuments (Rothman 1989). Several other statutes authorize various elements of the Federal archeology program, especially the Historic Sites Act, National Historic Preservation Act (NHPA), National Environmental Policy Act (NEPA), Archeological and Historic Preservation Act (AHPA), Archaeological Resources Protection Act (ARPA), and Abandoned Shipwreck Act.

The Outer Continental Shelf (OCS) Lands Act authorizes geological exploration of the OCS only if such exploration "will not...disturb any site, structure, or object of historical or archeological significance" (43 USC 1340(g)(3)). The Department of Transportation Act "4(f)" provision requires the protection of archeological and other historic properties if it is "prudent and feasible" to do so. The American Indian Religious Freedom Act directs Federal agencies to take American Indian religious values into consideration in all agency activities, including their archeology programs. The Native American Graves Protection and Repatriation Act identifies certain kinds of archeological remains for special consideration and treatment.

The Historic Sites Act of 1935 declared that preservation of antiquities and other historic sites and objects for their public use was a national policy and delegated the responsibility for implementing that policy to the Secretary of the Interior, who was to act through the National Park Service (NPS). The NPS was empowered to survey, collect data, research, acquire, use, manage, and provide technical advice and public education about archeological sites (and other historic sites and objects), and to cooperate with any Federal agency to do this. It is this general authority that was used in the late 1940s to develop the River Basin Surveys program under the joint direction of the National Park Service and the Smithsonian Institution (Jennings 1986:57).

In 1960, the Reservoir Salvage Act specifically provided for the preservation of archeological data that might be "irreparably lost or destroyed" as the result of "alterations of the terrain [by] any agency of the United States, or by any private person or corporation holding a license issued by any such agency." The Secretary of the Interior was given the responsibility to implement this national program, which the Secretary in turn delegated to the NPS.

NHPA, as amended, is a very important authority for the Federal archeology program. NHPA established the National Register of Historic Places (NRHP), whose "historic properties" include prehistoric and historic archeological resources, and the Advisory Council on Historic Preservation, which advises the President and Congress about the national historic preservation program and reviews all Federal projects that may affect registered historic properties. It authorized the appointment of State Historic Preservation Officers (SHPO) in each State, Territory, and District of Columbia, the establishment of Tribal preservation programs, and the approval of Certified Local Governments (CLG). It also outlined the historic preservation responsibilities of Federal agencies to locate, inventory, and nominate to the Register all historic properties on their lands or affected by their actions; to use historic properties available to the agency; to exercise caution in all their actions so as not to inadvertently damage or destroy unidentified historic properties; and to record (e.g., excavate, analyze) significant historic properties that were going to be altered or destroyed.

NEPA also is an important law for archeological preservation. Although archeological resources are not specifically listed in the text of NEPA or its regulations (40 CFR 1500), the law authorizes the preservation of "important historic, cultural, and natural aspects of our national heritage" (Sec. 101(b)(4)). The Council on Environmental Quality (CEQ) regulations implementing NEPA require the integration of archeological protection issues within a comprehensive multidisciplinary evaluation of environmental management issues, which supports both archeological site identification and evaluation and site protection through the selection of less harmful development alternatives (CEQ 1990:210-211). Nowhere in either of these documents are the components of the "environment" specified beyond the Section 101 Declaration of National Environmental Policy. It is standard practice for all Federal environmental assessments and impact statements to address the presence or absence of potential impact to archeological as well as other cultural resources. Most often, this requirement is met through compliance with section 106 of NHPA and its implementing regulations, 36 *CFR* 800.

The Archeological and Historic Preservation Act of 1974 (AHPA; "Moss-Bennett," P.L. 93-291) amended the Reservoir Salvage Act of 1960 and authorized (Sec. 1):

> . . . the preservation of historical and archeological data (including relics and specimens) which might otherwise be irreparably lost or destroyed as the result of (1) flooding, the building of access roads, the erection of workmen's communities, the

relocation of railroads and highways, and other alterations or the terrain caused by the construction of a dam by any agency of the United States, or by any private person or corporation holding a license issued by any such agency or (2) any alteration of the terrain caused as a result of any Federal construction project or federally licensed activity or program.

The Secretary of the Interior was given the responsibility to implement and coordinate this national program, and again, the Secretary delegated this responsibility to NPS. Like the 1935 Historic Sites Act, the 1960 Reservoir Salvage Act gave the Secretary a leadership role for Federal archeology without also specifying a coordination function. The 1974 Act, with its requirement of a Secretarial report to Congress on the law's implementation by all Federal agencies, authorized a complementary coordination role.

The 1979 Archaeological Resources Protection Act (ARPA) was intended to protect "archaeological resources and sites which are on public lands and Indian lands, to foster increased cooperation and exchange of information between governmental authorities, the professional archaeological community, and private individuals..." (Sec. 1(b)). To do so, it authorized an archeological permit program, criminal and/or civil penalties for unpermitted disturbance of protected archeological materials, and intergovernmental coordination of programs implementing the Act. ARPA authorized each Federal agency to protect the archeological resources on that agency's lands. The Secretaries of the Interior, Defense, and Agriculture, and the Chairman of the Tennessee Valley Authority (TVA) were responsible together for developing uniform regulations (Figure 1.1) implementing ARPA. The Secretary of the Interior was directed to expand the scope of the AHPA-required report to Congress to include information about ARPA activities, implementation, and additional needs or recommendations.

In early 1988 the U.S. Government Accounting Office (USGAO 1987) reported that looting of archeological sites in the Four Corners of the southwestern United States (AZ, CO, NM, UT) remained a serious problem, that knowledge and protection of the archeological resources there were limited, and that curation of artifacts from the Federal lands was inadequate. In February 1988, the U.S. House of Representatives (1988) Subcommittee on General Oversight and Investigations within the Committee on Interior and Insular Affairs reported that looting and destruction of prehistoric archeological sites was a serious problem and recommended that Congress amend ARPA to strengthen the law. Later that year, P.L. 100-555 added Section 14 to ARPA, requiring plans and schedules for archeological survey of all

Federal and Indian lands, and the systematic documentation of all ARPA violations. At the same time, P.L. 100-588 amended ARPA to include attempted violations as prohibited acts, lowered the threshhold for felony prosecutions, and required Federal land managers to develop archeological public awareness programs (McManamon 1991b).

Complementing this focus on looting and the strengthening of ARPA, attention was being paid to the administration of the Federal archeology program within the national historic preservation program. In June of 1988, the GAO (USGAO 1988) reviewed the status of the historic preservation programs at the U.S. Forest Service (FS), NPS, Bureau of Land Management (BLM), General Services Administration (GSA), Department of Veterans Affairs (VA), and Postal Service, and recommended that there was a need for more preservation training, better NHPA Section 110 compliance, and more resources directed to meeting NPS external historic preservation responsibilities (including archeological assistance).

The Abandoned Shipwreck Act was signed into law on April 28, 1988; its proposed guidelines were published in 1988; and its final guidelines were published in 1990. The National Maritime Initiative began in 1986, and its Shipwreck Database project was begun in 1989 to integrate existing Federal and State inventories of archeologically surveyed and inventoried shipwreck sites as well as privately reported shipwrecks.

Involved Departments or Agencies

As listed and discussed in recent reports to Congress on the Federal archeology program (Keel et al. 1989, McManamon et al. 1993), a wide array of Federal departments and agencies are involved in the program (Figure 1.2). Their involvement in some cases stems from their responsibilities to manage public land for a variety of purposes (e.g., parks, forests, grazing) or it may be because their administrative and service facilities are located on public lands. Other agencies are involved in the Federal archeology program because they fund or regulate organizations or projects that themselves affect archeological resources. Finally, some Federal agencies support research that affects archeological resources on public or Indian lands, even if the agencies themselves manage little or no such land.

Figure 1.2. Federal organizations participating in the Federal archeology program.

Land-Managing Agencies (>1M acres with direct management responsibility; research also)

- Department of Agriculture
  - Forest Service
- Department of Defense
  - Department of the Air Force
    - Air Force
      - Air National Guard
  - Department of the Army
    - Army
      - Army National Guard Bureau
      - Corps of Engineers
  - Department of the Navy
    - Marine Corps
    - Navy
- Department of Energy (Operations)
- Department of the Interior
  - Bureau of Land Management
  - Bureau of Reclamation
  - Fish and Wildlife Service
  - National Park Service
- Tennessee Valley Authority

Development-Managing Agencies (provide financial or technical support; have facilities)

- Department of Agriculture
  - Farmers Home Administration
  - Rural Electrification Administration
  - Soil Conservation Service
- Department of Commerce
  - Economic Development Administration
- Department of Health and Human Services
  - Indian Health Service
- Department of Housing and Urban Development
- Department of the Interior
  - Bureau of Indian Affairs (Indian lands trustee, public lands management)
- Department of Transportation
  - Federal Highway Administration
- Environmental Protection Agency (regulatory function also)
- General Services Administration
- Resolution Trust Corporation

Congressional Charter

- National Trust for Historic Preservation

Facilities-Managing Agencies (<1M acres with direct management responsibilities, minimal development support)

- Department of Commerce
  - National Oceanic and Atmospheric Administration (research also)
- Department of Energy
  - Bonneville Power Administration
  - Naval Petroleum & Oil Shale Reserves
  - Southwestern Power Administration
  - Strategic Petroleum Reserve
  - Western Area Power Administration
- Department of the Interior
  - U.S. Geological Survey (research also)
- Department of Justice
  - Federal Bureau of Prisons
  - Immigration and Naturalization Service
- Department of Transportation
  - Federal Aviation Administration
  - U.S. Coast Guard
- Department of Veteran Affairs
- National Aeronautics and Space Administration (research also)
- U.S. Postal Service
- Smithsonian Institution (research also)

Regulatory Agencies (not land-managing, minimal facilities management, do not financially support development)

- Advisory Council on Historic Preservation
- Council on Environmental Quality
- Department of Energy
  - Federal Energy Regulatory Commission
- Department of the Interior
  - Minerals Management Service
  - Office of Surface Mining, Reclamation, and Enforcement
- Nuclear Regulatory Commission

Research Agencies (primary mission, few facilities)

- Department of Health and Human Services
  - Public Health Service
- National Endowment for the Humanities
- National Institutes of Health
- National Institute of Standards and Technology
- National Science Foundation
- Smithsonian Institution (facilities also)

Those agencies responsible for managing vast tracts of land (Figure 1.2, Land-Managing Agencies) have the largest archeological management needs, and their programs vary in their staffing, funding, and effectiveness. Many of these agencies write annual reports on their overall program (e.g., Defense [Cheney 1992], FS [1992]), but their archeological activities are rarely mentioned in such reports. Within the array of participants in the Federal archeology program, the land-managing agencies manage the bulk of the Federal archeological resources and are presently the most visible institutional base for public archeological resource management in this country.

Federal agencies that provide financial or technical support to other organizations or individuals may not have direct responsibility for managing archeological sites, but they have major responsibilities within the Federal archeology program (Figure 1.2, Development-Managing Agencies). For example, the Bureau of Indian Affairs (BIA) has a relatively small amount of acreage under its direct management (2.75 million acres). However, as the administrator of the Federal government's trust responsibilities for nearly 60 million acres of Tribal lands, BIA has responsibility for overseeing or accomplishing conservation of archeological resources on 20 times its owned acreage. Under the American Indian Self-Determination and Educational Assistance Act (P.L. 93-638), some tribes (e.g., Makah Tribe, Navajo Nation, Zuni Tribe) have developed their own archeological management programs, but archeological permitting activities on most tribal lands still are managed by the BIA.

Another example of development management, the Federal Highway Administration, does not manage substantial acreage directly but distributes funds to state agencies that in turn impact a large number of archeological sites through road developments, improvements, and maintenance. A recent newspaper article (vos Savant 1992) estimated that Federal, Tribal, State, and local roadways together covered 36,744 square miles (23,516,610 acres) of land in the United States. Many state highway agencies have developed staffs with archeological expertise, and through contracts conduct a significant amount of archeological site inventory, evaluation, and data recovery. These archeological investigations generate large quantities of artifacts, other excavated materials, and investigation records that require long-term conservation and curation. A third example of federally-assisted development affecting U.S. archeological resources can be found in activities of the Soil Conservation Service (SCS). The SCS's national soil and water conservation program includes construction and operation of watershed protection dams and reservoirs, and provision of technical assistance to private landowners. Under the Resource Conservation Act of 1977, the erosion potential of agricultural soils on private lands is evaluated

periodically by the SCS (USDA 1990); this evaluation could include assessment of a vast array of archeological sites.

Under regulations for the curation of Federal archeological collections (36 *CFR* 79), these kinds of agencies also may have substantial responsibilities for the long term care of collections and records produced by their funded or supported projects.

Facilities-managing Federal agencies that participate in the Federal archeology program are those which have direct management responsibilities for only relatively small numbers of acres (Figure 1.2, Facilities-Managing Agencies). These agencies have minimal archeological programs, and those agencies that have reported to the Secretary note that much of their land has been inventoried and that the identified resources require little management attention. The Department of Veterans Affairs manages many historical facilities that retain a significant historic archeological record. The DOE (1990) power administrations have not reported to the Secretary on their archeological programs, but their facilities include networks of power transmission lines whose corridors cross the landscape in complement to access routes through difficult terrain, and they undoubtedly impact important archeological resources. The Naval Petroleum Reserves in Wyoming and California include over 57,000 acres, and the Naval Oil Shale Reserves in Colorado and Wyoming include over 145,000 acres, with wells, pipelines, and maintenance infrastructure scattered throughout the acreage (DOE 1990:123-131). The Strategic Petroleum Reserve in Louisiana and southeastern Texas consists of six underground salt dome crude oil storage facilities and associated ground surface operations. Archeological resources with scientific integrity undoubtedly still remain on those DOE lands.

Some agencies in the Federal archeology program neither manage significant tracts of land nor support development either financially or technically. These agencies regulate the national historic preservation and environmental quality programs, and the use of energy and natural resources, such as water and minerals. The regulatory programs of both the ACHP and the CEQ have a tremendous impact on the conservation and use of archeological resources on Federal and Indian lands and on other lands affected by federally funded or authorized projects.

Section 106 of NHPA requires that Federal agencies whose projects affect significant archeological and other historic properties provide the ACHP "a reasonable opportunity to comment" on

the proposed effects. This involves thousands of archeological sites each year (ACHP 1988, 1989, 1990). During 1988-1990, the Advisory Council offered frequent training courses in Section 106 compliance. Section 202(a)(6) of NHPA authorizes the Advisory Council to review Federal agency historic preservation programs and policies to improve their effectiveness, coordination, and consistency with that Act. No such agency reviews were conducted in 1988-1990.

Hydroelectric power facilities are licensed by the Federal Energy Regulatory Commission (FERC 1991), which is currently reviewing dozens of applications to relicense extensive private reservoir/dam/transmission line systems that were built 50 or more years ago and have never been subject to archeological inventory. To be relicensed, these projects must now comply with the Federal archeological and historic preservation program requirements. People have always lived near water, and hence the regulation of water quality and allocation of water quantities often involves considerable archeological inventory, evaluation, and data recovery. The Office of Surface Mining Reclamation and Enforcement regulates activities in new and ongoing private surface mines, and manages the reclamation of old mined lands that frequently hold a rich historic archeological record. Offshore leasing is managed by the Minerals Management Service, which has been constructing extensive archeological predictive models of the occurrence of historic shipwrecks and submerged prehistoric sites on the continental shelf. The Outer Continental Shelf is explicitly excluded from ARPA compliance, but its archeological resources are still subject to the Antiquities Act, Outer Continental Shelf Lands Act, Abandoned Shipwreck Act and NHPA, NEPA, and AHPA.

Finally, a few Federal agencies have primary research missions that directly or indirectly include archeology and have minimal facilities for which they have land management responsibilities. The National Science Foundation, Smithsonian Institution, and National Endowment for the Humanities directly fund archeological research throughout the United States and overseas. Three Federal facilities-managing agencies also have significant archeological research programs which support the Federal archeology program. Staff members at the U.S. Geological Survey, National Aeronautics and Space Administration, and Smithsonian Institution do research with archeological materials and sites. The National Oceanic and Atmospheric Administration supports research on submerged archeological resources, in addition to managing marine sanctuaries. Agencies that support archeological research, but which are less well known for such support, include the U.S. Public Health Service, National Institutes of Health, and National Institute of Standards and Technology.

The National Strategy for Federal Archeology

The Federal government's basic responsibility for the protection and prudent use of the nation's archeological resources is conducted by a wide array of agencies in the context of general public values and needs. Consistent application of the various legal authorities listed in Figure 1.1 is achieved through a standard set of regulations, as well as policy, standards, guidelines, and other directives and technical information provided by the NPS and the Departmental Consulting Archeologist. In a recent (1991) effort to lead and coordinate Federal agencies in meeting the responsibilities of archeological preservation, the Secretary of the Interior issued a policy statement, *A National Strategy for Federal Archeology* (Lujan 1991). This policy was derived from an internal memorandum of the same title (Lujan 1990) distributed by the Secretary throughout the Department of the Interior in 1990, which was itself derived from the recommendations in the report to Congress on the 1985-1986 Federal archeology program (Keel et al. 1989: 53-54). The strategy sets forth six objectives (Figure 1.3) for the Federal archeology program. This report on the Federal archeology program, using data from 1988-1990, evaluates the program's activities in light of those six objectives.

The Report to Congress on the Federal Archeology Program

As mentioned previously, the 1974 AHPA required the Secretary of the Interior to report to Congress on the Federal archeological activities authorized by that act; this requirement was expanded by ARPA in 1979 and its amendments in 1988 (Figure 1.4). Preparation of the report data, evaluations, and recommendations provides each involved agency and the Secretary the opportunity to communicate to Congress and agency heads the values and needs of the Federal archeology program.

The NPS prepared such reports for a few years prior to passage of the AHPA, and has continued to do so since then. The focus and content of these reports have varied over the past 25 years (Knudson and McManamon 1992). The present report was developed from data submitted by Federal agencies (Table 1.1) in response to a questionnaire (Appendix A) sent to them each year. This questionnaire was developed in 1985 and has been used for all subsequent years. Although modified somewhat during this period, the compiled responses to it provide quantitative as well as qualitative data for the Federal archeology program from 1985 through 1990. Because of the extensive number of departments, agencies, and agency subdivisions that provide the questionnaire responses, the numerical information can be taken

- **Public Education and Participation:** Federal and other public agencies should provide more and better public education about and opportunities for the public to participate in archeology--Archeology Week celebrations, open houses, tours, volunteer programs, films. Federal and other public agencies that conduct archeological investigations or manage archeological sites should include public participation and education activities throughout their projects and programs.

- **Public Use of the Archeological Paleoenvironmental Record:** Federal and other public agencies would provide for public use of the archeological record of thousands of years of human adaptation to changing environments. This identifies the conditions in which people have lived and the changes made in society, technology, and human habits in response to changing climate and natural resources, and can help us understood and shape our present responses to changing environments.

- **Fight Looting and Preserve the Archeological Record in Place:** Federal and other public agencies should focus attention on archeological site preservation in place, provide increased law enforcement personnel trained in archeological protection, and use the strengthened Archaeological Resources Protection Act to prosecute looters.

- **Interagency Cooperation in Information Exchange:** Federal and other public agencies must work to improve archeological information exchange at the national, State or regional, and local levels.

- **Site Inventories:** Federal agencies need to find the means to undertake archeological inventories of the public lands, and should encourage Tribes, States, local governments, private organizations, and individuals to inventory and provide information about the distribution and characteristics of the archeological resources in this country.

- **Curation of Collections and Records:** Federal agencies must systematically preserve the artifacts, other excavated remains, and related records from archeological sites on the public lands they manage or control, and encourage other private and public organizations and individuals to do the same.

Figure 1.3. Objectives of the National Strategy for Federal Archeology.

Archeological and Historic Preservation Act

Sec. 5(c) [16 USC 469a] The Secretary shall coordinate all Federal survey and recovery activities authorized under this Act and shall submit an annual report at the end of each fiscal year to the Committee on Interior and Insular Affairs of the House of Representatives and the Committee on Energy and Natural Resources of the Senate indicating the scope and effectiveness of the program, the specific projects surveyed and the results produced, and the costs incurred by the Federal Government as a result thereof.

Archaeological Resources Protection Act:

Sec. 10(c) [16 USC 470ii] Each [Federal] land manager shall submit an annual report to the Committee on Interior and Insular Affairs of the United States House of Representatives and to the Committee on Energy and Natural Resources of the United States Senate regarding the actions taken under such program [to increase public awareness of the significance of the archaeological resources located on public lands and Indian lands and the need to protect such resources].

Sec. 13 [16 USCII] As part of the annual report required to be submitted to the specified committees of the Congress pursuant to section 5(c) of the Act of June 27, 1960 (74 Stat. 220; 16 U.S.C. 469-469a), the Secretary of the Interior shall comprehensively report as a separate component on the activities carried out under the provisions of this Act [excavation and removal; resource custody; prohibited acts, criminal and civil penalties, rewards, forfeitures, violation documentation; confidentiality; intergovernmental coordination; survey; public awareness], and he shall make such recommendations as he deems appropriate as to changes or improvements needed in the provisions of this Act. Such report shall include a brief summary of the actions undertaken by the Secretary under section 11 of this Act, relating to cooperation with private individuals.

Figure 1.4. Federal archeology program Congressional report requirements.

Table 1.1. Federal Archeology Program Reporting Agencies, 1988-1990

Agency Name	1988	1989	1990
Air Force (USAF)	X	X	X
Army (USA)	X	-	-
Bureau of Indian Affairs (BIA)	X	X	X
Bureau of Land Management (BLM)	X	X	X
Bureau of Reclamation (BR)	X	X	X
Corps of Engineers (COE)	X	X	X
Department of Energy (DOE) Operations	X	X	X
Environmental Protection Agency (EPA)	X	X	X
Farmers Home Administration (FHmA)	X	X	X
Federal Aviation Administration (FAA)	-	X	X
Federal Bureau of Prisons (FBOP)	-	X	X
Fish and Wildlife Service (FWS)	-	X	X
Forest Service (FS)	X	-	-
General Services Administration (GSA)	X	X	X
Health and Human Services (HHS)	X	-	-
Immigration and Naturalization Service (INS)	-	X	X
Indian Health Service (IHS)	X	-	-
Marine Corps (USMC)	X	X	X
Minerals Management Service (MMS)	-	X	X
National Oceanic & Atmospheric Administration (NOAA)	-	-	X
National Park Service (NPS)	X	X	X
Navy (USN)	X	-	X
Nuclear Regulatory Commission (NRC)	X	-	-
Office of Surface Mining (OSM)	X	X	X
Rural Electrification Administration (REA)	X	X	X
Soil Conservation Service (SCS)	X	X	X
Tennessee Valley Authority (TVA)	-	X	X
U.S. Geological Survey (USGS)	-	-	X
U.S. Postal Service (USPS)	-	-	X

as a measure of the activity within each reporting unit as well as the overall national program, but not as a precise measure of the exact nature of that program. The response to the questionnaire was good over the three years of activity reported here, and provides a reliable overview of the Federal archeology program in 1988 through 1990.

A Note on Method

Data are presented throughout this report in two primary ways. The first of these is as reported data, presented year-by-year and agency-by-agency in Appendices B and C and summarized within the main body of the report. These data are taken directly from the questionnaire responses submitted by the agencies. Not all response data have been included within this report, but Lotus 1-2-3 spread sheets containing the complete data are available upon request and provision of a high density floppy disk to Daniel Haas, Archeologist, Archeology and Ethnography Program, National Park Service, P.O. Box 37127, Washington, DC 20013-7127.

Not all agencies that participate in the Federal archeology program reported fully or at all for each of the three years discussed here (Figure 1.5). The need to account for missing data has been identified in previous reports on the Federal archeology program (Keel et al. 1989:2-6; McManamon et al. 1993). In reporting on the Federal archeology program in 1988-1990, the questionnaire data have been used as a basis for a second form of information presentation in the main body of the report: as estimates or approximations of the actual nationwide frequencies when unreported data are taken into consideration. Appendix B describes the method used to arrive at these approximations.

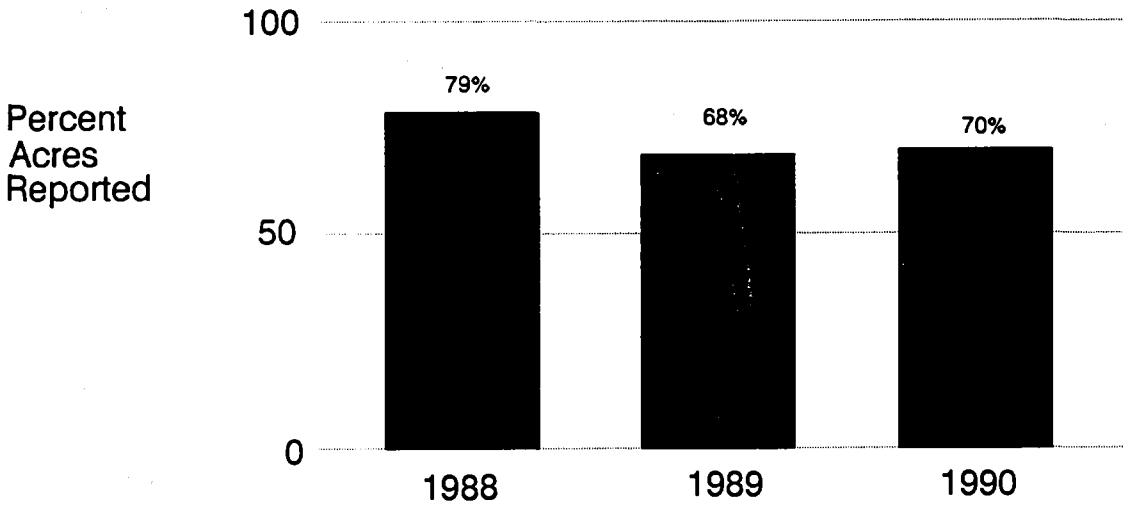

Figure 1.5. Approximate percentage of Federal acreage in the United States covered by archeological questionnaire response data for 1988, 1989, and 1990.

2

THE FEDERAL ARCHEOLOGICAL RESOURCE BASE

Introduction

Archeological inventories with their accompanying records have been accumulating in the United States for most of the last half-century. These investigations complement other sets of cultural resource data, including historic buildings surveys. Archeological inventories typically have been assembled by public agencies and educational institutions, combining museum and academic records accumulated from rescue archeology projects and information collected to comply with requirements of land management or development project planning (e.g., for environmental impact statements and Section 106 reviews to evaluate the impacts of proposed reservoirs, pipelines, nuclear waste repositories, highways). A further significant contribution has come from the site inventory efforts of avocational archeologists.

Archeological resources are sometimes evident on the surface of the ground, but frequently have buried components whose breadth and depth must be estimated to evaluate a resource's scientific and humanistic importance. Some sites have no surface indications at all. As discussed below, only a small fraction of the Federal and Indian acreage in the United States has been inspected sufficiently to identify even the archeological resources evident on the land surface. The information we do have about identified archeological sites must be the basis for approximating the management needs of the universe of prehistoric and historic sites on Federal and Indian lands.

Section 106 of the National Historic Preservation Act (NHPA) requires Federal agencies to identify and consider the impacts of Federal projects on historic properties, including archeological sites. The 1969 National Environmental Protection Act required that the impact of Federal projects on archeological sites and other aspects of the social and natural environment be taken into consideration in project planning, but its regulations allow environmental impact decisions to be made on the basis of existing information alone (40 CFR 1502.22). It was not until President Nixon signed Executive Order 11593 in 1971, with its Section 2(a) requiring inventory of all properties that appear to qualify for the National Register of Historic Places, that archeological inventories for environmental and historic

preservation requirements began to be conducted more frequently. In 1980, amendments to NHPA provided a statutory basis for the inventory requirements in NHPA Section 110(a)(2). In 1988, the Archaeological Resources Protection Act (ARPA) was amended (P.L. 100-555) to underscore this requirement. The 1988 legislation directed the Departments of the Interior, Agriculture, and Defense (DOD) and the Tennessee Valley Authority (TVA) to develop plans and schedules for surveying their lands to "determine the nature and extent" of their archeological resources. The ARPA planning requirement also applies to Indian lands that are held in trust by the Bureau of Indian Affairs. Section 110(a)(2) of NHPA was amended in 1992 (P.L. 102-575 Title 40) to more fully describe Federal agency identification, evaluation, and nomination programs for historic properties in greater detail, and to direct agencies toward planning and public consultation within such programs.

Archeological Resource Databases

Federal archeologists estimate that approximately 7 million archeological sites exist on Federal and Indian lands in the United States, of which fewer than one-half million were identified by the end of 1990 (Table C.2). Information about all those identified sites is recorded to some degree on archeological inventory paper records, and some of it is recorded in computerized databases that can be queried to support archeological research, public education, or management decisions. No quantitative data are available on the amount of archeological information entered into electronic databases between 1988 and 1990.

By the end of 1990, there were a few agency-wide computerized archeological resource inventory databases. The U.S. Army Corps of Engineers' (COE) Construction Engineering Research Laboratory (CERL) had developed the Cultural Resource Information System (CRIS), which was used by several DOD departments and agencies. By 1992 CRIS was being supplemented by the XCRIS program, to enable the CRIS database to combine with the Geographic Resources Analysis Support System (GRASS) that CERL had developed in 1988. The National Park Service (NPS) Archeological Resources Inventory (ARI) was being tested by late 1990 (Davis 1990). The Shipwreck Database was being developed by the NPS Maritime Initiative, and the Archaeological and Shipwreck Information System (ASIS) was being developed as the Minerals Management Service (MMS) baseline for assessing the impacts of leasing on the Outer Continental Shelf (OCS). The General Services Administration (GSA) had developed and was implementing an Arts & Historic Preservation Cultural Resource Management System that included

archeological data. The Bureau of Land Management (BLM) was working on the development of the archeological component of their Automated Lands and Minerals Records System (ALMRS).

On a smaller scale, computerized archeological databases were developed on several DOD and Department of Energy (DOE) facilities, for a number of Federal land management jurisdictions (e.g., a U.S. Forest Service (FS) forest, a Bureau of Indian Affairs (BIA) area office, a BLM district, a COE district), and for some Indian lands (e.g., Navajo Tribe). Two interagency regional computerized databases were in place the Southwestern Anthropological Research Group (SARG), and the Intermountain Antiquities Computer System (IMACS) (Altshul 1988:79) and the Automated Management of Archeological Site Data in Arkansas (AMASDA) system was being adapted to other states.

Regarding national systems, the NPS' National Register Information System (NRIS) and National Historic Landmark Information System (NHLIS) include many archeological resources on public, Indian, and private U.S. land if those sites are either determined eligible for inclusion in the Register or have been determined to be National Historic Landmarks (Miller 1987). Information about archeological sites on Federal and Indian lands was also incorporated within the range of computerized State cultural resource inventories by the end of 1990 (Wood 1990), many of which were tied into State or local geographic information systems (GIS; Warnecke 1990).

In 1988, the BLM published a major report (Judge and Sebastian 1988) on predictive modelling of archeological resources, which discussed the use of electronic GIS with natural and land use data, some obtained by remote sensing, for use in archeological research and management. During the late 1980s the U.S. Army Corps of Engineers Southwestern Division supported the development of the Southwestern Division Archeological Management Plan (Limp 1989) whose mapping applications were run under the GRASS system (Farley et al. 1990). This plan was based on archeological inventory data at the county level.

The National Archeological Database

The National Archeological Database (NADB; Canouts 1991:233-236, 1992) continued to be developed during 1988 through 1990, and by the end of that period the NPS NADB Regional Coordinators were establishing cooperative agreements with State Historic Preservation Officers (SHPO)

and other Federal agencies to establish a network of data providers. Plans were being made to develop NADB as an online system based on the citation database designed by the Arkansas Archeological Survey in support of the Southwestern Division Archeological Management Plan and adapted from the original NADB-Reports data structure.

Federal Archeological Resources

The total area of Federal and Indian lands in the United States is over 720 million acres (Table 2.1), over 30% of the 2.3 billion acres within the U.S. borders (GSA 1990). These Federal and Indian lands and all of the known and yet-to-be-identified archeological sites they contain have been an important focus of the Federal archeology program since the passage of the Antiquities Act of 1906. These lands, the vast majority of which are located in western states (Figure 2.1), can be described by specific acreage figures that remain relatively stable over time.

Beginning in the 1960s, additional Federal legislation, most importantly NHPA and NEPA, has fostered an equally significant aspect of Federal archeology concerned with archeological resources impacted by Federally sponsored or regulated projects that disturb the ground, regardless of land ownership. This second category of lands of archeological concern to the Federal government creates archeological management issues that are more diverse than those on the Federal lands themselves. Federal agencies may not have a direct resource management function for non-Federal archeological resources, yet they have responsibility for the long term preservation of data and materials recovered from resources impacted by Federally authorized projects. Archeological and other cultural resources on these non-Federal lands are managed as part of the national historic preservation program (McManamon 1992:26-32).

Progress on Federal Land Site Inventories

Federal land-managing agencies (as identified in Figure 1.2) account for 99% of all federally owned land as reported by GSA in 1990 (Table B.3). Holdings of the facilities-managing agencies account for most of the remaining 1% of the Federal lands in the United States, with regulatory, research, and development agencies accounting for the residual.

Table 2.1. Reported U.S. Acreage Managed by Key Federal Agencies and Associated Levels of Archeological Inventory Coverage, 1988-1990.

Agency[1]	Acres Reported Managed in 1990 (millions)[2] [Question 66]	Acres Reported To Be Newly Surveyed 1988-89 (millions) [Question 49]	Total Acres Reported Inventoried through 1990 (millions)[3] [Question 67A]	Percent Acres Reported Inventoried Through 1990 [Question 67B]
Air Force (P)[4]	8.4	<.1	0.5	6%
Army[5]	12.0	-[6]	(1.0)	-
Bureau of Indian Affairs	58.8	0.2	0.5	1%
Bureau of Land Management (P)	270.0	1.4	9.4	4%
Bureau of Reclamation	7.9	0.1	0.4	6%
Corps of Engineers (P)	7.4	0.5	1.7	20%
Department of Energy Ops. (P)	2.8	<.1	0.1	5%
Fish and Wildlife Service	91.0	0.1	7.9	-
Forest Service[7]	184.5	(1.5)	(9.8)	-
Marine Corps	1.7	<.1	0.3	6%
National Park Service (P)	77.0	0.2	1.0	-
Navy	4.7	-	-	-
Tennessee Valley Authority (P)	1.0	<.1	-	<1%
Totals	**727.2[8]**	**4.2**	**25.5**	
Percent Managed Acres Reported Inventoried Through 1990		**3.5%**		

[1]This list includes all Land-Managing agencies (Figure 1.2) plus the BIA; question numbers refer to questions detailed in Appendix A, and data are derived from Table C.1.

[2]Acreage reported as being managed by any Federal agency may or may not be "owned," i.e., assigned ownership authority by the U.S. Government, who actually holds all Federal land title. The GSA reports on Federal land ownership, and the differences between owned and managed lands, and the implications of that for estimating overall Federal archeology program accomplishments and needs, are described and discussed in Appendix B.

[3]"Inventory" here refers to reported 100% coverage of U.S. Federal or Indian lands, assumed to include both prehistoric and historic resource identification and evaluation.

[4]"P" indicates that the agency has at least begun discussion of a plan to inventory all the archeological sites under its management, as required in 1988 by ARPA §14(a).

[5]The Army did not report in 1989 or 1990, so the Acres Reported Managed number here is acres owned by the Army in 1990 as reported by GSA (1990); the Total Acres Reported Inventoried Through 1990 is the number provided by the Army in 1988 and consequently is set in parentheses here.

[6]"-" indicates no data were reported for this category.

[7]Acreage data are as reported by the GSA (1990), and survey and inventory acreage numbers are data derived from a 1988 partial FS report since no FS report for 1988-1990 is complete; hence, they are set in parentheses.

[8]Referring to Federal land only (i.e., not including BIA-managed Indian trust land), the *owned* acreage reported for these agencies by GSA in 1990 (Table B.3) totals 649,032,684 acres, or 99% of the federally owned real property in the United States. The discrepancy between the GSA-reported ownership data and the agency-reported acres-managed data, as well as the inclusion here of BIA-managed lands (which are subject to NHPA and ARPA, but are not *owned* and tabulated by the GSA), is discussed in Appendix B.

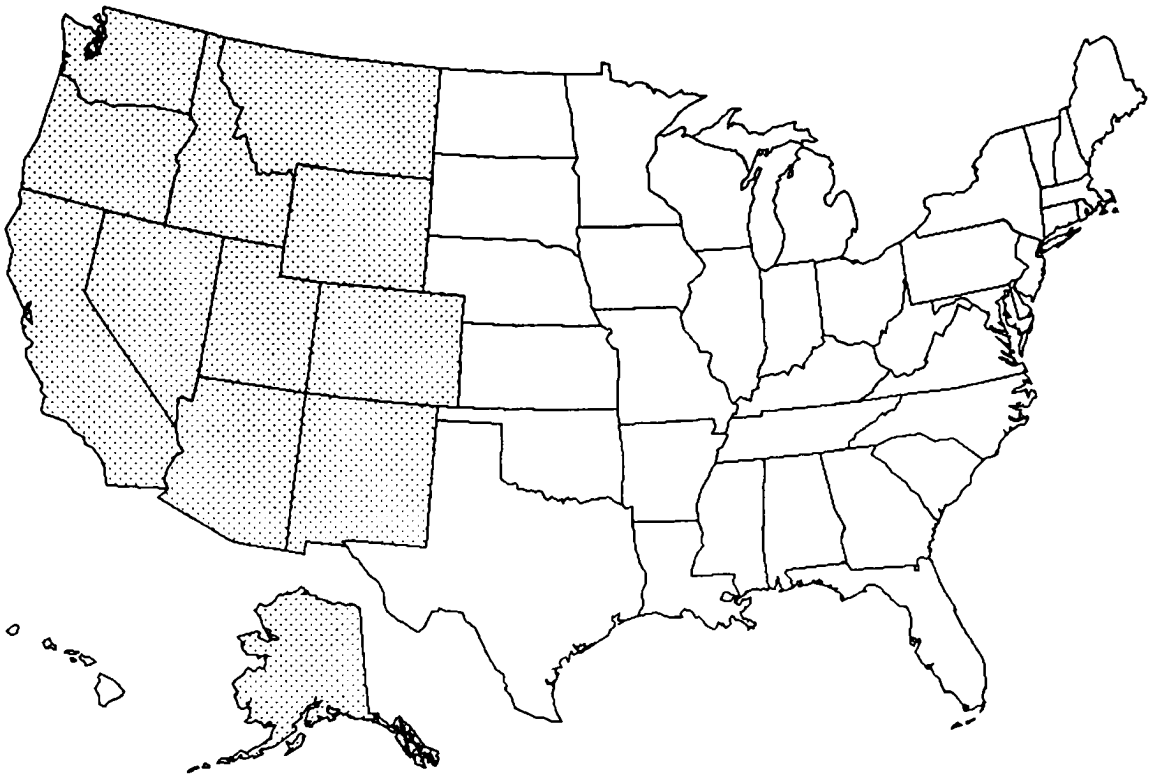

Figure 2.1. The contiguous western States and Alaska (shaded) together contain over ninety percent of all Federal and Indian lands in the United States.

The compilation of an archeological site inventory for Federal and Indian lands in the United States can be said to have begun before the turn of the 20th century, with reports to Congress and other Federal authorities on the imperiled state of a few spectacular archeological sites on public domain lands in the southwestern United States. At the time, sites in the Four Corners area of Arizona, Colorado, New Mexico, and Utah, such as Chaco Canyon, were being mined for artifacts (Lee 1970; Lister and Lister 1981, 1983; Rothman 1989:34). Reports of this destruction and steady pressure by archeologists,preservationists, and other scientists eventually led to passage of the Antiquities Act of 1906, and ultimately to the protection and subsequent public enjoyment of these sites. This illustrates the truism that underlies the archeological site inventory program: a site can not be preserved or protected until its location and condition are known to those with the interest and resources to undertake its preservation. Today, it also is appreciated that the broader and more complete the knowledge of all the archeological sites on Federal lands, the more effective will be the use of the financial and human resources available to preserve and protect those prehistoric and historic resources (Case Studies 2.1, 2.2).

On the large and relatively stable tracts of land overseen by agencies such as COE, BIA, BLM, DOE, FS, FWS, NPS, Bureau of Reclamation (BR), and DOD (Table 2.1, Figure 2.2), a site inventory is an important tool for developing the means of preserving archeological resources and enhancing their public use. Unfortunately, few areas have comprehensive site inventories. Building a site inventory requires a steady ongoing effort, entailing the identification and characterization of archeological sites through inspection of the area being managed using appropriate methods and techniques to identify diagnostic artifacts, architecture, and soil features. A comprehensive inventory would be a source of overall knowledge of the number, type, and condition of all archeological sites on Federal and Indian lands. The quality of information in any comprehensive site inventory program, including its completeness in terms of acres covered and intensity of coverage, will to a large extent determine the quality of the decisions that can be made about the future preservation of archeological resources on Federal and Indian land.

By the end of 1990, about 21 million acres, or about 3% of the U.S. Federal and Indian lands, was reported as having been inspected thoroughly enough ("full or 100% coverage") to identify all of the archeological properties evident on these lands (Table 2.1; Figures 2.2-2.3). Specific agencies varied considerably in their reported archeological inventory coverage. During 1988-1990, COE reported having

Over the course of nearly ten years, ending in 1988, archeologists from the NPS-Midwest Archeological Center conducted a series of archeological investigations in the Jackson Lake area of Wyoming's Grand Teton National Park.

The Jackson Lake Archeological Project coincided with a 10 year repair project of the Jackson Lake Dam authorized by the Safety of Dams Act. The original dam construction was completed by BOR, who still manages it, in 1916. The Bureau funded a cultural resource inventory in connection with the repair project and NPS conducted the inventory.

The archaeological project was scheduled to take advantage of two controlled lowerings in the water level of the federally-maintained reservoir in the park. This made it possible to conduct a site inventory and selective excavations in areas normally covered by water. Completion of the study required the coordination of BOR, NPS, and volunteers who contributed over 5,000 hours field and laboratory work.

During the repairs, the Bureau planned to maintain the reservoir at a high of 2,056 meters (6,745 ft), with an approximate 2.5 meter (8 ft) annual fluctuation. With the water at this level the first phase of the archeological work was carried out in the field seasons of 1984-1986. In the course of this work, 109 previously unknown archeological sites were discovered along 130 km of normally inundated lake shoreline, and 29 were tested and excavated. This was to be the extent of the project.

Subsequently, however, a drought took place and BOR was unable to hold the reservoir at the planned level throughout the year. In the Fall of 1987 and 1988 the water level was dropped to that of the original, natural lake level. During these archeologically fortuitous drops in the water level large field crews were mobilized to complete the inventory to the natural lake level and to test and conserve, through excavation, the surprisingly large number of new sites that were found. Data gathered from this phase of the project are still being analyzed.

While the volunteers were predominately from the Jackson Hole area, participants came from across the United States. They were asked to put in one to two weeks of long hours and hard work on an array of tasks, from the tedious to the physically draining. In return, they were given space in the group campground for as long as they worked, and a certificate of appreciation from NPS. Nearly all of them have asked where they can sign up for more work.

In sum, the project has addressed significant issues of archeological management and interpretation. The documentation and assessment of these newly discovered sites makes them a part of the Park Service's current archeological site inventory, allowing these resources to be protected and managed more effectively in the future. Also, evaluation of the effects of inundation of the sites will be useful in developing procedures for inumdated cultural resources throughout the country. From an interpretive standpoint, the project has added significantly to existing knowledge of the culture history, subsistence practices, and settlement patterns of the prehistoric inhabitants of the area. In particular, this project has helped in understanding how human societies have utilized mountain landscapes as they faced problems of resource shortages and climatic change.

Case Study 2.1. Increasing Site Inventory Coverage at Jackson Lake, Grand Teton National Park by Melissa Connor [National Park Service-Midwest Region]

Bandelier National Monument, New Mexico is an archeological site notable for its beauty and its brief but well-preserved Anasazi occupation. But despite interest dating back to the turn of the century, few sites within the Monument had been formally inventoried or even accurately located until a recent collaborative study.

Over the last four years, teams led by Robert P. Powers, NPS-Southwestern Region, and the author have studied the dense and famous archeological resources of Bandelier. Now, NPS survey teams have completed detailed coverage of 40 percent of the Monument, providing baseline data for both management and research. Analysis of these data is just beginning, but has already yielded surprising results. Few archeologists, for example, believed the large, post-A.D. 1325 "Classic Period" pueblos represented the period of peak local population. It now appears likely that population size peaked in the late A.D. 1200s, coincident with the formation of the first small villages at Bandelier. Yet, practically no excavation has been done in the sites of this earlier period, which now appears critical to understanding some of the mysteries at Bandelier: why, where, when, and how villages were first formed here.

To obtain sufficient information to answer these questions, Washington State University (WSU) researchers have conducted test examinations at five sites ranging in age from the late A.D. 1100s to the mid-A.D. 1400s, focusing on the critical period between A.D. 1250 and 1325 when people rather suddenly abandoned isolated farmsteads to form compact rectangular villages enclosing a plaza.

Excavations have targeted the recovery of information that survey alone cannot provide; and whereas excavation has been only a small component of the Bandelier Archeological Project, it has contributed greatly to public education and participation. Guided tours are available, informing the general public of processes and problems of excavation. Additionally, much of the excavation labor was provided by field school students and local volunteers. And excavations also contribute to public use of the archeological paleoenvironmental record. WSU researchers are now embarking on a program of detailed analysis of pollen and sediments for the fill of a kiva abandoned in the early A.D. 1300s. It is likely that these sediments contain environmental information which will help identify and explain vegetative effects of human habitation and local climate change in the 14th and 15th centuries.

In years of declining budgets, collaborations such as this become especially attractive as a means for institutional sharing of expertise and resources in the interests of furthering public knowledge while working towards management goals of complete site inventories for public lands.

Case Study 2.2. Site Inventory at Bandelier National Monument by Timothy A. Kohler [Washington State University]

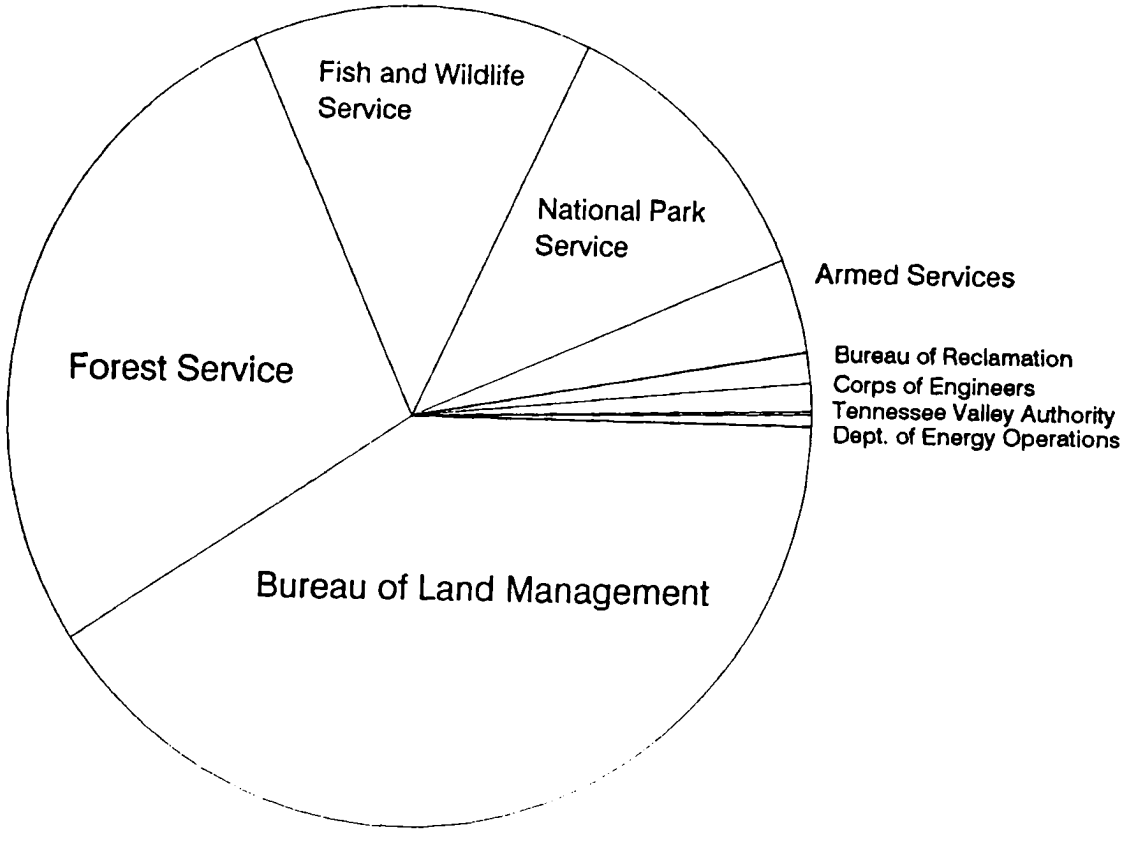

Figure 2.2. Relative amounts of acreage overseen by Federal Land-Managing agencies in 1990 (Tables 2.1, B.3, C.1).

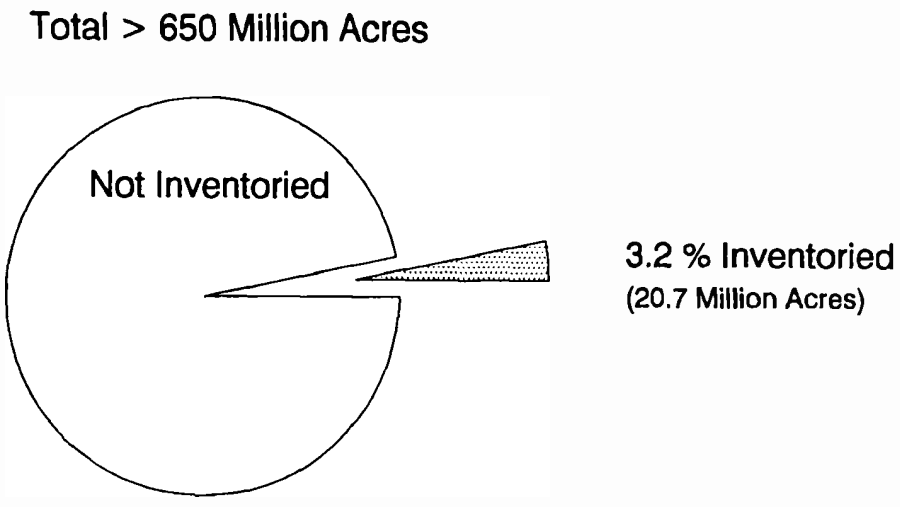

Figure 2.3. Estimated portion of the U.S. Federal and Indian lands, administered by Key Federal Agencies (Table 2.1), which had been archeologically inventoried by the end of 1990 (Table C.1).

inventoried the archeological sites on nearly 20% of its land, while the Navy did not report any archeological inventory; most agency reports fell between these two extremes. Inventory disparities primarily relate to variations in the amount of ground-disturbing projects required by each agency to fulfill its mission. Most Federal archeological investigation funds come as a byproduct of development, maintenance, and operational projects, rather than as independent archeological or historic property inventories.

Under ARPA Section 14, added in 1988 (P.L. 100-555), Federal agencies are required to develop plans for surveying land under their control to determine the nature and extent of their archeological resources, and to prepare a schedule for completing an inventory of the sites on lands that are likely to contain the most valuable archeological resources. This complements the NHPA Section 110, which directs Federal agencies to establish programs to inventory their historic properties, including archeological resources. As with the actual amount of inventory accomplished to date, the degree of formal planning is highly variable. By 1990, 6 of the 13 key Federal agencies listed in Table 2.1 reported having begun the process of agency-wide planning to produce such a site inventory. Progress in developing such plans is more modest for the other Federal agencies.

In addition to Federal and Indian lands reported to have been thoroughly inventoried in 1988-1990 to identify their evident archeological resources (Figure 2.4), nearly 4% of the other such lands were reported to have been archeologically investigated at "less than 100%, or partial, coverage" (Appendix A: Question 68). Thus, approximately 7% of the U.S. Federal and Indians lands have been thoroughly or at least partially surveyed to identify the evident archeological resources on them. These less than complete surveys can relate either to temporal (e.g., historic and/or prehistoric resources identified), topical (e.g., "cultural resource inventories" limited to architectural properties), or geographical coverage (e.g., whether surveyors actually walked over the land in sufficient intensity to think that all surface-evident archeological materials have been identified, or intensive walk-over of only a sample of the agency lands). Thus, much of the Federal and Indian land reported to have been archeologically inventoried still have unidentified archeological resources on them, and require additional inventories to reach the "full coverage" level. Even on fully inventoried lands, ground-disturbing development or natural erosion may expose deeply buried archeological sites not identifiable previously during inventories of land surfaces.

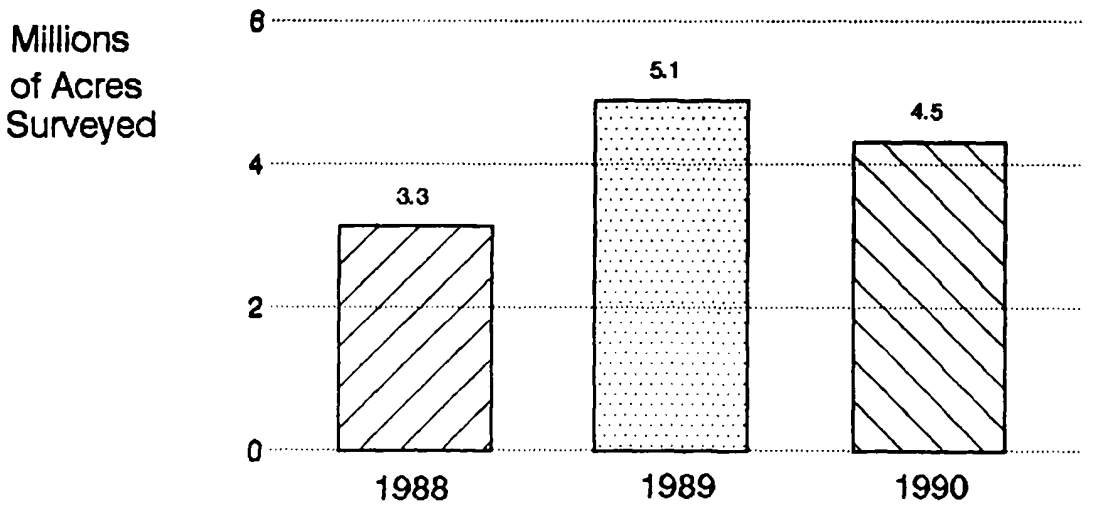

Figure 2.4. U.S. acres reported surveyed by Federal archeology program participants during 1988 through 1990, including many non-Federal and non-Indian lands (Table C.1)

An anomalous and important portion of the United States' archeological record is the 1.4 billion acres of the outer continental shelf claimed by the Federal government and overseen by the MMS. This land is not tallied in the Federal acreage reported in Table 2.1 because it is not included in the base of United States acreage for public land statistics (BLM 1988a, 1989, 1990c) and is excluded from ARPA jurisdiction (ARPA, Section 3). Nonetheless, archeological resources probably are substantial on these submerged lands. Because of the potential threat to submerged resources from geological exploration, over the past several years the MMS has developed inventories of known or predicted historic shipwrecks. MMS also has used geomorphological, hydrological, sedimentary, archeological, and ethnographic data to build models for describing the distribution of submerged prehistoric sites on OCS lands (e.g., Gearhart et al. 1990). As mentioned in Case Study 2.3, efforts are underway to survey the shipwrecks and inundated, formerly terrestrial, archeological sites that lie within portion of these submerged acres.

Some Federal agencies' responsibilities in accord with their missions are involved primarily with facilities management. The Federal Bureau of Prisons, for example, manages 20,000 acres disbursed nationally among relatively small parcels of land on which Federal prisons have been built. Such facilities, although they entail only a very small fraction of Federal lands, may contain significant historic and prehistoric archeological sites (Case Study 2.4). These properties enjoy advantages of location today that have often made them highly desirable in the past as well. Thus they may contain archeological remains that are at the surface or deeply buried. Many of these properties now are built up densely, and frequently there is little consideration given to the possibility that there may be significant historic and prehistoric archeological sites underlying the modern buildings that they contain. Because of their small size, many of these facilities have significant constraints as to where they can place new construction, and are unable to avoid identified archeological resources. Archeological materials on Federal facilities are unlikely to be damaged or destroyed by archeological looting because of close Federal oversight, but the presence of such materials frequently are not considered early in planning for development or operations. Archeological remains on these facilities frequently are treated only as emergency discoveries, which are often expensive (see p. 3-6) because of development construction delays that caused by the archeological discovery.

No matter what their missions, all Federal agencies possess at least some public and administrative offices and associated land. These administrative lands represent one of the most

The Minerals Management Service (MMS) contracted with Espey, Huston and Associates, Inc. of Austin, Texas, to perform a baseline study of the archeological resource potential of the continental shelf off of northern California, Oregon, and Washington. The six-volume baseline study includes a compilation of known historic shipwreck sites, known coastal prehistoric archeological sites, and an assessment of the potential for both unknown historic shipwrecks and inundated prehistoric archeological sites within the study area. This study is the most recent in a series of archeological baseline studies funded by MMS to assess the archeological resource potential of the continental shelf of the United States.

Both primary and secondary sources were searched to compile the listing of known historic shipwrecks within the study area. Approximately 3,850 shipwrecks were documented for the study area. These shipwreck data have been incorporated into the Archaeological and Shipwreck Information System (ASIS). The locations of these known shipwrecks were used in combination with data on historic shipping patterns; geographic hazards such as rocks, reefs and shoals; and historic climatic conditions including high winds, heavy seas and fog, to construct a predictive model for the occurrence of unknown shipwrecks. The predictive model was used to delineate eleven zones having different levels of probability for historic shipwreck occurrence within the study area.

Both published and unpublished literature and archeological data sources were used to compile the database of known coastal prehistoric archeological sites for the study area. These prehistoric site data have been incorporated into the Archaeological/Prehistoric Site Data Tracking System. The age, cultural affiliations and landform associations of these coastal prehistoric sites were used to construct a predictive model for offshore site occurrence. An unavoidable constraint of this approach is that there is no onshore analogue for coastal prehistoric sites dating earlier than the late Archaic Period when sea level reached its current position.

Available sea level data were used to map the approximate shoreline positions for 18,000, 15,000, 10,000 and 7,500 B.P. Available geologic data on the locations of late Wisconsin and Holocene landforms such as fluvial channels, marine terraces and relict islands were used in combination with the prehistoric site model to delineate areas where prehistoric archeological sites were most likely to occur. Available dates on the thickness of Holocene sediments were also compiled and used to determine where archeological sites were most likely preserved, and how deeply they would be buried beneath the present sea floor.

Case Study 2.3. Archeological Resource Baseline Study, by Melanie Stright [Minerals Management Service].

The Florence Historic and Archeological District in Colorado is comprised of 13 historic sites clustered within approximately 160 acres of land owned by the Department of Justice. The District is a transitional, geographic zone east of the southern Colorado Front Range and west of the Plains region. From 1876 to 1902 the Florence Oil Field, within which the District lies, covered an area of 14 square miles and was the only producing oil field in Colorado.

Sixteen historic sites associated with historic oil exploration were investigated. Of these, ten were recorded in 1989, and six were recorded in 1990. They vary in size, type of features present, and in the frequency and diversity of artifacts. Of the sites identified during 1990, three sites were determined ineligible for the National Register and are considered non-contributing elements to the District. The sites were mapped, surface collected and, in some instances, explored with backhoe trenches. Excavations uncovered a variety of features at different sites including a well casing, remnants of a wooden trough and a structure possibly enclosing a pipe in the oil gathering system, an iron well pipe, a relatively intact brick firebox or furnace base, a reasonably intact wooden drive wheel with a large slag and coal heap, and a steel wellhead capped with a wooden plug.

With the exception of site 5FN1043, each site has at least one area containing scattered slag and coal. Most sites also contain a discrete locus of drilling effuse and loose, pulverized substrate bailed from the drilling shaft. Among the features and historical artifacts recorded at various sites were concentrations and scatterings of cinders, petroleum sludge, nails, other ferrous objects, steel stakes, cables and fragments, weathered and rotted timbers, bricks, glass, and stoneware sherds.

Based on collections and excavations the sites demonstrated the potential to yield significant information on the early oil industry and associated technology in Colorado and the United States. The District is particularly illustrative of Western settlement expansion resulting from the exploitation of the Region's natural resources.

Case Study 2.4. Florence, Colorado, Oil Field Sites by Amy Friedlander, Marcus Grant and Ingrid Wuebber [Department of Energy]

geographically varied set of Federal real properties, and often are managed by agencies whose activities do not otherwise require archeological staffing. In these situations, agencies may minimize if not overlook the requirement to consider archeological protection needs in agency development planning or operations even though their lands may contain important, relatively unprotected historic and prehistoric archeological resources. The Postal Service (Table B.1), with its numerous and widely distributed facilities, is an example of a facility-managing agency without in-house expertise or much experience dealing with archeological protection needs, but with a number of real property holdings scattered across the United States.

Improving the completeness of the inventory of archeological resources on Federal and Indian lands has been identified as a strategic goal for all Federal agencies (Figure 1.4; Lujan 1991) and is being pursued by many of the Federal agencies. However, archeological resources on non-Federal lands are just as germane to national preservation goals, and their consideration is an important part of a successful Federal preservation program. Site and landscape information gained through investigations of non-Federal and non-Indian land required by Federal law, or through non-Federal efforts anywhere in the United States are also a part of the U.S. archeological inventory process. The resources are all part of an interrelated past, and information about the location and condition of all of them is important to implementing an efficient, and coordinated program for preserving archeological sites.

In 1990, NPS published "Guidelines for Evaluating and Documenting Rural Historic Landscapes" (McClelland et al. 1990). A subsequent NPS annotated bibliography of historic landscapes (Meier and Chittenden 1990) included both designed and vernacular landscapes, but did not include references to archeological resources. However, the definition of a rural historic landscape (McClelland et al. 1990:1) clearly could fit many prehistoric as well as historic archeological resource areas:

> ...a geographical area that historically has been used by people, or shaped or modified by human activity, occupancy, or intervention, and that possesses a significant concentration, linkage, or continuity of areas of land use, vegetation, buildings and structures, roads and waterways, and natural features.

The Advisory Council on Historic Preservation's 1990 report to the President and Congress focused on rural historic landscapes and noted (ACHP 1990:7,9) that characteristics of the rural landscape included archeological sites. Archeological sites were part of the basis for determining the Granite Chief

Wilderness Area in Tahoe National Forest, California, eligible for the Register (ACHP 1990:52-53). Thus, by the end of 1990 a new technique for describing archeological contexts was made available to the Federal archeology program.

Federal Archeology Program Site Inventory on Non-Federally Managed Lands

As cited in Chapter 1, the 1974 AHPA and the NHPA provide procedures that may result in the preservation of significant archeological resources or data threatened by Federally funded or licensed projects, whether those projects are on Federal or Indian land or on non-Federal land. Some such sites are excavated fully and studied, while others simply are identified and avoided. Many have been investigated sufficiently for inclusion in site inventories maintained by State archeologists, State Historic Preservation Offices, and others.

As one example of archeological activities by a Federal development-managing agency, the Soil Conservation Service (SCS) operates in partnership with private land owners to preserve soil and ground cover under the Soil and Water Resources Conservation Act of 1977 (USDA 1990). SCS has identified 45 million acres of highly erodible private land as a target for its preservation efforts. When impacted by SCS projects, which may be considered Federal undertakings, these lands are subject to archeological investigation conducted or required by the SCS. Private lands may at times also be the subject of similar Federal involvement on the part of agencies such as COE, Environmental Protection Agency (EPA), or Federal Energy Regulatory Commission (FERC). Unlike Federal archeological activity of the land-managing agencies, whose holdings are highly concentrated in the western States, the areas of impact of the development and regulatory agencies are distributed more evenly throughout the United States.

Known and Estimated Site Frequencies

Over the past several years, Federal agency archeologists have been asked to estimate the number of archeological sites likely to exist on their agencies' lands, taking into account their knowledge of the topography, soils, hydrology, known site distributions, and ethnographic and historic uses of those lands. In 1990, the land-managing agencies together estimated a total of just under 7 million archeological sites on the lands under their management (Table C.2). Correcting for missing data, it is estimated that 9.3

million archeological sites are likely to occur on lands managed by the key Federal agencies (Figure 2.5, Table C.2). Only 4.7% (437,000) of these sites have been identified.

The number of archaeological sites reported as having been identified each year by Federal agencies decreased between 1988 and 1990 (Figure 2.6, Table C.2). Even when correcting for missing data, the key Federal agencies exhibit the same decrease in estimated site identifications over that period (Table C.2). This is coincidental with the decrease in estimated key Federal agency acreage inventoried (Table C.1). In 1990, 437,000 archeological sites were estimated to have been identified on key Federal agency-managed lands (Figure 2.6, Table C.2).

Since Federal lands constitute 30% of the total United States acreage and are estimated to contain about 9 million sites, it also might be estimated that the territory of the United States as a whole contains approximately 30 million archeological sites (Figure 2.5). Of these estimated 30 million sites, the 437,000 sites estimated to have been found by the Federal archaeology program apparently represent only 1.5% of the archeological sites that might be located somewhere in the United States.

National Register of Historic Places and National Historic Landmarks

NHPA as amended (Figure 1.1) requires that archeological sites and other historic properties affected by any Federal agency activity be evaluated, and if appropriate, be nominated to the Register. However, the reports on the Register status of archeological sites by Federal agencies indicate that only one site in three is ever formally evaluated (Figure 2.7, Table C.3).

Archeological sites designated as National Historic Landmarks deserve particular attention because they have been determined to have special national significance. These sites occur on private, public, and Indian lands.

Each year NPS submits to Congress a Section 8 Report, describing the condition of National Historic Landmarks (NHL) in the United States whose integrity and long-term preservation is damaged or threatened. The reports recommend actions needed to protect these endangered resources. A number of these NHLs are archeological sites on Federal or Indian lands. For instance, in 1988 (Martone 1988), 1989 (NPS 1989), and 1990 (NPS 1990) these included Cape Krusenstern (AK),

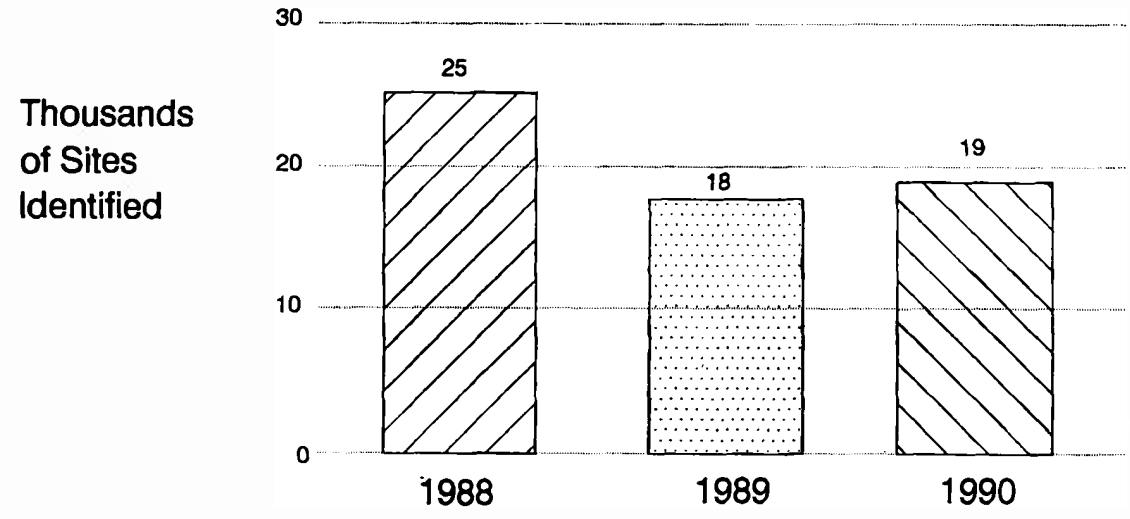

Figure 2.5. Archeological sites reported to have been identified in the United States by Federal archeology program participants, 1988-1990 (Table C.2).

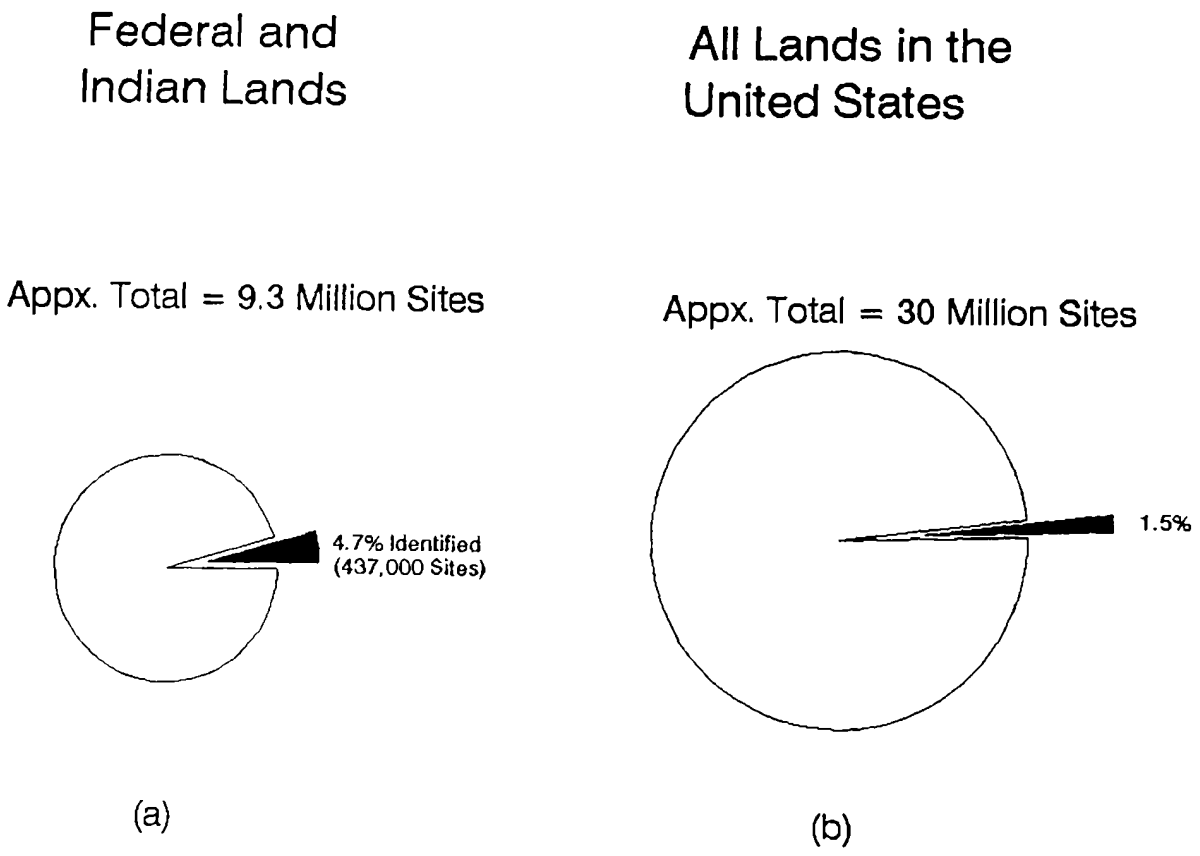

Figure 2.6. Estimated number of archeological sites judged likely to occur in the United States, relative to the portion currently identified by Key Federal Agencies (a) on all Federal and Indian lands (Tables 2.1, C.2) and (b) throughout the United States, based on relative acreage.

Site CA-Ven-110 is listed on the National Register of Historic Places (NRHP), as a prehistoric village and cemetery occupied between A.D. 700 and 1000. It is situated within the Calleguas Creek flood control channel, which is managed by the Ventura County, California, Flood Control District and falls under the Los Angeles District, U.S. Army Corps of Engineers (COE) Section 10 and Section 404 regulatory authority.

Since CA-Ven-110 is a NRHP archeological site, compliance with Section 106 of the National Historic Preservation Act was required when the Flood Control District applied for a COE permit to conduct maintenance dredging after a severe flood occurred in 1980. Human remains had been washing out of the channel for years, causing distress among the local Ventureno Chumash, who trace their ancestry to the village. These Native Americans were torn between wanting the remains removed to a safe place and wanting to save them from further disturbance. There was also concern that recent damage sustained by the site might have made it no longer eligible for NRPH listing, and there was a question of funding. COE is not authorized to expend funds for test excavations or mitigation under its regulatory authority and the Flood Control District, its funds depleted by flood damages and resulting litigation, had applied to the Federal Emergency Management Agency (FEMA) for funds.

COE archeological staff and other concerned parties, including the State Historic Preservation Officer, Advisory Council on Historic Preservation, Ventureno Chumash, and Candelaria American Indian Council, worked out and approved a Memorandum of Agreement (MOA). FEMA agreed to fund test excavations, a local land owner contributed funds toward the data recovery program, and the Flood Control District agreed to provide data recovery funds as well as land and funds for burial relocation. The MOA contained provisions for data recovery excavations and analysis of human remains prior to reburial. Results of the archeological investigations were to be published and cultural materials not associated with a burial were to be curated by an appropriate institution. In addition to plans for relocation of the burials, there were provisions for Ventureno Chumash representatives to be present during excavations and to work with the physical anthropologist during analysis of the human remains.

Test excavations begun in 1985 showed that portions of the site were still intact and that human remains were present. After 1986 data recovery excavations exposed the cemetery area, Native American representatives asked COE to reexamine alternatives for preservation. Studies conducted by the COE Waterways Experimental Station determined that neither preservation of the site nor other alternatives were feasible or would guarantee long-term protection. The burials were carefully exposed and analyzed in the field by Dr. Phil Walker of the University of California, Santa Barbara and then taken to the laboratory for extensive analysis.

The Ventureno Chumash and Candelaria American Indian Council, whose members worked with Walker, presented him with an award honoring his patience and ability to explain his work. Publicity generated by the discoveries made during these archeological excavations has led to a renewed interest in and appreciation of the area's large Native American constituency. Ventura County has provided park land for burial relocations that contains many Chumash archeological sites.

Case Study 2.5. Resource Custody of the Chumash Indians by Patricia Martz [U.S. Army Corps of Engineers]

The Army Corps of Engineers, like other Federal agencies, face a massive artifact curation problem. This became apparent to the Portland District in the early 1980s with the need to curate the archeological materials recovered from site 45SA11 at North Bonneville, Washington. Salvage work, carried out as a result of building a second powerhouse at the Bonneville Lock and dam project, had produced a collection of 630,000 archeological and historic items.

As work began in 1986 on the initial curation of the site materials, the Portland District discovered that existing regional institutions could not provide suitable, cost-effective long-term storage and care of its ever-increasing collection of cultural resources. At this point, the Portland District looked to its own resources and determined that the auditorium building on the Bonneville project contained space acceptable for conversion to a curation facility. As one of seven components of the Bonneville Historic District, the 1934 one-story brick auditorium had been placed on the National Register of Historic Places and then declared a National Historic Landmark in 1987. Use of the Bonneville Auditorium as a curation facility satisfied the responsibility of Federal agencies to preserve and use significant historic buildings "to the maximum extent feasible" (National Historic Preservation Act, section 110a).

The Portland District upgraded mechanical and electrical systems for the auditorium and renovated almost 3,200 square feet of the basement into three secure rooms with state-of-the-art components for curation and collections management. One room of the facility contains a general storage area; another provides climate-controlled conditions; and a third serves as a research center. Both storage areas utilize quality, high-density mobile storage units. This system consists of 3,352 lineal feet of open shelving and 576 custom designed storage drawers. The installation furnishes efficient space for existing and future collections; allows for organized storage and retrieval with full accessibility, selectivity, and protection; and reduces user time and effort in locating and retrieving items. The initial installation can be expanded with the option of changing design or configuration of the system if the need arises. A computer located in the research room is dedicated to supporting and accessing the collections through sophisticated computerized catalogs specifically developed for the curation facility.

While the curation facility is established as a Division entity, Portland District has operational responsibility for it. Day-to-day operations of the facility are handled by Bonneville Park Rangers who received training in collection care and management. Portland District cultural resource specialists provide guidance to the Park Rangers in their collection duties and have final approval of all requests for collection use. The Division Curation Facility, completed in 1989, enables the Corps of Engineers districts in the Pacific Northwest to fulfill their cultural resources requirements in an innovative and cost-effective manner.

Case Study 2.6. North Pacific Division Curation Facility by Bill Willingham [U.S. Army Corps of Engineers]

in the Federal archeology program understood the collections management issues that needed to be addressed in the near future, and since the 1987 publication of 36 CFR 79 as a proposed rule, those agencies were coming to see curation as being of equal importance with other archeological resource management issues.

In 1990, the Department of the Interior Inspector General (USDIIG 1990) reported that museum property (art, artifacts, etc.) curation was a problem throughout the Department. Subsequently, an Interior Museum Property Task Force was established to set department-wide policies, standards, and procedures for museum property management. *Interim Standards for Documentation, Preservation and Protection of Museum Property* were issued in September 1990, and in 1993 the departmental *Museum Property Management* standards were published (USDIOS 1993c). A department-wide survey of 721 units identified nearly 55 million archeological artifacts from Interior lands, accompanied by records and images. All USDI units with museum property submitted draft Scope of Collections Statements by November 1992, and a handbook of department-wide standards, policies, and procedures was to be completed in December 1992 (USDIOS 1993a, 1993b).

NPS has been developing an Automated National Cataloging System (ANCS) since 1985, and the most recent upgrade (3.31) was introduced in 1990. The system is split into sections including an Accessions Log Book System and a Cultural Resources Catalog (including archeological collections). This is intended to link to the NPS Archeological Resources Inventory mentioned previously, and ultimately to GIS systems.

Future Directions and Needs for Resource Identification, Evaluation, and Curation

More information, more inventory, and more evaluation is the consistent call by Federal archeologists, land managers, and other resource managers. In lieu of substantially improved inventories, geographically based archeological resource overviews and predictive models might form the basis for designing and implementing cost-effective and well directed field inventories and plans for dealing with unexpected discoveries of buried archeological materials. In complement, there is a need for comprehensive land management plans that are based in part on accurate archeological inventories and well founded archeological interpretations and are accompanied by monitoring and accountability programs. Better coordination of Federal, Tribal, State, local, and private archeological information bases

is needed (Limp 1992) to better understand the broadest dimensions of the United States' archeological resource base and thus to design and implement the most appropriate management program for the Federal and Indian lands and for federally authorized projects.

A need exists to recognize more archeological sites on the public or private lands as National Historic Landmarks, and to monitor the condition of designated Landmarks and protect their long-term integrity. A complementary need exists to add more archeological resources to the World Heritage List.

A great many avocational archeologists collect artifacts in the United States, many of whom have been raised in the tradition of collecting on public and Indian as well as private lands. Many of these people have well-documented and extensive artifact collections. Every State has some form of archeological society that is focused on avocational archeological interests, though they often include professional archeologists as well. Avocational archeologists know the landscape and often have a sophisticated understanding of the relationships of geomorphology, soils, natural resources, and human use patterns over the past millennia. Many of these people have strong historical interests and are skilled at using documentary resources in complement to archeological methods and techniques to undertake significant historical archeological research. They are a largely untapped reservoir of knowledge and energy that could be used to supplement agency activities within the Federal archeology program. Several Federal agencies included volunteers in their activities in 1988-1990, such as the NPS "Volunteers in Parks," FS "Passport in Time," and BLM "Adventures in the Past" activities, and agencies participate in State-based programs such as the site stewardship programs in Arizona and Texas. But more is needed.

Archeological curation and archival requirements must begin with an inventory of the collections and their condition. Most of the nation's archeological sites are yet unidentified, much less studied for their information values. However, the rate of land-development and natural erosion is increasing, emphasizing the need to preserve better the remnants of the archeological record that have already been removed from their original contexts. In 1991, NPS initiated training courses in archeological curation and collections management, specifically oriented to implementation of the 36 *CFR* 79 regulations. Such training should provide all Federal agencies with the information needed to meet these regulatory requirements.

Inventories of sites and landscapes, inventories of collections, and inventories of reports and records are a critical need for the '90s. Given an enhanced understanding of the nation's archeological knowledge base, we can better understand how to improve the public use of the scientific, humanistic, and spiritual aspects of archeological resources.

3

FEDERAL ARCHEOLOGICAL INVESTIGATIONS

A fundamental principle of archeology is that the collection of data is destructive. Excavation of an archeological site or even the collection of artifacts from a site's surface reduces complex artifactual relationships and environmental information down to that fraction that can be observed and recorded given current archeological theory, methods, and techniques. The uncollected site information can never be recovered and is lost to posterity. Thus, archeological sites and landscapes are resources to be managed and should be expended only after careful planning and for public benefit rather than by accident or personal gain.

In deciding whether or not to excavate a site, the value of the information to be gained must be balanced against that which will be lost. The potential scientific values must also be balanced against the humanistic or spiritual values that some may assign to the archeological materials (Knudson 1991a). The collection of archeological information in and of itself is directed toward its use in the analysis of the prehistoric or historic data for presentation as technical publications for scholars. Subsequently, those data are available for transformation to lay language for presentation to the public through museums, general publications, and the media. Most archeological field investigations in the United States today are undertaken to identify sites that are threatened with damage or destruction. These projects typically emphasize site identification and evaluation over excavation and data recovery, since proposed development projects can be modified to avoid damaging archeological resources. All archeological investigations on Federal or Indian lands require a permit or comparable authorization under the authorities cited in Chapter 1.

Recognizing that sites on Federal and Indian lands are explicitly for public use, the Federal archeological permit or comparable authority shields those sites from unnecessary or inadequately planned excavation. If a permit is necessary, the permitting process requires that a proposed project be reviewed and a permit issued prior to the start of any archeological investigation on Federal or Indian lands. The various kinds of archeological permits or comparable authorizations are discussed below, as are the permitted site identification, evaluation, and data recovery activities covered by them. The frequency and

magnitude of unanticipated or emergency discoveries of archeological resources are also discussed, as are the costs and public benefits of these activities.

Investigation Permits

The Archaeological Resources Protection Act (ARPA) of 1979 as amended is the primary authority for Federal archeological permits or permit-like sanctions. Permits usually are issued either under the specific authority of ARPA or using an authority permitted by the ARPA Uniform Regulations.

Federally employed archeologists in the United States may conduct their archeological investigations without a specific permit under the ARPA Uniform Regulations §-.5(c) provision, when "carrying out official agency duties under the Federal land manager's direction, associated with the management of archeological resources...." ARPA Uniform Regulations §-.5(b) excepts from formal permitting "any person conducting activities on the public lands under other permits, leases, licenses, or entitlements for use, when those activities are exclusively for purposes other than the excavation and/or removal of archaeological resources." Thus, a pipeline right-of-way use permit across Federal or Indian lands may carry with it the authority to conduct archeological excavations there. Grants, cooperative agreements, agency contracts for archeological services, and activities such as Bureau of Land Management (BLM) challenge cost-share projects can provide ARPA-authorized permission to conduct archeological investigations. Although all of these investigations may be done without the formal issuance of an ARPA permit, the terms and conditions required for permits, including professional standards, curation requirements, and notification of Indian tribes in certain situations, must also be met before these investigations can proceed.

The BLM (Manual Section 8151) regularly issues "cultural resource use permits" that are akin to a basic ordering agreement, establishing the qualifications of the permittee and the standards to which they will conduct their cultural resource investigations. Under such a permit, specific kinds of investigations (e.g., identification and evaluation, data recovery) at specific locations are subject to individual authorizations.

A small number of Federal archeological investigation permits still in effect during 1988-1990 were authorized by the Antiquities Act of 1906, and these involved the investigation of archeological

resources less than 100 years old (which are not covered by ARPA) and previously existing permits that had been renewed.

Table C.4 summarizes the archeological permits and ARPA-authorized activities reported to have been begun or in progress on Federal or Indian lands in 1988 through 1990. The data show that the Land-Managing agencies conduct the majority of their authorized investigations based on §-.5(b,c) authority rather than formal ARPA permit (Figure 3.1). More than half of these §-.5(b,c) investigations are BLM cultural-resource-use-permitted activities. During 1988-1990, a substantial amount of archeological work was done on Federal and Indian land by agency staff and otherwise-authorized archeologists without formal permits. In the Bureau of Indian Affairs (BIA), a regulatory agency that issues ARPA permits for archeological investigations on Tribal lands, the proportion of §-.5(b,c) investigations is less than average, being roughly equal to formally permitted ones.

Adding an estimate for unreported data, between nearly 7,000 and 8,000 authorizations for Federal archeological investigations (both formally permitted and excepted authority) were made annually between 1988 and 1990 (Figure 3.2). With some fluctuation, the number of reported federally authorized archeological investigations has tripled from 1985 through 1990 although this may be the result of more complete reporting (Table 3.1). Use of this rule avoids redundancy and waste in managing archeological activities, without waiving the requirements of the ARPA Uniform Regulations. In each year reported here, only 3 to 6 permits were suspended, indicating that the permitting program supports good professional performance.

Reviews of Federal Archeological Investigations

The Archeological and Historic Preservation Act (AHPA) of 1974 (P.L. 93-291, "Moss-Bennett"; Figure 3.3) provides mechanisms by which the Secretary of the Interior can be asked to protect archeological resources threatened by a Federal project; this is usually referred to as the "Section 3(a)" processes. The AHPA also includes a mechanism for the Secretary to respond to emergency discoveries of archeological material found in the midst of a Federal land-disturbing project; this is usually referred to as the "Section 4(a)" or "EDS" (emergency discovery situation) process. To comply with Section 106 of the National Historic Preservation Act (NHPA), archeological resources found during ongoing Federal undertakings may follow either the Section 4(a) process of Secretarial notification or the 36 *CFR* 800.11

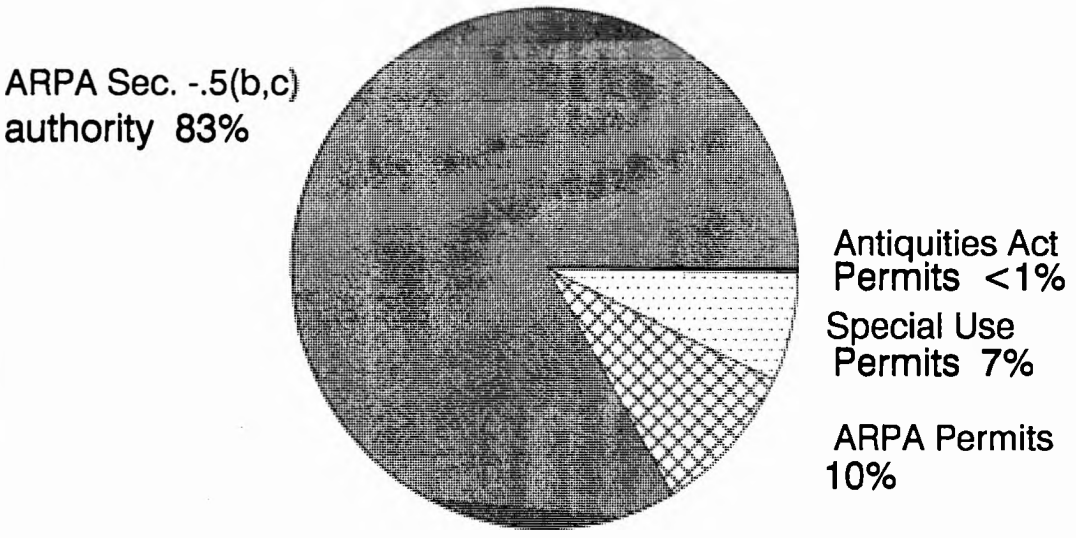

Figure 3.1. Reported average percentage of U.S. Federal archeology program activities authorized in compliance with ARPA Uniform Regulations §-.5(b,c) during 1988-1990, relative to those authorized by formal permits (Table C.4).

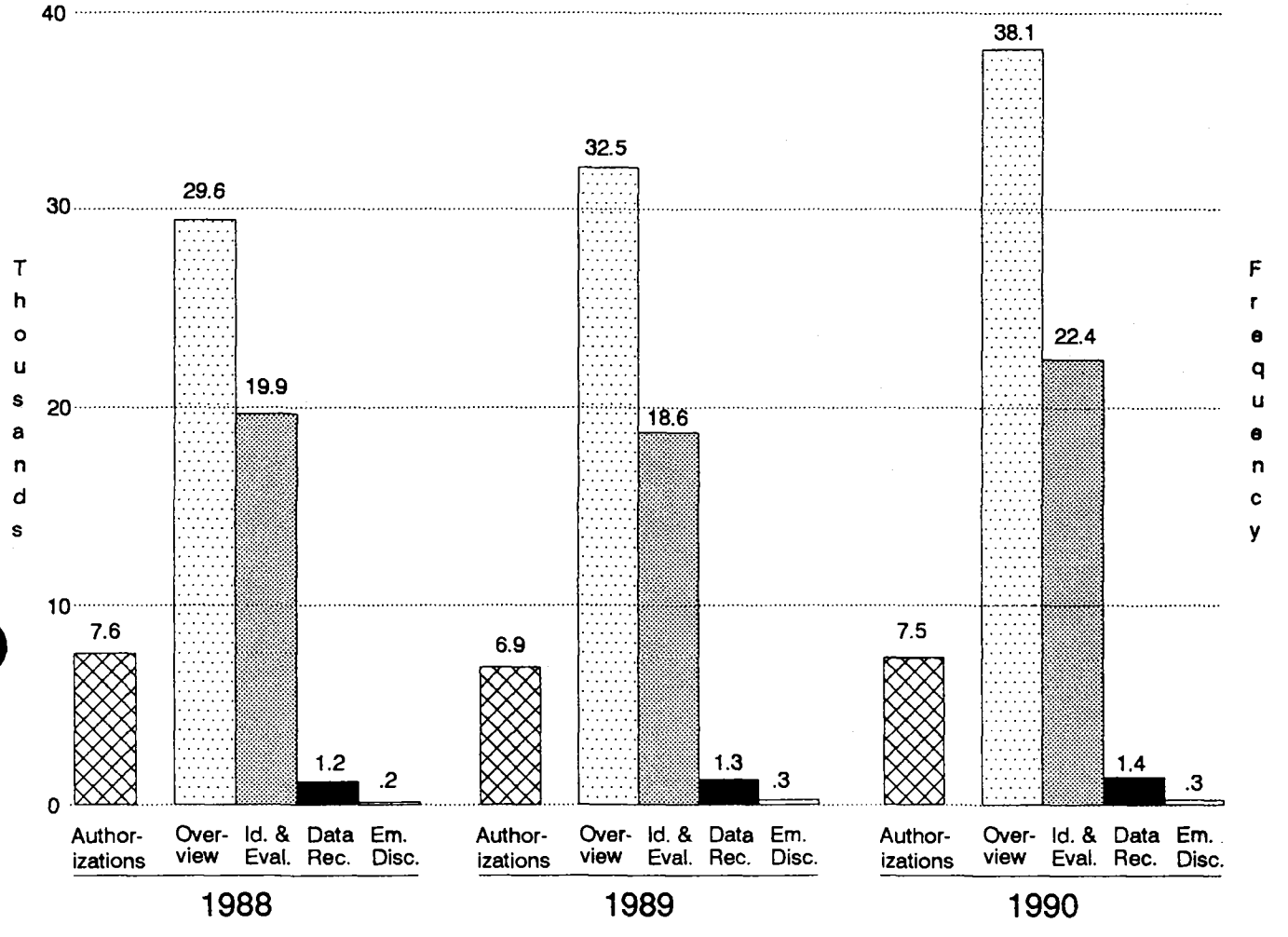

Figure 3.2. Estimated number of overviews and identification projects (Table C.5), data recovery projects (Table C.6), and emergency or unanticipated discoveries (Table C.7) conducted by U.S. Federal archeology program participants during 1988, 1989, and 1990, relative to the estimated number of investigation authorizations (Table C.4) for those years.

P.L. 93-291 (*Archeological and Historic Preservation Act of 1974* as amended)

Sec. 3. (a) Whenever any Federal agency finds, or is notified, in writing, by an appropriate historical or archeological authority, that its activities in connection with any Federal construction project or federally licensed project, activity, or program may cause irreparable loss or destruction of significant scientific, prehistorical, historical, or archeological data, such agency shall notify the Secretary [of the Interior], in writing, and shall provide the Secretary with the appropriate information concerning the project, program, or activity. Such agency may request the Secretary to undertake the recovery, protection, and preservation of such data (including preliminary survey, or other investigation as needed, and analysis and publication of the reports resulting from such investigation), or it may, with funds appropriated for such project, program, or activity, undertake such activities.

Sec. 4. (a) The Secretary, upon notification in writing, by any Federal or State agency or appropriate historical or archeological authority that scientific, prehistorical, historical, or archeological data is being or may be irrevocably lost or destroyed by any Federal or federally assisted or licensed project, activity, or program, shall if he determines that such data is significant and is being or may be irrevocably lost or destroyed and after reasonable notice to the agency responsible for funding or licensing such project, activity, or program, conduct or cause to be conducted a survey and other investigation of the areas which are or may be affected and recover and preserve such data (including analysis and publication) which, in his opinion, are not being, but should be, recovered and preserved in the public interest.

The *National Historic Preservation Act Amendments of 1980* (P.L. 96-515)

Sec. 208. Notwithstanding section 7(a) of the Act of June 27, 1960 (16 U.S.C. 469c), or any other provision of law to the contrary —

(1) identification, surveys, and evaluation carried out with respect to historic properties within project areas may be treated for purposes of any law or rule of law as planning costs of the project and not as costs of mitigation;

(2) reasonable costs for identification, surveys, evaluation, and data recovery carried out with respect to historic properties within project areas may be charged to Federal licensees and permittees as a condition of the issuance of such license or permit; and

(3) Federal agencies, with the concurrence of the Secretary and after notification of the Committee on Interior and Insular Affairs of the United States House of Representatives and the Committee on Energy and Natural Resources of the United States Senate, are authorized to waive, in appropriate cases, the 1 per centum limitation contained in section 7(a) of such Act.

Figure 3.3. U.S. Federal archeology program authorization for project expenditures and Secretarial and Congressional notification requirements.

Table 3.1. Reported Federally Authorized U.S. Archeological Investigations, 1985-1990.

Year	Number of Reported Authorized Investigations	Reference
1985	**1,420**	Keel et al. 1989: Table 3.1
1986	**4,293**	Keel et al. 1989: Table 3.1
1987	**4,742**	McManamon et al. 1992: Table 2.1
1988	**6,086**	This report: Table C.3
1989	**4,829**	This report: Table C.3
1990	**5,361**	This report: Table C.3

regulations of the Advisory Council on Historic Preservation. Approximately 10-15 Federal agencies followed either the Sections 3(a) or 4(a) process during 1988 through 1990, which meant providing information that was reviewed for the Secretary and acted on as was appropriate by the Departmental Consulting Archeologist (DCA). Data on these cases are available in subject files of the National Park Service Archeological Assistance Division (see Case Study 3.1). The following discussions of emergency or unanticipated discoveries includes projects that have complied with both or either NHPA Section 106 and/or AHPA Section 4(a).

The AHPA Section 7(a) set a limit of "not more than 1 per centum of the total amount authorized to be appropriated for such project" that could be used by a Federal agency for its expenditures for AHPA compliance within any given development project. A mechanism to exceed the "1% limit" was authorized by Section 208 of the NHPA Amendments of 1980 (see Figure 3.3). That mechanism includes receiving the Secretary of the Interior's concurrence that the additional expenditures are appropriate. Approximately 5-10 "1% waiver" requests were reviewed by the DCA for the Secretary, during the years reported here.

The Phases of Archeological Investigation

Ideally, archeological resource management begins with an assessment of what is known already about the archeology of a specific tract of land. Such an assessment includes a review of current site inventories, the literature, interviews with avocational and professional archeologists, and an assessment of an area's geology, geomorphology, soils, and prehistoric and historic land use to develop an overview of the area's probable archeological resources requiring management. Over 20,000 such overviews have

Project RS-6665 involves the construction of a county road just southwest of the city of Mt. Vernon in Posey County, southwest Indiana. The project is funded by the FHwA and administered by the Indiana Department of Highways. The Mount Vernon site is on a ridge immediately south of property owned by the General Electric company. The site was discovered as a result of construction for the road.

During construction the elevation constituting the site was selected as a source of borrow dirt for the highway. The evidence available at the present time indicates that the site was found during borrow operations. The borrow work was done during the spring and/or summer of 1988 by a construction company, and a large quantity of Hopewell archaeological material was found at that time. Contrary to FHwA and IDOH regulations and the recommendations of the archaeological survey reports for the project, the site was not reported to the proper agencies (the Indiana Department of Highways or the Division of Historic Preservation and Archaeology of the Indiana Department of Natural Resources). Collectors learned about the site, and a substantial amount of digging for artifacts was done by them. People who knew about the site began talking about it, and this led to the discovery of the site location by archeologists from the Department of Highways.

The prominent elevation on the ridge may have been a large artificial mound. The top of that elevation is reported to have been flattened and to have had sizeable depressions in it. There is also evidence that at least part of the elevation was composed of dark earth that had been carried to the site. It is known that some Hopewell mounds were constructed, at least in part, from earth transported from elsewhere, and the depressed areas on the top of the elevation are interesting in that they could possibly indicate the presence of collapsed tombs or structures. One informant gave evidence supporting the latter possibility by reporting that when the archaeological material was found during borrow operations, the equipment operator's "just fell into it", indicating some kind of a hole or soft spot. Another individual has reported the possible existence of a wooden tomb at the site. It is thought that the artifacts occurred in separate caches and/or accompanied burials of important people at the site.

Case Study 3.1. Unanticipated Resource Discovery at Mount Vernon, Indiana by Curtis Tomak [Indiana Department of Transportation]

been reported by Federal archeology program participants during each of the three years reported here (Table C.5). Including an estimate for unreported data, approximately 29,000 to 38,000 U.S. Federal archeological overview projects were conducted each year (see Figure 3.2). The 1990 figure represents a 30% increase in this critical planning activity over the three years reported here, and is more than triple the 10,581 planning projects reported in 1985 (Keel et al. 1989:Table 3.2), the first year in which such reviews were tallied. This number of "reported projects" greatly exceeds the number of "authorized investigations" reported in Tables 3.1 and C.4 because of differences in terminology (see Figure 3.2). The responses to questions about permits and permit-like authorizations are made in terms of the permitted or authorized person/corporation, each of whom or which may conduct several projects in any one year that are all covered under a single permit or §-.5(b,c) authority. For instance, in Montana the BLM averages about 1,000 "actions" or "undertakings" each year, which far exceeds the number of archeological permits issued, employee contracts, and other agreements combined (Gary Smith, BLM Montana State Archeologist, telephone conversation with Ruthann Knudson, February 17, 1993).

Over 14,200 identification and inventory projects were reported annually in the United States in 1988 through 1990 (Table C.5, see Case Studies 2.1, 2.2). This is fewer than the nearly 17,000 and over 20,000 such investigations reported in 1985 and 1986 respectively (Keel et al. 1989:Table 3.2) and the nearly 16,000 reported in 1987 (McManamon et al. 1992: Table 2.3), but these numbers may have been affected by differing levels of agency reporting in 1988-1990. BLM is the largest Federal land manager and the integrated nature of its cultural resource management program makes it difficult to obtain data on archeological activities separate from other types of cultural resource investigations. In addition, data are not available to indicate how much of the reported archeological activity involves baseline site identification and mapping, and how much of it involves test excavation or the use of other ground-penetrating technologies to support an evaluation of a site's eligibility for the National Register of Historic Places. Including a correction for unreported data, from 18,600 to 22,400, such Federal field inventory investigations were estimated to have been conducted in the United States each year during 1988, 1989, and 1990 (see Figure 3.2). During that period there does not appear to have been any substantial change in the amount of such activity. For those years, fluctuations in the number of field investigations parallel fluctuations in the number of authorized archeological projects (see Figure 3.2).

Planned excavation of archeological sites, usually referred to as "data recovery" or "treatment," may be conducted either to meet research needs alone, or to preserve data that are important to scientific

research in compliance with NHPA Section 106 or the AHPA. Between 900 and 1,000 U.S. archeological data recovery projects per year have been reported by Federal agencies for 1988-1990 (Table C.6, Case Study 3.2), and when this number is corrected for unreported acreage, it is estimated that approximately 1,200-1,400 such projects have been conducted annually during the period of this report (see Figure 3.2). The annual percentage of data recovery projects relative to archeological project authorizations (see Figure 3.2) is roughly equivalent for each of the three years covered here. Data recovery projects ranged in size from very small excavations of a few square feet to the Central Arizona Project that included many large excavations at a number of sites.

As discussed above, emergency or unanticipated discoveries of an archeological site in the midst of an ongoing Federal or federally assisted project may be managed in compliance with either AHPA or NHPA. Whatever the form of compliance, in 1988, 1989 and 1990 between 150 and 235 such discoveries were reported each year in the United States; correcting for missing data, it is estimated that 190 to 335 of these occurred in each of these years (Table C.7, see Figure 3.2). Many Federal agency annual questionnaire responses regarding the total number of unanticipated archeological discoveries appear to be incomplete (Table C.7). Thus it is not appropriate to estimate the yearly percentages of unanticipated discoveries that required data recovery. Data for 1990 from the BLM and the BIA, which reported most of the unanticipated discoveries (Table C.7), indicate that about half of those discoveries involve materials that were significant enough to require data recovery. Data from the development-managing agencies indicate that most of their emergency discoveries are significant archeological resources, though they had fewer such discoveries than did the land-managing agencies. Federal agency reliance on agency personnel to staff archeological investigations, rather than on land-use applicants (and consultants), is greatest for unanticipated discovery projects as compared with overview or identification and evaluation activities (Tables C.5, C.6, and C.7, see Figure 3.2).

An extremely complex U.S. archeological resource management project was conducted in 1989 and 1990 the Exxon Valdez cultural resource management program (ACHP 1989:96-97, Betts et al. 1991, Haggerty et al. 1991, Mobley et al. 1990). The oil tanker *Exxon Valdez* struck a reef off the coast of south central Alaska on March 24, 1989, releasing an estimated 258,000 barrels of crude oil and fouling the shore along the coast of Prince William Sound, an area known to have archeological and architectural sites reflecting over 7,000 years of human heritage. The Exxon Valdez cultural resource management project employed 26 professional archeologists and included site inventory and assessment, site

The Minerals Management Service (MMS), in cooperation with the Florida State Historic Preservation Office, Bureau of Archaeological Research and the Florida State University, Department of Geology, conducted archeological investigations of a submerged sinkhole offshore the Apalachee Bay Area of Florida. The sinkhole, Ray Hole Spring, is a typical karst feature, probably formed during the Pleistocene era as a result of surface limestone collapsing due to solution or mechanical action of underground drainage. The sinkhole contains an intermittently flowing freshwater spring.

Predictive models for the occurrence of submerged prehistoric archeological sites in the eastern Gulf of Mexico indicate that sinkholes would have been a focal point for prehistoric habitation during the late Pleistocene and early to middle Holocene periods. Sinkholes would have provided both fresh water and a relative abundance of plant and animal life. Because Ray Hole Spring has an associated freshwater spring, it would have been a particularly favorable location for prehistoric human occupation.

Initial archeological testing at Ray Hole Spring included attempts at coring the sediment cone in the bottom of the sinkhole, and the use of an induction water jet to excavate random test units around the rim of the sinkhole. The initial attempts at coring were unsuccessful because the coring device was too small to penetrate the large, coarse marine shell detritus.

The water jet excavations of the crevices around the rim of the sinkhole penetrated a layer of marine detritus underlain by a dense deposit of oyster shells. A piece of waterlogged live oak was recovered from beneath the oyster shell deposit. The lack of teredo worm damage to the wood suggests that it may be an in-place occurrence associated with a freshwater environment rather than a secondary marine deposit, The sequence of sediments in the test excavation suggests an intact continuous sequence of freshwater, brackish and marine deposits that formed as sea level was rising during the Holocene transgression. Radiocarbon dates obtained on the live oak and oyster shell provide additional evidence that the sediments in the test excavation are in undisturbed stratigraphic sequence.

Based on the radiocarbon dating of the live oak (radiocarbon dated to 8220 +/- 80 B.P.) and the oyster shell (7300 +/- 60 B.P.), the following chronology was developed for Ray Hole Spring. At approximately 8300 B.P. the spring supported a terrestrial habitat and freshwater flora. By approximately 7300 B.P. a brackish coastal environment and shellfish fauna had replaced the terrestrial freshwater habitat due to rising sea level. Ray Hole Spring lies 33 km. offshore within a full marine environment, 12 meters below present sea level.

Evidence of prehistoric occupation at Ray Hole Spring includes several modified limestone and/or chert flakes that are poorly preserved due to corrosion. These flakes were recovered from one of the crevices around the rim of the sinkhole. A flint flake was also discovered in marine-transported sediment around the rim. Because this flake was not from a primary context, it does not provide strong evidence of prehistoric human occupation. However, because all of the lithic debitage recovered from other inundated sites in the area are extremely brittle due to marine weathering, the state of preservation of this flake suggests that it was probably not transported very far from its original context. If Ray Hole Spring was utilized by prehistoric human groups, the site would date prior to approximately 7300 B.P. when the area was converted to a brackish environment.

Case Study 3.2. Investigations at Ray Hole Spring by Melanie Stright [Minerals Management Service].

monitoring, and collection of threatened artifacts where necessary; avoidance of resource disturbance was the prevailing policy. The project included lands managed by the State of Alaska, U.S. Forest Service, National Park Service, U.S. Fish and Wildlife Service, and Alaska Native groups, and identified 271 prehistoric and historic sites. The indirect consequences were as important as the site identification aspects: public awareness, interagency cooperation, and the positive interaction within the Alaskan archeological community and among archeologists, cultural anthropologists, and Native Americans.

Departmental Consulting Archeologist Peer Reviews

During 1988-1990, the DCA conducted peer reviews (Keel 1993) of three projects: FWS Stillwater Wildlife Management Area Project, NV (Aikens et al. 1989); COE Libby Dam (Lake Koocanusa) Project, MT (Crespi and Davis 1989); and SCS Alkali Creek project, ND (Hannus et al. 1990). The Stillwater project was requested by FWS to address Native American concerns and assure that historic preservation requirements were being met. COE wanted to confirm that its historic preservation responsibilities were being fulfilled in a manner sensitive to Native American religious concerns in the Libby Dam project, and SCS requested a review of the Alkali Creek project in light of SHPO and professional archeological community concerns.

Costs of Investigations

Archeological investigations are frequently labor intensive and require technical skills to differentiate subtle soil changes, chemical residues, design patterning, or use wear. Sophisticated remote sensing, electronic databases, and statistics to discern past patterns that are used to infer human activities and behavior. Thus, archeological personnel and technical support costs are high, particularly for data recovery activities either as planned or emergency projects.

Tables C.8 and C.9 report Federal agency costs for archeological overviews, identification and evaluation projects, planned data recovery projects, and emergency recovery projects in 1988-1990 (Figures 3.4 - 3.6). The questionnaire (Appendix A) asked U.S. agencies to report the costs incurred by land use applicants complying with Federal archeology program requirements. This information is not readily available to agencies and as a consequence the data reported are too incomplete to be presented in detail. Based on the data that were reported, however, it would appear very tentatively that the amount

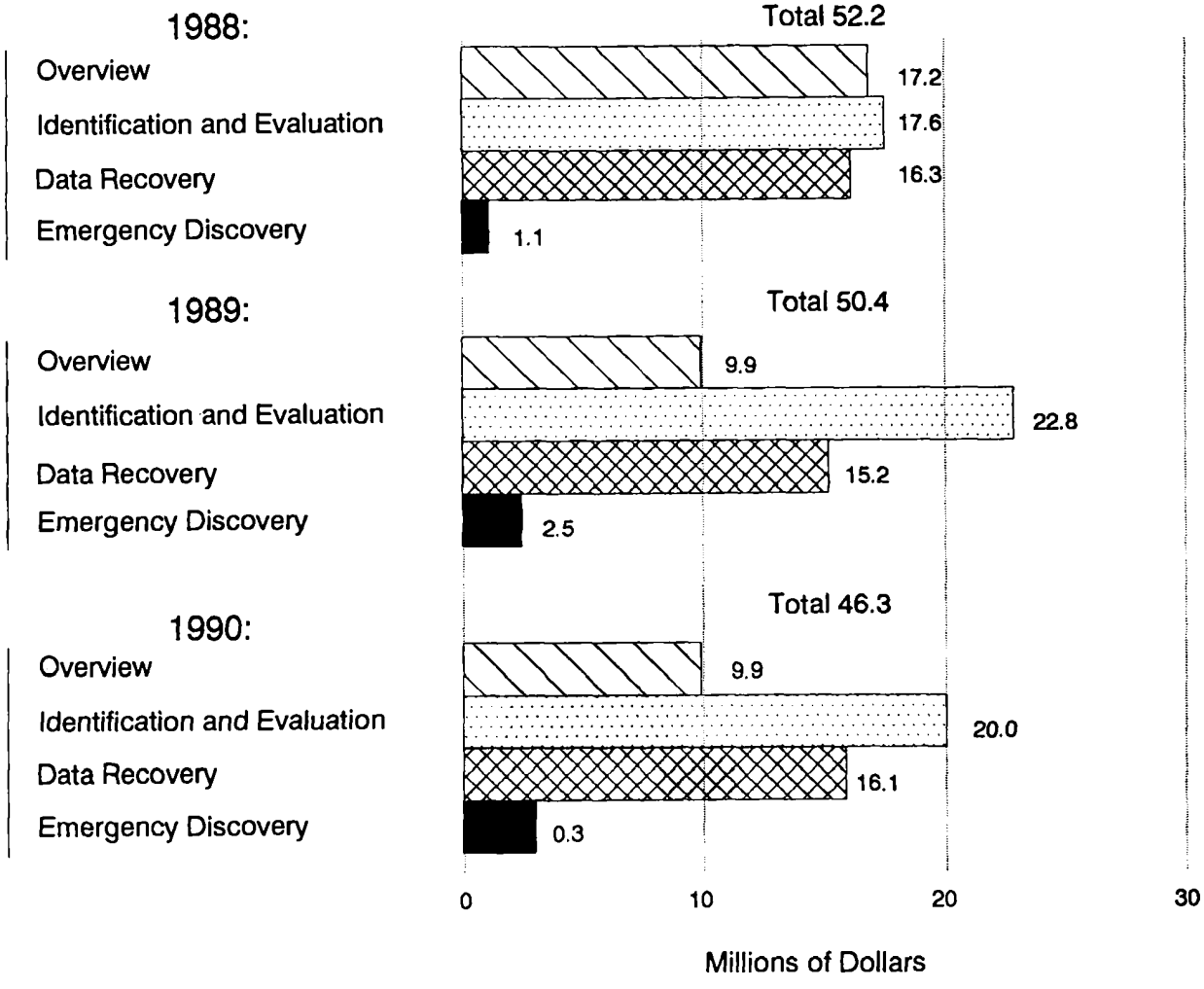

Figure 3.4. Estimated Federal expenditures for Federal archeology investigations in the United States, 1988-1990, by project type, not adjusted for inflation (Table C.8).

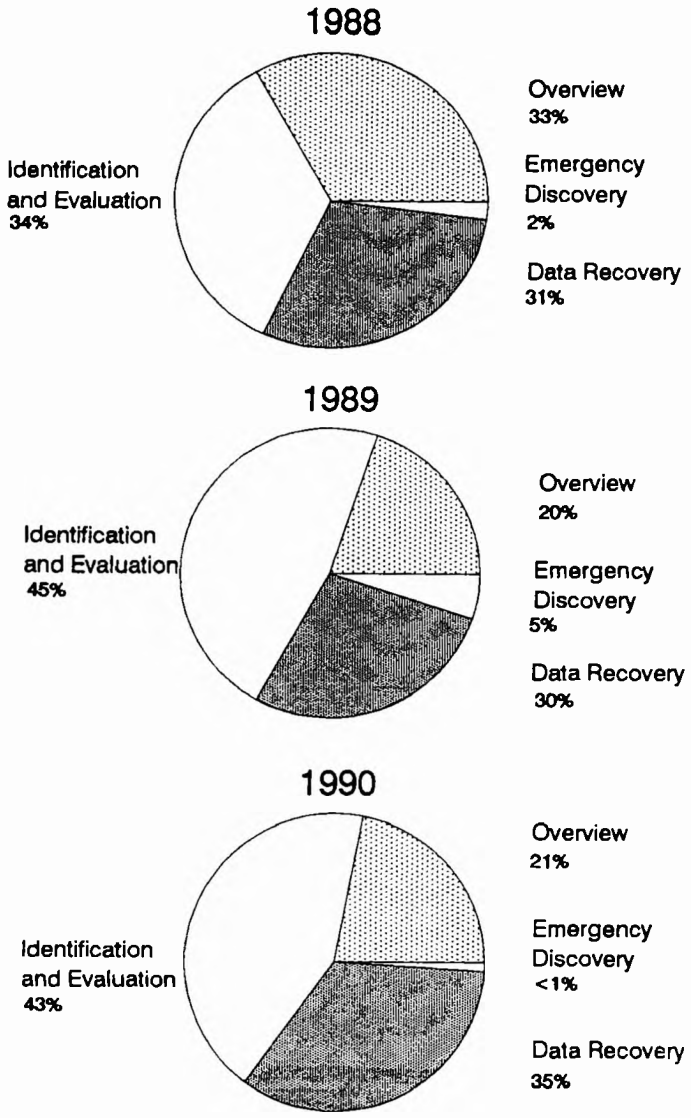

Figure 3.5. Distribution of estimated Federal agency archeology investigation expenditures in the United States, by project type, 1988-1990 (Table C.8).

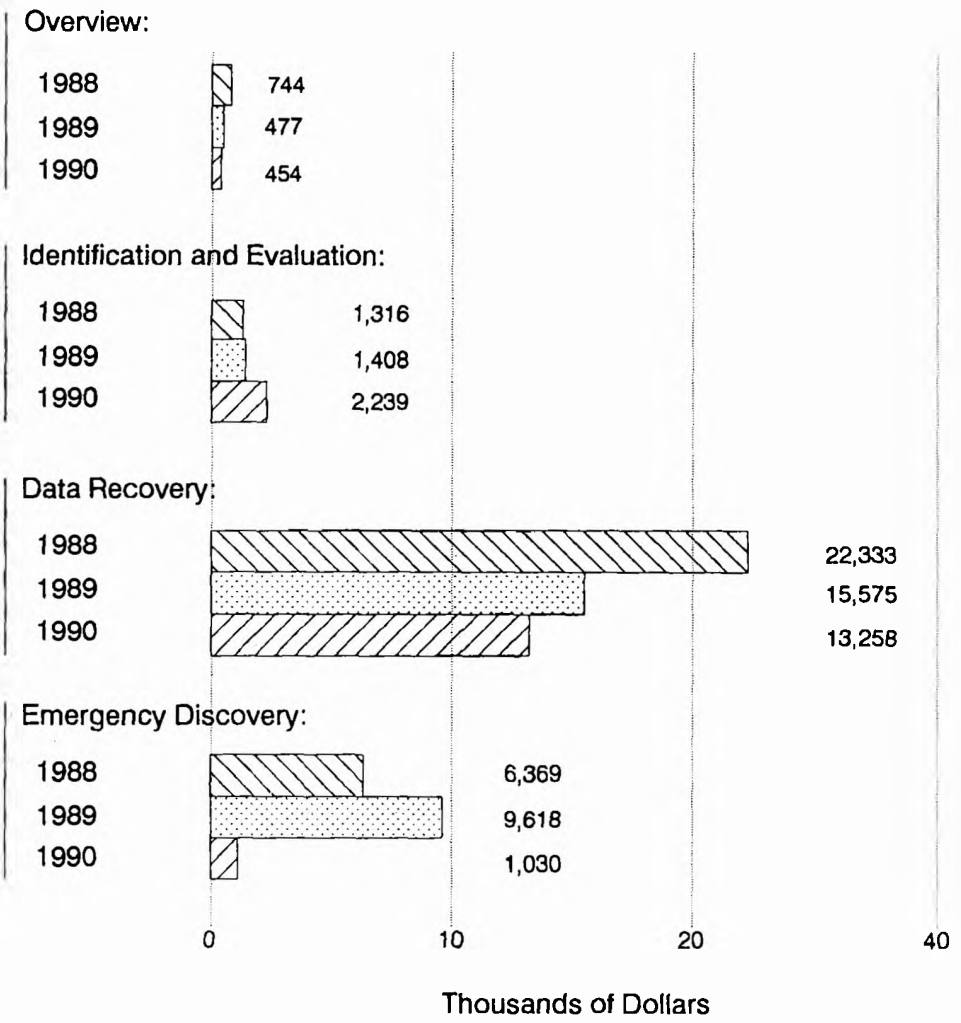

Figure 3.6. Reported average project costs for Federal archeology activities in the United States, 1988-1990, by project type, not adjusted for inflation (Table C.9).

spent on compliance-related archeological investigations was roughly equivalent to the $50 million per year spent by Federal agencies themselves for archeological activities.

Future Directions and Needs for the Public Use of Archeological Resources

It is estimated that the United States has over 9 million archeological sites on its Federal and Indian lands. Of these, less than one half million have been identified and minimally evaluated. While there is a need for more information, inventory and evaluation, an equally important need exists for facilitating greater use of those archeological resources (Case Study 3.3).

To support greater use of the information inherent in the archeological resources on U.S. Federal and Indian lands or affected by federally assisted projects, wider dissemination of that information should occur. The National Archeological Database (NADB; Canouts 1991:233-236, 1992) needs to be expanded to include permit, project, and even resource data when possible, while NADB-Reports is being further developed and refined. Better communication of the characteristics of the Federal archeological field, laboratory, collections, library, and archival resource base to academia, needs to occur as well as more partnerships to analyze this information and communicate it to the scientific community and the general public. More reviews of Federal archeology program reports in scientific and professional journals in and outside of archeology are needed, and presentation of program information at professional meetings. A tremendous need exists for more communication of information from the Federal archeology program to the many publics (McManamon, et al. 1989; McManamon 1991a) who would use it if they knew about it, as part of their personal education or recreation.

Thus, with a need for more archeological information, inventory, and evaluation, a strong need exists to use archeological values to the greatest public benefit.

A diverse, experienced and highly group of people representing a variety of organizations, agencies and interest groups were brought together May 7-12, 1989 at the Fort Burgwin Center in Taos, New Mexico (SAA 1990). Their purpose was to discuss the issue of looting and vandalism of archeological sites and to develop recommendations for ways to deal with this problem.

The Taos Conference brought together over 70 national experts in a variety of fields: archeologists from academia, Federal and State agencies and the private sector, along with law enforcement experts, social scientists, politicians and other citizens concerned with the problem of archeological looting and vandalism. Conference participants were divided into three concurrent workshops, each chaired by an expert in the field. The workshops were "Understanding the Problem," "Combating the Problem," and "Preventing the Problem." Prior to the conference, each chair was asked to define a number of key issues relevant to their respective workshop topics. At Fort Burgwin, the schedule included plenary sessions where major issues were presented to all the participants and workshop sessions where participants discussed the issues intensively and developed specific recommended courses of action.

After the conference, issues and recommendations were circulated to all participants for review and then compiled by the workshop chairs into working papers. A detailed summary was compiled, listing all of the recommendations from the conference. These were later incorporated into a final report, which is a joint product of many people, all dedicated to the cause of protecting the archeological record and cultural resource heritage of the United States.

The final report includes a summary of major findings which need to be addressed in order to improve efforts to protect the past. These findings are that 1) information must reach the public, specifically explaining why archeology is important, what public benefit is derived from archeological activities, and how looting and vandalism damage that public benefit; 2) education and training must be improved; 3) existing laws must be revised both to increase penalties against professional looters and to provide more effective deterrents to hobbyists; 3) protection efforts must be increased on a local, state and Federal level in terms of both money and staff; 4) agencies must improve coordination and cooperation in information exchange; 5) more research is needed on the problem of archeological looting; and 6) the interested public must be provided with alternative ways - both ethical and legal - to participate in archeology.

The Taos Conference was not an end unto itself, rather a beginning to new inquiry and interest in the problem of archeological looting. A limited number of the 1990 report are still available for distribution at no charge. Request single copies only from the Publications Specialist, National Park Service, Archeological Assistance Division, P.O. Box 37127, Washington, DC 20013-7127.

Case Study 3.3. Save the Past for the Future Actions for the '90s. Taos Working Conference on Preventing Archaeological Looting and Vandalism

4

ARCHEOLOGICAL PROTECTION LAW ENFORCEMENT

The 1988 ARPA Amendments and Interagency Cooperative Efforts

The Archaeological Resources Protection Act (ARPA) of 1979 as amended is the primary authority for permitting the public use of Federal archeological resources; unpermitted excavation, removal, damage, alteration, or defacement of archeological materials on Federal and Indian lands, or the attempt to conduct any of those actions, is a crime subject to criminal and civil penalties. In 1988 two amendments to ARPA (See Figure 1.1) strengthened this legislation (Cheek 1991, McManamon 1991b). The "attempt" language was added to §6(a) (P.L. 100-588 Section 1(b)), and the threshold for determining an archeological crime a felony rather than a misdemeanor was lowered from $5,000 to $500 (P.L. 100-588 Section 1(c)). In addition, §14(c) was added to require the Departments of the Interior, Agriculture, and Defense and the Tennessee Valley Authority to:

> (c) develop documents for the reporting of suspected violations of this Act and establish when and how those documents are to be completed by officers, employees, and agents of their respective agencies.

The 1988 amendments were institutionalized in 1988-1990 by the development of a variety of tools. In 1989, the Departmental Consulting Archeologist organized an Interagency Archeological Protection Working Group (IAPWG) to address several issues of archeological law enforcement, including documentation, training, and public education. The group meets 2-4 times a year, depending on the issues being addressed. The IAPWG initially consisted of agency archeologists and law enforcement officers.

IAPWG's activities and achievements in 1989 and 1990 were significant, and several projects initiated during that period now have been completed. Several IAPWG members were participants in the Taos Working Conference on Preventing Archaeological Looting and Vandalism (SAA 1990; Case Study

3.3), which addressed a variety of formal and informal tools for understanding, preventing, and combating archeological crime. The Conference came up with over 100 action recommendations, many of which were directed toward law enforcement within the Federal archeology program (e.g., "encourage agency archaeologists and law enforcement staff to develop working relationships in advance of investigations" [SAA 1990:19]). As a result of those recommendations, the Department of Justice was included within the IAPWG, as were the U.S. Customs Service and the Federal Bureau of Investigations (FBI). Thus, the group was expanded to include Department of Justice members representing the full ARPA enforcement team: archaeologists, law enforcement officers, and prosecuting attorneys (Hutt 1991).

In 1989 and 1990, IAPWG, with the Federal interagency archeological Public Awareness Working Group (PAWG), encouraged the writing and publication of a general text on ARPA enforcement; that book was published in 1992 (Hutt et al. 1992). IAPWG and PAWG also developed the idea of a video on ARPA enforcement, and *Assault on Time* was produced by the Department of Treasury Federal Law Enforcement Training Center (FLETC) in 1990. The two working groups together also supported publication of archeological protection theme bookmarks, of which over 3 million had been distributed by 1991. In support of general public awareness of archeological protection needs, the Listing of Education in Archeological Programs (LEAP) Clearinghouse was developed (Knoll 1991) and a first volume of listings was published in 1990 (Knoll 1990). This Clearinghouse is discussed in more detail in Chapter 5.

An archeological resources protection training program (Waldbauer 1991) was started at FLETC in 1984, with a 40-hour ARPA training course taught on FLETC campuses 2-4 times each year. By 1990, with encouragement from the IAPWG, the FLETC offerings had increased dramatically, with 8 ARPA training courses taught each year 2-4 on FLETC campuses, and 4-6 taught in places such as Federal Land-Managing agency regional offices. IAPWG supported the development of archeological protection plans in the U.S. Forest Service (FS), National Park Service (NPS), and U.S. Fish and Wildlife Service, and encouraged the development of archeological stewardship and monitoring programs to involve the general public in archeological protection. It also supported the development of materials to be used in ARPA protection self-help training programs. IAPWG encouraged the development of the NPS' 16-hour *Overview of Archeological Protection* course and their 4-8-12-hour *Overview of Archeological Protection Programs* course. These provide land and other resource managers with an introduction to ARPA and

other archeological management tools without the law enforcement detail included in the FLETC courses. It was in response to IAPWG discussions that in 1990 the Tennessee Valley Authority (TVA) entered into a memorandum of agreement with the Department of the Interior (DOI; Hutt et al. 1992: Appendix G) allowing TVA to use DOI administrative law judges to prosecute civil penalties under ARPA. The FS had entered into a similar agreement with DOI in 1988 (Hutt et al. 1992:Appendix F).

The LOOT (Listing of Outlaw Treachery) Clearinghouse (Keel et al. 1989:39-40; McManamon et al. 1993:72; Waldbauer 1991) was developed under the sponsorship of the IAPWG and PAWG, as an archeological law enforcement record; this is discussed further below.

Documentation of Federal Archeological Law Enforcement

In 1987 the NPS Archeological Assistance Division established the LOOT Clearinghouse to collect archeological law enforcement and prosecution data for individual cases, and to supplement information collected in responses to the annual Federal archeology program questionnaire (Appendix A). During the period reported here (1988-1990), LOOT data were significantly expanded by a researcher under contract to the NPS. By the end of 1990, LOOT had information on nearly a hundred cases from 1936 to the present, and plans were being developed to place this set of information in an electronic database. The LOOT files are unique in that they contain completed case information, which is usually unavailable in law enforcement records and is available in insufficient detail from the Department of Justice or other Federal agency sources.

In 1990, a Uniform Crime Reporting Act (UCRA) was passed that structured the way all U.S. law enforcement data are to be submitted to the FBI. The IAPWG recommended that all ARPA violation reports developed within the various U.S. agencies and departments participating in the Federal archeology program conform with the Reporting Act requirements. The NPS began in 1990 to develop a computerized Case Incident Reporting System (CIRS) that would serve as a DOI pilot project for compliance with the UCRA and include a report specific to ARPA offenses and prosecutions.

At the end of 1990, waiting for full development of CIRS, the Bureau of Land Management (BLM) noted in its response to the Federal archeology program questionnaire that implementation of any archeological incident tracking system was dependent on the acquisition of baseline data, and that at that

time very few BLM districts had developed mechanisms for acquiring those data. The Air Force reported in 1990 that, because it had few ARPA violation cases, it had no specific ARPA reporting forms. The Bureau of Reclamation reported that it was developing an electronic database to monitor ARPA and Antiquities Act violations, and TVA reported that it would be producing an archeological citation form that could be issued by TVA Public Safety Officers in the field.

Archeological Resource Crimes

It is estimated that over 900 archeological violations were documented on Federal and Indian lands in 1990 (Table C.10, Figure 4.1), a 30% increase from 1988 (Table C.10) and twice that of 1985 (Keel et al. 1989:30).

Throughout each of the three years reported here, the reported and estimated number of arrests for documented incidents of archeological violations decreased, as did the number of citations for such activities. (Table C.10, Figure 4.1). The reported and estimated number of cases of documented archeological vandalism or looting prosecuted using an authority other than ARPA fluctuated over the 1988-1990 period, but was relatively constant for the full period (Table C.11, Figure 4.1). No second offenses were reported by any agency. The number of prosecutions in cases of documented vandalism or looting are estimated to have decreased during that period (Table C.10, Figure 4.1). The reported and estimated number of convictions for archeological violations also fluctuated but was relatively constant through the 1988-1990 period (Table C.11, Figure 4.1), with misdemeanors outnumbering criminal convictions by 6 to 7 times.

Only three Land-Managing agencies (BLM, Corps of Engineers [COE], NPS; Table C.12) reported financial information about fines, civil penalties, the cost of resource restoration and repair, and the value of forfeited artifacts and other items. Of the reporting agencies, NPS appeared in 1990 to have taken a lead in collecting this information. Most reporting agencies had few prosecutions of archeological violations or were unable to separate the archeologically related information from other law enforcement data. The only reward reported for the period 1988 through 1990 was a NPS award of $50.

In 1990, the NPS Alaska Region anticipated increased looting in areas around Native villages where looting was active on coastal sites discovered during the Valdez oil-spill clean-up. TVA

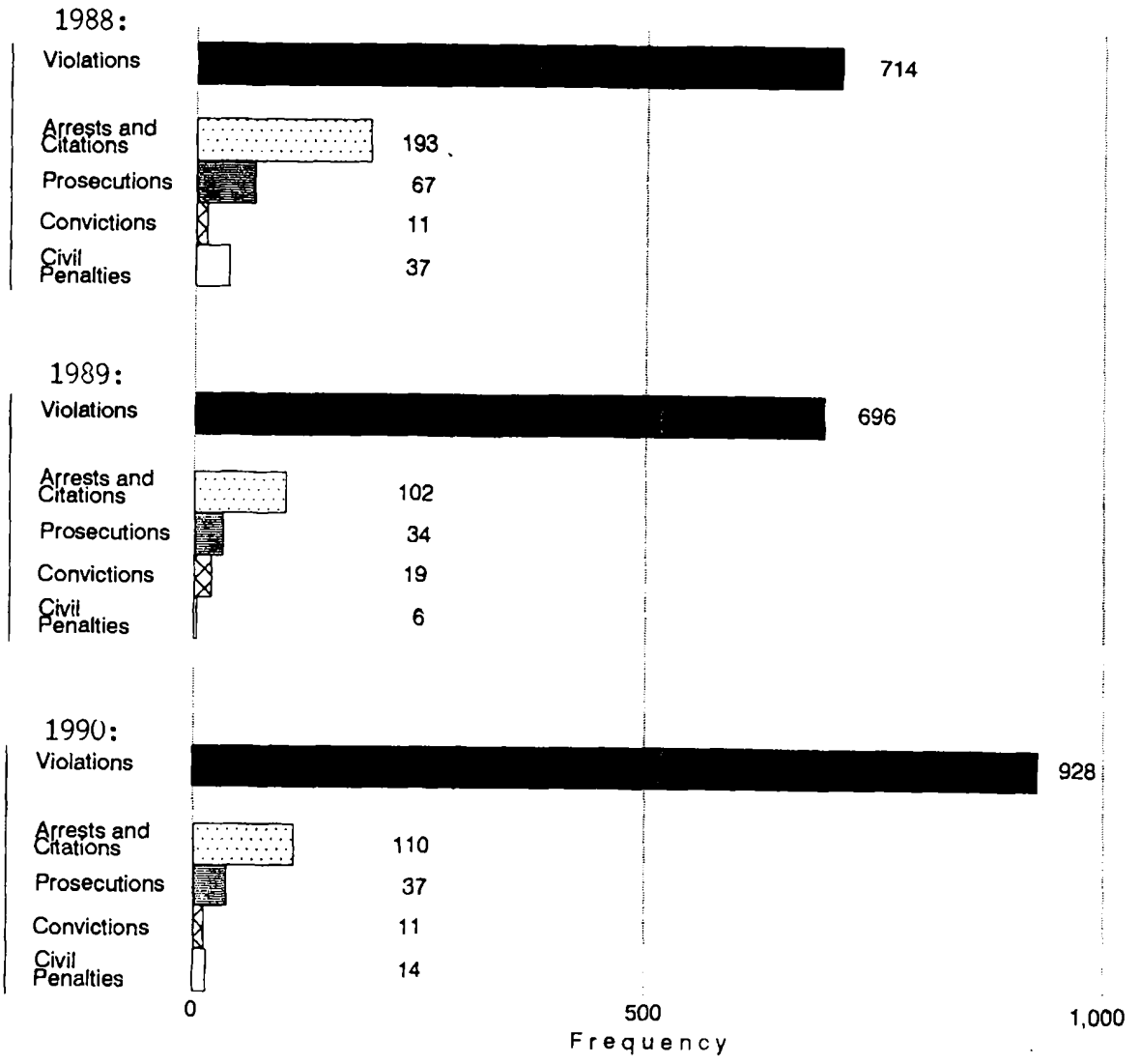

Figure 4.1. Estimated number of archeological violations, and associated arrests and citations, on Federal and Indian lands in the United States, 1988-1990 (Table C.10), with estimates of numbers of prosecutions, convictions, and civil penalties (Table C.11) for U.S. archeological violations during that period.

reported in 1988-1990 that hundreds of archeological sites on its lands are looted annually, that looters are rarely caught in the act, and that prosecutions usually were conducted under State law. For the years reported here, the Bureau of Reclamation had no law enforcement capability and relied on agreements with the BLM, NPS, Bureau of Indian Affairs, and State and local law enforcement authorities for ARPA enforcement on Bureau lands. COE also generally contracted for local law enforcement services for major criminal arrests and investigations, since their patrol rangers cannot issue arrest warrants. The military policed its archeological sites as part of its regular security procedures on military reservations and cannot segregate information related just to archeological protection.

Some agencies not subject to the ARPA Uniform Regulations reported archeological criminal prosecutions in 1988-1990. In addition to the data presented in Table C.12, NOAA assessed $132,000 in fines in 6 cases of looting in the Channel Islands National Marine Sanctuary, and additional penalties for 13 other individuals reached $1000/individual in some cases. Outer continental shelf archeological resources are exempt from ARPA, except when the ocean bottom is owned by a Federal agency. In 1988 DOE reported confiscating stolen artifacts whose commercial value was less than $500.

The Cost of Archeological Law Enforcement

Most of the Federal U.S. land-managing agencies reported on their archeological law enforcement expenditures in 1988, 1989, and 1990 (Table C.10). When corrected for missing data, it is estimated that between $1 million and $2 million are spent for such Federal effort each year. (Table C.10, Figure 4.2) Over the 1986-1990 period, reported (1986) and estimated (1990) agency expenditures (without adjusting for inflation) for archeological law enforcement (Table C.10; Keel et al. 1989:Table 5.1) increased at about the same rate as did the numbers of documented cases of archeological resource violations.

Future Directions and Needs for Archeological Law Enforcement

All United States citizens can assist in the preservation and management of the archeological resources by abstaining from active destruction of the sites and materials and by assisting the law enforcement system to prevent or prosecute those who cause such damage. The Chapter 5 discussions of coordination of public agencies, private organizations, and individuals in developing archeological public awareness are directed to the end of deterring the theft and destruction of archeological resources.

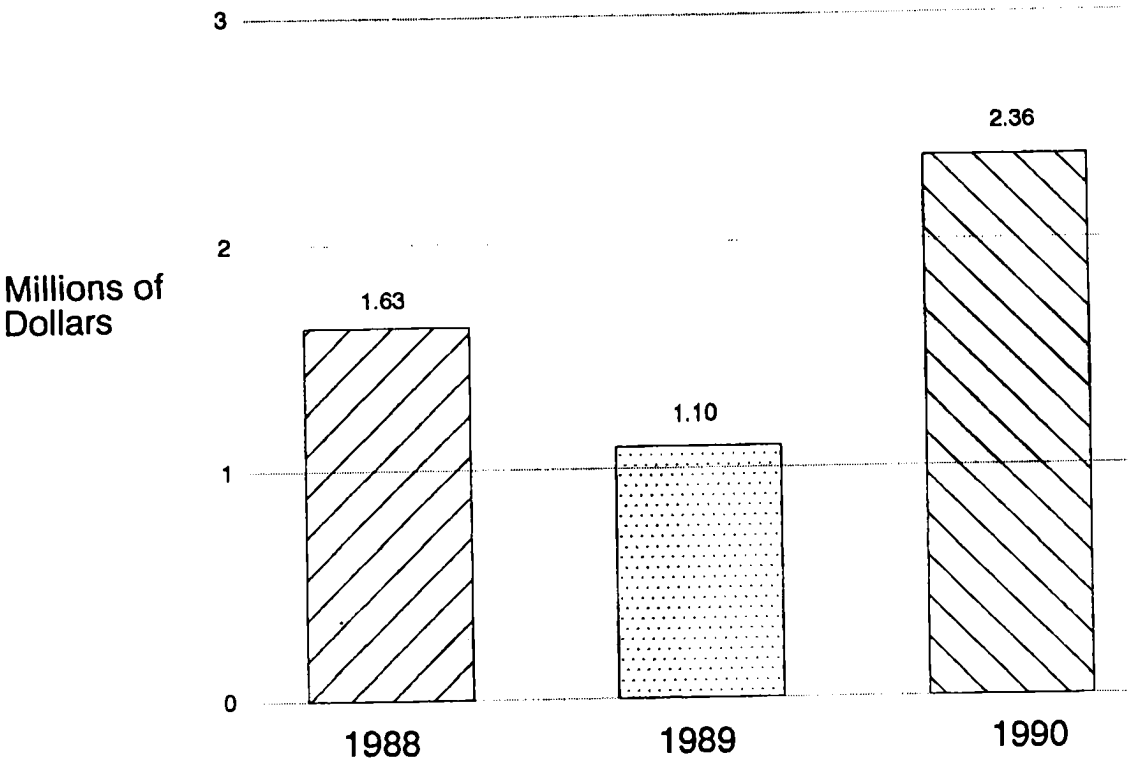

Figure 4.2. Estimated cost of Federal archeological law enforcement in the United States, 1988-1990, not adjusted for inflation (Table C.10).

An important element in effective archeological law enforcement is public education and outreach, as is discussed elsewhere in this report. The Taos Working Conference (SAA 1990; See Case Study 3.3) recommendations frequently address a need to involve the public in resource protection issues, to include members of the public in archeological site monitoring activities and encourage them to report archeological crimes. Elwood Jones (SAA 1990:37) noted that "high visibility law enforcement programs generally have the "halo effect" on the public they will obey the laws when there is a high probability of being observed, apprehended and prosecuted." The process from archeological violation observation through successful prosecution is often initiated by a private citizen who reports site damage, and is as important as is the team of the archeologist, law enforcement officer, prosecutor, and judge and then there is the jury. Concerns about public education as a significant tool in reducing site looting were expressed frequently in a 1990 symposium on that topic (Ehrenhard 1990), the publication of which was a significant contribution to the overall Federal archeology program, as well as at the Taos Working Conference. In early 1991, the Congressional Quarterly published a lengthy discussion of the issues of archeological looting and public responsibilities in the United States (Landers 1991), based on information collected by the Federal archeology program through 1990.

As mentioned previously, in the late 1980s interagency working groups identified the need for a text to inform archeologists, law enforcement officers, and prosecutors and judges about their mutual need to work together as a team for successful ARPA and related prosecutions. That book has now been published (Hutt et al. 1992) with strong interagency support, and the current need is for all involved specialists to implement the team approach and guidance. In complement to the *Archeological Resource Protection* text, a manual (USDOJ 1992) has been compiled to assist in ARPA prosecutions. Again, the current need is for the use of that sourcebook in successful prosecutions.

The *Archeological Resource Protection* text includes a clear discussion of the process of civil prosecution of ARPA violations by land managers. There is a need for training in this civil process, so that land managers use this process more frequently; this more localized prosecution process serves as a deterrent as much as a means of penalizing ARPA violations. A related need is for land managers to use the civil ARPA process more frequently.

Payments of rewards to people who furnish information that leads to convictions of archeological crimes was authorized in ARPA Section 8(a). Guidance on how to make these rewards is needed in the

Department of the Interior, and that guidance could then serve as a procedural model for other Federal departments and agencies.

As the previous discussion of archeological law enforcement documentation describes, there is a need to complete the development of case incident reporting systems that can link with FBI databases. Mechanisms need to be developed to collect these data. In the future, it may be desirable for these databases to be linked with other elements of the National Archeological Database as they are developed, if Privacy Act and archeological site location confidentially requirements can be addressed adequately.

5

THE FEDERAL ARCHEOLOGY PROGRAM IN A PUBLIC CONTEXT

As has been said several times in this report, U.S. Federal archeological sites, artifacts, and records can be considered part of a public trust for which the Federal government has stewardship responsibilities. This public stewardship charge has been discussed extensively (Green 1984, Keel 1991, Knudson 1986, Knudson and Keel 1993, McGimsey 1972, SAA 1990, Smith and Ehrenhard 1991), including its implementation amidst the people for whom the archeological material is preserved, who use archeological information and appreciate its other values. The public context for Federal archeological stewardship involves intergovernmental coordination among U.S. Federal agencies, and by those agencies with foreign, State, Tribal, and private government organizations. It also involves coordination with private associations and individuals. All these contribute to a national archeological public awareness program, for which the Federal government has leadership responsibilities.

Intergovernmental Coordination

Textbooks in public administration invariably refer to government fragmentation, responsibility, and accountability, and to complexities of size, mission, and corporate culture. The nonrenewable nature of archeological resources requires coordination among government agencies to minimize the impacts of the administrative complexities in managing the archeological resources, and to account for the fulfillment of management responsibilities.

The Congressional requirement for a regular evaluation of how the U.S. Federal archeology program is operating both demands intergovernmental coordination of information, and identifies ongoing coordination activities and the opportunities and needs for additional interaction. Archeological resource management is only a small portion of the activities of every one of the 50 or so Federal agencies that contribute to the Federal archeology program (Figure 1.2), and the allocation of slim resources from several of those agencies to a joint project can coalesce to support significant activities or programs. A wide range of Tribal, State, local, and even foreign government operations interact with the U.S. Federal archeology program, as do many professional and social organizations and private individuals. The

National Register Information System (NRIS) database includes information about archeological resources across the breadth of the Federal archeology program as well as on Tribal, State, local, and private property, and is probably the most complete set of data about specific archeological resources nationwide. A large number of archeological sites have been identified in the United States by the Federal archeology program, but their eligibility for the National Register of Historic Places (Register) often has not been evaluated yet (Figure 2.7), and information about those resources are not in the NRIS. No interagency database describing the known archeological sites in the United States has been developed.

Federal Archeology Program Agency Coordination

Three U.S. Federal interagency coordination activities have been mentioned in previous discussions: the Interagency Archeological Protection Working Group, the Public Awareness Working Group (PAWG), and the Interior Museum Property Task Force. Each of these has used a wide range of personal expertise and scarce individual and agency resources to development standards, manuals, and training guidance that greatly enhance the Federal archeology program. The LOOT Clearinghouse, discussed previously, is based on Federal agency cooperation, including the Department of Justice and Federal Land-Managing agencies.

Several national archeological or cultural resource management publications rely on Federal interagency support. This report is certainly one of them. The Listing of Education in Archeological Programs (LEAP) Clearinghouse relies on information supplied by other Federal agencies. The National Park Service (NPS) publishes *CRM* (formerly *CRM Bulletin*) with input from a range of Federal, Tribal, State, local, and foreign organizations and private groups and individuals. A special 1988 issue of the *CRM Bulletin* (Vol. 11) described the Federal archeology program (Smith et al. 1988), and it is being revised. The NPS publishes *Federal Archeology*, *Archeological Assistance Technical Briefs*, and *Archeological Assistance Studies*, which include information submitted by a range of participants in the Federal archeology program, as well as Tribal, State, local, and foreign agencies.

Most of the non-military land-managing agencies report frequent interagency cooperation for archeological law enforcement, training, and public outreach. None of the military agency reports for 1988 through 1990 describes such interaction, though some is ongoing of necessity because of joint

agency land management responsibilities (e.g., Bureau of Land Management [BLM] with the Army, Air Force, and Navy respectively).

In the Southwest, NPS, BLM, and U.S. Forest Service (FS) have cooperative agreements to share law enforcement personnel and cooperate in several archeological protection projects. The Department of Energy (DOE) and NPS cooperate to protect archeological resources in the Los Alamos National Laboratory and Bandelier National Monument lands. In California, an interagency task force of Federal (BLM, FS, NPS) and State land-managing agency representatives work together to exchange information on archeological law enforcement, training, and public outreach. In the Great Basin, the Intermountain Antiquities Computer System (IMACS) includes all archeological site information from southern Idaho, Utah, Nevada, southwestern Wyoming, and Colorado. The system was developed as a historic properties database in the 1970s by a land-managing interagency task force and continues to be the major site inventory system for several Federal agency units and State Historic Preservation Officers (SHPOs). This tradition of interagency archeological cooperation is complemented by interagency anti-vandalism public awareness task forces in Utah and Colorado. Within BLM, in 1989 the Winnemucca (NV), Lakeview (OR), and Susanville (CA) districts shared archeological resource data, equipment, and personnel to stage a joint public outreach effort over Memorial Day weekend. In Arizona, BLM and FS cooperate in protecting the Perry Mesa archeological resources.

In southeast Alaska, the Bureau of Indian Affairs (BIA) and FS jointly sponsor archeological public education activities. The 1989 Valdez oil-spill in Prince William Sound, Alaska, required significant interaction among the NPS, U.S. Fish and Wildlife Service (FWS), BIA, Alaska SHPO, and several other State and local agencies and Native groups to protect the archeological resources along the coast. At Little Bighorn National Monument in southern Montana, BIA assists NPS in archeological law enforcement. In Montana, Wyoming, and New Mexico, BLM provides archeological law enforcement support to the Bureau of Reclamation, and DOE and FWS cooperate in archeological protection activities at the Richland Operation, WA. The Idaho National Guard and BLM cooperate in archeological resource protection activities in southern Idaho. The Corps of Engineers (COE) cooperates with BIA in archeological resource protection along the Middle Missouri River, and with FWS along the Mississippi River.

Federal Archeology Program Coordination with Non-Federal Organizations

Federal agencies use a variety of non-Federal cooperative efforts to help in the protection of archeological resources on Federal and Indian lands. COE cooperates with State agencies who lease lands managed by the New England Division, and with the North Carolina State Parks Department in that state. TVA uses the services of a State Game Enforcement Officer to protect TVA archeological resources. In Utah, BLM and the Utah State Parks department cooperate on archeological protection activities. NPS and Colville Tribe boat rangers cooperate to protect archeological materials at Coulee Dam National Recreation Area. There is Federal agency coordination with SHPOs in all U.S. states, and with a number of the over 700 Certified Local Governments (CLG; Morris 1990, Renaud 1992:29-37), but information about those activities has not been reported in the annual questionnaire response. By 1990, 16% of the CLGs had professional archeological expertise on staff (Morris 1990:1), and 100 of them included archeology within their local historic preservation ordinances (Morris 1990:6).

Section -.7 of the Archaeological Resources Protection Act (ARPA) Uniform Regulations requires that Federal agencies notify Indian Tribes of proposed archeological work that could harm sites of Indian religious or cultural significance. The reported and estimated frequency of such notifications fluctuated but increased approximately 40%-50% in the period 1988 through 1990 (Table C.13, Figure 5.1). Thus, in 1990 agencies reported over 5 times more notifications than had been reported in 1985 (Keel et al. 1989:15), the first year such information was collected. It is estimated that over 1,000 such notifications of projects on Federal and Indian lands were made across the United States in 1990 (Table C.13, Figure 5.1). Tabulating the frequency of such notifications does not address issues of the quality of the notification process, which is frequently a form letter rather than face-to-face consultation about the proposed work. However, during the period reported here, the Advisory Council on Historic Preservation (1989:94-95, 1990:99-100) noted an increase in Native American participation in Section 106 reviews of archeological projects, particularly those than included human remains.

No specific information currently is available about overall Federal-Tribal cooperation in archeological resource analysis, protection, and training projects or programs, but such cooperation is known to occur.

All regulated aspects of the Federal archeology program must be coordinated with the SHPO(s) of the State(s) involved in specific ground-disturbing archeological projects. Under NHPA, all SHPOs report annually to NPS on how each State has spent its Historic Preservation Fund (HPF)

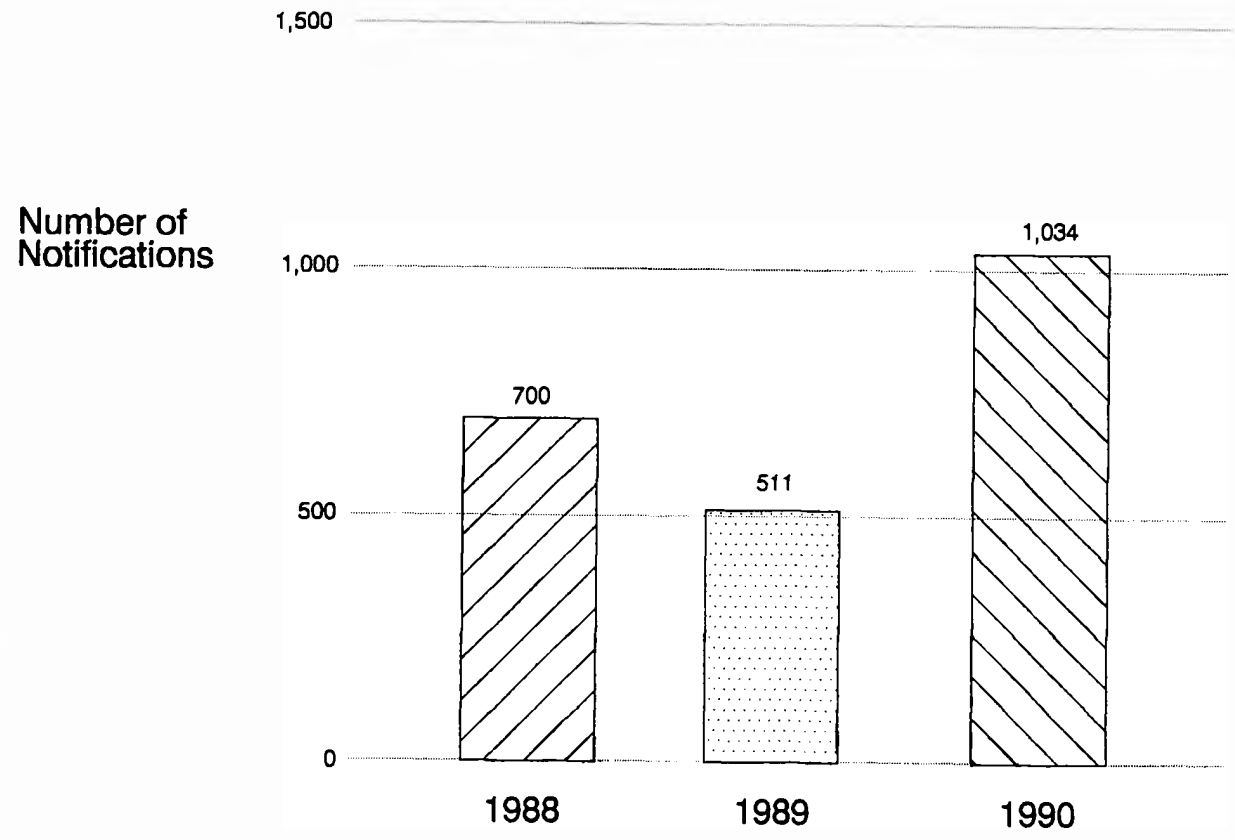

Figure 5.1. Estimated number of Federal agency notifications of Native American organizations concerning proposed archeological projects being conducted in the United States under the authority of ARPA, 1988-1990 (Table C.13).

monies. Congress appropriates the HPF each year, and the Secretary of the Interior then allocates the HPF to individual States according to a prescribed formula. NPS currently collects information about the frequency, cost, and staffing of the SHPO survey and inventory historic preservation activities and the Register nomination process in an HPF database (e.g., Renaud 1992). A significant proportion of these activities deal with archeological resources, but no data specifies the types of cultural resources involved in the SHPO-reported numbers. NPS has recently developed the Integrated Preservation Software (IPS), which allows for easy transfer of data between computer systems, and this may be useful in linking HPF survey data with data collected for the Secretary's report on the Federal archeology program.

The National Archeological Database (NADB, Case Study 2.1) is being developed through cooperative efforts of NPS, SHPOs (through the National Conference of State Historic Preservation Officers), the COE Southwestern Division, and the Center for Applied Spatial Technology, University of Arkansas. In 1992 NADB-Reports was being made available as an online system to the SHPOs, who had been invited to use the Corps of Engineers Automated Program (CEAP) communication network. Through CEAP, NADB-Reports was also tested in NPS regional offices, and by selected other preservation professionals. NADB has the potential to serve as a vehicle for disseminating other collected information, e.g., for Historic Preservation Fund or Federal archeology program reporting, LEAP, NAGPRA.

The National Trust for Historic Preservation (NTHP) was Congressionally chartered in 1949 (Figure 1.1) as a public-private partnership. In 1990, NTHP began a cooperative effort with NPS, U.S. Committee of the International Council on Monuments and Sites (US/ICOMOS), and Waterford Foundation (a private organization) to develop a *Heritage Education Resource Guide* (NTHP 1990) for U.S. school teachers.

Data are not available readily to describe or assess the Federal archeology program's interaction with local governments, or with other countries cooperating in joint efforts to protect and manage the worldwide archeological heritage.

Future Directions and Needs for Intergovernmental Cooperation

The United States' economic recession of the late 1980s and early '90s, combined with increasing technological sophistication, may have a long-term benefit of encouraging if not forcing more interagency and interpersonal coordination to avoid duplication of effort and maximize the use of scarce resources.

Federal archeology program participants need to contribute more frequently and consistently to several national clearinghouses beginning with the information needed for this report. That means developing the systems, standardization, mechanisms, and trained staff for such data collection. Developing NADB as an online system with various modules for Reports, SRC (Secretary's Report to Congress), LOOT, LEAP, Permits, or other information categories is a long-range goal. Thoughtful planning to outline the strategy and tactics needed to work toward that goal has already begun. Because of Privacy Act and archeological site location confidentiality constraints, the accessibility to some modules probably will have to be limited. Linkages between NADB and other databases, such as NPS, HPF or the NRIS, or to IMACS, CIRS, or a variety of other agency-specific databases also need to be investigated.

There is a need for a better understanding of the formal as well as informal mechanisms that can be used to support intergovernmental cooperation to preserve archeological resources interagency agreements, memoranda of understanding, reimbursable agreements, contracts, purchase orders, etc. Frequently, informal designs of such cooperation cannot be implemented because of a lack of administrative information about how to do it. Articles and technical briefs on this topic would be useful throughout the Federal archeology program.

Finally, there is a need for more information about Federal agency interactions in support of archeological protection with local (especially CLGs) and foreign governments, to identify further opportunities for mutually beneficial projects and programs.

Coordination with Private Organizations and Individuals

Coordination Activities, 1988-1990

The beneficiaries of the Federal archeological public trust are the citizens of the nation, and the Federal archeology program must be affirmative in coordinating agency activities with the private beneficiaries at the local, regional, and national levels. Such coordination has three purposes: (1) to return public benefit to private individuals, and (2) to make use of private energy and support to provide knowledge that is frequently not available within Federal agencies, as well as to augment limited staff time and agency financial resources, and (3) to enhance the preservation, protection, and interpretation of American archeological resources.

Section 11 of ARPA specifically directed the Secretary of the Interior to "foster and improve the communication, cooperation, and exchange of information" between private citizens with archeological material and information collected before 1979 and professional archeologists and Federal resource managers. As discussed later, most of the effort directed to that end is usually referred to by terms such as, "public outreach", "public awareness", and "public education." This section will focus more on the mechanisms and organizations involved in such coordination.

Probably most of the professional archeologists in the Federal government are members one or more of national archeological organizations (e.g., American Anthropological Association [AAA] Archeology Division, Society for American Archaeology [SAA], Society for Historical Archaeology [SHA], Society of Professional Archeologists, American Society for Conservation Archeology [ASCA]), and State and/or regional professional and/or avocational/professional organizations. They actively participate in organization governance and make presentations at public meetings and publish articles. Many of them are also speakers in local schools and service clubs, and provide tours and demonstrations at agency open houses and State archeology weeks (Greengrass 1993). Individual Federal archeologists organized several symposia and/or made presentations or presented posters at the annual SAA meetings in Phoenix (1988), Atlanta (1989), and Las Vegas (1990).

Staff archeologists in U.S. Federal agency field offices generally are acquainted personally with the avocational archeologists in their area, and frequently consult with those people about specific sites, types of resources, or proposed project areas. The Minerals Management Service (MMS) Gulf of Mexico Region archeologists cooperate with local sport divers and fishermen to locate potential prehistoric archeological sites off the Florida Gulf Coast. In 1989, a significant private collection of 16th century Ming Dynasty porcelain collected from Point Reyes National Seashore and nearby beaches was given to

NPS with its discovery records, and a private collection of a historic period Chugach Eskimo-Russian site, collected in the 1960s, was donated to Kenai Fjords National Park.

In 1990, the Bureau of Reclamation's (BR) Missouri-Souris Projects Office was offered a prehistoric collection from a local landowner if the Bureau would incorporate it into a public display at a State park on agency lands. The Bureau had a cooperative agreement with the Wyoming State Archeologist for archeological inventory and data recovery at Seminoe Reservoir in 1990, and part of that project included interviewing local artifact collectors, and avocational archeologists. That same year, NPS archeologists at the Southeast Archeological Center and Canaveral National Seashore, FL, worked with an avocational archeologist to locate and evaluate a 16th century French site. The private citizen had used a metal detector to collect from the site area in the 1970s, before the area was a NPS unit. His materials included pre-1565 French coins that may be from survivors of the French Ribault fleet that was sunk by a hurricane as it was being chased by the Spanish; survivors may have lived with local Indians. The avocational archeologist loaned NPS his collection for analysis, was featured in an NPS video on the project, continued to work with NPS during the archeological testing program, and has served as liaison between NPS and other avocational archeologists in the area.

At an organizational level, several Federal agencies have co-sponsored State archeology weeks (Case Study 5.1, Greengrass 1993) by providing financial and staff support to the overall effort, as well as individual offices and staff members making presentations or displays or leading tours. In 1989, the DOE Los Alamos National Laboratory co-sponsored the Pecos Conference. BLM regularly co-sponsors archeology weeks in States in which it has major surface management responsibilities (e.g., Alaska, Arizona, Idaho), as do NPS and FS. All three of those agencies have volunteer programs that regularly provide private citizens with opportunities to do archeology on the public lands; FS Passport in Time (PIT; Case Study 5.2); NPS Volunteers in Parks (VIP); and BLM site stewards programs in AK (Case Study 5.3), AZ, NM, NV, and UT. Federal archeology program agencies frequently enter into cooperative agreements with colleges and museums to conduct development-driven inventory or data recovery or research-oriented investigations (e.g., BLM with Montana State University), and frequently contract with such institutions for needed inventory or data recovery (Case Study 2.3). BLM has a cooperative agreement with the Utah Wing of the Civil Air Patrol, for aerial monitoring of archeological sites in the Arizona Strip.

Alaska Archaeology Week is a state-wide series of events, programs, activities, and museum exhibits which has been organized since 1989 by the State of Alaska, NPS, MMS, BLM, COE, FS, Anchorage Museum of History and Art, and the University of Alaska. Archaeology Week programs, originally introduced in Arizona, are a very successful way to facilitate interaction with the public and have been used by approximately twenty states over the past ten years.

The week-long celebration has been of particular interest to members of the general public who are interested in their Alaska heritage and archaeology. Most of those who attend the evening programs are adults who already have an interest in archaeology. Another primary audience is teachers who are introducing units dealing with Alaska Natives into their curriculum.

In Alaska, looting is a growing problem with most archaeological sites in extremely remote locations. Often, native communities pot their own legacy on private land as a "cash crop" and material passes through many hands before it comes to rest with collectors in Tokyo, San Francisco, and New York. Archaeology Week activities are an attempt to increase public awareness by presenting the importance of leaving archaeological sites undisturbed.

By piggy-backing onto the excitement most school children feel about the dinosaur craze, archaeology has become a popular topic. The attendance at the Saturday childrens' program has increased yearly until it became necessary to hold two separate sessions divided by age group. This by far the most successful program of the week. One enthusiastic parent obtained additional funding through her childrens' elementary school PTA to hold a special Archaeology Week just for their school this fall.

Alaska Archaeology Week has been coordinated by NPS with the involvement of several State and Federal agencies, including MMS. The Anchorage Museum of History and Art has donated the use of their galleries and auditorium. Five evening programs, one Saturday children's program, and a month-long museum exhibit take place in Anchorage. Last year, programs were also conducted in the communities of Juneau, Ketchikan, Kodiak, Kotzebue, Naknek, Petersburg, Unalaska, and Wrangell.

Case Study 5.1. Alaska Archaeology Week by Michelle Hope [National Park Service]

During the summers of 1988 through 1990, archeologists from the Superior National Forest in Minnesota conducted test excavations on two recently discovered sites from the Paleoindian Period (ca. 7,000 to 12,000 years old). These sites were located in developed campgrounds on East Bearskin and McDougal lakes. While over 3,000 sites have been located in Superior National Forest to date, these sites were specifically selected for several reasons. First, the campgrounds were constructed prior to required Section 106 compliance, and it was our intent to determine the level of impact to these sites through campground construction and subsequent use. Second, we wanted to determine the significance of any intact cultural deposits which may remain and develop protective measures for those deposits. Third, as part of ongoing research on Paleoindian occupation of the Lake Superior basin, to increase our knowledge of the Forests earliest inhabitants. Lastly, because of the easy public access to the campgrounds and sites, to provide an opportunity for the public to learn about the fragile nature of archeological resources and the unwritten history of the Superior National Forest environs.

While local volunteers were recruited in 1988, national recruitment through Passport in Time (PIT) was used during subsequent years. Simply defined, PIT is hands-on environmental education. It is a program through which the general public can volunteer in all facets of heritage resource management: inventory, evaluation, and enhancement.

The PIT program benefits the public, the Forest Service, and the profession but, most importantly, it benefits the heritage resources. The program meets the public's quest for cerebral recreation, environmental education, and involvement in conservation of the environment. The people who sign up for PIT projects are already environmentally conscious but their involvement in PIT increases their commitment to include another sensitive resource.

The Forest Service benefits in two ways. Through PIT, the agency encourages people to visit the National Forests and finds ways to better serve the public. The programs also round out the cultural resource management program. The enthusiasm of volunteers helps agency employees realize that cultural resource management means transforming their data into understanding the past uses of environment, connecting the present with the past.

But the most important benefits accrue to the cultural resources. With the help of volunteers, much more can be accomplished on any given site. For example, during the three years involving PIT in the Superior National Forest, over 100 volunteers contributed from one to seven weeks of their time, totaling in excess of 6,500 hours at an appraised value of $72,000. Through their contributions, we were able to accomplish all of our objectives. Namely, we demonstrated that the sites were virtually undisturbed, in spite of campground construction and use, and exhibited a much earlier occupation of the Forest environs than had originally been anticipated. In addition, botanical data from the sites provided information necessary to reconstruct the stages of forest succession and resource availability for the Paleoindian occupants. Finally, besides providing an opportunity for public participation and an educational experience for volunteers, over 1,000 people visited the sites and were exposed to conservation ethics and the nature of archeological research.

Case Study 5.2. Passport in Time by Jill A. Osborn and Gordon Peters [U.S. Forest Service]

During the summer of 1989 a team of BLM employees worked in the Unalakleet River area in Alaska conducting various resource studies. During the coarse of boat trips up and down the river, two archeological sites were observed to be undergoing erosion. The BLM was faced with a dilimma: how to deal with this situation of potentially very important scientific information in two sites being washed away--and with it some of the unknown history of this part of the state.

A cooperative effort was launched involving a university and others to mitigate damage and accomplish much needed new work in the region. It soon became apparent that work in this region could well provide a student with an exciting doctoral dissertation topic. And what's more, maybe BLM could help with some of the logistics and funding to get the project underway.

In the Summer of 1990 intensive survey and testing was done for about four weeks. The excitement and momentum of the impending project also brought a volunteer archaeologist from the BIA, plus a 16-year old Eskimo high school student from the village of Unalakleet. His involvement was under the new Resource Apprentice Program for Students ("RAPS") launched in Alaska a few years ago, and now spreading to other states. It provides students with hands-on experience in various resource management jobs paid for by local Native corporations. Others to help included other BLM employees and summer volunteers from the fisheries program who provided assistance in logistics, including driving and servicing boats plus cooking some great dinners.

For now, we at the BLM in Alaska are all excited aout the new "Cooperation in the Frozen North". It indeed is a "win-win" situation for everyone involved--and an exciting way to accomplish much-needed archeological work in the great state of Alaska, America's Last Frontier!

Case Study 5.3. Uncovering the Unalakleet: A Cooperative Effort by Robert King (Bureau of Land Management]

At the national level, NPS has cooperative agreements with the National Council of State Historic Preservation Officers (NCSHPO), National Trust for Historic Preservation (NTHP), and SAA. NPS coordinated the Save the Past for the Future project with other sponsors including BLM, BR, MMS, Soil Conservation Service (SCS), COE, FWS, FS, NCSHPO, NTHP, National Parks and Conservation Association, SHA, and the Dimick Foundation. The Save the Past for the Future project was initiated by SAA in 1988 and spawned the Taos Working Conference (Judge 1991, Reinburg 1991, SAA 1990; Case Study 3.3) and public awareness forums at the SAA meeting in 1990. The recommendations from the conference report have been used by individuals throughout the Federal archeology program to enhance their agency archeological protection efforts.

Through its cooperative agreement with NPS, in 1989 the SAA initiated a National Historic Landmarks Archeology Committee, to develop archeological landmark nominations and review nominations presented to NPS that addressed significant archeological properties.

The Federal archeology program has learned to rely on private organizations and individuals to conduct some of its day-to-day work, to provide information about site locations in lands not formally inventoried, and to make use of and in turn co-direct its public awareness activities.

Future Directions and Needs for Coordination with Private Organizations and Individuals

The success of the Save the Past for the Future cooperative effort, and individual programs such as Passport in Time or co-sponsorship of archeology weeks, makes it imperative that the Federal archeology program reach out continually to the private sector. Thus, in 1993 PAWG included 33 Federal agencies and 17 private organizations on its mailing list, to coordinate information among the diverse array of structures and individuals.

Previous pages have cited the need for more archeological site inventory, more information, more evaluations, greater use of the associated values, and deterrence of archeological theft and looting. The means to address those needs is not just or necessarily funds, but it is in coordinated efforts among the public and private sector. Participants in the Federal archeology program need a better understanding of the mechanisms available for coordination with the private sector, through cooperative agreements, volunteer programs, and contracting. Senior-level commitment may be needed to implement these

the mechanisms available for coordination with the private sector, through cooperative agreements, volunteer programs, and contracting. Senior-level commitment may be needed to implement these mechanisms without getting lost in administrative detail, so that scarce public resources can be supplemented to manage, protect, and use the archeological heritage resources on our public and Indian lands, and affected by federally sponsored project.

Federal Archeological Public Awareness Activities

If you are a 35-year-old nurse and parent of five in a Chicago suburb, how do you find out about archeology in general, much less about the Federal archeology program? Archeology could help your children better understand the cultural heritage of their country, and it could provide the whole family with recreation. The library may have copies of *Archaeology* magazine and a few books on archeological topics, including Jean Auel's novels (see Auel 1991); there are frequent articles about archeology in the *National Geographic*. The Discovery Channel, the Learning Channel, and public television have occasional programs about archeology or archeological topics. The local newspapers may have stories about a local archeological project from time to time, but they generally feature only those archeological investigations that are emergency discoveries in the midst of a needed construction project. How does the Federal government provide leadership and coordination in helping the general public know about, and have access to, the scientific, humanistic, and spiritual values inherent in the prehistoric and historic archeological resources on Federal and Indian lands?

In 1988-1990, Federal agencies made important efforts to increase public archeological awareness. This was in part in response to ARPA Section 10(c), which was added in 1988:

> Each Federal land manager shall establish a program to increase public awareness of the significance of the archaeological resources located on public lands and Indian lands and the need to protect such resources.

The list of public awareness activities conducted in 1988-1990 by participants in the Federal archeology program is extensive. It includes:

- participation in statewide Archeology Weeks (AK, AZ, CO, ID, NM, UT);

- presentation to school groups during Career, Conservation and Outdoor Classroom, Earth, and Environmental Education days;
- presentations to civic and service organizations, school and church groups, business associations, and both avocational and professional archeological and historical societies;
- developing and setting up displays at museums, local and State fairs;
- developing and distributing brochures, posters, and other interpretive materials;
- assisting archeological site steward programs;
- recruiting and involving volunteers in archeological inventory, excavation, fencing, recordation, and laboratory projects, and training them to give guided site tours;
- supporting and serving as officers, instructors, and advisors to chapters of State archeological and historical societies;
- providing materials for media releases to newspapers and television and radio stations on archeological investigations and looting, including public service announcements by well known individuals (e.g., author Jean Auel);
- hosting open houses to explain Federal agency archeology programs; and
- conducting special tours on sites and archeological facilities.

The Air Force's regulation AFR 126-7 §4g(4)(f) requires installation commanders to promote historic preservation awareness, including archeological awareness, and they do so in a variety of the activities listed above (Case Study 5.4). In 1989, several Federal agencies participated in Oregon's Operation SAVE (Save Archaeological Values for Everyone), which included provision of a toll-free "800" telephone number to reports incidents of archeological vandalism and looting. The Tennessee Valley Authority (TVA) provided a comparable number in an ARPA-enforcement brochure that agency developed in 1990.

In 1988 the Departmental Consulting Archeologist and NPS initiated the *Federal Archeology Report*, a quarterly report on actions and topics important to public archeology. The initial distribution was primarily to Federal archeologists and land managers, but by 1993 it was mailed to approximately 6500 individuals, at least 25% of whom were private citizens with no governmental affiliation. These individuals also receive NPS *Archeological Assistance Technical Briefs*, which was initiated in 1989; ten briefs were published in 1989 and 1990.

The USAF has been rapidly developing its programs in archeology and historic preservation. Through increased training opportunities and interagency agreements with other Federal agencies such as NPS, USAF has been refining and expanding it's knowledge and management of resources under its control. Francis E. Warren Air Force Base is just one example of Air Force facilities that have been developing comprehensive cultural resource programs with public involvement in mind.

F.E. Warren Air Force Base is located in Laramie County, Wyoming. It is currently the home of the 90th Missile Wing. The base has a long history dating back to 1867 when it was established as a cavalry post to protect the transcontinental railroad workers. It rapidly expanded to become one of the largest cavalry posts in the country with a quartermaster supply depot that serviced Federal facilities in a 400 mile area. The preservation of the historic structures on the base has been excellent. In 1983, the Air Force began large scale archeological surveys in preparation of the deployment of the Peacekeeper Missile system. The surveys continued until a complete survey of all installation property was finished in 1988 and began developing an extensive cultural resource management program.

Using the information generated from these surveys, an informal public interpretation program was conceived. This program had several major components that were to be developed over a five year time period. The base archeologist started the program by presenting talks to interested groups and schools about the archeology and history of the base. At the same time, a search was conducted for a site that could be used for the construction of a permanent archeological interpretive center. This center has a three-fold purpose: to educate base personnel and the general public about the archeology of the base; to illustrate archeological methods and techniques, and to educate people on the legal system protecting archeological sites. A series of informational pamphlets on the archeology and historic preservation of the base will be produced.

The last major component of the program was to increase involvement of outside scientists in the research of archeological and historic resources on the base. Initial contact was made with local universities and other Federal agencies in 1989 when plans were started to develop a centralized research and curation facility on base. The concept plan and design started in 1990 and funding was approved at the end of the year as part of the Legacy Resource Management Program. When the facility is complete in 1992, the base will centralize the curation of all artifacts into the facility and develop a rapid retrieval system for research.

Case Study 5.4. Cultural Resource Management at F.E. Warren Air Force Base by Bill Metz [Air Force]

In 1988 the U.S. Department of the Interior and the Boy Scouts of America entered into a Memorandum of Understanding for cooperation in programs and activities related to natural and cultural resources conservation. NPS presented a program on archeological preservation at the 1989 Boy Scout National Jamboree at Fort A.P. Hill, VA, and at the Order of the Arrow National Conference in Bloomington, IL, in 1990. In 1989, NPS co-sponsored the Public Trust Symposium (Knudson and Keel 1995) as part of the First World Summit Conference on the Peopling of the Americas, with the Center for the Study of the First Americans, University of Maine, Orono. That same year, the Corps of Engineers (COE) was actively involved in the Circum-Pacific Prehistory Conference, Seattle (Aikens and Rhee 1992). Both of these conferences were well publicized, included general public sessions, and resulted in publications.

In 1988, the U.S. Forest Service (FS) and COE sponsored the International Symposium on Vandalism: Research, Prevention and Social Policy in Seattle, which brought together resource managers, researchers, law enforcement and criminal justice leaders, archeologists, educators, and other public officials; archeological resource protection was a prominent topic. NPS, BLM, TVA, and SCS co-sponsored the Third Annual Conference, *Presenting the Past to the Public*, in 1989 at the University of Minnesota, Minneapolis, with a focus on "History and Archeology in Schools and Museums" (Wells 1991). In 1988-89, FS sponsored an interagency symposium, *Tools to Manage the Past*, which involved BLM, NPS, Bureau of Indian Affairs (BIA), COE, and New Mexico State Historic Preservation Officer, which also resulted in a publication (Tainter 1989).

In 1990, BLM developed its "Adventures in the Past" initiative, which encompassed hundreds of BLM field office public awareness efforts such as those listed previously. As part of this initiative, in 1990 BLM held a Four Corners Tribute in southwestern Colorado that included a Four Corners Governors' Conference (BLM 1990b) whose discussions were based on a Four Corners Cultural Resource Proposal (BLM 1990a). The Conference involved the public and included a fair and media releases, and was attended by representatives of several Federal agencies (BLM, Congressional Research Service, COE, FS, FWS, SCS, NPS); Tribal, State, and local governments; and private organizations. As a result, a Four Corners Heritage Council was established by a Memorandum of Agreement among BLM, FS, NPS, and SCS in 1991, to promote resource preservation, heritage tourism, and economic development in the region. Throughout 1988-1990, the BLM's Anasazi Heritage Center in Dolores, CO, developed

special travelling exhibits promoting archeological awareness, and offered artifact collections tours to the general public.

As part of the FS National Recreation Strategy, several projects and programs were developed in 1988-1990. "Windows on the Past" provided interpretations of U.S. National Forest lands and includes interpretive travel routes, displays, participatory archeology activities, onsite interpretation, and brochures (FS 1990). FS developed a Passport in Time (PIT) project that was tested in 1990 in four forests in the Eastern Region (Case Study 5.2). PIT was designed to involve volunteers in archeological investigations, and by 1992 the program had become a significant national effort.

COE conducted archeological public awareness activities throughout its districts and divisions. The Omaha District's Avocational Archaeological Program concluded the four-year excavation of the 1856-1892 Fort Randall Historic Site in 1989. A total of 2,641 work hours were contributed by 169 volunteers there, and over 25,000 artifacts were catalogued. In 1989, the COE Wilmington, Mobile, Rock Island, and Portland districts developed and distributed brochures to promote archeological public awareness.

In Utah in 1990, BLM directed the development of a public school archeology education program, *Intrigue of the Past: Investigating Archaeology* (Smith 1990). The program was sponsored by the Utah Interagency Task Force (BLM, Bureau of Reclamation [BOR], FS, NPS) and was designed for fourth to seventh grade students. It was developed after extensive background research and coordination with Native Americans, educators, and archeologists.

Throughout 1988-1990, NPS developed and distributed archeological public awareness materials through the Service and participated in all of the activities listed previously. In 1990, the NPS Western Region, San Francisco, developed draft guidelines about the preservation of archeological resources, for use by NPS interpreters. That same year, the NPS Pacific Northwest Region, Seattle, BOR, BIA, Confederated Tribes of the Colville Reservation, and Spokane Tribe developed a public awareness training program to address the resources around Lake Roosevelt in Coulee Dam National Recreation Area. In Alaska, in 1990 BIA organized and directed a six-week Native youth archeological field school, working in cooperation with a Native Association.

In 1989 the DOE Richland Operations, WA, developed cultural resources public education materials variously oriented to primary and secondary schools, the DOE work force, and the lay public, and a comparable effort was made by the DOE Savannah River Operations, SC. The DOE Idaho National Engineering Laboratory funded archeological investigations at Aviators' Cave in 1989, including an extensive public information initiative. The Federal Bureau of Prisons (FBOP) conducts archeological public awareness activities only as they relate to specific projects, and in 1990 they publicized archeological recovery at FBOP projects in Florence, CO (Case Study 2.5), and Cumberland, MD.

Archeological protection issues are frequently identified in U.S. Federal, Tribal, State, and local planning impact assessment documents, but the public is not aware enough of those issues to call for them routinely in those documents.

In 1990, PAWG began development of a *Participate in Archeology* brochure, and this was published and widely disseminated in 1992. The Listing of Education in Archeological Program (LEAP) project was initiated by PAWG in 1987, and the 1987-89 listings were published in 1991 (Knoll 1991); its 1990-91 listings were published in 1992 (Knoll 1992).

Several Federal agencies provided support to the Public Education Task Force established in the Society for American Archaeology (SAA) in 1989, including staff time, publication and mailing costs for their newsletter, and support for teacher training workshops. NPS also provided logistical support for the Inter-Society Public Education Work Group, to coordinate efforts among Federal agencies and public archeological education efforts of the AAA, ASCA, SAA, and SHA. In 1990, the Secretary of the Interior gave Public Service Awards to Dr. Raymond Thompson, director of the Arizona State Museum, and to author Tony Hillerman for each of their actions supporting the Departmental mission of archeological resource protection and public education.

The American Folklife Center (AFC) hosted *Cultural Conservation: Reconfiguring the Cultural Mission (The First National Conference)* in 1990, working from the 1983 report to Congress by NPS and AFC on cultural conservation (Loomis 1983). Roundtable topics addressed environmental protection, historic preservation, planning and development, public education, and arts and humanities. None of the resulting recommendations was directed specifically to archeological programs, but several of them addressed the values ascribed to prehistoric and historic archeological resources (AFC 1990).

The Advisory Council on Historic Preservation noted an increase in Native American participation in National Historic Preservation Act Section 106 reviews of projects affecting archeological resources in 1989 (ACHP 1989:94-95) and 1990 (ACHP 1990:99-100). This parallels the reported and estimated (Table C.13, Figure 5.1) Federal notifications to U.S. Native Americans of proposed archeological work in 1988-1990.

Future Directions and Needs for Archeological Public Awareness Activities

To protect and understand the archeological sites on Federal lands, the overall national context of those resources must be protected and understood. Thus, in fulfilling its public trust responsibilities, the Federal archeology program has a responsibility to provide leadership for archeological resource conservation and appropriate use on non-Federal as well as on Federal and Indian lands in the United States.

To meet these responsibilities, the Federal archeology program needs to involve the public. Private citizens need more nontechnical publications that display the information values retained in sites, and that provide information about techniques for the physical and legal protection of privately owned archeological sites. Federal programs should, as part of fulfilling their mandate, provide more opportunities for private citizens who wish to take part in professionally supervised investigations on Federal lands or as part of other Federal investigations. They should also support more site steward programs, such as the one in Arizona, to involve private citizens more actively in site protection (Hoffman 1991). There is a need to allow experienced avocational archeologists to participate in Federal archeological site investigations beyond generalized "volunteer" opportunities for untrained individuals. The Federal archeology program should work with organizations such as the Council of Affiliated Societies, within the SAA, and other relevant organizations to promote ways in which to address these needs.

The Federal archeology program needs to continue to maintain the LEAP Clearinghouse, and to develop and distribute materials such as the *Participate in Archeology* brochure, archeological theme bookmarks, and the *Archeological Resource Protection* text that provide the general public with information about archeological values and opportunities to participate in the program. Agencies should

be encouraged to publish lay language reports in several tongues in tandem with all technical reports of Federal archeological investigations, to encourage greater public use of the recovered information.

Outdoor recreation is a major national topic in the United States since the President's Commission on Americans Outdoors' 1987 recommendation that a Task Force on Outdoor Recreation Resources and Opportunities be established. The Report of the President's Commission includes a California Desert Conservation Area case study that mentions "irreplaceable archeological resources" as one element in developing multiple use partnerships that promote outdoor recreation opportunities (Commission 1987:413-420), but there is no specific discussion of archeology and recreation. The BLM's optional allocation of archeological and other cultural resources for public use (BLM 1988b) provides a technique for beginning to look at these relationships. The Outdoor Recreation Task Force's report cited the development of the Anasazi Heritage Center and the Federal archeology program (Task Force 1988:58) as a recreation initiative and accomplishment, but made no specific reference to archeological or other cultural resources in its description of Outdoor Recreation Demand, Outdoor Recreation Supply, An Outdoor Recreation Policy to Strengthen America's Communities, Case Studies, or Recreation Visitation and Supply Data. In 1990 BLM published its strategic plan for outdoor recreation on the public lands, and it cited its 129,999 historic and archeological sites (BLM 1990d:52) as recreation resources, noted that in FY 1990 $500,000 had been spent on cultural sites having recreation significance (BLM 1990d:53), but did not include historic preservation or heritage tourism in its discussion of the economic benefits of public land recreation (BLM 1990d:18-21). It is imperative that the participants in the Federal archeology program address their common interests with the national outdoor recreation programs in their agencies and across the nation, developing information on benefits as well as costs of those programs, and directing more of the archeological resources to public use of their humanistic as well as scientific values.

Conservation and appropriate use of the archeological resources on Federal and Indian lands is stewardship responsibility of the Federal government. It must be constantly reminded of that, and constantly involve the public in decisions about its own resources.

6

FEDERAL ARCHEOLOGY PROGRAM EFFECTIVENESS

The Federal archeology program involves the activities of over 50 U.S. Federal agencies; public organizations in Tribes, States, the District, and Territories; and a vast number of local governments. It involves a myriad of private and public associations and individuals undertaking a variety of activities. These activities are requirements of several important Federal archeological, historic preservation, and environmental protection laws, as discussed in Chapter 1. Increasingly, Tribes, States, and local organizations are creating complementary statutes as well. In recent years the Secretary of the Interior's *National Strategy for Federal Archeology* (Figure 1.3, Lujan 1991) has been used to focus special attention to the topics discussed below. This chapter summarizes actions in these areas during the 1988-1990 period, as well as program expenditures. Successes as well as continuing needs in these areas are noted. The reports and estimates of Federal expenditures for this program although incomplete (Table 6.1) suggest declining funding for this program during the late 1980s, while information elsewhere in this report documents important increases in program activities.

Public Education and Participation

While the Federal archeology program always has included programs and activities to educate people about archeological values and their preservation needs, many such activities have been initiated and developed only within the late 1980s. In 1988-1990, the Save the Past for the Future project, the Public Awareness Working Group, and the Interagency Archeological Protection Working Group identified several public education and awareness projects and products that needed to be done, both for *in situ* protection of archeological sites and for wider use and appreciation of the values inherent in those sites and their associated materials. These activities and products have been described in some detail in previous chapters.

An important element in U.S. public administration in the late twentieth century is the increase in public participation in most public decision-making, especially in the authorization or planning of

Table 6.1. Estimated Expenditures for Federal Archeology Program Investigations and Law Enforcement Activities, 1988-1990.

Activity	Year		
	1988	1989	1990
Estimated Investigation Expenditures (Table C.8)	$52,230,912	$50,450,359	$46,297,611
Estimated Law Enforcement Expenditures (Table C.10)	+ 1,626,147	+ 1,103,159	+ 2,363,227
Estimated Expenditures for Federal Archeology Program Activities	$53,857,059 (100%)	$51,553,518 (96%)	$48,660,838 (90%)
Total Estimated Expenditures Adjusted for Inflation (1987=baseline; Appendix B)	$51,702,777 (100%)	$47,429,237 (92%)	$42,821,537 (83%)

Federal projects that may impact the environment. There is a need for clear accounts of the impacts of proposed Federal projects on archeological materials. Given the relatively small number of archeological resources identified in the United States compared with their estimated numbers (Figure 2.6), that means that each such impact statement should have specific discussions of the archeological resources known and reasonably expected to be affected by the proposed work. Its compilation may require more field investigations. This information should be presented so that what could be lost, or what could be recovered and contribute to scientific knowledge or support recreation and tourism, is clearly understood by members of the public who review and comment on such statements.

There is a clear need to coordinate efforts within the Federal government and build private-public partnerships to increase private participation in those programs. An unfortunate development of the passage of Archaeological Resources Protection Act (ARPA) is the increased distinction between professional and non-professional archeologists, with greater emphasis on differences between credentialed archeological studies and archeological investigations carried out by avocational archeologists. Excavation

or removal of archeological items from the public lands without an official permit has been a Federal crime since 1906. The outcry against archeological looting that resulted in the enactment of ARPA also called for rigorous enforcement of the law once passed. However, artifact collectors and avocational archeologists have identified many of the significant archeological sites in the country, whether on private or public lands, including probably 80% of the significant Paleoindian sites presently identified in the United States (Knudson 1991b). Some of these efforts, from field investigation to publication of results, have been recognized and rewarded by organizations such as the Society for American Archaeology (Crabtree Award). These worthwhile activities should be articulated with the Federal archeology program, perhaps beginning with Federal agency outreach to the avocational community via the Council of Affiliated Societies within the Society for American Archaeology. This could result in:

- a notable increase in archeological site identifications on the public and Indian lands, and increases in archeological knowledge based on analyses of privately held archeological artifact and record collections; and

- greater cost-effectiveness of the public money now spent on the Federal archeology program.

Public Use of the Archeological Paleoenvironmental Record

Archeological resources hold an array of information about past environments, and the human adaptations to those environments should be managed for scientific extraction and public consumption of that information or should be conserved for future scientific investigation. If information is derived from an archeological site in the public domain, it is essential that information be presented in a form and language appropriate to public interpretation and understanding. Archeological resource stewardship requires facilitation of their public use in such a way as to not lose or harm the information basis. Translation of scientific data into description of past lifeways, and presentation of those descriptions in popular books and other publications, television and radio broadcasts, and films and videos, is as much a responsibility of the Federal archeology program as is resource inventory and protection.

Efforts to Fight Looting and Preserve the Archeological Record in Place

Halting archeological looting and preservation of archeological resources in place should result from a two-pronged effort by the Federal archeology program. Continuing and enhanced programs to train law enforcement and prosecution professionals in ARPA enforcement is needed. Gaining more private partners in archeological stewardship also is important in the Federal protection program. Greater education of people about their heritage as it is represented in the archeological record will support their personal protection of sites, artifacts, and records, and development of them as proselytes to extend the message of the merits and needs for archeological resource protection. Inclusion of more private citizens in the legitimate archeological activities on public and Indian lands will gain a new cadre of specialists to supplement the tax dollar outlays that now support almost all of the Federal archeology program.

Interagency Cooperation in Information Exchange

Throughout the 1980s there was increased interagency cooperation to collect and synthesize the information provided in the Secretary's report to Congress on the Federal archeology program in the United States. In the late 1980s, archeological crimes case incident reporting systems were beginning to be developed, as were the National Archeological Database (NADB) and the Listing of Education in Archeological Programs (LEAP) and Listing of Outlaw Treachery (LOOT) databases. Development of NADB-Reports continued throughout 1988-1990, resulting in a bibliography now electronically accessible nationally (Canouts 1991, 1992). All of these needed more consistent and extensive participation by Federal agencies, and mechanisms still are needed to support these systems. Means need to be developed to coordinate archeological information relevant to the Federal archeology program, from other nations, Tribes, States, Certified Local Governments, and private organizations and individuals.

Several agency reports on Federal archeological activities (e.g., Ehrenhard 1990, Gearhart et al. 1990, Judge and Sebastian 1988, Limp 1989, Trimble 1990) were made available to the public in limited distributions, as were some reports on privately funded projects in response to Federal requirements (e.g., Betts et al. 1991, Haggerty et al. 1991, Mobley 1990 et al. 1990). Over a dozen reports of specific archeological projects or overviews and/or management plans dealing with archeological resources are published by Federal agencies each year, to be come part of the minimally distributed "grey literature" that is listed in NADB-Reports. However, little of this information actually gets to a significant number of private citizens. Senior administrators in all the involved agencies need to be committed to the

provision of requested information, and in turn the benefits of such information coordination needs to be demonstrated to those administrators.

In today's information society, huge conceptual leaps must be made from prehistoric stone tools in a desert campsite to information important to understanding the twentieth century's adaptations to changing natural as well as sociopolitical environments. Coordination of information from various sources is a necessity to discern socially significant patterns from the details of individual sites, artifacts, or environmental remains.

Site Inventories

Before information can be coordinated, it has to be acquired. Before patterns can be discerned, the descriptive data that reflect those patterns must be depicted. Since less than 4% of the Federal and Indians lands have been inventoried adequately enough to have had their prehistoric and archeological sites identified, and since so few of those identified resources have been evaluated to display their information values, our information base on which to support pattern recognition and explanation is deficient. More resource field inventories and evaluations, preferably with the assistance of avocational archeologists, are critically needed across the vast Federal and Indian lands. The public can not learn about, and use, archeological resources that have never been identified.

Curation of Collections and Records

Even though less than 4% of the Federal lands have been inventoried archeologically, the rate of loss through development and natural erosion may be greater than the annual rate of increased archeological inventory. Previously excavated collections often represent sites that are considered now to be among the most significant archeological resources of the country. Previously excavated and analyzed collections were studied in the past using then-state-of-the-art analytical models, methods, and techniques, and may still hold valuable information that has not been identified yet. The records of excavated sites, whose original contexts are now only a matter of that record, may hold valuable clues to problems phrased in new ways. They hold information, invaluable in an information society. The 1990 completion of the 36 *CFR* 79 regulations about the curation and management of archeological artifact and records collections provide standards for the protection and use of these collections.

A current critical need is to inventory archeological collections, records, and reports from the U.S. public and Indian lands and projects, including both those in public repositories and those in private collections. Public validation of many of those private collections is a critical first step to their incorporation in the national knowledge base. As part of this, a critical need exists to provide adequate curatorial facilities that meet the requirements of 36 *CFR* 79, and to train curatorial staff in appropriate curation skills, methods, and techniques.

Conclusion

The Federal archeology program advanced in 1988-1990, particularly in its response to the 1988 ARPA amendments the growth of its interagency law enforcement and training activities, and its growing emphasis on public education, outreach, and participation programs. Development of a private archeological stewardship initiative in the 1990s, as well as participation in the ongoing program activities, should strengthen stewardship of the United States' archeological resources.

REFERENCES CITED

Advisory Council on Historic Preservation

1988 *Report to the President and Congress of the United States*. Advisory Council on Historic Preservation, Washington.

1989 *Report to the President and Congress of the United States*. Advisory Council on Historic Preservation, Washington.

1990 *Report to the President and Congress of the United States*. Advisory Council on Historic Preservation, Washington.

Aikens, C. Melvin, Jerald T. Milanich, and Douglas D. Scott

1989 Carson Desert Archaeological Peer Review. Report submitted to the Departmental Consulting Archeologist, National Park Service, U.S. Department of the Interior, Washington.

Aikens, C. Melvin, and Song Nai Rhee, editors

1992 *Pacific Northeast Asia in Prehistory: Hunter-Fisher-Gatherers, Farmers, and Sociopolitical Elite*. Washington State University Press, Pullman.

Altshul, Jeffrey A.

1988 Models and the Modeling Process. In *Quantifying the Past and Predicting the Future: Theory, Method, and Application of Archaeological Predictive Modeling*, edited by W. James Judge and Lynne Sebastian, pp. 61-96. Department of the Interior, Bureau of Land Management, Denver.

American Folklife Center (AFC)

1990 *Cultural Conservation: Reconfiguring the Cultural Mission. The First National Conference, May 16-19, 1990*. The Library of Congress, Washington.

Auel, Jean M.

1991 Romancing the Public. In *Protecting the Past*, edited by George S. Smith and John E. Ehrenhard, pp. 123-127. CRC Press, Boca Raton, FL.

Betts, Robert C., Christopher B. Wooley, Charles M. Mobley, James C. Haggerty, and Aron Crowell

1991 *Site Protection and Oil Spill Treatment at SEL-188. An Archaeological Site in Kenai Fjords National Park, Alaska.* Exxon Shipping Company and Exxon Company, USA, Anchorage, AK.

Bureau of Land Management (BLM)

1988a *Public Land Statistics 1988.* U.S. Department of the Interior, Bureau of Land Management, Washington.

1988b Cultural Resource Management. Chapter 8100, *Bureau of Land Management Manual*, issued December 12, 1988. U.S. Department of the Interior, Bureau of Land Management, Washington.

1989 *Public Land Statistics 1989.* U.S. Department of the Interior, Bureau of Land Management, Washington.

1990a *Four Corners Cultural Resource Proposal.* U.S. Department of the Interior, Bureau of Land Management, Anasazi Heritage Center, Dolores, CO.

1990b *Four Corners Governors' Conference June 19-21, 1990.* U.S. Department of the Interior, Bureau of Land Management, New Mexico State Office, Albuquerque.

1990c *Public Land Statistics 1990.* U.S. Department of the Interior, Bureau of Land Management, Washington.

1990d *Recreation 2000: A Strategic Plan.* U.S. Department of the Interior, Bureau of Land Management, Washington.

Canouts, Veletta

1991 Computerized Information Exchange at the Local and National Levels in USA. In *Sites & Monuments: National Archaeological Records*, edited by Carsten J. Larsen, pp. 231-247. The National Museum of Denmark, Copenhagen, distributed by Oxbow Books, Oxford, England.

1992 NADB - The National Archeological Database. *Federal Archeology Report* 5(3):1,6-9.

Cheek, Annetta

1991 Protection of Archaeological Resources on Public Lands: History of the Archaeological Resources Protection Act. In *Protecting the Past*, edited by George S. Smith and John E. Ehrenhard, pp. 33-39. CRC Press, Boca Raton, FL.

Cheney, Dick

1992 *Annual Report to the President and the Congress*. Department of Defense, Washington.

Council on Environmental Quality (CEQ)

1990 *Environmental Quality: 21st Annual Report*. The Council on Environmental Quality, Washington.

Crespi, Muriel, and Hester A. Davis

1989 *Libby Dam Historic Preservation: A Peer Review*. Report submitted to the Departmental Consulting Archeologist, National Park Service, U.S. Department of the Interior, Washington.

Davis, Craig

1990 Issues in Designing an Archeological Resources Management Database for National Parks. Paper presented in the Symposium, "CRM Databases Managerial, Technical, and Ethical Issues for the 1990s" at the 55th Annual Meeting of the Society for American Archaeology, Las Vegas, NV.

Department of Energy (DOE)

1990 *The Secretary's Annual Report to Congress*. U.S. Department of Energy, Washington.

Ehrenhard, John E., editor

1990 *Coping with Site Looting: Southeastern Perspectives. Essays in Archeological Resource Protection*. U.S. Department of the Interior, National Park Service, Southeast Region, Interagency Archeological Services, Atlanta, GA.

Farley, James A., W. Fredrick Limp, and Jami Lockhart

1990 The Archaeologist's Workbench: Integrating GIS, Remote Sensing, EDA and Database Management. In *Interpreting Space: GIS and Archaeology*, edited by Kathleen M.S. Allen, Stanton W. Green, and Ezra B.W. Zubrow, pp. 141-164. Taylor and Francis, NY.

Federal Energy Regulatory Commission (FERC)

1991 *Federal Energy Regulatory Commission 1991 Annual Report*. U.S. Department of Energy, Federal Energy Regulatory Commission, Washington.

Forest Service (FS)

1990 *Windows on the Past: Interpretive Guide to Pacific Northwest History*. U.S. Department of Agriculture, Forest Service, Pacific Northwest Region Recreation, Portland, ME.

1992 *Report of the Forest Service Fiscal Year 1991: 100 Years of Conservation 1891-1991*. U.S. Department of Agriculture, Forest Service, Washington.

Gearhart, Robert L., II, Clell L. Bond, and Steven D. Hoyt, editors

1990 *California, Oregon, and Washington Archaeological Resource Study* (6 vols.). U.S. Department of the Interior, Minerals Management Service, Pacific OCS Region, Camarillo, CA.

General Services Administration (GSA)

1988 *Summary Report of Real Property Owned by the United States Throughout the World as of September 30, 1988*. U.S. General Services Administration, Public Buildings Service, Office of Governmentwide Real Property Policy and Oversight, Washington.

1989 *Summary Report of Real Property Owned by the United States Throughout the World as of September 30, 1989*. U.S. General Services Administration, Public Buildings Service, Office of Governmentwide Real Property Policy and Oversight, Washington.

1990 *Summary Report of Real Property Owned by the United States Throughout the World as of September 30, 1990*. U.S. General Services Administration, Public Buildings Service, Office of Governmentwide Real Property Policy and Oversight, Washington.

Green, Ernestene L., editor

1984 *Ethics and Values in Archaeology*. The Free Press, New York.

Greengrass, Mara

1993 State Archeology Weeks. *Archeological Assistance Program Technical Brief*, in press. U.S. Department of the Interior, National Park Service, Washington.

Haggerty, James C., Christopher B. Wooley, Jon M. Erlandson, and Aron Crowell

1991 *The 1990 Exxon Cultural Resource Program. Site Protection and Maritime Cultural Ecology in Prince William Sound and the Gulf of Alaska.* Exxon Shipping Company and Exxon Company, USA, Anchorage, AK.

Hannus, Adrien, Terry Del Bene, and Jack Hofman

1990 Peer Review, Alkali Creek Project, Soil Conservation Service, Dunn County, North Dakota, July 9-13, 1990. Report submitted to the Departmental Consulting Archeologist, National Park Service, U.S. Department of the Interior, Washington.

Hoffman, Teresa L.

1991 Stewards of the Past: Preserving Arizona's Archaeological Resources through Positive Public Involvement. In *Protecting the Past*, edited by George S. Smith and John E. Ehrenhard, pp. 253-259. CRC Press, Boca Raton, FL.

Hutt, Sherry

1991 The Team Approach to Archaeological Resources Protection. In *Protecting the Past*, edited by George S. Smith and John E. Ehrenhard, pp. 65-69. CRC Press, Boca Raton, FL.

Hutt, Sherry, Elwood W. Jones, and Martin E. McAllister

1992 *Archeological Resource Protection.* The Preservation Press, Washington.

Jennings, Jesse D.

1986 American Archaeology, 1930-1985. In *American Archaeology Past and Future*, edited by David J. Meltzer, Don D. Fowler, and Jeremy A. Sabloff, pp. 53-62. Society for American Archaeology, Washington.

Judge, W. James

1991 Saving the Past for Ourselves: The SAA Taos Anti-Looting Conference. In *Protecting the Past*, edited by George S. Smith and John E. Ehrenhard, pp. 277-281. CRC Press, Boca Raton.

Judge, W. James, and Lynne Sebastian, editors

1988 *Quantifying the Past and Predicting the Future: Theory, Method, and Application of Archaeological Predictive Modeling*. Department of the Interior, Bureau of Land Management, Denver.

Keel, Bennie C.

1991 The Future of Protecting the Past. In *Protecting the Past*, edited by George S. Smith and John E. Enhrehard, pp. 291-296. CRC Press, Boca Raton, FL.

1993 The Peer Review of Public Archeology Projects: A Procedure Developed by the Departmental Consulting Archeologist. *Archeological Assistance Technical Brief* No. 14. U.S. Department of the Interior, National Park Service, Washington.

Keel, Bennie C., Francis P. McManamon, and George S. Smith, compilers

1989 *Federal Archeology: The Current Program. Annual Report to Congress on the Federal Archeology Program, FY 1985 and FY 1986.* U.S. Department of the Interior, National Park Service, Washington.

Knoll, Patricia C.

1990 *Listing of Education in Archeological Programs: The LEAP Clearinghouse 1987-1989 Summary Report*. U.S. Department of the Interior, National Park Service, Washington.

1991a Clearinghouses for Archaeological Education and Looting: LEAP and LOOT. In *Protecting the Past*, edited by George S. Smith and John E. Ehrenhard, pp. 193-199. CRC Press, Boca Raton.

1992 *Listing of Education in Archeological Programs: The LEAP Clearinghouse 1990-1991 Summary Report*. U.S. Department of the Interior, National Park Service, Washington.

Knudson, Ruthann

1986 Contemporary Cultural Resource Management. In *American Archaeology Past and Future*, edited by David J. Meltzer, Don D. Fowler, and Jeremy A. Sabloff, pp. 395-413. Smithsonian Press, Washington.

1991a The Archaeological Public Trust in Context. In *Protecting the Past*, edited by George S. Smith and John E. Ehrenhard, pp. 3-8. CRC Press, Boca Raton, FL.

1991b Paleoindian Paradigms. Presentation in the Symposium on Paleoindian-Upper Paleolithic Relations, Denver, CO, June 13-15.

1995 The Public Trust and Archaeological Stewardship. In *The Public Trust and the First Americans*, edited by Ruthann Knudson and Bennie C. Keel, in press. Oregon State University Press for the Center for the Study of the First Americans, Corvallis.

Knudson, Ruthann, and Bennie C. Keel, editors

1995 *The Public Trust and the First Americans*. Oregon State University Press for the Center for the Study of the First Americans, Corvallis.

Knudson, Ruthann, and Francis P. McManamon

1992 The Secretary's Report to Congress on the Federal Archeology Program. *Federal Archeology Report* 5(2):1,4-10.

Landers, Robert K.

1991 Is America Allowing Its Past to be Stolen? *Congressional Quarterly's Editorial Research Reports* 1991 No. 3.

Lee, Ronald F.

1970 *The Antiquities Act of 1906*. National Park Service, Washington (National Technical Information Service No. PB 200 042).

Limp, W. Fredrick, editor

1989 *Guidelines for Historic Properties Management. Southwestern Division Management Plan.* Arkansas Archeological Survey, Fayetteville, for the U.S. Army Corps of Engineers Southwestern Division, Ft. Worth, TX.

1992 The Challenge of Automated Systems in Archeology. *Federal Archeology Report* 5(3):1,5-6.

Lister, Robert H., and Florence C. Lister

1981 *Chaco Canyon. Archeology and Archeologists*. University of New Mexico Press, Albuquerque

1983 *Those Who Came Before*. The University of Arizona Press, Tucson.

Loomis, Ormond H., coordinator

1983 *Cultural Conservation: The Protection of Cultural Heritage in the United States*. Publications of the American Folklife Center No. 10. U.S. Library of Congress, Washington.

Lujan, Manuel, Jr.

1990 A National Strategy for Federal Archeology. Departmental Memorandum Dated March 20, 1990, Secretary of the Interior, U.S. Department of the Interior, Washington.

1991 A National Strategy for Federal Archeology. Policy Statement, Secretary of the Interior, U.S. Department of the Interior, Washington. (Reprinted, *SAA Bulletin* 10(2):10,15 [1992].)

Martone, Camille M., compiler

1988 *Damaged and Threatened National Historic Landmarks 1988 Report*. U.S. Department of the Interior, National Park Service, Washington.

McClelland, Linda Flint, J. Timothy Keller, Genevieve P. Keller, and Robert Z. Melnick

1990 Guidelines for Evaluating and Documenting Rural Historic Landscapes. *National Register Bulletin* 30. U.S. Department of the Interior, National Park Service, Interagency Resources Division.

McGimsey, Charles R., III

1972 *Public Archaeology*. Seminar Press, New York.

McManamon, Francis P.

1991a The Many Publics for Archaeology. *American Antiquity* 56(1):121-130.

1991b The Federal Government's Recent Response to Archaeological Looting. In *Protecting the Past*, edited by George S. Smith and John E. Ehrenhard, pp. 261-269. CRC Press, Boca Raton, FL.

1992 Managing America's Archaeological Resources. In *Quandries and Quests: Visions of Archaeology's Future*, edited by LuAnn Wandsnider, pp. 25-40. Center for Archaeological Investigations [Occasional Paper No. 20], Southern Illinois University, Carbondale.

McManamon, Francis P., George S. Smith, and Richard C. Waldbauer

1989 The Present and Future Archeological Assistance Program. In *1989 Proceedings of the American Society for Conservation Archaeology*. Porteles, New Mexico.

McManamon, Francis P., Patricia C. Knoll, Ruthann Knudson, George S. Smith, and Richard C. Waldbauer, compilers

1993 *Current Federal Archeological Programs and Activities. The Secretary of the Interior's Report to Congress on Federal Archeological Activities*. U.S. Department of the Interior, National Park Service, Washington.

Meier, Lauren, and Betsy Chittenden, compilers

1990 *Preserving Historic Landscapes: An Annotated Bibliography*. U.S. Department of the Interior, National Park Service, Preservation Assistance Division, Washington.

Miller, Diane

1987 National Register Information System Manual for State and Federal Users. *National Register Bulletin* 33. U.S. Department of the Interior, National Park Service, Interagency Resources Division, Washington.

Mobley, Charles M., James C. Haggerty, Charles J. Utermohle, Morley Eldridge, Richard E. Reanier, Aron Crowell, Bruce A. Ream, David R. Yesner, Jon M. Erlandson, and Paul E. Buck

1990 *The 1989 EXXON VALDEZ Cultural Resource Program.* Exxon Shipping Company and Exxon Company, USA, Anchorage, AK.

Morris, Stephen A.

1990 *Certified Local Governments 1990. A Status Report.* U.S. Department of the Interior, National Park Service, Interagency Resources Division, Preservation Planning Branch, Washington.

National Park Service (NPS)

1989 *Damaged and Threatened National Historic Landmarks 1989 Report.* U.S. Department of the Interior, National Park Service, Washington.

1990 *1990 Section 8 Report: Damaged and Threatened National Historic Landmarks.* U.S. Department of the Interior, National Park Service, Washington.

National Trust for Historic Preservation (NTHP)

1990 *Heritage Education Resource Guide: Preliminary Edition.* National Trust for Historic Preservation, Washington.

President's Commission on Americans Outdoors (Commission)

1987 *Americans Outdoors: The Legacy, the Challenge. The Report of the President's Commission, with Case Studies.* Island Press, Washington.

Reinburg, Kathleen M.

1991 Save the Past for the Future: A Partnership to Protect Our Past. In *Protecting the Past*, edited by George S. Smith and John E. Ehenhard, pp. 271-276. CRC Press, Inc., Boca Raton, FL.

Renaud, John W.

1992 *Summary of State Historic Preservation Office Activities Funded by the Historic Preservation Fund in FY 1991.* U.S. Department of the Interior, National Park Service, Interagency Resources Division, Preservation Planning Branch, Washington.

Rothman, Hal

1989 *Preserving Different Pasts: The American National Monuments*. University of Illinois Press, Urbana.

Society for American Archaeology (SAA)

1990 *Actions for the '90s: Final Report, Taos Working Conference on Preventing Archeological Looting and Vandalism*. Society for American Archaeology, Washington.

Smith, George S, and John E. Ehrenhard, editors

1991 *Protecting the Past*. CRC Press, Boca Raton, FL.

Smith, George S., Francis P. McManamon, Ronald D. Anzalone, James W. Hand, and James C. Maxon, compilers

1988 Archeology and the Federal Government. *CRM Bulletin* 11 (special issue).

Smith, Shelley

1990 *Intrigue of the Past: Utah's Archaeological Education Program*. U.S. Department of the Interior, Bureau of Land Management, Salt Lake District, Salt Lake City, UT.

Tainter, Joseph

1989 *Tools to Manage the Past*. General Technical Report RM-164. U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station, Ft. Collins, CO.

Task Force on Outdoor Recreation Resources and Opportunities (Task Force)

1988 *Outdoor Recreation in a Nation of Communities. Action Plan for Americans Outdoors*. Report of the Task Force on Outdoor Recreation Resources and Opportunities to the Domestic Policy Council. U.S. Government Printing Office, Washington.

Trimble, Michael K., and Thomas B. Meyers

1990 *Saving the Past from the Future: Archaeological Curation in the St. Louis District*. U.S. Army Corps of Engineers, St. Louis District, St. Louis, MO.

U.S. Committee/International Council on Monuments and Sites (US/ICOMOS)

1990 World Heritage Convention - Special Issue. *US/ICOMOS Newsletter* 11(3):1-2.

U.S. Department of Agriculture (USDA)

1990 *The Second RCA Appraisal: Soil, Water, and Related Resources on Nonfederal Land in the United States; Analysis of Condition and Trends*. [U.S. Department of Agriculture Miscellaneous Publication Number 1482.] U.S. Department of Agriculture, Soil Conservation Service, Washington.

U.S. Department of the Interior Office of the Secretary (USDIOS)

1993a *Documentation of Museum Property*. 411 *Departmental Manual* [*DM*], Vol. II. U.S. Department of the Interior, Washington.

1993b *Preservation and Protection of Museum Property*. 411 *DM*, Vol. I. U.S. Department of the Interior, Washington.

1993c *Museum Property Management*. 411 *DM* 1-3. U.S. Department of the Interior, Washington.

U.S. Department of the Interior Inspector General (USDIIG)

1990 Accountability and Control Over Artwork and Artifacts, Department of the Interior. *OIG Audit Report* No. 90-83 (dated July 23, 1990). U.S. Department of the Interior, Washington.

U.S. Department of Justice (USDOJ)

1992 *Archeological Resources Protection: Federal Prosecution Sourcebook*. 2 vols. U.S. Department of Justice, Criminal Division, Office of Professional Development and Training, Washington.

U.S. General Accounting Office (USGAO)

1987 *Cultural Resources: Problems Protecting and Preserving Federal Archeological Resources*. GAO/RCED-88-3. U.S. Government Printing Office, Washington.

1988 *Cultural Resources: Implementation of Federal Historic Preservation Program Can Be Improved*. GAO/RCED-88-81. U.S. General Accounting Office, Washington.

U.S. House of Representatives

1988 *The Destruction of America's Archaeological Heritage: Looting and Vandalism of Indian Archaeological Sites in the Four Corners States of the Southwest*. U.S. House of Representatives, Committee on Interior and Insular Affairs, Subcommittee on General Oversight and Investigations, Washington.

vos Savant, Marilyn

1992 Ask Marilyn. *Parade Magazine*, September 13, p. 26.

Waldbauer, Richard C.

1991 Archaeological Resource Protection Training. In *Protecting the Past*, edited by George S. Smith and John E. Ehrenhard, pp. 201-206. CRC Press, Inc., Boca Raton, FL.

Warnecke, Lisa

1990 *Geographic Information Systems Use in State Government Agencies*. U.S. Department of the Interior, National Park Service, Interagency Resources Division, Washington.

Wells, Peter S.

1991 Presenting the Past: A Conference Series Aimed at Public Education. In *Protecting the Past*, edited by George S. Smith and John E. Ehrenhard, pp. 181-185. CRC Press, Boca Raton.

Wood, Noriko

1990 *Computer Use in State Historic Preservation Offices*. Department of the Interior, National Park Service, Interagency Resources Division (Cultural Resources Information Management Series), Washington.

APPENDIX A

ANNUAL REPORT TO CONGRESS
BY THE SECRETARY OF THE INTERIOR
ON FEDERAL ARCHEOLOGY ACTIVITIES

Questionnaire Used in Fiscal Years 1988 through 1990

The Secretary of the Interior is charged with providing guidance and coordination for Federal archeology and for preparing the report to Congress on Federal archeological activities. This role is accomplished for the Secretary by the Departmental Consulting Archeologist and the Archeological Assistance Division within the National Park Service. The National Historic Preservation Act (NHPA) gives the Secretary of the Interior the responsibility to guide and coordinate Federal historic preservation activities, including Federal archeological activities. The Secretary is further required to report to Congress on various Federal archeological activities by Section 5(c) of the Archeological and Historic Preservation Act and by several sections of the Archaeological Resources Protection Act (ARPA) as amended. The Secretary's report is based on the responses to archeological program questionnaires completed by each participating agency within the Federal archeology program, supplemented by annual LOOT and LEAP clearinghouse data submissions.

This questionnaire is designed to provide agency-specific data for the Secretary's FY 1990 report. Under the National Historic Preservation Act (16 USC 470), as amended, Federal agencies have the general responsibility to cooperate with the Secretary by providing information concerning archeological activities as well as other historic preservation activities. The questions here also are relevant to wider preservation issues. The questionnaire topics and specific questions have been developed with comments by archeologists and historic preservation officers throughout the Federal government. The format and questions below are the same as in the FY 1989 questionnaire. Unless otherwise stated, each question refers to activities in FY 1990 (October 1, 1989 through September 30, 1990). Both objective and narrative questions are employed.

LOOT and LEAP clearinghouse information forms accompany this questionnaire, to be completed for all archeological vandalism incidents and public education programs or projects completed within each agency during FY 90.

Questions about this questionnaire should be directed to Ruthann Knudson or Francis P. McManamon, USDI-NPS-WASO, Archeological Assistance Division, (202 or FTS) 343-4101.

A. Agency Highlights (Narrative Question)

Highlights of exemplary projects and programs will be included in the FY 90 report. Topics discussed might include specific archeological surveys; data recovery projects; public awareness activities; interagency, intergovernmental, and international cooperation; or other relevant activities. **Address these on 1-2 separate sheets.**

B. Permitting

This section summarizes the amount of archeological activity undertaken using various legal authorities during FY 90.

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1. Number of permits issued or in effect under ARPA **(answers to questions 1, 2, and 3 should be mutually exclusive)** _____

2. Number of permits issued or in effect with the Antiquities Act as the primary authority _____

3. Number of permits issued or in effect under agency policies, procedures or guidelines for archeological activities in lieu of an ARPA or Antiquities Act permit **(i.e., special use permits)** _____

4. Number and percent of permittees field-checked **(all permits)** ___(%)

5. Number of permits issued for investigations related to NHPA Section 106 or National Environmental Policy Act (NEPA) compliance activities _____

6. Number of permits issued for investigations not related to compliance activities **(research for scientific or scholarly purposes, interpretation, etc.)** _____

7. Total number of investigations begun or underway for which no permits were issued, but which complied with conditions and standards required by ARPA, conducted by the agency or under contract _____

8. Number of permit applications received **(all types)** _____

9. Number of permit applications denied **(all types)** _____

10. Number of permits suspended **(all types)** _____

11. Number of denied or suspended permits appealed _____

12. Number of notifications to Indian Tribes of proposed work under ARPA or being done in conformance with ARPA (i.e., work done under permit, by agency, or under contract) that may possibly harm or destroy sites having religious or cultural importance to a Tribe **(as required by Sec. -.7 of the Final ARPA Uniform Regulations, based on ARPA Sec.4(c))** _____

Caveats: Analysis, Interpretation, or Clarification of Answers B1-12:

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Narrative Question (address on separate sheet)

13. Describe any computerized systems that your agency is using to record and monitor ARPA, Antiquities Act, and/or other permits for archeological investigations. If this system is part of a larger system, please note and summarize the other kinds of information included in the system. Note the kind of hardware and software used for any mentioned systems.

C. Enforcement

This section summarizes FY 90 violations, citations, arrests, prosecutions, and convictions under various Federal authorities that afford protection to archeological properties **(use enclosed LOOT form for reporting FY 90 ARPA violation cases)**

14. Number of documented violations of ARPA, the Antiquities Act, Federal property laws, or other statutes protecting archeological properties reported on land managed by the agency **(as defined in ARPA Sec. 6, a violation is any actual or attempted excavation, removal, damage to, alteration, or defacement of an archeological property on Federal land without a permit issued or an exemption listed in ARPA Sec. 4; examples of violations may be fresh holes dug into or vehicle tracks through a site)** _____

15. Number of arrests made in cases of documented vandalism or looting _____

16. Number of citations issued in cases of documented vandalism or looting _____

17. Number of prosecutions in cases of documented vandalism or looting **(for each prosecution fill out to the extent possible the enclosed LOOT**

Clearinghouse summary form and send it with this completed FY 90 questionnaire) _____

18. Number of misdemeanor convictions under ARPA _____

19. Number of felony convictions under ARPA _____

20. Number of second ARPA offenses **(included in answers 18 and 19)** _____

21. Number of cases of documented vandalism or looting of archeological property that were prosecuted using an authority other than ARPA **(in Caveats section, list specific authority and cases in which they were used)** _____

22. Amount collected in criminal fines under ARPA $_____

23. Number of civil penalties applied **(as permitted under ARPA Sec. 7 or other authorities)** _____

24. Amount collected in civil penalties under ARPA $_____

25. Costs for restoring or repairing archeological properties that have been looted or vandalized $_____

26. Amount given in rewards under ARPA **(as permitted by ARPA Sec. 8(a))** $_____

27. Commercial value of artifacts seized and retained by the government under ARPA **(as permitted by ARPA Sec. 8(b))** $_____

28. Commercial value of property seized and retained by the government in

ARPA convictions **(as permitted by ARPA Sec. 8(b))** $_____

29. Amount spent on law enforcement for archeological resource protection $_____

30. Percent of the overall cost of agency law enforcement associated directly with archeological resource protection _____%

Caveats: Analysis, Interpretation, or Clarification of Answers C14-30:

Narrative Questions (address on separate sheet)

31. Describe effective cooperative projects, methods, and/or techniques that your agency has used to improve ARPA enforcement. Examples might include the use of remote sensing equipment for monitoring site locations, or interagency cooperative agreements for combined surveillance of adjacent land units and concurrent jurisdiction of law enforcement personnel.

32. What actions are planned or underway concerning the recent ARPA amendment (1) requiring agencies to develop documents for reporting suspected ARPA violations, and (2) establishing procedures concerning when and how these documents are to be completed by officers, employees, and agents of their respective agencies?

33. What public awareness agency programs are planned or underway in compliance with the 1988 ARPA Sec. 10(c) amendment? This requires that each Federal agency establish a program to increase public awareness of the significance of the archeological resources located on public lands and Indian lands, and the need to protect such resources. **Please complete a LEAP form for each agency office archeological public awareness project or program.**

D. Archeological Resources Protection Education/Training

This section collects information on the extent to which agencies made their archeologists, law enforcement personnel, other cultural resource personnel, managers, and field personnel aware of archeological resource protection during FY 90.

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34. Number and percent of law enforcement personnel taking Federal Law Enforcement Training Center (FLETC) or comparable 40-hour archeological resource protection course ___(%)

35. Number and percent of archeologists and other cultural resource personnel taking FLETC or comparable 40-hour archeological resource protection course ___(%)

36. Number of other personnel (resource managers, other field personnel, etc.) taking FLETC or comparable 40-hour archeological resource protection course _____

37. Number and percent of law enforcement personnel taking 8-16-hour short courses or similar-length portions of longer courses on archeological resource protection ___(%)

38. Number and percent of archeologists and other cultural resource personnel taking 8-16-hour short courses or similar-length portions of longer courses on archeological resource protection ___(%)

39. Number of other personnel (resource managers, other field personnel, etc.) taking 8-16-hour short courses or similar-length portions of longer courses on archeological resource protection ___ (%)

Caveats: Analysis, Interpretation, or Clarification of Answers D34-39:

Narrative Question (address on separate sheet)

40. Describe any training courses used for archeological resource protection training or general training in archeology. Include training other than the FLETC course on ARPA enforcement, the NPS 12-hour course on archeological resources protection, and the Advisory Council on Historic Preservation course on Section 106 procedures. In addition, offer opinions concerning what training would be useful. Be as specific as possible.

E. Identification and Evaluation Investigations

This section provides data for estimating the effort put into identification and evaluation investigations by agencies, land use applicants, or contractors working for agencies during FY 90.

41. Number of overviews, inventories, or literature/map searches associated with

general planning activities or undertakings for the purpose of identifying archeological properties **(resulting in a file letter, report, or other documentation; include activities conducted by the agency, under contract, or by land use applicants)** _____

42. Number of agency FTEs used for overviews, inventories, and/or literature/map searches _____

43. Amount expended by agency for overviews, inventories, literature/map searches **(include salary and benefit, support, and contract costs)** $_____

44. Number of overviews, inventories and/or literature/map searches conducted by land use applicants and the estimated amount expended $_____

45. Number of field studies to identify and evaluate archeological properties **(include those conducted by the agency, under contract, or by land use applicants)** _____

46. Number of agency FTEs used for identifying and evaluating archeological properties _____

47. Amount expended by agency for identifying and evaluating archeological properties **(include salary and benefit, support, and contract costs)** $_____

48. Number of field studies to identify and evaluate archeological properties conducted by land use applicants and the estimated amount expended $_____

49. Number of acres inspected by identification and evaluation investigations _____

50. Number of FY 90-identified archeological sites _____

Caveats: Analysis, Interpretation, or Clarification of Answers 41-50:

Narrative Question (address on separate sheet)

51. What actions are underway or planned to comply with the 1988 ARPA Sec. 14 amendment? This requires Federal agencies to develop plans for surveying lands under their control to determine the nature and extent of their archeological resources, and to prepare a schedule for surveying lands that are likely to contain the most scientifically valuable archeological resources.

F. Data Recovery

This section provides data for estimating the effort devoted to data recovery projects during FY 90.

52. Number of data recovery projects that included compliance-related archeological data recovery **(compliance data recovery projects are defined to be investigations designed to mitigate an adverse impact or to achieve a (NHPA Sec. 106) determination of "no adverse" effect; include data recovery projects conducted by the agency, under contract, or by land use applicants)** _____

53. Number of agency FTEs used for compliance data recovery _____

54. Amount expended for compliance related data recovery **(include salary and**

benefit, support, and contract costs) $_____

55. Number and estimated cost of compliance-related data recovery projects conducted by land use applicants $_____

56. Number of data recovery projects unrelated to NHPA Sec. 106 compliance **(include projects associated with stabilization, law enforcement, interpretation, baseline data collection, and/or specific research, conducted by the agency, under contract, or by land use applicants)** _____

57. Number of agency FTEs used for data recovery not associated with compliance _____

58. Amount expended by agency for data recovery unrelated to compliance **(include salary and benefit, support, and contract costs)** $_____

59. Number and cost of data recovery projects not associated with compliance conducted by land use applicants $_____

Caveats: Analysis, Interpretation, or Clarification of Answers F52-59:

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Narrative Question (address on separate sheet)

60. Describe communication, cooperation, and exchange among agency, private individuals having collections of archeological resources and data obtained before ARPA enactment, and

professional archeologists. Identify when those activities involve archeological, historic, or other scientific associations.

G. Unanticipated Discoveries

This section provides data for estimating the extent to which in FY 89 archeological properties were discovered unexpectedly during undertakings subsequent to completion of the Section 106 review and compliance process.

61. Subsequent to Section 106 compliance, number of agency undertakings resulting in the discovery of unanticipated archeological resources _____

62. Number of unanticipated discovery situations in which the resources were judged important enough for data collection to be conducted or design changes made to avoid them _____

63. Number of agency FTEs used for unanticipated discoveries _____

64. Amount expended by agency for unanticipated discoveries **(include salary and benefit, support, and contract costs)** $_____

65. Number and cost of unanticipated discoveries handled by land use applicants $_____

Caveats: Analysis, Interpretation, or Clarification of Answers G61-65:

H. Estimating the Federal Archeological Resource Base

This section provides baseline information about the extent of archeological resources within the lands managed by Federal agencies, and the quality of our knowledge about them. The questions below call for the best possible estimated answers for activities **through** FY 90; write any caveats concerning them in the space provided.

66. Total acres managed _____

67. Total acres and percent investigated sufficiently to identify 100% of the archeological properties presumed to be present **(i.e., investigated at an appropriate level of intensity to eliminate the need for further systematic inventory given current standards)** ___(%)

68. Total acres and percent investigated to identify less than 100% of the archeological properties presumed to be present ___(%)

69. Total acres and percent not investigated **(this should equal the total acreage indicated in answer 66 minus surveyed acres reported in answers 67 and 68)** ___(%)

70. Total number of known archeological properties on agency-managed land _____

71. **Estimate** of the total number of archeological properties likely to be located in/on agency-managed land **(i.e., number of archeological sites that may actually exist, including known sites)** _____

72. Number and percent of the total known archeological properties on agency-managed lands listed on the National Register of Historic Places (NRHP)

(answers 72-76 should sum to 100%) ___(%)

73. Number and percent of total known archeological properties on agency-managed land determined eligible for the NRHP by the Keeper or considered eligible through documented consultation with the SHPO ___(%)

74. Number and percent of total known archeological properties on agency-managed land adequately evaluated, but not listed, considered, or formally determined eligible for the NRHP **(i.e., fitting neither question 72 nor 73)** ___(%)

75. Number and percent of the total known archeological properties on agency-managed land determined NRHP-ineligible by the Keeper or through documented consultation with the SHPO ___(%)

76. Number and percent of the total known archeological properties on agency-managed land <u>not</u> NRHP-evaluated ___(%)

Caveats: Analysis, Interpretation, or Clarification of Answers H66-76:

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I. Questionnaire Improvements (Narrative Question; address on separate sheet)

Suggestions for improving the FY 91 questionnaire.

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APPENDIX B

METHOD OF CORRECTING FOR MISSING DATA, U.S. FEDERAL ARCHEOLOGY PROGRAM REPORT, 1988-1990

Not all participants in the Federal archeology program in the United States during 1988, 1989, and 1990 (Figure 1.2) reported on their activities during each of those years (Table 1.1). In 1988, the Forest Service reported on only 62% of its 155 million owned acres (Table B.1). The Forest Service, Army, Indian Health Service, and Nuclear Regulatory Commission did not report on their archeology programs in 1989 and 1990, and several agencies missed one report of the three years reported here. The Land-Managing agencies (Figure 1.2) manage 99 percent of the Federal lands in the United States; when one of them fails to report for any year, the reported data cannot provide a valid picture of overall Federal archeology program activities. To provide information on the overall Federal archeology program during 1988 through 1990, evaluations of the extent of the missing data were made and the resulting annual *Correction Factors* applied to many of the reported data to estimate annual program size. The Correction Factors were based on the acreage of the non-reporting agencies, or parts of agencies, as compared with overall Federal acreage. The Correction Factors were used to estimate only those program activities that are tightly linked to Federal land because there is no reliable means for estimating the non-Federal-land component of the program. An adjustment of these Correction Factors was made, where appropriate, to account for Indian lands in the estimates.

The ARPA Section 2 definition of "Federal land manager" refers to the head of any agency that has "primary management authority over such lands." However, ARPA Section 3 defines "public lands" as those "owned and administered" by the United States. In the United States, the General Services Administration (GSA) reports on the administrative assignment of "ownership" of lands whose title is held by the U.S. Government. The ARPA Section 3 language implies a GSA- or ownership-based definition of Federal archeology program administrative responsibilities. In reality, the program is reported by managers whose agencies may not own (in a GSA sense) the lands they manage. In complement, ARPA Section 3 defines "Indian lands" as lands "either held in trust by the United States or subject to a restriction against alienation imposed by the United States"; these are administered by the Bureau of Indian Affairs (BIA) as a Federal undertaking.

Table B.1. Reporting of U.S. Acres Owned and Archeologically Managed by Federal Agencies in 1988.

Federal Agency Queried	Acres Reported as Managed by Agency [Question 66]	Acres Owned by Agency (GSA 1988)	Owned Acres Not Reported
Air Force	**8,764,362**	**8,139,262**	-
Army	**12,000,000**	**8,848,164**	-
Bureau of Indian Affairs	53,000,000	2,750,820	-
Bureau of Land Management	**270,000,000**	**337,773,265**	-
Bureau of Reclamation	**8,927,515**	**5,855,693**	-
Corps of Engineers	**8,000,000**	**5,474,177**	-
Department of Energy Operations	**2,440,000**	**2,129,735**	-
Environmental Protection Agency	200	368	-
Farmers Home Administration	1,234,000	(included in Other)	-
Federal Aviation Agency	-	52,418	52,418
Federal Bureau of Prisons	-	23,104	23,104
Federal Highway Administration	-	72	-
Fish and Wildlife Service	-	**83,313,064**	**83,313,064**
Forest Service	**98,163,130**	**155,077,857**	**56,914,727**
General Services Administration	15,000	13,930	-
Health and Human Services	1,330	3,247	-
Immigration and Naturalization Service	-	617	617
Indian Health Service	2,854	(included with HHS)	-
Marine Corps	**1,500,000**	**(included with Navy)**	-
Minerals Management Service	-	-	-
National Oceanic and Aeronautic Admin.	-	2,547	2,547
National Park Service	**77,000,000**	**75,427,373**	-
Navy	**2,423,800**	**1,598,852**	-
Nuclear Regulatory Commission	26,000	(included with Other)	-
Office of Surface Mining	150,000	(not GSA real property)	-
Rural Electrification Administration	-	(included with Other)	-
Soil Conservation Service	1,731	697	-
Tennessee Valley Authority	-	**1,033,183**	**1,033,183**
U.S. Coast Guard	-	81,970	81,970
U.S. Geological Survey	-	1,093	1,093
U.S. Postal Service	-	9,767	9,767
Other Federal Acreage	-	881,433	-
Total:	-	688,492,708	141,432,490
	Fraction of Owned Acreage Unreported for Year:		21%

Correction Factor: **1.27**

Application of the Correction Factor yields an approximation applicable to all Federal acreage, but only Federal Land-Managing Agency (Figure 1.2) acreage (**bolded**) is used as a basis for estimating inventory coverage (Table C.1) and number of archeological sites identified each year (Table C.2), archeological authorizations (Table C.4), Federal archeological enforcement actions and costs (Table C.10, Federal prosecutions of archeological violations (Table C.11), and Federal agency notifications of Indian Tribes (Table C.13).

A dash (-) means "not applicable," agency has no data, or agency did not complete a questionnaire.

Bureau of Indian Affairs acres reported as "managed" includes 52 million acres held in trust by the U.S. Government for Native American Tribes.

Minerals Management Service acres reported as "managed" are primarily Outer Continental Shelf lands not considered by GSA to be real property, and by law not subject to the Archaeological Resources Protection Act.

Office of Surface Mining acres reported "managed" are primarily private properties.

These figures do not include 239,000 acres owned outside of the United States (e.g., in Puerto Rico, Guam) by the U.S. Department of the Interior (157,000 a.), Defense (26,000 a.), Agriculture (28,000 a.), and other agencies (GSA 1988:15).

Tables B.1, B.2, and B.3 provide an overall and agency-by-agency measure of the geographic scope of the U.S. Federal archeology program in 1988-1990. The tables show the number of acres owned by each agency as well as the acreage on which agencies have reported archeological activities. Data in the first column of Tables B.1-B.3 are annual agency responses to Question 66 ("Total Acres Managed") of the Federal archeology program questionnaire (Appendix A). Each response often corresponds to the acres reported by the GSA to be owned by a particular agency (Tables B.1-B.3 second column). However, acres managed and acres owned cannot be equated automatically. One agency may manage land that is legally owned by another agency. In addition, an agency may have temporary or intermittent archeological management responsibilities for non-Federal Government or privately owned land.

Note in Tables B.1 through B.3 that GSA-identified Department of Energy (DOE) land "ownership" data (which include both DOE Operations and DOE Facilities-Managing agencies as identified in Table 1.2) fluctuated strongly in 1988 through 1990. However, the DOE Operations definition of its management responsibilities was relatively constant through 1988, 1989, and 1990; DOE Facilities-Managing agencies did not report on their archeological activities for those years.

The following method was used to account for the unreported or missing data, relying on the annual GSA report of acreage owned by Federal agencies (GSA 1988, 1989, 1990; Tables B.1, B.2, B.3 second columns). If a Federal Land- or Facility-Managing agency (Table 1.2) did not report its archeological activities for any given year, the column two GSA acreage figure was carried over to the third column, "Owned Acres Not Reported," of Tables B.1, B.2, and B.3. For agencies that reported more acres managed than GSA reported owned by that agency, for any given year, nothing was entered into column three (including "Other Federal Agencies," whose column two figure did not exceed the sum of the column one data reported for some agencies without GSA-specified acreage). The Bureau of Land Management (BLM) reported fully for 1988, 1989, and 1990, and in 1988 the BLM reported managing significantly fewer acres than the GSA said were owned then by the BLM (Table B.1); nothing was entered into column three for the BLM for 1988 because those BLM-owned acres were assumed to have been managed by other agencies with archeological program reporting responsibilities. The sum of column three in any given year, then, is a measure of a major component of the missing data on Federal archeology program activities for that year, based on GSA data and expert judgements of agency

Table B.2. Reporting of U.S. Acres Owned and Archeologically Managed by Federal Agencies in 1989.

Federal Agency Queried	Acres Reported as Managed by Agency [Question 66]	Acres Owned by Agency (GSA 1989)	Owned Acres Not Reported
Air Force	**8,368,000**	**8,140,924**	-
Army	-	**10,432,430**	**10,432,430**
Bureau of Indian Affairs	58,800,000	2,751,201	-
Bureau of Land Management	**270,000,000**	**266,298,833**	-
Bureau of Reclamation	**7,900,000**	**5,721,998**	-
Corps of **Engineers**	**7,640,000**	**5,474,177**	-
Department of Energy Operations	**2,410,000**	**85,052**	-
Environmental Protection Agency	-	368	368
Farmers Home Administration	900,000	(included with Other)	-
Federal Aviation Agency	-	52,418	52,418
Federal Bureau of Prisons	-	23,104	23,104
Federal Highway Administration	-	56	-
Fish **and Wildlife Service**	**93,000,000**	**83,579,808**	-
Forest Service	-	**201,482,663**	**201,482,663**
General Services Administration	15,000	14,996	-
Health and Human Services	-	4,049	4,049
Immigration and Naturalization Service	-	636	636
Indian Health Service	-	(included with HHS)	-
Marine Corps	**1,700,000**	**(included with Navy)**	-
Minerals Management Service	1,444,389,354	(not GSA real property)	-
National Oceanic and Aeronautic Admin.	-	2,536	2,536
National Park Service	**76,800,000**	**74,231,806**	-
Navy	**5,000,000**	**1,996,922**	-
Nuclear Regulatory Commission	-	(included with Other)	-
Office of Surface Mining	150,000	(not GSA real property)	-
Rural Electrification Administration	-	(included with Other)	-
Soil Conservation Service	3,700	5,346	-
Tennessee Valley Authority	**1,030,000**	**1,033,019**	-
U.S. Coast Guard	-	81,970	81,970
U.S. Geological Survey	-	1,093	1,093
U.S. Postal Service	-	11,134	11,134
Other Federal Acreage	-	985,085	-
Total:	-	662,411,624	212,092,401
	Fraction of Owned Acreage Unreported for Year:		32%

Correction Factor: **1.47**

Application of the Correction Factor yields an approximation applicable to all Federal acreage, but only Federal Land-Managing Agency (Figure 1.2) acreage (**bolded**) is used as a basis for estimating inventory coverage (Table C.1) and number of archeological sites identified each year (Table C.2), archeological authorizations (Table C.4), Federal archeological enforcement actions and costs (Table C.10, Federal prosecutions of archeological violations (Table C.11), and Federal agency notifications of Indian Tribes (Table C.13).

A dash (-) means "not applicable," agency has no data, or agency did not complete a questionnaire.

Bureau of Indian Affairs acres reported as "managed" include 52 million acres held in trust by the U.S. Government for Native American Tribes.

Minerals Management Service acres reported as "managed" are primarily Outer Continental Shelf lands not considered by GSA to be real property, and by law are not subject to the Archaeological Resources Protection Act.

Office of Surface Mining acres reported "managed" are primarily private properties.

These figures do not include acres owned outside of the United States (e.g., in Puerto Rico) by the U.S. Department of the Interior, Defense, Agriculture, and other agencies (GSA 1989).

Table B.3. Reporting of U.S. Acres Owned and Archeologically Managed by Federal Agencies in 1990.

Federal Agency Queried	Acres Reported as Managed by Agency [Question 66]	Acres Owned by Agency (GSA 1990)	Owned Acres Not Reported
Air Force	**8,410,238**	**8,140,924**	-
Army	-	**10,465,651**	**10,465,651**
Bureau of Indian Affairs	58,761,296	2,748,247	-
Bureau of Land Management	**270,000,000**	**271,229,716**	-
Bureau of Reclamation	**7,907,000**	**5,682,865**	-
Corps of Engineers	**7,400,000**	**745,968**	-
Department of Energy Operations	**2,753,886**	**650,212**	-
Environmental Protection Agency	200	368	-
Farmers Home Administration	854,000	(included with Other)	-
Federal Aviation Agency	-	18,848	18,848
Federal Bureau of Prisons	-	21,569	21,569
Federal Highway Administration	-	47	-
Fish and Wildlife Service	**91,000,000**	**90,482,776**	-
Forest Service	-	**184,510,267**	**184,510,267**
General Services Administration	-	11,038	11,038
Health and Human Services	-	4,009	4,009
Immigration and Naturalization Service	862	638	-
Indian Health Service	-	(included with HHS)	-
Marine Corps	**1,700,000**	**(included with Navy)**	-
Minerals Management Service	1,444,389,354	(not GSA real property)	-
National Oceanic and Aeronautic Admin.	3,100,000	2,377	-
National Park Service	**76,972,070**	**72,864,513**	-
Navy	**4,694,839**	**519,562**	-
Nuclear Regulatory Commission	-	(included with Other)	-
Office of Surface Mining	150,000	(not GSA real property)	-
Rural Electrification Administration	-	(included with Other)	-
Soil Conservation Service	3,709	5,716	-
Tennessee Valley Authority	**1,032,593**	**991,983**	-
U.S. Coast Guard	-	79,175	79,175
U.S. Geological Survey	900	414	-
U.S. Postal Service	-	12,057	12,057
Other Federal Acreage	-	825,196	-
Total:	-	650,014,096	195,122,614
	Fraction of Owned Acreage Unreported for Year:		.30%
			-
	Correction Factor: 1.43		-

Application of the Correction Factor yields an approximation applicable to all Federal acreage, but only Federal Land-Managing Agency (Figure 1.2) acreage (**bolded**) is used as a basis for estimating inventory coverage (Table C.1) and number of archeological sites identified each year (Table C.2), archeological authorizations (Table C.4), Federal archeological enforcement actions and costs (Table C.10, Federal prosecutions of archeological violations (Table C.11), and Federal agency notifications of Indian Tribes (Table C.13).

A dash (-) means "not applicable," agency has no data, or agency did not complete a questionnaire.

Bureau of Indian Affairs acres reported as "managed" include 52 million acres held in trust by the U.S. Government for Native American Tribes.

Minerals Management Service acres reported as "managed" are primarily Outer Continental Shelf lands not considered by GSA to be real property, and by law are not subject to the Archaeological Resources Protection Act.

Office of Surface Mining acres reported "managed" are primarily private properties.

These figures do not include acres owned outside of the United States (e.g., in Puerto Rico) by the U.S. Department of the Interior, Defense, Agriculture, and other agencies (GSA 1990).

performance. The column three sum divided by the column two sum provides the percentage of missing data; 100 (percent) divided by the "missing data" percentage provides the *Correction Factor* by whichselected reported data could be multiplied to provide an estimate of those data that would be included in this report if completely reported for the whole Federal archeology program in any given year.

Data relating to Federal archeology program activities that are not necessarily Federal-land-based (e.g., number and costs of overview, identification and evaluation, data recovery, emergency discovery projects) have been corrected without differentiating agency type or land ownership (i.e., Tables C.3, C.5, C.6, C.7, C.8).

Estimating complete compliance with U.S. Federal legal requirements to inventory archeological sites is very difficult, since Section 110 of the National Historic Preservation Act as amended mandates that each Federal agency "ensure...that historic properties under the jurisdiction **or control** of the agency, are identified..." (§110(a)(2)(A); emphasis added). This "control" covers all federally licensed, funded, permitted, or otherwise authorized undertakings on non-Federal (i.e., State and local public, and private) land as well as on Indian trust lands administered by the BIA. The Correction Factors discussed above are developed from GSA data on **all** Federal land, but only Federal land; they do not account for non-Federal or Indian land. BIA reports managing over 50M acres each year, a significant amount of land for which Federal archeology program activities must be reported, while BIA actually owns only 5% of that land. Thus, in some instances in this report (e.g., Figure 2.3), estimates were developed in two steps. First, acreage estimates were derived using the Correction Factors, and then BIA-reported acres managed were added to the first estimate to derive a more appropriate evaluation of Federal and Indian land archeological activities.

Almost all (98%-99%, depending on the year) of the Federal and Indian land in the United States (Tables B.1, B.2, B.3 columns two) is owned and/or managed by only the 13 Key Federal Agencies listed in Table 2.1. Development of a Correction Factor based on only these agencies did not modify the factors identified in Tables B.1, B.2, or B.3 by even a full percentage point. Therefore, these Correction Factors have been used, corrected by BIA data, as a first basis for estimating Federal agency archeological inventory coverage on those Federal and Indian lands for which the Federal archeology program has

primary Congressional reporting responsibilities under the Archaeological Resources Protection Act (ARPA).

The estimate of cumulative archeological inventory coverage of ARPA-defined Federal and Indian lands by the end of 1990 (Figure 2.3) is based on FY90 questionnaire responses to Question 67A (Appendix A). The total response for all Land-Managing agencies (Figure 1.2; **bolded** agencies in Tables B.1-B.3, C.1) was multiplied by the 1990 Correction Factor (Table B.3), and corrected acreage was added to the 1990 BIA total to derive the estimate of the number of acres of Federal and Indian land estimated to be archeologically inventoried by the end of 1990; the mathematics of this calculation are appended to Table C.1. A comparable calculation method was used with Table C.2 data to estimate the number of archeological sites known to occur on Federal and Indian land by the end of 1990, and the number of sites believed likely to occur on those lands.

The estimate of the amount of archeological inventory that had been completed in 1988-1990 was based on the annual responses of the Land-Managing agencies and the BIA to Question 49 (Appendix A) for each of those years. Each year's reported Land-Managing agency inventoried acreage was corrected before adding the reported BIA acreage for each year, to derive annual estimates. Again, the calculations are appended to Table C.1. Comparable calculations were made to estimate the number of archeological sites found (Table C.2), archeological investigation authorizations (Table C.4), archeological law enforcement actions (Table C.10) and prosecutions (Table C.11), and tribal notifications (Table C.13) during each year 1988, 1989, and 1990 on Federal and Indian land.

Finally, calculations were made to adjust cost and expenditure amounts for inflation over the three years reported here. The Fixed Weight Index of the Gross Domestic Product (FWIGDP) is the inflation rate calculated by the U.S Department of Commerce (USDC), and was provided by Sharby Herman, USDC Bureau of Economic Analysis, in a telephone conversation with J.E. Myers, 11/5/92. This number divided by 100 provides the **Inflation Adjustment Factor** (IAF) for the three years reported here, when 1987 = 100% (IAF=1.0), 1988 = 103.9% (IAF=.96), 1989 = 108.6% (IAF=.92), and 1990 = 113.5% (IAF=.88).

APPENDIX C

AGENCY RESPONSES TO THE U.S. FEDERAL ARCHEOLOGY PROGRAM QUESTIONNAIRES, FISCAL YEARS 1988 THROUGH 1990

Tables C.1 through C.13 provide "raw data," the numerical responses to the Federal archeology program FY88-FY90 questionnaires (Appendix A), used in the analyses provided in this report. The mathematical calculations to account for uncorrected data and inflation (Appendix B) are appended to the appropriate data tables here. These data are provided as background information, for those individuals who wish to review program and/or agency-specific information in more detail. The complete response data sets are maintained in the Archeological Assistance Division, National Park Service, Washington, in an electronic file, and are available on request.

Table C.1. U.S. Acreage Reported Inventoried by the Federal Archeology Program, 1988-1990.

Agency	Year	Acres Managed [Question 66]	Acres Surveyed During Year [Question 49]	Acres Inventoried By End of Year [Question 67A]	Percent Inventoried By End of Year [Question 67B]
Air Force	88	8,674,362	12,115	403,181	5
	89	8,368,000	31,050	437,000	5
	90	8,410,238	25,590	475,006	6
Army	88	12,000,000	-	1,000,000	0
Bureau of Indian Affairs	88	53,000,000	43,422	1,150,000	2
	89	58,800,000	83,230	457,000	1
	90	58,761,296	76,028	532,737	1
Bureau of Land Management	88	270,000,000	395,440	8,508,463	3
	89	270,000,000	491,232	8,954,744	3
	90	270,000,000	506,170	9,396,088	4
Bureau of Reclamation	88	8,927,515	29,363	616,992	7
	89	7,900,000	59,275	754,302	10
	90	7,907,000	27,130	445,213	6
Corps of Engineers	88	8,000,000	209,000	2,202,000	-
	89	7,640,000	196,404	2,177,660	21
	90	7,400,000	136,068	1,721,000	20
Department of Energy Op.	88	2,440,000	11,132	200,000	8
	89	2,410,000	14,468	68,904	3
	90	2,753,886	21,921	135,131	5
Env. Prot. Agency	88	200	8,384	200	100
	89	0	4,000	-	-
	90	200	8,000	200	100
Farmers Home Administration	88	1,234,000	13,000	102,000	0
	89	900,000	150,000	324,000	-
	90	854,000	43,000	138,000	16
Federal Aviation Agency	89	-	1,000	-	-
	90	-	-	-	0
Federal Bureau of Prisons	89	0	1,873	-	-
	90	-	21,236	-	0
Fish and Wildlife Service	89	93,000,000	13,000	180,149	0
	90	91,000,000	60,000	789,000	-
Forest Service	88	(98,163,130)	(1,501,767)	(9,822,790)	-
General Services Admin.	88	15,000	0	230	2
	89	15,000	180	-	-
	90	-	61	-	0
Health and Human Services	88	1,330	1	830	62
Immig. and Natural. Service	90	862	3	3	3
Indian Health Service	88	2,854	3,425	938	33
Marine Corps	88	1,500,000	3,000	74,394	5
	89	1,700,000	8,000	88,000	5
	90	1,700,000	8,935	97,000	6
Minerals Management Service	89	144,000,000	2,020,320	0	0
	90	144,400,000	2,729,000	0	0
Nat. Oceanic and Aer. Admin.	90	3,100,000	5	640	0

Table C.1. U.S. Acreage Reported Inventoried by the Federal Archeology Program, 1988-1990 (continued).

Agency	Year	Acres Managed [Question 66]	Acres Surveyed During Year [Question 49]	Acres Inventoried By End of Year [Question 67A]	Percent Inventoried By End of Year [Question 67B]
National Park Service	**88**	**77,000,000**	**107,064**	**895,215**	**1**
	89	**76,800,000**	**35,000**	**1,009,502**	**1**
	90	**76,972,070**	**28,000**	**1,040,014**	**1**
Navy	**88**	**2,423,800**	**-**	**-**	**5**
	89	**5,000,000**	**-**	**-**	**-**
	90	**4,694,839**	**-**	**-**	**-**
Nuclear Reg. Commission	88	26,000	0	7,000	27
Office of Surface Mining	88	150,000	270	150,000	100
	89	150,000	-	150,000	100
	90	150,000	45	150,000	100
Rural Electrification Admin.	88	-	458	-	-
	89	0	1,685	-	0
	90	-	1,045	-	-
Soil Conservation Service	88	1,731	916,125	173	10
	89	3,700	2,000,000	36	1
	90	3,709	783,872	36	1
Tennessee Valley Authority	**89**	**1,030,000**	**-**	**0**	**0**
	90	**1,032,593**	**31,000**	**0**	**0**
U.S. Geological Survey	90	900	0	100	11
U.S. Postal Service	90	-	0	-	-
Total	88	-	3,253,966	-	-
	89	-	5,110,717	-	-
	90	-	4,507,109	-	-
3-year total:			12,871,792 (average, 4,290,597)		

Note: A dash (-) indicates "not applicable," agency has no data, or agency did not complete a questionnaire.

Questions are written out in Appendix A.

The Forest Service (FS) report was incomplete, covering only approximately 62% of lands as identified by the General Services Administration (GSA 1988); hence, the numbers are included within parentheses.

Federal Land-Managing agencies (Figure 1.2) are **bolded** here, in complement to Tables B.1-B.3 and as discussed in Appendix B. The acres reported (with the caveats stated above) to be archeologically inventoried by Land-Managing agencies by the end of 1990 (Question 67A, Appendix A) sum as follows:

Table C.1. U.S. Acreage Reported Inventoried by the Federal Archeology Program, 1988-1990 (concluded).

Air Force	475,006		
BLM	9,396,088		
BR	445,213		
COE	1,721,000		
DOE-Ops.	135,131		
FWS	789,000		
MC	97,000		
NPS	1,040,014		
Total Reported Cumulative Inventory Acreage:		14,098,452	
1990 Correction Factor		x1.43	
Corrected Number		20,160,786	
Reported 1990 BIA Acreage		+ 76,028	
Estimated Cumulative Inventory Coverage By End of 1990		20,693,523	(20.7M) acres, which is **3.2%** of the >650M acres of Federal land in the United States

The acres reported (with the same caveats) to be archeologically inventoried by Land-Managing agencies for each of the three years 1988, 1989, and 1990 (Question 49, Appendix A) sum annually as follows:

Agency	1988	1989	1990	
Air Force	12,115	31,050	25,590	
BLM		395,440	491,232	506,170
BR		29,363	59,275	27,130
COE		209,000	196,404	136,068
DOE-Ops.	11,132	14,468	21,921	
FWS		-	13,000	60,000
FS		1,501,767	-	-
MC		3,000	8,000	8,935
NPS		107,064	35,000	28,000
TVA		-	-	31,000
Annual Reported Inventory Acreage	2,268,881	848,429	844,814	
Annual Correction Factor	x1.27	x1.47	x1.43	
Corrected Number	2,881,479	1,247,191	1,208,084	
Reported BIA Acreage	+ 43,422	+ 83,230	+ 76,028	
Estimated Annual Inventory Coverage	+2,924,901	+1,330,421	+1,284,112	= 5,539,434 (5.5M) acres, which is an average of 1.8M acres/year

Table C.2. Reported Identified During Year, Total Known, and Likely Total Archeological Sites Present on U.S. Federal Archeology Program Lands, 1988-1990.

Agency	Sites Found During Year [Question 50]	Total Known Sites [Question 70]	Agency Estimate of Total Sites [Question 71]
1988:			
Air Force	77	4,013	6,342
Army	-	25,000	150,000
Bureau of Land Management	8,159	142,839	4,000,000
Bureau of Reclamation	417	15,731	37,191
Corps of Engineers	2,217	36,000	90,000
Department of Energy Oper.	384	5,000	72,086
Fish and Wildlife Service	-	-	-
Forest Service	6,659	107,579	718,858
Marine Corps	4	400	2,235
National Park Service	5,000	46,153	415,293
Navy	-	21,000	-
Tennessee Valley Authority	-	-	-
Land-Managing Agencies----->	**22,917**	**403,715**	**5,492,005**
Bureau of Indian Affairs	1,481	27,050	2,000,000
Other Dev. Agencies------->	985	45	99
Regulatory Agencies------->	15	4,487	4,487
Other Agencies------------>	0	2	2
Total for 1988----------->	**25,398**	**435,299**	**7,496,593**
1989:			
Air Force	268	4,798	15,000
Army	-	-	-
Bureau of Land Management	7,968	149,871	4,000,000
Bureau of Reclamation	947	11,200	-
Corps of Engineers	2,431	38,301	70,079
Department of Energy Oper.	332	5,649	74,246
Fish and Wildlife Service	260	7,000	100,000
Forest Service	-	-	-
Marine Corps	43	433	5,000
National Park Service	3,411	52,270	426,523
Navy	4	-	5,000
Tennessee Valley Authority	76	-	25,000
Land-Managing Agencies----->	**15,740**	**269,522**	**4,720,848**
Bureau of Indian Affairs---->	2,144	27,339	1,500,000
Other Dev. Agencies------->	570	101	031
Regulatory Agencies------->	0	4,265	6,850
Other Agencies------------>	19	19	0
Total for 1989----------->	**18,473**	**301,172**	**6,227,729**
1990:			
Air Force	371	5,467	10,326
Army	-	-	-
Bureau of Land Management	9,289	157,810	4,000,000
Bureau of Reclamation	554	11,216	27,300
Corps of Engineers	1,604	42,886	85,000
Department of Energy Oper.	409	6,654	76,147
Fish and Wildlife Service	469	7,000	100,000
Forest Service	-	-	-
Marine Corps	140	573	5,000
National Park Service	1,281	53,000	429,480
Navy	-	-	-
Tennessee Valley Authority	150	-	725,000
Land-Managing Agencies----->	**14,267**	**284,606**	**5,458,253**

Table C.2. Reported Identified During Year, Total Known, and Likely Total Archeological Sites Present on U.S. Federal Archeology Program Lands, 1988-1990 (concluded).

Agency	Sites Found During Year [Question 50]	Total Known Sites [Question 70]	Agency Estimate of Total Sites [Question 71]
Bureau of Indian Affairs---->	3,051	30,390	1,500,000
Other Dev. Agencies------->	1,277	101	108
Regulatory Agencies------->	15	4,265	6,850
Other Agencies------------>	32	43	0
Total for 1990------------>	18,642	319,405	6,965,211

The terms "Land-Managing," "Development," and "Regulatory" Agency are discussed in Chapter 1, and the agency identifications within those categories are outlined in Figure 1.2. Questions are written out in Appendix A.

A dash (-) means "not applicable," agency has no data, or agency did not complete a questionnaire.

The number of archeological sites reported and estimated to have been found by Federal Land-Managing Agencies and the BIA for each of the three years 1988, 1989, and 1990 (Question 50, Appendix A) sum annually as follows:

	1988	1989	1990	
Land-Managing Agency Sites Found	22,917	15,470	14,267	(average 17,551/year)
1990 Correction Factor	x1.27	x1.47	x1.43	
Corrected Number	29,105	22,741	20,402	
Reported BIA Sites Found	+1,481	+2,144	+3,051	
Estimated Number of Archeological Sites Identified Each Year on U.S. Federal and Indian Land, 1988-1990	30,586	24,885	23,453	(average 26,308/year)

The estimated number of archeological sites known to occur on Federal and Indian land in the United States as of 1990 is based on responses to Question 70 (Appendix A) and was calculated (see Appendix B) as follows, from the data presented in this Table:

Land-Managing Agencies' Estimate	284,606	
1990 Correction Factor	x1.43	
Corrected Number	406,987	
Reported BIA estimate	+30,390	
Estimated Number of Archeological Sites Known to Occur on U.S. Federal and Indian Land as of 1990	437,377	(rounded to 437,000) sites, which is 4.7% of the 9.3M sites judged likely to occur on Key Federal Agency lands in the United States

The estimated number of archeological sites judged likely to occur in the United States is based on the 1990 responses to Question 71 (Appendix A) and was calculated (see Appendix B) as follows, from the data presented in this Table:

Land-Managing Agencies estimate	5,458,253
1990 Correction Factor	x1.43
Corrected Number	7,805,302
Reported BIA estimate	+ 1,500,000
Estimated Number of Archeological Sites on U.S. Federal and Indian Land	9,305,302 (9.3M) sites

Table C.3. National Register of Historic Places Status of Archeological Sites on U.S. Federal Archeology Program Lands, 1988-1990.

Agency	Year	NRHP-Listed Properties [Ques. 72A]	Properties Det. Elig. [Ques. 73A]	Properties Ev.,Not Lstd. [Ques. 74A]	Ineligible Properties [Ques. 75A]	Properties Not Eval. [Ques. 76A]
Air Force	88	10	291	447	1,259	2,006
	89	55	111	454	1,165	3,015
	90	14	124	1,555	140	3,460
Army	88	14	700	0	0	-
Bureau of Indian Affairs	88	55	110	1,300	4,050	21,535
	89	55	185	1,359	4,198	21,542
	90	55	185	1,359	4,198	21,542
Bureau of Land Management	88	2,973	7,482	-	4,773	127,611
	89	3,195	9,764	-	7,806	129,106
	90	3,247	13,025	-	11,240	130,298
Bureau of Reclamation	88	155	318	353	163	2,868
	89	176	1,573	371	364	8,766
	90	135	865	1,155	757	4,154
Corps of Engineers	88	500	4,273	4,000	7,145	20,000
	89	497	4,064	3,050	8,194	22,496
	90	768	5,205	4,765	8,633	21,105
Department of Energy Op.	88	10	183	1,323	1,006	1,420
	89	57	180	1,852	916	2,538
	90	58	349	1,984	1,133	3,112
Env. Prot. Agency Op.	88	0	0	0	0	0
	90	0	0	0	0	0
Farmers Home Admin.	88	3	0	-	-	-
	89	3	7	61	5	14
	90	4	8	9	75	12
Federal Bureau of Prisons	89	0	10	1	8	0
	90	1	16	0	23	40
Fish and Wildlife Service	89	277	288	1,031	580	4,724
	90	277	341	1,486	639	4,257
Forest Service	88	423	7,110	3,605	7,578	60,450
General Services Admin.	88	-	-	-	0	-
	89	1	0	0	0	-
	90	1	0	2	0	-
Health and Human Services	88	0	2	0	0	0
Indian Health Service	88	2	1	0	0	9
Marine Corps	88	3	33	100	13	242
	89	4	39	99	45	246
	90	4	39	231	52	246
Minerals Management Service	89	2	0	3	0	260
	90	2	0	3	0	260
Nat. Oceanic and Aer. Admin.	90	2	3	-	-	1,191
National Park Service	88	24,240	2,441	2,214	50	17,208
	89	16,497	2,579	4,342	50	28,994
	90	19,000	3,000	3,411	50	28,261
Navy	88	50	30	8	8	4

Table C.3. National Register of Historic Places Status of Archeological Sites on U.S. Federal Archeology Program Lands, 1988-1990 (continued).

Agency	Year	NRHP-Listed Properties [Ques. 72A]	Properties Det. Elig. [Ques. 73A]	Properties Ev.,Not Lstd. [Ques. 74A]	Ineligible Properties [Ques. 75A]	Properties Not Eval. [Ques. 76A]
Nuclear Reg. Commission	88	0	0	106	0	381
Office of Surface Mining	88	0	2,800	0	1,200	0
	89	0	2,800	0	1,200	0
	90	0	2,800	0	1,200	0
Soil Conservation Service	88	0	1	0	0	0
	89	0	1	1	1	-
	90	0	1	1	1	-
Tennessee Valley Authority	89	4	5	-	-	-
	90	4	5	-	-	-
U.S. Geological Survey	90	0	0	0	0	-
U.S. Postal Service	90	0	0	0	0	0
Total for 1988:		28,438	25,775	13,456	27,245	253,734
Total for 1989:		20,823	21,606	12,624	24,532	221,701
Total for 1990:		23,572	25,966	15,961	28,141	217,938

A dash (-) indicates "not applicable," agency has no data, or agency did not complete a questionnaire. Questions are specified in Appendix A.

The reported and estimated numbers of archeological sites listed on the National Register of Historic Places, occurring on Federal or Indian lands or non-Federal lands affected by Federal projects (Question 72A), in 1988, 1989, and 1990, sum annually as follows.

	1988	1989	1990	
Reported Listed Sites	28,438	20,823	23,572	
Annual Correction Factor	x1.27	x1.47	x1.43	
Estimated Annual Number NRHP Sites	36,116	30,610	33,708	(average, 33,478)

The reported and estimated numbers of archeological sites determined eligible for, but not listed on, the National Register of Historic Places, occurring on Federal or Indian lands or non-Federal lands affedted by Federal projects (Question 73A), in 1988, 1989, and 1990, sum annually as follows.

	1988	1989	1990	
Reported Eligible Sites	25,775	21,606	25,966	
Annual Correction Factor	x1.27	x1.47	x1.43	
Estimated Annual Number Eligible Sites	32,734	31,761	37,131	(average, 33,875)

Table C.3. National Register of Historic Places Status of Archeological Sites on U.S. Federal Archeology Program Lands, 1988-1990 (concluded).

The reported and estimated number of archeological sites adequately evaluated for their National Register of Historic Places eligibility, but not formally determined eligible by SHPO or Keeper, on Federal or Indian lands or on non-Federal lands affected by Federal projects (Question 74A), in 1988, 1989, and 1990, sum annually as follows.

	1988	1989	1990	
Reported Evaluated Sites	13,456	12,624	15,961	
Annual Correction Factor	x1.27	x1.47	x1.43	
Estimated Annual Number Evaluated Sites	17,089	18,557	22,824	(average, 19,490)

The reported and estimated number of archeological sites determined ineligible for the National Register by the SHPO or Keeper on Federal or Indian lands or on non-Federal lands affected by Federal projects (Question 75A), in 1988, 1989, and 1990, sum annually as follows.

	1988	1989	1990	
Reported Ineligible Sites		27,245	24,532	28,141
Annual Correction Factor	x1.27	x1.47	x1.43	
Estimated Annual Number Ineligible Sites	34,601	36,062	40,242	(average, 36,968)

The reported and estimated number of archeological sites *not* evaluated for their National Register of Historic Places eligibility, on Federal or Indian lands or on non-Federal lands affected by Federal projects (Question 76A), in 1988, 1989, and 1990, sum annually as follows.

	1988	1989	1990	
Reported Unevaluated Sites		253,734	221,701	217,938
Annual Correction Factor	x1.27	x1.47	x1.43	
Estimated Annual Number Unevaluated Sites	322,242	325,900	311,651	(average, 319,931)

The relative frequency of the National Register status of the estimated number of archeological sites on Federal or Indian lands or on Federal lands affected by Federal projects in 1988, 1989, and 1990, based on the estimated numbers derived from this Table C.3 in comparison to the estimated number of total known sites on those lands (Question 70, Table C.2), sum as follows.

First, the estimate of known sites as corrected for all Federal agencies, not just Land-Managing Agencies:

	1988	1989	1990
Reported Known Sites	435,299	301,172	319,405
Annual Correction Factor	x1.27	x1.47	x1.43
Estimated Annual Number Known Sites	552,830	442,722	456,749

Second, the relative frequency of sites, which was calculated on the basis of the sum of Questions 72A-76A because of discrepancies with estimates calculated with Question 70 data (Figure 2.7):

	Ques.70 No.	72+73+74 +75+76 No. (100%)	Ques.72A No. (%)	Ques.73A No. (%)	Ques.75A No. (%)	Ques.74A No. (%)	Ques.76A No. (%)
1988	522,830	442,782	36,116 (8)	32,734 (7)	34,601 (8)	17,089 (4)	322,242 (73)
1989	442,722	442,890	30,610 (7)	31,761 (7)	36,062 (8)	18,557 (4)	325,900 (74)
1990	456,749	443,609	31,761 (7)	37,131 (8)	40,242 (9)	22,824 (5)	311,651 (70)
				15%			75%

Table C.4. Permitted or Otherwise-Authorized Archeological Investigations Reported Begun or Underway in the United States by Key Federal Agencies, 1988-1990, by Authorization Type.

Agency	ARPA Permit [Question 1]	Antiq. Act Permit [Question 2]	Special Use Permit [Question 3]	No Formal Permit [Question 7]	All Types (1+2+3+7)
1988:					
Air Force	0	0	0	79	79
Army	3	0	0	40	43
Bureau of Indian Affairs	30	3	157	173	363
Bureau of Land Management	375	-	-	3,514	3,889
Bureau of Reclamation	6	0	10	34	50
Corps of Engineers	9	0	238	286	533
Department of Energy Oper.	1	0	0	36	37
Fish and Wildlife Service	-	-	-	-	-
Forest Service	63	17	118	507	705
Marine Corps	0	0	0	1	1
National Park Service	18	6	1	349	374
Navy	1	0	5	5	11
Tennessee Valley Authority	-	-	-	-	-
Total for 1988----------->	**506**	**26**	**529**	**5,024**	**6,085**
Percent for each type----->	**8%**	**0.4%**	**9%**	**83%**	**(100%)**
1989:					
Air Force	0	0	0	19	19
Army	-	-	-	-	-
Bureau of Indian Affairs	53	1	97	185	336
Bureau of Land Management	460	-	-	3,177	3,637
Bureau of Reclamation	3	0	31	115	149
Corps of Engineers	13	2	5	214	234
Department of Energy Oper.	2	0	1	241	244
Fish and Wildlife Service	13	0	43	50	106
Forest Service	-	-	-	-	-
Marine Corps	0	0	0	5	5
National Park Service	19	0	1	61	81
Navy	1	0	0	15	16
Tennessee Valley Authority	0	0	1	0	1
Total for 1989----------->	**564**	**3**	**179**	**4,082**	**4,828**
Percent for each type----->	**12%**	**<0.1%**	**4%**	**85%**	**(100%)**
1990:					
Air Force	0	0	0	26	26
Army	-	-	-	-	-
Bureau of Indian Affairs	41	1	77	141	260
Bureau of Land Management	389	0	-	3,561	3,950
Bureau of Reclamation	5	3	74	77	159
Corps of Engineers	15	4	278	149	446
Department of Energy Oper.	2	0	1	229	232
Fish and Wildlife Service	17	0	47	49	113
Forest Service	-	-	-	-	-
Marine Corps	0	0	0	3	3
National Park Service	14	1	2	127	144
Navy	1	1	-	0	2
Tennessee Valley Authority	0	0	0	0	0
Total for 1990----------->	**487**	**10**	**482**	**4,362**	**5,335**
Percent for each type----->	**9%**	**0.2%**	**9%**	**82%**	**(100%)**

A dash (-) means "not applicable," agency has no data, or agency did not complete a questionnaire.

Questions are identified in Appendix A. Question 7 responses include Bureau of Land Management "cultural resource use permits" issued under several authorities. Federal archeology program participants who are not Key Federal agencies reported one 1988, one 1989, and twenty 1990 authorized investigations relying on ARPA §-.5(b,c) authority, and three 1990 investigations relying on Special Use Permits.

Table C.4. Permitted or Otherwise-Authorized Archeological Investigations Reported Begun or Underway in the United States by Key Federal Agencies, 1988-1990, by Authorization Type (concluded).

The average reported distribution of Federal archeology program activity authorizations for the period 1988-1990 (Figure 3.1) sum as follows.

Year	ARPA Permit [Question 1]	Antiq. Act Permit [Question 2]	Special Use Permit [Question 3]	No Formal Permit [Question 7]	All Types (1+2+3+7)
1988	506	26	529	5,024	6,085
1989	564	3	179	4,082	4,828
1990	487	10	482	4,362	5,335
Total	1,557	39	1,190	13,468	16,248
Percentage	10%	.2%	7%	83%	100%

The estimated number of archeological investigation authorizations (either formal permit or ARPA §-.5(b,c) authority) made by Key Federal Agencies (Table 2.1) in the United States in years 1988, 1989, and 1990 (Figure 3.2) is calculated as follows.

	1988	1989	1990	
Land-Managing Agency Authorizations	5,722	4,492	5,075	
Annual Correction Factor	x1.27	x1.47	x1.43	
Corrected Number	7,267	6,603	7,257	
Reported BIA Authorizations	+ 363	+ 336	+ 260	
Estimated Annual Number of Archeological Investigation Authorizations	7,630	6,939	7,517	(average 7,362)

Table C.5. Reported U.S. Federal Archeology Program Overview or Identification and Evaluation Projects, 1988-1990.

Agency	Year	All Overviews [Ques. 41]	Applicant Overviews [Ques. 44]	Percent Applicant Overviews (44/41)	All Id. & Eval. [Ques. 45]	Applicant Id. & Eval. [Ques. 48]	Percent Applicant Id. & Eval. (48/45)
Air Force	88	38	0	0%	42	3	7%
	89	130	13	10%	176	6	3%
	90	134	0	0%	118	6	5%
Army	88	100	0	0%	-	0	-
Bureau of Indian Affairs	88	1,245	905	73%	1,919	781	41%
	89	1,496	912	61%	1,173	379	32%
	90	3,025	1,939	64%	2,700	1,919	71%
Bureau of Land Management	88	8,543	2,535	30%	7,201	3,682	51%
	89	10,533	4,833	46%	8,341	-	0%
	90	13,266	6,891	52%	10,766	7,205	67%
Bureau of Reclamation	88	347	85	24%	83	29	35%
	89	433	95	22%	254	40	16%
	90	442	207	47%	208	153	74%
Corps of Engineers	88	2,348	83	4%	700	105	15%
	89	2,324	101	4%	576	140	24%
	90	2,827	223	8%	649	123	19%
Department of Energy Oper.	88	281	1	0.4%	82	1	1%
	89	603	3	0.5%	219	3	1%
	90	747	11	1%	322	7	2%
Environmental Protection Agency	88	278	164	59%	141	81	57%
	89	252	165	65%	95	87	92%
	90	278	164	59%	141	81	57%
Farmers Home Administration	88	3,447	416	12%	500	255	51%
	89	3,514	1,036	29%	667	400	60%
	90	3,350	1,027	31%	428	285	67%
Federal Aviation Admin.	89	26	25	96%	10	10	100%
	90	0	-	-	-	-	-
Federal Bureau of Prisons	89	2	0	0%	5	0	0%
	90	18	0	0%	6	0	0%
Fish and Wildlife Service	89	349	26	7%	76	9	12%
	90	509	15	3%	92	9	10%
Forest Service	88	4,708	248	5%	5,158	36	1%
General Services Admin.	88	8	0	0%	0	0	-
	89	4	-	0%	4	0	0%
	90	8	0	0%	4	-	0%
Health and Human Services	88	0	0	-	1	0	0%
	90	1	0	0%	0	0	-
Indian Health Service	88	217	0	0%	90	2	2%
Marine Corps	88	20	0	0%	5	0	0%
	89	4	0	0%	4	0	0%
	90	2	0	0%	5	0	0%
Minerals Management Service	89	15	-	0%	368	368	100%
	90	12	-	0%	497	497	100%
Nat. Ocean. & Aviation Admin.	90	2	0	0%	2	0	0%

Table C.5. Reported U.S. Federal Archeology Program Overview or Identification and Evaluation Projects, 1988-1990 (concluded).

Agency	Year	All Overviews [Ques. 41]	Applicant Overviews [Ques. 44]	Percent Applicant Overviews (44/41)	All Id. & Eval. [Ques. 45]	Applicant Id. & Eval. [Ques. 48]	Percent Applicant Id. & Eval. (48/45)
National Park Service	88	957	4	0.4%	300	5	2%
	89	966	2	0.2%	390	8	2%
	90	621	3	0.5%	239	3	1%
Navy	88	37	-	0%	14	-	0%
	89	15	0	0%	5	0	0%
	90	24	1	4%	-	-	-
Nuclear Regulatory Commission	88	0	0	-	0	0	-
Ofice of Surface Mining	88	6	-	0%	8	8	-
	89	10	-	0%	-	-	-
	90	15	-	0%	-	-	-
Rural Electrification Admin.	88	648	648	100%	93	93	100%
	89	711	711	100%	174	174	100%
	90	796	796	100%	153	153	100%
Soil Conservation Service	88	71	0	0%	30	3	10%
	89	24	-	0%	89	2	2%
	90	39	39	100%	117	117	100%
Tennessee Valley Authority	89	700	0	0%	15	-	0%
	90	500	0	0%	13	1	8%
U.S. Geological Survey	90	0	-	-	0	-	-
U.S. Postal Service	90	0	-	-	0	-	-
Total	**88**	**23,299**	**5,089**	**22%**	**15,646**	**5,121**	**33%**
	89	**22,111**	**7,922**	**36%**	**12,641**	**1,626**	**13%**
	90	**26,616**	**11,316**	**43%**	**15,679**	**9,421**	**73%**
Annual Average		24,009	8,109 (34%)		14,655	5,389 (37%)	

A dash (-) means "not applicable," agency has no data, or agency did not complete a questionnaire. Questions are identified in Appendix A.

The number of archeological overviews estimated to have been completed in the United States by Federal archeology program participants over each of the three years 1988, 1989, and 1990 (Question 41, Appendix A; Figure 3.2) sum annually as follows.

	1988	1989	1990	
Annual Reported Overviews	23,299	22,111	26,616	
Annual Correction Factor	x1.27	x1.47	x1.43	
Estimated Annual Number Overviews	29,590	32,503	38,061	(average, 33,385)

The estimated number of archeological identification and evaluation projects conducted in the United States by Federal archeology program participants in each of the years 1988, 1989, and 1990 (Figure 3.2), is calculated as follows, based on the responses to Question 45 (Appendix A).

	1988	1989	1990	
Annual Reported Identification and Evaluation Projects	15,646	12,641	15,679	
Annual Correction Factor	x1.27	x1.47	x1.43	
Estimated Annual Number I&E Projects	19,870	18,582	22,421	(average, 20,291)

Table C.6. Reported U.S. Federal Archeology Program Data Recovery Projects, 1988-1990.

Agency	Year	All Compliance Data Rec. [Ques. 52]	All Non-Compl. Data Rec. [Ques. 56]	All Data Rec. (52+56)	Applicant Compliance Data Rec. [Quest. 55A]	Applicant Non-Compl. Data Rec. [Ques. 59A]	All Applicant Data Rec. (55A+ 59A)	Percent Applicant Data Rec. (55A+59A)/(52+56)
Air Force	88	11	0	11	0	0	0	0%
	89	6	14	20	0	2	2	10%
	90	19	16	35	-	0	0	0%
Army	88	1	0	1	0	0	0	0%
Bureau of Indian Affairs	88	29	6	35	13	2	15	43%
	89	21	4	25	16	1	17	68%
	90	9	0	9	32	0	32	356%
Bureau of Land Management	88	349	17	366	234	-	234	64%
	89	486	23	509	180	-	180	35%
	90	535	29	564	110	-	110	20%
Bureau of Reclamation	88	11	1	12	2	0	2	17%
	89	3	3	6	1	0	1	17%
	90	9	0	9	0	-	0	0%
Corps of Engineers	88	52	9	61	6	0	6	10%
	89	66	14	80	15	5	20	25%
	90	70	84	154	17	0	17	11%
Department of Energy Op.	88	8	2	10	1	0	1	10%
	89	19	4	23	0	0	0	0%
	90	8	4	12	0	0	0	0%
[illegible]v. Prot. Agency Op.	88	18	-	18	9	-	9	50%
	89	26	7	33	16	4	20	61%
	90	18	-	18	9	-	9	50%
Farmers Home Administration	88	-	144	144	-	1	1	1%
	89	78	32	110	7	-	7	6%
	90	38	23	61	8	1	9	15%
Federal Bureau of Prisons	89	0	0	0	0	0	0	-
	90	2	0	2	0	0	0	0%
Fish and Wildlife Service	89	3	2	5	-	-	-	-
	90	6	5	11	0	0	0	0%
Forest Service	88	141	26	167	69	8	77	46%
General Services Admin.	88	3	0	3	0	0	0	0%
	89	2	0	2	0	0	0	0%
	90	1	0	1	0	0	0	0%
Health and Human Services	88	0	0	0	0	0	0	-
Immig. and Natural. Service	90	0	0	0	0	0	0	-
Indian Health Service	88	1	0	1	0	0	0	0%
Marine Corps	88	1	0	1	0	0	0	0%
	89	1	0	1	0	0	0	0%
	90	0	0	0	0	0	0	-
Minerals Mgmt. Service	89	0	2	2	0	0	0	0%
	90	0	0	0	0	0	0	-
Nat. Oceanic & Aer. Admin.	90	0	0	0	0	0	0	-

Table C.6. Reported U.S. Federal Archeology Program Data Recovery Projects, 1988-1990 (continued).

Agency	Year	All Compliance Data Rec. [Ques. 52]	All Non-Compl. Data Rec. [Ques. 56]	All Data Rec. (52+56)	Applicant Compliance Data Rec. [Quest. 55A]	Applicant Non-Compl. Data Rec. [Ques. 59A]	All Applicant Data Rec. (55A+ 59A)	Percent Applicant Data Rec. (55A+59A)/(52+56)
National Park Service	88	65	9	74	2	0	2	3%
	89	71	15	86	-	0	0	0%
	90	69	18	87	1	1	2	2%
Navy	88	9	0	9	-	0	0	0%
	89	4	0	4	-	0	0	0%
	90	9	-	9	-	-	0	0%
Nuclear Reg. Commission	88	0	-	0	0	-	0	-
Office of Surface Mining	88	10	0	10	-	0	0	0%
	89	-	2	2	-	-	0	0%
	90	-	-	-	-	-	-	-
Rural Electrific'n Admin.	88	0	0	0	0	0	0	-
	89	1	0	1	1	0	1	100%
	90	5	0	5	5	0	5	100%
Soil Conservation Service	88	1	0	1	1	0	1	100%
	89	1	-	1	-	-	-	0%
	90	6	-	6	0	-	0	0%
Tennessee Valley Authority	88	-	-	-	-	-	-	-
	89	0	1	1	0	0	0	0%
	90	0	2	2	0	0	0	0%
U.S. Geological Survey	88	-	-	0	-	-	0	-
	89	-	-	0	-	-	0	-
	90	-	-	-	-	0	0	-
U.S. Postal Service	88	-	-	0	-	-	-	-
	89	-	-	0	-	-	-	-
	90	0	0	0	0	0	0	-
Total	**88**	**710**	**214**	**924**	**268**	**11**	**279**	**30%**
	89	**788**	**123**	**911**	**236**	**12**	**248**	**27%**
	90	**804**	**181**	**985**	**182**	**2**	**184**	**19%**
Annual Average		767	173	940	229	8	237	25%

A dash, "-", means not applicable, agency has no data, or agency did not complete a questionnaire.

Questions are identified in Appendix A. The number of archeological data recovery projects estimated to have been completed in the United States by Federal archeology program participants over each of the three years 1988, 1989, and 1990 (Questions 52+56; Figure 3.2) sum annually as follows.

	1988	1989	1990
Annual Number of Reported Data Recovery Projects	924	911	985
Annual Correction Factor	x1.27	x1.47	x1.43
Estimated Annual Number of Data Recovery Projects	1173	1339	1409 (average, 1307)

Table C.7. Reported U.S. Federal Archeology Program Unanticipated Discovery Projects, 1988-1990.

Agency	Year	Agency Unantic. Discoveries [Ques. 61]	Applicant Unantic. Discoveries [Ques. 65A]	All Unantic. Disc. (61+65A)	Percent Applicant Unant.Disc. (65A / 61+65A)	Unantic. Disc. Requiring Data Rec. [Ques. 62]	Percent Un. Disc. Req.Data.Rec. (62 / 61+65A)
Air Force	88	9	0	9	0%	7	78%
	89	34	-	34	0%	32	94%
	90	6	0	6	0%	0	0%
Army	88	0	0	0	-	0	-
Bureau of Indian Affairs	88	13	3	16	19%	5	31%
	89	4	8	12	67%	4	33%
	90	50	50	100	50%	25	25%
Bureau of Land Management	88	33	-	33	0%	29	88%
	89	102	-	102	0%	123	121%
	90	86	-	86	0%	46	53%
Bureau of Reclamation	88	2	1	3	33%	2	67%
	89	3	2	5	40%	3	60%
	90	1	-	1	0%	-	0%
Corps of Engineers	88	9	1	10	10%	6	60%
	89	17	4	21	19%	14	67%
	90	8	1	9	11%	4	44%
Department of Energy Op.	88	2	0	2	0%	1	50%
	89	0	0	0	-	0	-
	90	2	0	2	0%	0	0%
Env. Prot. Agency Op.	88	5	4	9	44%	5	56%
	89	9	2	11	18%	7	64%
	90	5	4	9	44%	5	56%
Farmers Home Administration	89	1	2	3	67%	10	333%
	90	8	2	10	20%	8	80%
Federal Bureau of Prisons	89	0	0	0	-	0	-
	90	0	0	0	-	0	-
Fish and Wildlife Service	89	2	1	3	33%	1	33%
	90	0	0	0	-	0	-
Forest Service	88	42	4	46	9%	81	176%
	89	-	-	-	-	-	-
	90	-	-	-	-	-	-
General Services Admin.	88	0	0	0	-	0	-
	89	0	0	0	-	0	-
	90	0	0	0	-	0	-
Health and Human Services	88	0	0	0	-	0	-
	89	-	-	0	-	-	-
	90	-	-	0	-	-	-
Immig. and Natural. Service	88	-	-	0	-	-	-
	89	-	-	0	-	-	-
	90	0	0	0	-	0	-
Indian Health Service	88	0	0	0	-	0	-
	89	-	-	0	-	-	-
	90	-	-	0	-	-	-

Table C.7. Reported U.S. Federal Archeology Program Unanticipated Discovery Projects, 1988-1990 (concluded).

Agency	Year	Agency Unantic. Discoveries [Ques. 61]	Applicant Unantic. Discoveries [Ques. 65A]	All Unantic. Disc. (61+65A)	Percent Applicant Unant.Disc. (65A / 61+65A)	Unantic. Disc. Requiring Data Rec. [Ques. 62]	Percent Un. Disc. Req.Data.Rec. (62 / 61+65A)
Marine Corps	88	0	0	0	-	0	-
	89	0	0	0	-	0	-
	90	0	0	0	-	0	-
Minerals Management Service	88	-	-	0	-	-	-
	89	0	0	0	-	0	-
	90	0	0	0	-	0	-
National Park Service	88	14	0	14	0%	7	50%
	89	6	0	6	0%	8	133%
	90	6	0	6	0%	4	67%
Navy	88	0	-	0	-	-	-
	89	0	0	0	-	0	-
	90	1	0	1	0%	0	0%
Nuclear Reg. Commission	88	1	-	1	0%	1	100%
	89	-	-	0	-	-	-
	90	-	-	0	-	-	-
Office of Surface Mining	88	3	3	6	50%	0	0%
	89	1	-	1	0%	1	100%
	90	0	0	0	-	0	-
Rural Electrification Admin.	88	1	1	2	50%	1	50%
	89	0	0	0	-	0	-
	90	0	0	0	-	0	-
Soil Conservation Service	88	1	0	1	0%	1	100%
Tennessee Valley Authority	89	1	0	1	0%	1	100%
	90	1	0	1	0%	1	100%
U.S. Postal Service	90	1	0	1	0%	1	100%
Total	**88**	**135**	**17**	**152**	**11%**	**146**	**96%**
	89	**180**	**19**	**199**	**10%**	**204**	**103%**
	90	**175**	**57**	**232**	**25%**	**94**	**41%**
Annual Average		163	31	194	16%	148	76%

A dash, "-", means not applicable, agency has no data, or agency did not complete a questionnaire. **Bolded** numbers in the last column appear to reflect reporting errors.

Questions are identified in Appendix A. The number of unanticipated archeological discoveries estimated to have occurred in the United States that involved the Federal archeology program participants in each of the years 1988, 1989, and 1990 (Questions 61+65A; Figure 3.2) sum annually as follows.

	1988	1989	1990	
Annual Number of Reported Unanticipated Archeological Discoveries	152	199	232	
Annual Correction Factor	x1.27	x1.47	x1.43	
Estimated Annual Number of Unanticipated Archeological Discoveries	193	293	332	(average, 273)

Table C.8. Reported and Estimated Expenditures for U.S. Federal Archeology Program Investigations, 1988-1990.

Agency	Year	Overview $ [Ques. 43]	Id.& Eval. $ [Ques. 47]	Compliance Data Rec. $ [Ques. 54]	Non-Comp Data Rec. $ [Ques.58]	All Data.R. $ (54+58)	Unanticip. Discovery $ [Ques. 64]	Total for All Proj. $ (43+47+54+58+64)
Air Force	88	247,375	268,000	533,000	0	533,000	6,000	1,054,375
	89	346,000	1,331,400	20,000	500	20,500	3,500	1,701,400
	90	1,157,400	400,600	201,600	52,600	254,200	5,000	1,817,200
Army	88	4,000,000	-	1,000,000	0	1,000,000	0	5,000,000
Bureau of Indian Affairs	88	509,000	623,397	330,372	0	330,372	30,250	1,493,019
	89	414,000	295,000	820,000	20,000	840,000	-	1,549,000
	90	196,892	435,892	1,080,000	0	1,080,000	25,000	1,737,784
Bureau of Land Management	88	-	-	517,849	-	517,849	-	517,849
	89	-	-	454,039	-	454,039	-	454,039
	90	-	-	246,870	-	246,870	-	246,870
Bureau of Reclamation	88	208,680	488,000	2,215,320	15,000	2,230,320	200	2,927,200
	89	250,000	575,000	2,347,000	93,000	2,440,000	3,600	3,268,600
	90	273,400	637,746	3,398,000	0	3,398,000	-	4,309,146
Corps of Engineers	88	3,000,000	6,000,000	4,270,000	215,000	4,485,000	547,000	14,032,000
	89	2,624,946	8,268,521	4,546,169	430,000	4,976,169	1,597,227	17,466,863
	90	2,084,500	7,243,000	2,885,000	85,000	2,970,000	56,500	12,354,000
Department of Energy Op.	88	102,000	480,000	234,000	900	234,900	12,000	828,900
	89	504,408	476,947	469,399	16,500	485,899	0	1,467,254
	90	417,491	697,856	391,124	17,500	408,624	5,375	1,529,346
[redacted]onmental Prot. Agen.	88	129,140	216,280	1,060,175	-	1,060,175	43,040	1,448,635
	89	221,000	299,000	220,000	20,000	240,000	77,000	837,000
	90	129,000	216,000	1,100,000	-	1,100,000	43,000	1,488,000
Farmers Home Admin.	88	84,150	109,000	-	12,000	12,000	-	215,150
	89	300,000	300,000	240,250	-	240,250	4,200	844,450
	90	314,000	190,000	85,000	300	85,300	27,000	616,300
Federal Aviation Agency	89	2,000	640,000	23,000	-	23,000	-	665,000
	90	-	79,000	-	-	-	-	79,000
Federal Bureau of Prisons	89	12,099	76,000	0	0	0	0	88,099
	90	63,021	446,052	395,000	0	395,000	0	904,073
Fish and Wildlife Service	89	95,000	540,000	44,000	17,400	61,400	15,000	711,400
	90	50,000	405,000	37,000	20,000	57,000	0	512,000
Forest Service	88	3,769,786	2,740,700	637,907	70,350	708,257	200,957	7,419,700
General Services Admin.	88	-	0	0	0	0	0	0
	89	214,269	54,000	107,135	0	107,135	0	375,404
	90	118,000	139,000	60,000	0	60,000	0	317,000
Health and Human Services	88	0	3,000	0	0	0	0	3,000
Immig. and Nat. Service	90	23,000	0	0	0	0	0	23,000
Indian Health Service	88	323,390	156,261	20,000	0	20,000	0	499,651
Marine Corps	88	108,000	25,000	50,000	0	50,000	0	183,000
	89	43,200	72,000	10,000	0	10,000	0	125,200
	90	15,000	256,000	0	0	0	0	271,000
Minerals Man. Service	89	541,000	90,109	0	115,000	115,000	0	746,109
	90	651,000	0	0	0	0	0	651,000
[redacted]Ocean. and Aer. Ad.	90	50,000	50,000	0	0	0	-	100,000

Table C.8. Reported and Estimated Expenditures for U.S. Federal Archeology Program Investigations, 1988-1990 (continued)

Agency	Year	Overview $ [Ques. 43]	Id.& Eval. $ [Ques. 47]	Compliance Data Rec. $ [Ques. 54]	Non-Comp Data Rec. $ [Ques.58]	All Data.R. $ (54+58)	Unanticip. Discovery $ [Ques. 64]	Total for All Proj. $ (43+47+54+58+64)	
National Park Service	88	770,000	2,495,508	1,163,184	241,000	1,404,184	8,400	4,678,092	
	89	875,000	2,228,000	180,000	121,000	301,000	18,200	3,422,200	
	90	1,061,000	2,516,171	575,000	305,000	880,000	16,300	4,473,471	
Navy	88	128,000	81,000	220,000	0	220,000	-	429,000	0
	89	350	-	-	0	0	0	350	
	90	-	-	79,000	-	79,000	1,000	80,000	0
Nuclear Reg. Commission	88	0	0	0	-	0	-	0	0
Office of Surface Mining	88	6,000	0	25,000	0	25,000	0	31,000	0
	89	15,000	15,000	-	-	-	1,500	31,500	
	90	15,000	15,000	-	-	-	0	30,000	0
Rural Electri. Admin.	88	0	0	0	0	0	0	0	0
	89	0	0	0	0	0	0	0	0
	90	0	0	0	0	0	0	0	0
Soil Conservation Service	88	168,132	163,000	33,000	0	33,000	12,000	376,132	
	89	259,000	193,104	2,000	-	2,000	-	454,104	
	90	295,000	215,581	202,181	-	202,181	-	712,762	
Tennessee Valley Auth.	89	45,000	55,000	0	10,000	10,000	11,000	121,000	
	90	40,000	70,000	0	13,000	13,000	-	124,000	
U.S. Geological Survey	90	0	0	-	0	0	-	0	
U.S. Postal Service	90	0	-	-	0	0	1,000	1,000	
Total for 1988:		**13,553,653**	**13,849,146**	**12,309,807**	**554,250**	**12,864,057**	**859,847**	**41,126,703**	
Total for 1989:		**6,762,272**	**15,509,081**	**9,482,992**	**834,400**	**10,317,392**	**1,731,227**	**34,319,972**	
Total for 1990:		**6,953,704**	**14,012,898**	**10,735,775**	**493,400**	**11,229,175**	**180,175**	**32,375,952**	

A dash (-) means "not applicable," agency has no data, or agency did not respond to the questionnaire. Questions are identified in Appendix A. Questions 43, 47, 58, and 64 specify that they relate to Federal agency expenditures only; question 54 does not specify that, but respondents are assumed to have interpreted the question and their response in a manner parallel to questions 43, 47, 58, and 64.

The estimated total annual expenditures for overview projects (Question 43; Figure 3.4) by Federal archeology program participants in 1988, 1989, and 1990 are calculated as follows.

	1988	1989	1990	
Reported Overview Expenditures	$13,553,653	$ 6,762,272	$ 6,953,704	
Annual Correction Factor	x 1.27	x 1.47	x 1.43	
Estimated Annual Federal Overview Expenditures	$17,213,139 (100%)	$ 9,940,540 (58%)	$ 9,943,797 (58%)	(average, $12,365,825)

The estimated total annual expenditures for identification and evaluation projects (Question 47) by Federal archeology program participants in the United States in 1988, 1989, and 1990 (Figure 3.4) are calculated as follows.

	1988	1989	1990	
Reported Identification and Evaluation Expenditures	$13,849,146	$15,509,081	$14,012,898	
Annual Correction Factor	x 1.27	x 1.47	x 1.43	
Estimated Annual Federal Identification and Evaluation Project Expenditures	$17,588,415 (100%)	$22,798,349 (130%)	$20,038,444 (114%)	(average, $20,141,736)

Table C.8. Reported and Estimated Expenditures for U.S. Federal Archeology Program Investigations, 1988-1990 (concluded).

The estimated total annual expenditures for data recovery projects (Questions 54+58) by Federal archeology program participants in the United States in 1988, 1989, and 1990 (Figure 3.4) are calculated as follows.

	1988	1989	1990	
Reported Data Recovery Expenditures	$12,864,057	$10,317,392	$11,229,175	
Annual Correction Factor	x 1.27	x 1.47	x 1.43	
Estimated Annual Federal Data Recovery Project Expenditures	$16,337,352 (100%)	$15,166,566 (93%)	$16,057,720 (98%)	(average, $15,853,879)

The estimated total annual expenditures to respond to unanticipated discoveries (Question 64) by Federal archeology program participants in the United States in 1988, 1989, and 1990 (Figure 3.4) are calculated as follows.

	1988	1989	1990	
Reported Expenditures to Respond to Unanticipated Discoveries	$ 859,847	$1,731,227	$ 180,175	
Annual Correction Factor	x 1.27	x 1.47	x 1.43	
Estimated Annual Federal Unanticipated Discovery Response Expenditures	$1,092,006 (100%)	$2,544,904 (233%)	$ 257,650 (24%)	(average, $1,298,187)

The estimated total Federal archeology program project expenditures in the United States in 1988, 1989, and 1990 (Questions 43+47+54+58+64) are calculated as follows.

	1988	1989	1990	
Reported Project Expenditures	$41,126,703	$34,319,972	$32,375,952	
Annual Correction Factor	x 1.27	x 1.47	x 1.43	
Estimated Annual Federal Agency Project Expenditures	$52,230,912	$50,450,359 (100%)	$46,297,611 (97%)	(average, $49,659,627) (89%)
IAF (Appendix C)	x .96	x .92	x .88	
Estimated Annual Federal Agency Archeological Project Expenditures Adjusted for Inflation	$50,141,676 (100%)	$46,414,330 (93%)	$40,741,898 (81%)	

The distribution of estimated Federal agency archeology project expenditures in the United States, by project type, not adjusted for inflation, for 1988, 1989, and 1990 (Figure 3.6) was calculated as follows, based on the data in this table.

	Annual $:	Overview $	Id.&Eval.$	Data R.$	U.Disc. $
1988:	**41,126,703**: (100%)	13,553,653 (33%)	13,849,146 (34%)	12,864,257 (31%)	859,847 (2%)
1989:	**34,319,972**: (100%)	6,762,272 (20%)	15,509,081 (45%)	10,317,392 (30%)	1,731,227 (5%)
1990:	**32,375,952**: (100%)	6,953,704 (21%)	14,012,898 (43%)	11,229,175 (35%)	180,175 (<.1%)

Table C.9. Reported Average Federal Costs for Federal Archeology Program Projects in the United States, 1988-1990.

Agency	Year	Overviews No. Q41-44	Overviews Unit $ Q43 (Q41-Q44)	Id. & Evalua'n No. Q45-48	Id. & Evalua'n Unit $ Q47 (Q45-Q48)	Data Recovery No. Q54+58	Data Recovery Unit $ ([Q52+Q56]-55A+59A[Q55A+Q59A])	Unantic. Discovery Unit $ Q64 Q61
Air Force	88	38	6,510	39	6,872	11	48,455	667
	89	117	2,957	170	7,832	18	1,139	103
	90	134	8,637	112	3,577	35	7,263	833
Army	88	100	40,000	-	-	1	1,000,000	-
Bureau of Indian Affairs	88	340	1,497	380	1,641	20	16,519	2,327
	89	584	709	794	372	8	105,000	-
	90	1,086	181	1,138	383	23	46,957	500
Bureau of Land Management	88	6,008	-	3,519	-	132	3,923	-
	89	5,700	-	8,341	-	329	1,380	-
	90	6,375	-	3,561	-	454	544	-
Bureau of Reclamation	88	262	796	54	9,037	10	223,032	100
	89	338	740	214	2,687	5	488,000	1,200
	90	235	1,163	55	11,595	9	377,556	0
Corps of Engineers	88	2,265	1,325	595	10,084	55	81,545	60,778
	89	2,223	1,181	436	18,964	60	82,936	93,955
	90	2,604	800	526	13,770	137	21,679	7,063
Dept. of Energy Ops.	88	280	364	81	5,926	9	26,100	6,000
	89	600	841	216	2,208	23	21,126	-
	90	736	567	315	2,215	12	34,052	2,688
Env. Prot. Agency Op.	88	114	1,133	60	3,605	9	117,797	8,608
	89	87	2,540	8	37,375	13	18,462	8,556
	90	114	1,132	60	3,600	9	122,222	8,600
Farmers Home Administration	88	3,031	28	245	445	143	84	-
	89	2,478	121	267	1,124	103	2,333	4,200
	90	2,323	135	143	1,329	52	1,640	3,375
Federal Aviation Agency	89	1	2,000	-	-	-	-	-
Federal Bureau of Prisons	89	2	6,050	5	15,200	-	-	-
	90	18	3,501	6	74,342	2	197,500	-
Fish and Wildlife Service	89	323	294	67	8,060	5	12,280	7,500
	90	494	101	83	4,880	11	5,182	-
Forest Service	88	4,460	845	5,122	535	90	7,870	4,785
General Services Admin.	88	8	-	-	-	3	-	-
	89	4	53,567	4	13,500	2	53,568	-
	90	8	14,750	4	34,750	1	60,000	-
Health and Human Services	88	-	-	1	3,000	-	-	-
Immig. and Natural. Service	90	1	23,000	-	-	-	-	-
Indian Health Service	88	217	1,490	88	1,776	1	20,000	-
Marine Corps	88	20	5,400	5	5,000	1	50,000	-
	89	4	10,800	4	18,000	1	10,000	-
	90	2	7,500	5	51,200	-	-	-
Minerals Management Service	89	15	36,067	-	-	2	57,500	-
	90	12	54,250	-	-	-	-	-

Table C.9. Reported Average Federal Costs for Federal Archeology Program Projects in the United States, 1988-1990 (continued).

Agency	Year	Overviews No. Q41-44	Overviews Unit $ Q43 / (Q41-Q44)	Id. & Evaluation No. Q45-48	Id. & Evaluation Unit $ Q47 / (Q45-Q48)	Data Recovery No. Q54+58	Data Recovery Unit $ ([Q52+Q56]-55A+59A[Q55A+Q59A])	Unantic. Discovery Unit $ Q64 / Q61
Nat. Oceanic and Aer. Admin.	90	2	25,000	2	25,000	-	-	-
National Park Service	88	953	808	295	8,459	72	19,503	600
	89	964	908	382	5,832	86	3,500	3,033
	90	618	1,717	236	10,662	85	10,353	2,717
Navy	88	37	3,459	14	5,786	9	24,444	-
	89	15	23	5	-	4	-	-
	90	23	-	-	-	9	8,778	1,000
Office of Surface Mining	88	6	1,000	8	-	10	2,500	-
	89	10	1,500	-	-	2	-	1,500
	90	15	1,000	-	-	-	-	-
Soil Conservation Service	88	71	2,368	27	6,037	-	-	12,000
	89	24	10,792	87	2,220	1	2,000	-
	90	-	-	-	-	6	33,697	-
Tennessee Valley Authority	89	700	64	15	3,667	1	10,000	11,000
	90	500	80	12	5,833	2	6,500	-
U.S. Postal Service	90	-	-	-	-	-	-	1,000
Total for	**1988:**	**18,210**	**744**	**10,525**	**1,316**	**576**	**22,333**	**6,369**
Total for	**1989:**	**4,189**	**477**	**11,015**	**1,408**	**663**	**15,575**	**9,618**
Total for	**1990:**	**15,300**	**454**	**6,258**	**2,239**	**847**	**13,258**	**1,030**

A dash (-) indicates "not applicable," agency has no data, or agency did not complete a questionnaire. Questions are identified in Appendix A. Data for Questions 41, 44, 45, and 48 are presented in Table C.5, and data for Questions 52, 56, 55A, and 59A are presented in Table C.6. The figures presented in Table C.9 are graphed in Figure 3.6.

The reported annual unit costs for overview projects (Question 43 responses divided by the sum of Questions 41 and 44 responses) adjusted for inflation for 1988, 1989, and 1990 are calculated as follows.

	1988	1989	1990
Reported average overview project cost	$714 (100%)	$477 (64%)	$454 (61%)
IAF (Appendix B)	x .96	x .92	x .88
Average overview project cost adjusted for inflation	$714 (100%)	$439 (61%)	$400 (56%

Table C.9. Reported Average Federal Costs for Federal Archeology Program Projects in the United States, 1988-1990 (concluded).

The reported annual unit costs for identification and evaluation projects (Question 47 responses divided by the sum of Questions 45 and 48 responses) adjusted for inflation for 1988, 1989, and 1990 are calculated as follows.

	1988	1989	1990
Reported average identification and evaluation project cost	$1,316 (100%)	$1,408 (107%)	$2,239 (170%)
IAF (Appendix B)	x .96	x .92	x .88
Average identification and evaluation project cost adjusted for inflation	$1,263 (100%)	$1,295 (103%)	$1,970 (156%)

The reported annual unit costs for data recovery project costs (sum of Questions 54 and 58 responses divided by the sum of Questions 52 and 56 responses minus the sum of Questions 55A and 59A responses) adjusted for inflation for 1988, 1989, and 1990 are calculated as follows.

	1988	1989	1990
Reported average data recovery project cost	$22,333 (100%)	$15,575 (70%)	$13,258 (59%)
IAF (Appendix B)	x .96	x .92	x .88
Average data recovery project cost adjusted for inflation	$21,440 (100%)	$14,329 (67%)	$11,667 (54%)

The reported annual unit costs of responding to unanticipated archeologicical discoveries (Question 64 responses divided by Question 61 responses) adjusted for inflation for 1988, 1989, and 1990 are calculated as follows:

	1988	1989	1990
Reported average unanticipated discovery response project cost	$6,369 (100%)	$9,618 (151%)	$1,030 (16%)
IAF (Appendix B)	x .96	x .92	x .88
Average unanticipated discovery response project cost adjusted for inflation	$6,114 (100%)	$8,849 (144%)	$ 906 (15%)

Table C.10. Reported Federal Archeological Enforcement Actions and Associated Expenditures in the United States, 1988-1990.

Agency	Year	All Violations [Ques. 14]	Arrests [Ques. 15]	Citations [Ques. 16]	All Reported Enforcement Spending($) [Ques. 29]
Air Force	88	0	0	0	0
	89	0	0	0	3,000
	90	0	0	0	0
Army	88	0	0	0	0
Bureau of Indian Affairs	88	9	0	0	0
	89	5	0	0	-
	90	50	0	0	-
Bureau of Land Management	88	96	12	11	253,000
	89	213	5	11	344,300
	90	124	7	7	571,200
Bureau of Reclamation	88	1	0	0	0
	89	4	0	0	3,000
	90	12	2	-	1,000
Corps of Engineers	88	42	1	8	9,000
	89	37	0	8	0
	90	29	0	3	10,000
Department of Energy Op.	88	5	1	1	2,731
	89	3	0	0	0
	90	3	3	0	0
Federal Bureau of Prisons	89	0	0	0	0
	90	0	0	0	0
Fish and Wildlife Service	89	51	0	8	31,000
	90	46	0	23	67,000
Forest Service	88	151	10	6	230,620
General Services Admin.	88	0	0	0	0
	89	0	0	0	-
	90	0	0	0	-
Health and Human Services	88	0	0	0	0
Immig. and Natural. Service	90	-	-	-	0
Indian Health Service	88	0	0	0	0
Marine Corps	88	0	0	0	0
	89	0	0	0	0
	90	0	0	0	0
Nat. Oceanic and Aer. Admin.	90	52	26	52	-
National Park Service	88	260	10	88	785,080
	89	162	3	34	351,792
	90	400	9	23	989,000
Navy	88	0	0	-	-
	89	0	0	0	-
	90	0	0	0	-
Office of Surface Mining	88	0	0	0	0
	89	0	0	0	0
	90	0	0	0	0

Table C.10. Reported Federal Archeological Enforcement Actions and Associated Expenditures in the United States, 1988-1990 (continued).

Agency	Year	All Violations [Ques. 14]	Arrests [Ques. 15]	Citations [Ques. 16]	All Reported Enforcement Spending($) [Ques. 29]
Tennessee Valley Authority	**89**	-	-	**4**	**17,356**
	90	-	**0**	**0**	**14,406**
U.S. Geological Survey	90	-	-	-	0
U.S. Postal Service	90	-	-	-	0
Total for:	**88**	**564**	**34**	**114**	**$1,280,431**
Total for:	**89**	**475**	**8**	**65**	**$ 750,448**
Total for:	**90**	**716**	**47**	**108**	**$1,652,696**

A dash (-) means "not applicable," agency has no data, or agency did not complete a questionnaire. Land-Managing agencies are **bolded** in the table, and all questions are specified in Appendix A.

The estimated number of archeological violations on Federal and Indian lands (Question 14) in the United States in 1988, 1989, and 1990 (Figure 4.1) are calculated as follows:

Agency	1988	1989	1990
Air Force	0	0	0
Army	0	0	0
BLM	96	213	124
BR	1	4	12
COE	42	37	29
DOE Ops.	5	3	3
FWS	-	51	46
FS	151	-	-
MC	0	0	0
NPS	260	162	400
TVA	-	-	-
Annual Reported Violations	555	470	614
Annual Correction Factor	x1.27	x1.47	x1.43
Corrected Number	705	691	878
Reported BIA Archeological Violations	+ 9	+ 5	+50
Estimated Annual Number Violations	714 (100%)	696 (97%)	928 (130%)

Estimated number of arrests for archeological violations on Federal and Indian lands (Question 15) in the United States in 1988, 1989, and 1990 (combined with citations [Question 16], Figure 4.1) was calculated as follows.

Agency	1988	1989	1990
BLM	12	5	7
BR	0	0	2
COE	1	0	0
DOE Ops.	1	0	3
FS	10	-	-
NPS	10	3	9
Annual Reported Archeological Violation Arrests	34	8	21
Annual Correction Factor	x1.27	x1.47	x1.43
Corrected Number	43 (100%)	12 (28%)	30 (70%)

(no BIA reports; this is estimated annual arrest number)

Table C.10. Reported Federal Archeological Enforcement Actions and Associated Expenditures in the United States, 1988-1990 (concluded).

Estimated number of citations for archeological violations on Federal and Indian lands (Question 16) in the United States in 1988, 1989, and 1990 (combined with arrests [Question 15], Figure 4.1) was calculated as follows.

Agency	1988	1989	1990
BLM	11	11	7
COE	8	8	3
DOE Ops.	1	0	0
FWS	-	8	23
FS	6	-	-
NPS	88	34	23
TVA	4	0	0
Annual Reported Citations	118	61	56
Annual Correction Factor	x1.27	x1.47	x1.43
Corrected Number	150 (100%)	90 (60%)	80 (53%)

(no BIA reports; this is estimated annual conviction number)

Estimated combined arrests (Question 15) and citations (Question 16; Figure 4.1) per year:

	1988	1989	1990
Arrests	43	12	30
Citations	150	90	80
Combination	193 (100%)	102 (53%)	110 (57%)

Estimated expenditures for archeological law enforcement on Federal and Indian lands (Question 29) in the United States during 1988, 1989, and 1990 (Figure 4.2), with adjustment for inflation, was calculated as follows.

Agency	1988	1989	1990
Air Force	0	$ 3,000	0
BLM	$253,000	344,300	$571,200
BR	0	3,000	1,000
COE	9,000	0	10,000
DOE Ops.	2,731	0	0
FWS	-	31,000	67,000
FS	230,620	-	-
NPS	785,080	351,792	989,000
TVA	-	17,356	14,406
Annual Reported Law Enforcement Expenditures	$1,280,431	$750,448	$1,652,606
Annual Correction Factor	x1.27	x1.47	x1.43
Corrected Number	$1,626,147 (100%)	$1,103,159 (68%)	$2,363,227 (145%)

(no BIA reports; this is estimated annual archeological law enforcement cost)

IAF (Appendix B)	x .96	x .92	x .88
Annual Archeological Law Enforcement Expenditures Adjusted for Inflation	$1,561,101 (100%)	$1,014,906 (65%)	$2,079,640 (133%)

Table C.11. Reported and Estimated Federal Prosecutions of Archeological Violations in the United States, 1988-1990.

Agency	Year	All Prosecutions [Ques. 17]	ARPA Misd.Conv. [Ques. 18]	ARPA Fel.Conv. [Ques.19]	Non-ARPA Prosecutions [Ques. 21]	Civil Penalties [Ques. 23]
Air Force	**88**	**0**	**0**	**0**	**0**	**0**
	89	**0**	**0**	**0**	**0**	**0**
	90	**0**	**0**	**0**	**0**	**0**
Army	**88**	**0**	**0**	**0**	**0**	**0**
Bureau of Indian Affairs	88	0	0	0	0	0
	89	0	0	0	0	0
	90	0	0	0	0	0
Bureau of Land Management	**88**	**2**	**1**	**0**	**9**	**0**
	89	**4**	**5**	**0**	**2**	**1**
	90	**5**	**3**	**1**	**7**	**0**
Bureau of Reclamation	**88**	**0**	**0**	**0**	**0**	**0**
	89	**0**	**0**	**0**	**0**	**0**
	90	-	-	-	-	-
Corps of Engineers	**88**	**5**	**4**	**0**	**3**	**3**
	89	**7**	**0**	**3**	**4**	**2**
	90	**1**	**0**	**0**	**1**	**1**
Department of Energy Op.	**88**	**0**	**0**	**0**	**0**	**0**
	89	**0**	**0**	**0**	**0**	**0**
	90	**0**	**0**	**0**	**2**	**0**
Federal Bureau of Prisons	89	0	0	0	0	0
	90	0	0	0	0	0
Fish and Wildlife Service	**89**	**6**	**0**	**0**	**7**	**1**
	90	**3**	**0**	**0**	**23**	**9**
Forest Service	**88**	**4**	**0**	**1**	**12**	**6**
General Services Admin.	88	0	0	0	0	0
	89	0	0	0	0	0
	90	0	0	0	0	0
Health and Human Services	88	0	0	0	0	0
Indian Health Service	88	0	0	0	0	0
Marine Corps	**88**	**0**	**0**	**0**	**0**	**0**
	89	**0**	**0**	**0**	**0**	**0**
	90	**0**	**0**	**0**	**0**	**0**
Nat. Oceanic and Aer. Admin.	90	267	0	0	20	0
National Park Service	**88**	**42**	**2**	**1**	**40**	**20**
	89	**6**	**6**	**0**	**30**	**0**
	90	**17**	**4**	**0**	**27**	**0**
Navy	**89**	**0**	**0**	**0**	**0**	-
	90	**0**	**0**	**0**	**0**	**0**
Office of Surface Mining	88	0	0	0	0	0
	89	0	0	0	0	0
	90	0	0	0	0	0
Tennessee Valley Authority	**89**	**0**	**0**	**0**	**4**	**0**
	90	**0**	**0**	**0**	**0**	**0**

Table C.11. Reported and Estimated Federal Prosecutions of Archeological Violations in the United States, 1988-1990 (continued).

Agency	Year	All Prosecutions [Ques. 17]	ARPA Misd.Conv. [Ques. 18]	ARPA Fel.Conv. [Ques.19]	Non-ARPA Prosecutions [Ques. 21]	Civil Penalties [Ques. 23]
Total for Year	88	53	7	2	64	29
Total for Year	89	23	11	3	47	4
Total for Year	90	52	7	1	80	10

A dash (-) means not "applicable," agency has no data, or agency did not complete a questionnaire. Questions are specified in Appendix A. Land-Managing agencies are **bolded** in the table.

Correction of the reported data for missing Land-Managing agency data was calculated as follows for the factors listed in this table as they related to U.S. Federal and Indian lands in 1988, 1989, and 1990 (Figure 4.1). The BIA reported no archeological violation prosecutions, convictions, or civil penalties during any of these three years.

Estimated number of all archeological prosecutions (Question 17; Figure 4.1):

Agency	1988	1989	1990
BLM	2	4	5
COE	5	7	1
FWS	-	6	3
FS	4	-	-
NPS	42	6	17
Annual Reported Prosecutions	53	23	26
Annual Correction Factor	x1.27	x1.47	x1.43
Corrected Number of Archeological Prosecutions	67 (100%)	34 (51%)	37 (55%)

Estimated number of ARPA misdemeanor convictions (Question 18):

Agency	1988	1989	1990
BLM	1	5	3
COE	4	0	0
NPS	2	6	4
Annual Reported Convictions:	7	11	7
Annual Correction Factor	x1.27	x1.47	x1.43
Corrected Number of ARPA Misdemeanor Convictions	9 (100%)	16 (178%)	10 (111%)

Estimated number of ARPA felony convictions (Question 19):

Agency	1988	1989	1990
BLM	0	0	1
COE	0	3	0
FS	1	-	-
NPS	1	0	0
Annual Reported Fel. Convictions	2	3	1

Correction factor not a significant number here.

Table C.11. Reported and Estimated Federal Prosecutions of Archeological Violations in the United States, 1988-1990 (concluded).

Estimated combined ARPA misdemeanor (Question 18) and felony (Question 19) convictions (Figure 4.1) per year:

	1988	1989	1990
Misdemeanors	9	16	10
Felonies	2	3	1
Combination	11	19	11
	(100%)	(172%)	(100%)

Estimated number of non-ARPA prosecutions for archeological violations (Question 21):

Agency	1988	1989	1990
BLM	9	2	7
COE	3	4	1
DOE Ops.	0	0	2
FWS	-	7	23
FS	12	-	-
NPS	40	30	27
TVA	-	4	0
Annual Reported Non-ARPA Archeological Prosecutions	64	47	60
Annual Correction Factor	x1.27	x1.47	x1.43
Corrected Number of Non-ARPA Archeological Prosecutions	81 (100%)	69 (85%)	86 (106%)

Estimated number of civil penalties for archeological violations (Question 23; Figure 4.1):

Agency	1988	1989	1990
BLM	0	1	0
COE	3	2	1
FWS	-	1	9
FS	6	-	-
NPS	20	0	0
Annual Reported Civil Penalties	29	4	10
Annual Correction Factor	x1.27	x1.47	x1.43
Corrected Number of Archeological Civil Penalties	37	6	14

The reported numbers of ARPA and non-ARPA prosecutions for archeological violations appear to be incompatible:

	1988	1989	1990
All Reported Prosecutions	53	23	52
Reported non-ARPA Prosecutions	64	47	80

This is probably a valid reflection of the fact that the archeological violations were charged as part of a multiple violation set of charges, and that the archaeological crimes were pled away in the judicial negotiation and therefore are not reported as successful prosecutions of archeological crimes.

Table C.12. Selected Reported U.S. Federal Archeology Program Financial Information, 1988-1990.

Agency	Year	ARPA Criminal Fines ($) [Ques. 22]	ARPA Civil Penalties ($) [Ques. 24]	Restoration and Repair Costs ($) [Ques. 25]	Artifact Forfeiture Value ($) [Ques. 27]	Other Forfeiture Values ($) Ques. 28]
Bureau of Land Management	88	2,500	-	-	335	-
	89	-	4,000	25,000	90,000	-
	90	1,350	10,000	100,900	1,949	1,050
Corps of Engineers	88	-	26,500	-	-	-
	89	2,500	350	2,000	-	-
	90	-	50	-	-	-
National Park Service	88	5,000	56,400	43,530	32,520	604
	89	6,495	-	-	78	315
	90	3,000	-	7,000	8,000	13,000
Total for Year	88	$7,500	$82,900	$ 43,530	$32,855	$ 604
Total for Year	89	$8,995	$ 4,350	$ 27,000	$90,078	$ 315
Total for Year	90	$4,350	$10,050	$107,900	$ 9,949	$14,050

A dash (-) means "not applicable" or agency has no data. Questions are specified in Appendix A. These three agencies were the only Federal archeology program participants who reported complete enough information to communicate a sense of the financial aspects of their archeological crimes prosecutions.

Table C.13. U.S. Federal Agency Notifications of Indian Tribes About Planned Archeological Projects, 1988-1990.

Agency	Year	Notifications of Tribes [Question 12]
Air Force	**88**	**48**
	89	**11**
	90	**15**
Bureau of Indian Affairs	88	163
	89	132
	90	190
Bureau of Land Management	**88**	**224**
	89	**156**
	90	**489**
Bureau of Reclamation	**88**	**5**
	89	**14**
	90	**5**
Corps of Engineers	**88**	**26**
	89	**29**
	90	**18**
Department of Energy Op.	**88**	**6**
	89	**0**
	90	**11**
Env. Prot. Agency Op.	89	0
Federal Bureau of Prisons	89	0
	90	1
Fish and Wildlife Service	**89**	**14**
	90	**15**
Forest Service	**88**	**83**
General Services Admin.	88	0
	89	0
	90	0
Health and Human Services	88	0
Indian Health Service	88	2
Marine Corps	**88**	**0**
	89	**0**
	90	**0**
Nat. Oceanic and Aer. Admin.	90	0
National Park Service	**88**	**31**
	89	**34**
	90	**37**
Navy	**88**	**6**
	90	**0**
Nuclear Reg. Commission	88	0
Office of Surface Mining	88	0
	89	0
	90	0

Table C.13. U.S. Federal Agency Notifications of Indian Tribes About Planned Archeological Projects, 1988-1990 (concluded).

Agency	Year	Notifications of Tribes [Question 12]
Tennessee Valley Authority	**89**	0
	90	0
U.S. Geological Survey	90	0
Total for Year:	88	594
Total for Year:	89	390
Total for Year:	90	781

A dash (-) means "not applicable," agency has no data, or agency did not complete a questionnaire. Question is specified in Appendix A. Land-Managing agency data are **bolded**.

The estimate of tribal notifications of proposed archeological projects on Federal or Indian lands (Question 12, Figure 5.1) in the United States during 1988, 1989, and 1990 was calculated as follows.

Agency	1988	1989	1990
Air Force	48	11	15
BLM	224	156	489
BR	5	14	5
COE	26	29	18
DOE Ops.	6	0	11
FWS	-	14	15
FS	83	-	-
NPS	31	34	37
Annual Reported Tribal Notifications	423 (100%)	258 (61%)	590 (139%)
Annual Correction Factor	x1.27	x1.47	x1.43
Corrected Number	537	379	844
Reported BIA Notifications	163	132	190
Estimated Annual Number Notifications	700 (100%)	511 (73%)	1,034 (148%)