

## Protecting cultural resources in managing chemical pollution\*

Janet L. Friedman and Barbara J. Little

*Dames & Moore, Cultural Resource Services, 7101 Wisconsin Avenue, Suite 700,  
Bethesda, MD 20814-4870 (USA)*

### Abstract

Historic properties are tangible and intangible remains of previous cultures and populations. Also called cultural resources, they include such properties as buried prehistoric sites, historic structures, and Indian religious sites. Several laws protect cultural resources from damage resulting from actions undertaken, licensed, financed, and proposed by the Federal Government. The National Historic Preservation Act and its implementing regulations are of particular concern in managing chemical pollution. In discussing cultural resources in the context of environmental assessments and managing chemical pollution, there are four main issues to address: the identification of cultural resources and assessment of their significance; the regulations that require agencies to consider the impacts of their activities on cultural resources; the protection of cultural resources as an environmental issue in the management of chemical pollution; and the defensible balancing of cultural significance against risk and economic burden.

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### 1. Introduction

Cultural resources management and the preservation of historic places are growing areas of concern in this country and in the world. Both government and the public recognize a value in preserving and protecting our heritage resources from the destructive impacts of a variety of human activities. Specific legislation requires Federal agencies to ensure that the potential impacts of their activities on cultural resources be considered in their project planning. Hazardous waste clean-up is one activity that may adversely affect cultural resources and for which such consideration is required.

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### *1.1 Defining cultural resources*

What are cultural resources, and how do they differ from natural resources? Cultural resources, often called historic properties, include aspects of the historic and prehistoric, archeological and structural, tangible and sometimes intangible remains of past human cultures and people. They may be archeological sites, objects, places, landscapes, or buildings. They may be visible above the ground, buried underground, or covered by water. They are non-renewable resources that make up an irreplaceable part of the human environment in which we live. They differ from — or augment — natural resources in that they are sites associated with past human activity.

Cultural resources come in many forms: the remains of a temporary camp site used by Native Americans, now represented only by a surface scatter of stone chips; a cabin occupied by slaves in the 1800s; a mansion occupied by an important historic figure; a uniquely American style of building; a suspension bridge from the 1920s. A cultural resource may be important because it is central to the religion of a Native American tribe, or because it represents the work of a master craftsman, or because it is an archeological site with significant research potential.

Most of the cultural resources that are likely to be affected by chemical pollution are archeological sites. The Regulations implementing the Archeological Resources Protection Act of 1979 (43 CFR Part 7), define an "Archeological resource" as "any material remains [or physical evidence] of human life or activities which are at least 100 years of age and which are ... capable of providing scientific or humanistic understandings of past human behavior, cultural adaptation, and related topics through the application of scientific or scholarly techniques."

Clearly, cultural resources are diverse; the treatment of them may also be diverse. However, the process by which they are considered in law and regulation is consistent, regardless of their characteristics.

## **2. Cultural resources legislation**

In carrying out the identification and remediation of hazardous and toxic wastes as part of the Comprehensive Environmental Response Compensation and Liability Act of 1980 (CERCLA), agencies are also responsible for compliance with other environmental laws [1]. Because these responsibilities extend to laws concerning cultural resources, it is important that managers of hazardous waste projects understand the legislative protections and regulatory processes that are in place to ensure consideration of cultural resources in agency undertakings.

Historic properties are protected by a series of increasingly inclusive laws and regulations. Historic preservation legislation can be divided into two categories: those laws designed to protect the resource from the depredations of looting and vandalism; and those laws intended to protect sites from

inadvertent harm that may result as a by-product of other activities of the Federal government. Table 1 provides a summary of the Federal laws that consider cultural resources. State and local governments often require adherence to complementary legislation.

The first national effort to protect sites from vandalism was the Antiquities Act of 1906. In addition to providing penalties for looting archeological sites, the greatest contribution of this law was to create the basis for setting aside historic properties as part of the patrimony of the American people. The protections of the Antiquities Act were updated and expanded with the passage in 1979 of the Archeological Resources Protection Act (ARPA). ARPA protects archeological sites on Federal land by establishing severe civil and criminal penalties for their destruction and setting up a permitting process for their scientific excavation, among other provisions.

The first major efforts to recognize and curtail the potential of Federal projects to damage historic properties were the Historic Sites Act of 1935, the Reservoir Salvage Act of 1960, and the Archeological and Historic Data Preservation Act of 1974. The legislation that consolidated and strengthened previous requirements, and therefore is most relevant for our work today, is the National Historic Preservation Act of 1966 (as amended in 1992).

### *2.1 The National Historic Preservation Act*

The National Historic Preservation Act laid the framework for the existing Federal historic preservation system, establishing the Advisory Council on Historic Preservation (the Advisory Council or the Council) and its relationship to the State Historic Preservation Officers (SHPO) in each of the States and territories. Most important for our work today is a brief and simple requirement in Section 106 of that act that any agency head contemplating an “undertaking” must take into account the effect of that undertaking on historic properties and must give the Advisory Council on Historic Preservation an opportunity to comment with regard to such undertaking.

Section 106 is implemented by the Regulations of the Advisory Council on Historic Preservation, 36 CFR 800. All Federal Agencies must go through the “106 Process” for any Federal undertaking. That means that any time an agency directly or indirectly funds a project that has the potential to disturb the ground, it requires 106 review. But it also means that any time an agency provides a lease or permit, manages a piece of land, or proposes an action for Congressional authorization, the agency is required to consider the potential impact of that action on historic properties.

### *2.2 Identification of historic properties*

The first step in the 106 process is the identification and evaluation of cultural resources, itself an involved process. The Agency must consult with the appropriate State Historic Preservation Office to determine if there are, or are likely to be, historic properties within the impact area. The SHPO will work with the agency to find the known properties already identified in the

TABLE 1

Major federal legislation affecting cultural resources

Title and date	Number	Regulations
Antiquities Act, 1906	P.L. 59-209	43 CFR 3
National Park Service Organic Act, 1916	P.L. 64-235	
Historic Sites Act, 1935	P.L. 74-292	36 CFR 65, National Historic Landmarks; 36 CFR 68, DOI Standards for Historic Preservation
Federal-Aid Highway Act, 1956	P.L. 91-605	
Reservoir Salvage Act, 1960	P.L. 86-523	
National Historic Preservation Act, 1966 as amended (NHPA)	P.L. 95-515	36 CFR 65, National Historic Landmarks; 36 CFR 800, Protection of Historic Properties (Advisory Council on Historic Preservation); 36 CFR 801, Urban Development Action Grant Program - Historic Preservation Requirements; 36 CFR 61, Procedures for Approved State and Local Government Programs; Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation
Department of Transportation Act, 1966	P.L. 89-670	
National Environmental Policy Act, 1969 (NEPA)	P.L. 91-190	
Executive Order 11593, 1971 "Protection and Enhancement of the Cultural Environment"	16 USC 470	codified as part of 1980 amendments to NHPA
Archeological and Historic Preservation Act, 1974 (AHPA)	P.L. 93-291	
American Indian Religious Freedom Act, 1978 (AIRFA)	P.L. 95-341	
Archeological Resources Protection Act, 1979 (ARPA)	P.L. 96-95	43 CFR 7, 36 CFR 296, 18 CFR 1312, 32 CFR 229
Arctic Research Policy Act, 1984	P.L. 98-373	
Native American Graves Protection and Repatriation Act, (NAGPRA) November 16, 1990	P.L. 101-601	

State's files. Sometimes that will be enough; the SHPO will recommend that the project may go on and that no further work is needed. More frequently, the SHPO will recommend that the agency conduct a Phase I background study. This may be a literature search (Phase IA) or a field reconnaissance (Phase IB) or, more usually, both.

A Phase IA literature search involves gathering available relevant secondary and primary source material that deals with the prehistory and history of the project area. This includes library and archival studies, as well as a check of the appropriate State files and files of the National Register of Historic Places to identify the known cultural resources in the project area and information about previous cultural resources investigations that have been undertaken in the immediate area. It also includes meeting with local planning personnel, preservation societies, and local professional archeologists and historians to gather additional background information. Sufficient material must be collected and reviewed to allow the researchers to identify the historic contexts and property types likely to be encountered in the project area.

A Phase IB cultural resource survey is a detailed, systematic field inspection to discover historic and prehistoric cultural resources in the project area. It includes both surface collection and subsurface testing to ascertain the presence of archeological sites, as well as basic descriptions and photographs of existing buildings or structures in the project area built prior to about 1945. Generally in a Phase IB reconnaissance survey, surface inspection is carried out where visibility permits, some areas may be cleared with a trowel to increase surface visibility, and preliminary subsurface testing may be conducted at regularly spaced intervals. Phase IB survey includes identification and documentation of remains of both prehistoric and historic resources. At the conclusion of Phase IB investigation, it should be possible to: identify most cultural resources in the project area; determine that some sites have little potential for significance or have poor integrity, and are therefore not eligible for listing on the National Register of Historic Places; and make recommendations about sites that may be significant and for which Phase II investigation is appropriate.

### *2.3 Evaluation of significance*

Once identification is completed, significance must be evaluated. It is not necessary or desirable that all historic sites be saved. It is necessary, however, to evaluate the properties so that attention can be paid to those that are significant. Sites that appear, as the result of Phase IB survey, to have potential for National Register eligibility may be recommended for further Phase II testing to evaluate their significance and to provide sufficient information upon which to base recommendations for the next phase of research. The purpose of Phase II is to provide information about the boundaries and extent of a site, its depth, possible cultural affiliations, and potential significance. For architectural resources, Phase II involves more detailed descriptions, boundary determinations, and photographs, and the preparation of Determination of

Eligibility forms as needed. It also includes, for historic period sites and buildings, detailed historic research sufficient to provide an understanding of the site's place within the State's historic context framework and to identify any associations with significant people or events.

To be considered significant, a property must possess integrity of location, setting, and design AND must meet one or more of the four criteria for eligibility for inclusion in the National Register of Historic Places (36 CFR 60.6). Those criteria are: association with events that have made a significant contribution to the broad patterns of our history; association with persons who have been significant in our past; embodiment of distinctive characteristics of type or period or works of a master; or likely to yield information important in history or prehistory. It is this last criterion under which archeological sites are likely to be considered significant.

Significance is evaluated in conjunction with the SHPO. The Agency recommends action, and the SHPO has the responsibility to concur or disagree. Disputes can be brought to the Keeper of the National Register of Historic Places, but generally, it is the Agency and SHPO, working together, who make the determinations.

#### *2.4 Evaluation of effect*

The next step is the evaluation of effect. If there is a significant historic property within the project area, it must be decided whether the undertaking will harm the cultural resource. Again, a process exists for evaluating the effect; it is necessary to decide whether there is no effect, adverse effect, or no adverse effect. The latter determination means that the undertaking will affect one or more historic properties but will not harm them.

#### *2.5 Consultation*

The fourth step involves consultation between the agency and the SHPO, an important part of the historic resource compliance process. Consultation with the appropriate State Historic Preservation Office should be undertaken early in the process for several reasons: it is required in the compliance process; it permits a preliminary understanding of resource potential and significance; it helps to establish appropriate archeological and historic contexts; and it facilitates gaining understanding of how the State may wish to see the resources treated.

#### *2.6 Mitigation of adverse effect*

Working together, it is often possible to develop mitigation measures that will convert an adverse effect to no adverse effect, permitting the project to go ahead on schedule. Moving an activity in order to avoid impact to an archeological site is the preferred mode of mitigation. Another technique for mitigation may be the excavation of an archeological site that is significant for the information it contains. By excavating the site in a scientifically valid way that makes the information available, excavation removes the adverse effect of

a project. Similarly, recording a building to the standards of the Historic American Building Survey (HABS) before it is modified or destroyed may be a way to turn an adverse effect into a “no adverse effect.”

### *2.7 Memoranda of agreement and programmatic agreements*

Once decisions are reached about the presence of historic properties, their significance under the National Register criteria, and determination of effect, it is time to conclude a Memorandum of Agreement (MOA). Preferably, this MOA is reached by the agency, with the cooperation of the SHPO. When the two have worked together on developing an MOA, it smooths the process. When the agency and the SHPO agree, it is unlikely that the third required party in the agreement — the Advisory Council on Historic Preservation — will have a problem with the decision reached.

In addition to the Memorandum of Agreement for defined projects of short duration, the Advisory Council's regulations make a provision for a more general programmatic agreement for long-term programs. This provision is likely to become increasingly useful for considering cultural resources in areas where remediation is required. A programmatic agreement is developed by an agency to determine how cultural resources management will take place on a specific facility or for a particular program. For example, the Department of Energy has programmatic agreements for the characterization activities at the Yucca Mountain Site in Nevada, for their institutional energy conservation program, and for their Savannah River facility. The Coast Guard has a programmatic agreement for converting lighthouses from manned facilities to electronic systems. These and similar programmatic agreements enable the agency to run its own program with minimal requirements to seek concurrence from either the Council or the SHPO. Once consensus has been reached among the players, and the programmatic agreement has been signed, the agency is virtually litigation-proof as long as it lives up to the terms of the agreement it has signed.

Alternative means of complying with Section 106 regulations are following Counterpart regulations developed by an agency and approved by the Council or following an agreement between the Council and a State, which substitutes a state review for the standard Section 106 process.

### *2.8 American Indian Religious Freedom Act (AIRFA)*

There are two further pieces of legislation that increase the responsibilities of the agencies for protecting Native American historic and religious sites. The first, the American Indian Religious Freedom Act (AIRFA), requires Federal agencies to consult with American Indian groups and to examine their programs to identify requirements that may impact upon First Amendment rights of Native Americans, including Eskimos, Aleuts, and native Hawaiians. AIRFA has resulted in significant changes in some Agency programs that were inadvertently responsible for curtailing the opportunity for Native peoples to practice their religions. For example, the Fish and Wildlife Service has

amended its restriction on possessing parts of endangered species to allow Indians, in certain circumstances, to own eagle feathers used in religious ceremonies. The Forest Service, as another example, has opened areas closed for fire restrictions to permit Indians to gather plant materials needed to make baskets that are a part of religious rites. The requirement of the American Indian Religious Freedom Act that is most likely to affect project planning is the responsibility to notify local Indian groups about activities that could interfere with their religious freedom. The legislation does not name an agency to administer AIRFA; however, the 1992 amendments to the National Historic Preservation Act give the responsibilities to include consultation with Indian Tribes in their work with other agencies on Memoranda of Agreement. Thus, the Council helps to ensure that all agencies include consideration of American Indian Religious Freedom as part of their agency planning.

### *2.9 Native American Graves Protection and Repatriation Act (NAGPRA)*

The recently passed Native American Graves Protection and Repatriation Act (NAGPRA) puts additional restrictions on disturbing Indian graves and funerary goods. The regulations implementing NAGPRA are now being promulgated by the National Park Service. It is not clear how this will impact the activities of Federal agencies, but it is an issue that must be watched.

### *2.10 Federal agency responsibilities*

It is very important to understand that not every old building or archeological site is significant, not every historic property needs to be saved, and not every surface lithic scatter will delay or stop a project. It is important to include the process in planning, to incorporate cultural resources considerations with other environmental considerations, and to ensure that cultural resources responsibilities are acknowledged and met early enough in planning that the Section 106 process will not cause the undertaking to be delayed. Cultural resources planning is part of the responsibility of every Federal agency. Generally, agencies share that responsibility with their licensees, loan recipients, contractors, and others with whom they work.

## **3. Issues of cultural resources in managing pollution**

The consideration of historic properties has been a responsibility of the Federal government for several decades. However, the protection of cultural resources as an environmental issue in the management of chemical pollution is only recently being recognized as a part of the Federal government's responsibility. Increasingly, the tie between problems of chemical pollution and concerns of archeology are intersecting at unexpected junctures.

Archeologists are increasingly aware of the hazards of chemical pollution as they find themselves performing compliance-related site surveys and excavations on toxic sites. In some cases, archeologists and chemists have worked



together to study the longterm movements of organic and inorganic constituents in soil [2]. Archeologists might encounter toxic wastes unexpectedly [3] or, preferably, may be able to plan their work on such sites. Some archeologists have considered that industrial waste may itself be historic [4].

Archeologists must themselves become more aware of chemical pollution and identify the hazards that they are likely to encounter, both in sites targeted for remediation and in sites that are considered “normal” archeological occurrences. Among the latter, for example, there are hazards associated with the excavation of archeological features such as graves (including interments where bodies were covered in arsenic — often now leaching into groundwater), privies where accumulated human waste concentrates biological hazards, and even seemingly harmless sites where colonial artisans worked with pewter or lead.

Archeologists have been involved in hazardous waste clean-up in two main ways [5]. First, they often provide information about the history of site use. Historical archeologists and industrial archeologists need to pay particular attention to identifying historic hazards that maintain their toxic character. Such hazards resulted, for example, from early industrial activities ranging from 1700s tanneries and pharmacies to 1930s factory chemical production [6–8].

Second, increasingly, archeologists are involved in assessing impacts to archeological sites which will result from hazardous waste clean-up or remediation. Hazardous waste remediation is a Federal undertaking that has potential to affect cultural resource sites. Therefore, the Federal agency responsible for clean-up activities is required to follow the steps of the 106 process outlined above. They must insure site identification, evaluation of significance, evaluation of effect, consultation and mitigation of adverse impact.

Archeologists' involvement in hazardous waste remediation may include situations where archeological sites are known. Archeologists also may be involved in remediation efforts where the presence of sites is undetermined and where, therefore, exploration for and identification of cultural resources is a necessary step in the treatment of the land. Some archeologists have explored non-excavation strategies in order to safely and efficiently deal with sites contaminated with hazardous materials [9]. We currently are exploring such strategies for the identification of prehistoric and historic cultural resources in contaminated zones. Our approach relies on intensive background research and takes into account a number of factors that help predict the locations and types of archeological sites in an area. For example, we consider information such as data on past environments, known regional site distributions, and results from previous regional excavations to create and refine predictive models for cultural resources. Our aim is to vastly increase the efficiency of the short amount of field time available by using data from more intensely excavated clean sites in the same region as contaminated sites.

Traditional approaches in archeology are labor intensive in the field; a relatively large crew (six to ten to dozens of individuals) spends a relatively long amount of time (weeks to several months or more) on site. Traditional

approaches of intensive excavation result in the recovery of numerous artifacts that must be cleaned, identified and curated in perpetuity. Normally, artifacts are curated with the objective of providing scholars access to the material for study and providing museum curators material for educational display. Clearly, the logistical problems of curating contaminated artifacts and making them safely available are overwhelming — at least at present.

In spite of the popular Indiana Jones conception of archeologists driven by a need to supply museums with rare and fascinating objects for display, modern archeology is more concerned with the people of our past and with all the clues to their ways of life. Such data depend on the context and location of objects in relation to each other within a site. The objects themselves pale in importance to their context. It is important to realize that the issue is not how to recover and decontaminate objects, but is rather how to safely recover archeological and other cultural data while carrying out remediation efforts.

Some of the issues, then, in protecting cultural resources while managing chemical pollution are first, the efficient and credible identification of resources through valid prediction and limited testing; second, the efficient evaluation of the significance of such resources to make recommendations about their contribution to our cultural heritage; third, weighing the risks involved in delaying clean-up and the risk to field personnel against the importance of the data to be gathered; fourth, legal compliance with the mandate to consider cultural resources while caring for natural resources; and, fifth, the defensible balancing of cultural significance against risk and economic burden.

The importance of cultural resources in national, state and local identities is clear; legal requirements are clear; the need to remediate contaminated sites is clear. What is not yet clear is the practical application and coordination of protecting both cultural and natural resources. There is, however, an evolving system for managing both.

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