

# Dam Removal and Historic Preservation

## *Reconciling Dual Objectives*



**American Rivers**  
*Thriving By Nature*

## Acknowledgements

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*On The Cover: The Maple Lake Dam on Summit Lake Creek in Lackawanna County, Pennsylvania was removed in December 2006. The dam, originally built for water supply in the 1800s, no longer served a purpose and was removed in order to avoid expensive repairs and to restore the stream and wetland.*

*Photo Credit: Sara Deuling, American Rivers*

# Dam Removal and Historic Preservation:

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Removal can be a solution to problems of unsafe infrastructure and can stimulate waterfront revitalization, possibly providing new recreation opportunities and economic development.



## Foreward

Since the early 1990s, dam removal has increasingly become a legitimate tool for restoring rivers and aquatic ecosystems. Removal can be a solution to problems of unsafe infrastructure and can stimulate waterfront revitalization, possibly providing new recreation opportunities and economic development. The National Park Service (NPS) – Rivers, Trails and Conservation Assistance Program has partnered with American Rivers to help develop tools to help communities and individuals succeed with dam removal projects as part of its role in providing technical assistance to conserve rivers.

Yet, NPS is also very sensitive to protecting cultural values. The mission of NPS is to preserve unimpaired natural and cultural resources for the use and enjoyment of current and future generations, both within parks and throughout the country. NPS has a robust cultural resources program and is the keeper of the National Register of Historic Places. NPS administers the Historic American Engineering Record and the Historic American Landscape System. Many Parks were created specifically to preserve a piece of America's past. Park Interpreters specialize in helping tell the story of places, resources and objects and helping visitors relate those stories to their own lives.

The balance between natural and cultural resource protection can be very delicate. NPS grapples with these issues when it comes to decisions such as restoring a Civil War era landscape or maintaining tree cover to benefit water quality in the Chesapeake Bay. NPS uses enabling legislation for specific parks to guide such decisions, as well as management policies, procedures for engaging the public in planning decisions, and other laws. For non-park lands, the legal framework for addressing decisions about natural resource restoration and protecting historic resources provides opportunities for creative engagement and problem solving. *Dam Removal and Historic Preservation: Reconciling Dual Objectives* provides an introduction to historic preservation laws and a range of options for addressing the often difficult decisions that must be made when considering the removal of a dam. The purpose of this document is to provide both dam removal proponents and the historic preservation community the tools needed to work together and build a successful partnership.

**Joan Harn, Rivers and Hydro Leader**

National Park Service – Conservation and Outdoor Recreation Programs

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## Introduction

“History is a guide to navigation in perilous times. History is who we are and why we are the way we are.”

—David C. McCullough, author

“America is a great story, and there is a river on every page of it.”

—Charles Kuralt, author

Did you ever have a favorite place growing up that now, every time you drive by, it reminds you of your childhood? Whether it is a bridge, farm, a dam, or some other memorable landmark, there are historic structures and places across the country that have special significance to their communities. Historic preservation laws were devised to protect cultural, archaeological, and architectural sites, structures, and landscapes that are significant to our heritage. While one generally envisions houses, cemeteries, and battlefields as having historic significance, other structures such as dams and bridges can be historically significant and may receive protection if their engineering is unique and/or they served an important role in local, state, or national history. Historic preservation and conservation organizations often partner on issues such as urban sprawl and smart growth, finding ways to simultaneously preserve our nation’s heritage and natural environment. As our nation’s infrastructure continues to age and we come to recognize its impact on the environment, river restoration projects can create opportunities for historic preservation and environmental restoration interests to work together.

In some cases, efforts to restore rivers involve proposals for the removal of dams. A majority of dams were constructed prior to passage of both the National Historic Preservation Act (1966) and the National Environmental Policy Act (1969) and thus were built without the procedural safeguards now mandated by those statutes. Some of the dams that were once integral to our nation’s growth—providing power for grist mills and industrial cities, municipal drinking water, and electricity—no longer serve their intended purpose; costly repair may be needed to prevent their failure and ensure safety as these structures age. According to the American Society of Civil Engineers, one-quarter of the nation’s dams are older than 50 years; that number will increase to 85 percent by the year 2020. Because of their deterioration and additional documentation on the detrimental effects dams have on river ecosystems, dam removal has become an increasingly pragmatic method for restoring natural river functions and eliminating unsafe infrastructure. Removing a dam can provide many benefits, such as allowing migratory fish species access to historic spawning grounds, improving water quality and the natural movement of sediment and other nutrients, and

reestablishing the natural flow regime<sup>1</sup>. However, restoring environmental balance to our nation's rivers may affect historic structures and archaeological sites, triggering state and federal historic preservation laws, and interest in preserving a piece of local history, as well as providing an opportunity for historic discovery<sup>2</sup>.

*Dam Removal and Historic Preservation: Reconciling Dual Objectives* was written because too often advocates for river restoration through dam removal find themselves in the middle of a project and at odds with potential partners over matters of historic preservation. Dam removal proponents need to better understand the processes established to protect historic values so they can work more effectively in partnership with historic preservation interests to establish and achieve mutual goals. While the historic fisheries that helped build this nation, from providing sustenance to Washington's troops during the American Revolution to their role as a sacred species to many tribes, deserve recognition, it is also important to respect the role of the dam, and in some cases the impoundment, in building local communities and sometimes as the social center for a town. The primary audiences for this report are dam removal project managers such as state agencies, community leaders, watershed groups, consultants. It is also our hope that local historic preservation societies and associations will also find it useful. Furthermore, we hope that this document will help parties involved in such endeavors to build constructive relationships and successfully reconcile potentially competing objectives.

This report begins with a primer on Section 106 of the National Historic Preservation Act, the federal law that applies to many proposed dam removal projects. State and local historic preservation laws may also pertain to proposed dam removal projects. In most cases, state and local historic preservation laws parallel the federal law, and compliance with all levels of jurisdiction can be achieved in a single process.

The report also examines opportunities for historic preservation and environmental interests to (1) participate in productive discussions about whether a proposed dam removal could adversely affect historic resources and, if so, (2) work together to identify methods for avoiding, minimizing or mitigating the adverse effects of the dam removal project.

Finally, this report provides case studies of actual dam removal projects that have addressed historic issues (see Appendix A), and an overview of federal, state, and tribal historic preservation laws (see Appendix B). Whether you are a dam owner, community member, state or federal agency, historical society, an advocate for river restoration and/or historic preservation, this report provides you with important information about reconciling the dual objectives of dam removal and historic preservation and making the often difficult choices between compelling cases to restore rivers or retain historic value.

## Section 106 of the National Historic Preservation Act

In 1966, Congress passed the National Historic Preservation Act (NHPA). The intent, as stated in the opening section of the NHPA, is that “the historical and cultural foundations of the Nation should be preserved as a living part of our community life and development in order to give a sense of orientation to the American people.” [16 USC 470b(2)]

Section 106 of the NHPA requires federal agencies to follow a review and consultation process to consider the effects of all their undertakings on historic properties, whether those properties are federally owned or not. The Advisory Council on Historic Preservation (ACHP) must be afforded the opportunity to comment on any federal project that may affect properties that are listed on or eligible for listing in the National Register of Historic Places.

“The National Register of Historic Places is the Nation’s official list of cultural resources worthy of preservation. Authorized under the Historic Sites Act of 1935 and expanded under National Historic Preservation Act of 1966, the National Register is part of a national program to coordinate and support public and private efforts to identify, evaluate, and protect historic and archaeological resources. Properties listed on the Register include districts, sites, buildings, structures, and objects that are significant in American history, architecture, archaeology, engineering, and culture. The National Register is administered by the National Park Service, which is part of the U.S. Department of the Interior.

National Register properties are distinguished by having been documented and evaluated according to uniform standards. These criteria recognize the accomplishments of all peoples who have contributed to the history and heritage of the United States and are designed to help state and local governments, federal agencies, and others identify important historic and archaeological properties worthy of preservation and of consideration in planning and development decisions.<sup>3</sup>

Historic places are nominated to the National Register by the State Historic Preservation Officer (SHPO) of the State in which the property is located, by the Federal Preservation Officer (FPO) for properties under Federal ownership or control, or by the Tribal Historic Preservation Officer (THPO) if the property is on tribal lands. Anyone can prepare a nomination to the National Register; generally nomination forms are documented by property owners, local governments, historical societies or SHPO, FPO or THPO staff.

Nominations by States are submitted to a State review board, composed of professionals in the fields of American history, architectural history, architecture, prehistoric and historic archaeology, and other related disciplines. The review board makes a recommendation to the SHPO either to approve the nomination if, in the board’s opinion, it meets the National Register criteria, or to disapprove the nomination if it does not.”<sup>4</sup>

The SHPO/THPO then forwards the nomination to the NPS for listing in the National Register.

Property owners and local officials are notified of the intent to nominate. If the owner of a private property or the majority of private owners of a property or district with multiple



owners objects to the nomination, the historic property cannot be listed in the National Register. The SHPO/THPO may, however, forward the nomination to the NPS for a formal determination of eligibility.

Most states, and many counties and municipal governments, also maintain registers of properties that are significant to their history.

It is important to note that the applicable regulations are designed to provide a framework for problem solving. Section 106 regulations do not mandate an outcome; they prescribe a process. If it is determined that a dam's removal may have an adverse effect on historic properties, the Section 106 process requires the consideration of alternative ways to accomplish the goals of the proposed project (e.g., fish passage, public safety, elimination of liability, water quality improvements), in consultation with the State/Tribal Historic Preservation Officer, federally-recognized Indian tribes<sup>5</sup> that attach religious and cultural significance to affected properties, representatives from local government, the dam administrator if an applicant for a federal license or permit, and other interested parties. The federal agency with jurisdiction over the undertaking must also seek and consider views of the public during the Section 106 process.

The consideration of alternatives under the NHPA is consistent with many environmental laws and regulations. See Appendix B for a more detailed description of the Section 106 process. Alternatives must be considered to avoid, minimize, and, when impacts are unavoidable, mitigate their effects on historic properties. Although Section 106 strongly encourages preservation, it also recognizes that projects may proceed despite adverse effects on historic properties if the lead federal agency determines it to be in the best interest of the public. Decisions to proceed with a dam removal project that would adversely affect historic properties are typically formalized through a Memorandum of Agreement (MOA). An MOA spells out the various measures (avoidance, minimization, mitigation) that are agreed upon by the federal agency and consulting parties, identifies who is responsible for carrying them out, and provides formal documentation that the federal agency has met the requirements of Section 106.

## **Who Is Responsible For Implementing Section 106 and Determining If The Project Could Affect Historic Properties?**

It is the responsibility of the federal agency or agencies with jurisdiction over a dam removal project to comply with Section 106. [36 CFR § 800.2(a)] This includes, but is not limited to federal agencies that provide funding or technical assistance to implement the project, and federal agencies that have jurisdictional authority to grant a permit, approval, or

license for the dam removal project. While planning, funding for planning, and initial design are not considered undertakings under Section 106, discussions with SHPO/THPO staff during the planning stages can save you time and money in the long run. Federal agencies that are likely to have jurisdiction include: the Army Corps of Engineers, Bureau of Land Management, Environmental Protection Agency, Federal Energy Regulatory Commission, Fish and Wildlife Service, National Marine Fisheries Service, and the Forest Service. If more than one federal agency is involved, they may (but are not required to) designate a lead federal agency. Establishing a lead federal agency can help to ensure an efficient and consistent approach during the process of studying, designing, and implementing a dam removal project, including how the project may impact historic properties.

The federal agency is solely responsible for determining whether its undertaking (e.g., financial or technical assistance, permit, approval) is a type of activity that has the potential to affect historic properties. [36 CFR § 800.3(a)]. At this early point in the process it does not matter whether any historic properties are known to be present. Rather, the focus is on the type of activity that the agency is proposing to conduct. In the majority of cases where the undertaking has involved a proposed dam removal, the agency has determined that the potential for historic properties to be affected exists.

## **Involving Key Stakeholders In the Discussion**

When a federal agency determines that its undertaking (e.g., dam removal) has the potential to affect historic properties, the agency continues the Section 106 process by initiating consultation with interested people and groups.

Consultation is a central part of the Section 106 process. The objective is to bring interested stakeholders into the discussion process as early as possible. The federal agency may decide to initiate consultation during a dam removal feasibility study. Such early coordination enables the development of project alternatives to consider effects to historic properties. Waiting to start this consultation until a dam removal project has been designed and a permit application has been submitted has the potential to result in permitting delays or denial. Issues raised late in the planning process could result in a decision to redesign portions of the project, causing increased project costs and further project setbacks. Delaying the Section 106 consultation process can also lead to contentious interactions with stakeholders who are concerned about the project's potential consequences for historic properties. These stresses can largely be avoided with early consultation.

The federal agency is required to consult with several parties: the applicable State Historic Preservation Officer and/or Tribal Historic Preservation Officer (SHPO/THPO);

federally-recognized Indian tribes or Native Hawaiian organizations; the local government(s) directly affected by the project; the project applicant (typically the dam owner); the National Park Service (NPS), when the property in question is a National Historic Landmark [36 CFR § 800.11] or within a unit of the National Park system; and, finally, the Advisory Council on Historic Preservation when necessary to uphold the Section 106 process. Additional stakeholders (interested individuals and organizations) may also be included at this point, or can become involved later in the Section 106 process.

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Due to a project applicant's<sup>6</sup> clear interest in the impact of Section 106 reviews on their project, a federal agency may authorize the project applicant, or group of applicants, to formally initiate Section 106 consultation. In such cases, the federal agency must notify the SHPO/THPO. However, the federal agency retains the ultimate decision-making authority for all findings and determinations. These decisions cannot be delegated to the project applicant.

## Identifying Historic Properties

Once it is determined that a dam removal could affect historic properties and a lead federal agency has been established, the next step in the Section 106 process is to actually identify properties that could be affected by the proposed dam removal. A “property” can be a building, structure, site, object or district that contains multiple buildings, structures, and cultural landscapes. The significance of a dam and its impoundment need to be evaluated within the historic context and cultural landscape.

The federal agency first establishes a scope for the investigation, called the Area of Potential Effects (APE). While APEs are site-specific, the APE of most dam removal projects includes the dam and the length of river upstream that would be directly or indirectly affected by the dam's removal (i.e., extent of the impoundment or reservoir). Areas that would be directly impacted by construction activities (e.g., access roads/paths, borrow pits, disposal areas, equipment staging areas) should also be included in the APE. Areas within the viewshed of the dam and impoundment may also be included in the APE. Again, at this point, it does not matter whether historic properties are known to exist in the area. The intent of establishing the APE is to delineate an area that includes all properties that could be affected by the proposed dam removal.

Most dams will not be eligible for listing in the National Register as an individual property, but may be a significant contributing resource to a National Register historic district. Historic or cultural resources associated with the dam should be evaluated. For example, a historic boat club associated with water recreation would be affected if the removal changes the historic use of the river. Conversely, removal of the dam may also restore the historic use of the river through the restoration of native species that sustained tribes and early colonial settlers.

Once the APE is established, the process for identifying historic properties begins. Existing historical information on the properties within the APE should be obtained from the State Historic Preservation Office, the state dam safety office<sup>7</sup>, the local historical society, and other stakeholders. Gaps in knowledge about properties located within the APE and their historic and cultural context may necessitate additional research, which is typically conducted by a historic resource professional (e.g., consultant or designated person within the federal agency). The level of effort associated with this step varies with the scale and scope of each project. It may require relatively minor to substantial background research, including archival investigations, consultation with stakeholders, oral history interviews, field investigations and/or field survey.

The federal agency is required to make a “reasonable and good faith effort” to gather the information necessary to identify historic properties. [36 CFR § 800.4(b)(1)] Typically, the process of gathering this information culminates in a report of findings. The federal agency is responsible for evaluating these findings against the National Register criteria (see below). The purpose of the evaluation is to determine whether properties within the APE are eligible for the National Register, and thus subject to further Section 106 review. This evaluation is conducted in consultation with the SHPO/THPO and any applicable Indian tribe or Native Hawaiian organization.

National Register Criteria for Evaluation state that:

“The quality of significance in American history, architecture, archaeology, engineering, and culture that is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and

- (a) That are associated with events that have made a significant contribution to the broad patterns of our history; or
- (b) That are associated with the lives of persons significant in our past; or
- (c) That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

- (d) That have yielded or may be likely to yield, information important in prehistory or history. [36 CFR § 60.4]”

Generally, a property that has achieved significance within the past 50 years is not considered eligible for the National Register unless it is of exceptional importance.

National Register eligible properties may be deemed significant at a national, state, or local level. In addition to significance under criterion a, b, c, d, or some combination, the property must also possess integrity of setting, materials, workmanship, and association.<sup>8</sup>

Properties may also meet the National Register criteria because of their role in a living community’s tradition, religion, beliefs, customs, and practices.

Natural features, such as a waterfall, rapids, or traditional fishing grounds, may also be eligible for listing in the National Register.<sup>9</sup>

After the federal agency has applied the National Register criteria to a property it determines whether, in its opinion, the property is eligible for listing in the National Register. The federal agency should consult with stakeholders during its deliberation, and ultimately seek to achieve consensus with the SHPO/THPO on this determination. If there is disagreement, further discussions should take place.

Local knowledge of a property is extremely important to a well-informed evaluation process. Sometimes, it is the local knowledge and documentation of a property’s history that ultimately results in a finding of historical significance under federal or state law.

Other times, a community may consider a property to have “historic value” but it technically does not meet the National Register criteria. While the community may find this determination to be disappointing, the National Register criteria are meant to provide important professional standards because—as one Advisory Council on Historic Preservation (ACHP) staff member has stated—“when every dam, building, or archaeological site is historically significant, none are significant.”

In response to an increasing number of proposed dam removal projects, some states are recognizing the need to better evaluate the relative historic significance of dams within their state.

For example, Vermont has developed a set of “value categories” to better determine the relative importance of one “significant” dam over another “significant” dam. These criteria were generated to distinguish those dams that most deserve to be preserved. These considerations are not intended to replace the National Register criteria but rather to supplement



them. If a federal action were involved, these criteria would most likely be folded into a National Register significance evaluation. The value categories include:

1. How long a dam has been at a particular location;
2. The extent to which a historic environment still exists around a dam site (e.g., buildings or archaeological remains that are part of the original community);
3. The extent to which features directly associated with the historical function of a dam remain present to illustrate what the dam was for and how it worked (e.g., mill buildings, canals, etc.);
4. Intrinsic physical characteristics of a dam as it exists today to determine whether it might represent a particularly unusual type of dam, or might be important in the history of dams and engineering;
5. The age of an existing dam in relation to the time period it was built (e.g., the earlier a dam was built within the period of that type of construction may have greater value); and
6. The extent to which a dam possesses historical integrity—meaning the degree to which the original design, workmanship, and material of the dam remains.<sup>10</sup>

## **Will Historic Properties Be Adversely Affected?**

When properties within the APE are already listed in the National Register or are found to be eligible for listing in the National Register, the responsible federal agency must determine whether the dam removal and associated activities have the potential to adversely affect those properties. This determination must be conducted in consultation with the SHPO/THPO, and the consulting parties.

An adverse effect occurs when the integrity of the historic property may be diminished through an alteration of characteristics that qualify the property for the National Register. Adverse effects include, but are not limited to: physical destruction or damage, alteration that is not consistent with legal standards for property maintenance, removal from historic location, changes to the character of the property's use or setting, and neglect leading to deterioration.

Clearly, the prospect of removing a dam has the potential to be considered an adverse effect under Section 106. Even if the dam itself is not eligible for listing in the National Register, other properties such as archaeological sites or historic mill buildings within the APE may be adversely affected by a dam's removal.

It is important to note that dams and/or associated properties that are listed or eligible to be listed in the National Register are not necessarily sacrosanct. The option of removing or altering such structures can still be considered and may be allowed to occur, following the successful completion of the Section 106 consultation process.

Once the responsible federal agency determines that an undertaking may have an adverse effect on historic properties within the APE, it proceeds with the resolution of adverse effects. For many proposed dam removal projects this is the heart of the Section 106 process. It is during this phase that the federal agency, the SHPO/THPO, and the other consulting parties discuss the various options to avoid, minimize, and/or mitigate the adverse effects of the dam removal project.

The final result of these discussions is an MOA that spells out the measures that are agreed upon by the federal agency and consulting parties, identifies who is responsible for carrying them out, and provides documentation that the agency has met the requirements of Section 106.

Noteworthy options for achieving the goals of historic preservation and river restoration are described below. Additional case study examples are found in Appendix A.

*For greater detail on federal historic preservation laws, see Appendix B. Examples of state historic preservation laws are described in Appendix C.*

## **Options For Achieving Historic Preservation and Dam Removal Goals: Preservation, Documentation, and Mitigation**

When discussing dams and dam removal, it is important to remember that one size does not fit all. There is no “cookie-cutter” approach to designing, planning, and implementing dam removal projects because every site is different. The same principle applies to historic preservation. The level of study, extent of consultation, and types of alternatives developed through the Section 106 process are determined by the scale and scope of the project.

There are many creative options that can be considered to meet the needs of advocates of both historic preservation and natural resources. Applying the Section 106 process to a proposed dam removal project allows for the possibility of a wide range of decisions, from retaining and restoring the dam, to removing the dam entirely and providing appropriate mitigation.

The intent of Section 106 is that the ultimate decision is based upon a well-informed process that is commensurate with the scale of the project. When an MOA must be negotiated

to resolve adverse effects on historic properties, it is important for the responsible federal agency and consulting parties to work together constructively. ACHP has described the development of an MOA as a “compromise between the ideal and the practical.” The goal is to identify solutions that will leave all parties satisfied.

### Preserving a Piece of History

Often, historic preservationists, archaeologists, and concerned members of the public engage in Section 106 consultations with the goal of maintaining the status quo and preserving the dam and its impoundment. Stewardship of historic and cultural resources has an elevated importance in many communities, and people are passionate about retaining conditions that are felt to best reflect the history of a site. In other cases, the decision to take no action may be a viable choice with preservation of the historic setting being the preferred decision.

*Avoidance/No Action* - Because of the potential for adverse effects to historic properties decision makers may choose to (1) forgo the project and preserve the dam or (2) devise a way to accomplish the river restoration goals without adversely affecting those historic properties.



Photo Credit: Leviathor

above: Dell's Mill and Dam

In some cases, structural deficiencies in the dam may necessitate some level of activity to address public safety concerns and meet dam safety requirements. The Association of State Dam Safety Officials (ASDSO) estimates that the life expectancy of a dam is 50 years. Water is an erosive and corrosive agent, which means that over time dams incur structural wear and tear making them susceptible to failure. As historic dams age and structural deficiencies progress, ‘avoidance’ or ‘no action’ may not be a viable alternative where public safety is concerned.

When preservation of the dam and/or associated properties and restoration of natural river functions are sought, there are creative options for involved parties to consider. Some alternatives that may achieve these dual goals are to minimize impact on historic properties through partial preservation, adaptive reuse, and preservation-in-service.

*Partial Preservation* - While some participants may be unwilling to consider full dam removal during Section 106 consultations, a compromise may be reached in breaching or removing a portion of the dam or notching the structure.

By performing an appropriately designed partial breach, river functions such as sediment transport and fish passage may be restored while a portion of the dam is left in place in recognition of its historical significance. A breach can range anywhere in size from a full-depth v-shaped notch, to removing a section of the dam, to removing all but the dam's abutment structures.

However, breaching or notching the dam will not be a viable option in all cases. The location of the breach and/or the velocity of water as it passes through the breach could greatly limit or even prohibit fish passage. This alternative must also be evaluated for impacts to public safety and safety/stability of any remaining dam structure. Improperly designed partial breaches or notches can result in public safety hazards and physical impacts to the river channel that may not be conducive to restoring riverine functions.<sup>11</sup>



Photo Credit: Scarlet Rose

above: Partially preserved, Woolen Mills Dam, Rivanna River

*The City of Kent, Ohio balanced historic interpretation, preservation, and restoration of the natural functions of the Cuyahoga River through a creative approach. See Appendix A for more details.*

The installation of a rock ramp fishway is another option. A rock ramp fishway is a specially engineered arrangement of boulders and cobbles that creates a ramp on the downstream face of a dam. Rock ramp fishways are designed to create flow patterns suitable for fish to swim up or down the structure, therefore allowing them to successfully pass over the dam. Due to the gradual incline required for them to function properly, rock ramp fishways are most appropriate for relatively short dams (i.e.,  $\leq 10$  feet).



Photo Credit: Luther Aadland

above: Lyons Park Dam rock ramp, Otter Tail River

A rock ramp fishway does change the appearance of the dam, but when designed correctly it can restore fish



passage while also retaining the impoundment, which may be a project goal if the pond is a contributing element to an historic property or district.

*Adaptive Reuse* - This is the process of modifying buildings and structures for new uses while retaining their historic integrity. Examples of adaptive reuse of former industrial buildings on riverfront locations include the Gallery of Modern Art for the

Tate Museum on the River Thames in London, and the Massachusetts Museum of Contemporary Art (Mass-MOCA), which is housed in a historic factory complex in North Adams, Massachusetts. Dozens of handsome textile mill complexes on streams throughout New England and the mid-Atlantic states are also being re-developed as residential, office, and commercial spaces.

When discussing adaptive reuse in conjunction with dam removal, the most likely candidates involve the powerhouses from old hydroelectric dams or the mill buildings associated with mill dams. In these cases, the impacts of a potential dam removal on an historic resource may extend beyond the dam itself and encompass the mill it powered, the powerhouse, and other features. These structures have the potential to serve as monuments to a former pe-

riod in history, allowing natural resource goals to be met through dam removal. By converting the mill or power structures, some of the original characteristics can be retained while injecting the space with new life in the form of museums, restaurants, office and retail space, micro-breweries, and private residences.

The decision to adapt a space for a new use should take into consideration the level of historical disturbance that is acceptable. Will all of the machinery and equipment need to be removed to reuse the space? If so, is retaining only the shell of the building acceptable? Are there environmental concerns stemming from the building's operational history such as PCBs, heavy metals, solvent and petroleum spills, and asbestos that need to be resolved before the site can be used as a public facility?

Other challenges may include the large, often cavernous nature of buildings primarily intended to protect machinery from the elements and the isolated location of some of



Photo Credit: Forest City Residential Management

above: The old Ashton Mill has been revamped into the River Lofts at Ashton Mill.



these structures. These challenges, however, can also present unique opportunities for creative approaches to adaptive reuse.

**Preservation-in-Service** - This is generally considered the preferred solution from an historic preservation viewpoint because continued service encourages continued upkeep of the historic property. Even though maintenance of a serviceable structure may necessitate alterations that diminish some elements of a property's integrity, the advantages of continued productive service often outweigh the effects of what may be considered minor changes.

An alternative to dam removal that may be considered in this situation is the use of a bypass channel to achieve fish passage at the site of a historically significant dam.

A bypass channel circumvents a dam by mimicking a tributary or side channel of the mainstem river, allowing the dam to remain in place. It can create flowing water habitat and may provide both upstream and downstream passage to a range of species, including fish, riverine mammals, and reptiles and amphibians and assorted freshwater mussels.

Traditional fishways (e.g., denil and Alaskan steep pass fish ladders) are typically only passable by certain fish species or specific life stages of fish. While dam removal or an appropriately-designed partial breach is usually the most effective method for restoring fish passage and river function, bypass channels can restore certain river functions and minimally alter the aesthetics of the historic site. Since bypass channels are designed to appear and function as a natural tributary, they are often aesthetically pleasing.

*See Appendix A for the Heishman's Mill Dam case study in Pennsylvania where a bypass channel was used to preserve a dam. While Heishman's Mill is no longer a working milldam, it does provide a distinctive example of river restoration and historic preservation while preserving elements of the historic landscape.*

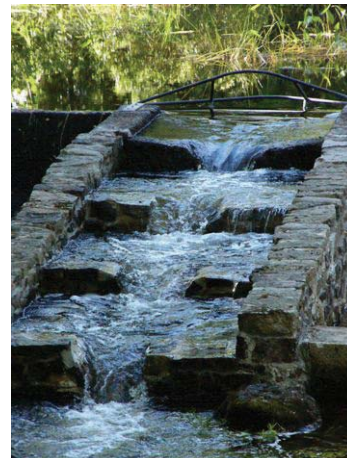


Photo Credit: American Rivers Photo Library

above: Mount Desert Fishway,  
Somes Brook

## Documentation as a Historic Preservation Tool

One of the more common methods of minimizing and mitigating adverse effects on an historic property and ensuring its historic significance is remembered is to make certain the dam and other associated landscape and historic properties are properly documented before removal or alteration.

The purpose of documenting a structure and the historic context in which it exists is to record features of its historic, engineering, and cultural significance for future generations to study and research. Documentation combines measured drawings, large-format photographs, archival research, written reports, and copies of historic photos and drawings to record and convey this significance. In historic preservation, documentation often represents the last alternative when all efforts to save and maintain a building, structure, or neighbor-

#### Where is historic documentation housed?

The **Historic American Buildings Survey/Historic American Engineering Record/Historic American Landscapes Survey** (HABS/HAER/HALS) is administered by the National Park Service and serves to document significant buildings, engineering structures, and landscapes.<sup>12</sup> Collections are housed at the Library of Congress and include bridges, dams, mills and other industrial facilities listed in the National Register of Historic Places. NPS regional HABS/HAER/HALS coordinators determine the level of documentation needed for National Historic Landmarks (NHL) and nationally significant National Register properties. SHPO/THPOs determine the level of appropriate documentation and identify suitable repositories for the documentation of state/tribal and locally significant National Register listed and National Register eligible properties.

hood have been exhausted. There are instances however, where high quality and well presented documentation provides a means for more people to learn about an important but isolated project than would have had the opportunity to visit the site itself. At its best, documentation can provide a means for understanding and interpreting a site better than ruins alone. Formal documentation may be the only permanent record of how a historic structure looked, worked, and related to its surrounding landscape and community before it is lost forever to deterioration, neglect, or planned destruction such as dam removal.

The level of documentation should reflect the significance of the historic resource, whether it is important on a local, state or national stage.

The Secretary of the Interior has published *Standards for Recording Historic Properties* as well as detailed *Guidelines for Architectural and Engineering Documentation*.<sup>13</sup> Standards and guidelines are defined for content, quality, materials, and presentation. These guide-

lines provide specific information on different levels of content of drawings, photographs, and written data, recognizing that the kind and amount of documentation should be appropriate to the nature and significance of the subject. They apply to the Historic American Buildings Survey, Historic American Engineering Record, and the Historical American Landscapes Survey (HABS/HAER/HALS) programs of the National Park Service. These guidelines are the generally accepted standards for documentation throughout the preservation community.

Federal agencies must produce documentation to HABS/HAER/HALS standards for historic properties that are listed, or are eligible for listing, on the National Register of Historic Places to mitigate the adverse effects of federal undertakings such as demolition or substantial alteration, under the provisions of Section 110(b) of the amended National Historic Preservation Act of 1966.<sup>14</sup>

There are four levels of HABS/HAER/HALS documentation. Level I involves production of new measured drawings, extensive large format photography, and extended written reports. It is usually specified as a mitigation measure only for properties of exceptional national significance or uniqueness. Level II documentation relies more heavily on archival copies of historic drawings and photographs, supplemented by new large format photography and written documentation. Level III documentation is generally confined to large format photography and text. Level IV is inventory level documentation, similar to that found in a National Register nomination.

Individual state/tribal historic preservation offices often have their own standard of documentation for structures of local and state significance. Some are less rigorous than the HABS/HAER/HALS standards but many SHPO/THPOs have adopted those standards in their entirety. In all instances, the emphasis is on generating a permanent record of the site that will be housed in public repositories because this may well be the last trace of an historic structure after it's gone.

While it is valuable to consider HABS/HAER/HALS standards when scoping the appropriate documentation for a particular project, an individualized approach may be sufficient for generating the desired documentation at a reasonable cost.<sup>15</sup> For further guidance on documentation, look to a National Park Service guidance document entitled, *HABS/HAER Mitigation Documentation: A Reengineering Proposal*.

*For a look at cases where documentation was used to mitigate for a dam's removal, see Appendix A for case studies on Embrey Dam on the Rappahannock River in Virginia and the McGoldrick Dam on the Ashuelot River in New Hampshire.*

## Mitigation for Impacts to a Historic Structure

When a proposed dam removal project will result in adverse effects on historic properties, creative approaches to mitigating those impacts should be discussed during consultation and subsequent development of the MOA as required by Section 106. This is discussed in more detail in Appendix B. Creative mitigation measures<sup>16</sup> allow for moving beyond simple documentation of a project to potentially adding components such as greater community involvement and interaction, preservation of alternative historic resources, and increased public education.

*Exhibits/Interpretive Signage* - Developing an interpretive exhibit from the photographs and information that has been gathered from documenting the project is one way of ensuring that the history of the dam is preserved for future generations. Exhib-

its can range from a commemorative plaque at the site of the former dam to an educational kiosk or another interpretive display. Project partners can also work with local

historical societies, museums, schools, and service leagues to arrange a permanent or traveling exhibit at a visible location. This method of mitigation allows for a wide variety of creativity but hinges on a well thought out plan for bringing the information to the public.

*See Appendix A for case studies on the Embrey Dam on the Rappahannock River in Virginia, Cascade Dam on the Merced River in California, and Kent Dam on the Cuyahoga River in Ohio for additional ideas on interpreting an historic site as part of a dam removal.*

**Lectures, Tours, Open Houses** - Another way to further involve the community in the project and mitigate adverse effects on historic properties is to schedule a lecture and/or tour of the dam and related structures prior to its removal. This could involve hosting an open house and tour of the powerhouse at a hydropower dam that concludes with a lecture at the dam or elsewhere on site. Under the proper conditions,

school groups could also tour the site, learning about the historical significance of the dam and documentation techniques from experts. These events also provide opportunities to collect stories and oral history from community members about the dam.

*See Appendix A for a case study of the Bull Run Hydropower Project on the Sandy and Little Sandy rivers in Oregon for a more detailed look at the decision to open a structure for tours prior to removal.*

**Oral History Project/Community Interviews** - A unique way to commemorate the history of the dam and the historic landscape in which it resides is to engage in an oral history project. Interviews could be conducted with members of the community that witnessed or participated in the dam's construction, worked at the facility powered by the dam, or simply enjoyed the presence of the dam and impoundment. This oral history could then be used to create a commemorative DVD or incorporated into a larger publication about the site.

**Utilizing Popular Publications** - Documentation gathered during the Section 106 review or by a local museum, historical society, or member of the community may be



Photo Credit: David Gould

above: Billington Street Dam Removal interpretive sign, Town Brook



good material for popular publications. This could involve coverage in the local newspapers about the history of the dam and the dam removal project or in a larger publication such as the National Trust for Historic Preservation's magazine, *Preservation*. Newspapers and periodicals are not the only publications to consider. Pamphlets, coffee table and other books, and journals can also preserve the memories and story of the structure. Whatever a community decides, a plan for releasing this information to the public should be included in the Section 106 MOA for the project. An example of this type of historic storytelling is *River Runs Free: Breaching the Rappahannock's Embrey Dam*, a commemorative book that chronicles the history of the dam and its removal to restore the Rappahannock River in Virginia.<sup>17</sup>

*Contributions to a Local Historic Preservation Effort* - In lieu of in-place dam preservation, providing funding to support other local preservation projects, such as a revolving loan program to aid in preservation of other historic resources or technical assistance for another local historic preservation project, funding for a historic resources survey, or a National Register nomination are other mitigation options when implementing the removal of an historically significant dam. This is more of a quid pro quo approach to mitigation efforts, and such provisions have been included in memoranda of agreements.

*Preparation of Preservation Plans or Ordinances* - Oftentimes a dam removal project will not only raise a community's awareness about the potential historic issues of the dam but also about other historic properties or areas in the region. Working to develop preservation plans or ordinances for the community helps to preserve other areas of historic interest. One method of contributing to these efforts might be to fund a study or plan for the identified historic areas. The Vermont State Historic Preservation Office has taken this approach in identifying dams on a state level that are historically significant and should be preserved. See *Identifying Historic Properties* on page 9.

*Creating Conservation/Preservation Easements* - Protecting other historic resources by developing and executing conservation easements<sup>18</sup> might also be appropriate mitigation in exchange for removal of a particular dam. If the dam owner also owns the abutting property, they may choose to donate that land in the form of a conservation easement to the local community. This would have particular value if the property had archaeological or architectural significance. Other property that may have historic

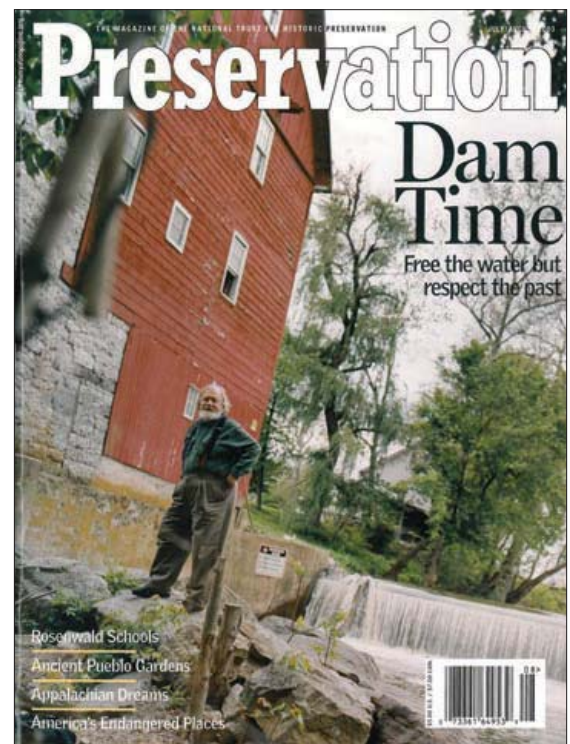


Photo Credit: American Rivers Photo Library

above: Preservation Magazine cover



value and is owned by the dam owner could also be traded for the benefit of removing the dam. As an ancillary benefit, the dam owner may be eligible for certain tax incentives as a result of the conservation easement.

## Lessons Learned

One of the primary driving forces behind both dam removal and historic preservation is community enrichment. This enrichment can come in the form of a project restoring runs of migratory fish that provides a boost to the local economy and propels people to reconnect with their local river. It can also come in the form of raising awareness and educating the community about a historic resource to which some may not have given much previous thought. If done properly, river restoration and historic preservation interests can both benefit from dam removal projects. Key lessons learned include:

- Begin historic consultation with the community and SHPO/THPO as early in the dam removal process as possible.
- Maintain an open mind, and respect the opinion of others involved in the project.
- Look for unique ways to partner; the most beneficial solution may not always be the most obvious one.
- Consider pre-historic (i.e., before European settlement), as well as historic period uses of the site.
- Consider the potential for exposure and effects to archaeological resources previously flooded by the impoundment or buried in stream banks.
- Just because a dam is listed or eligible for listing in the National Register does not mean it is precluded from removal or alteration.
- There is a dearth of information on creative historic mitigation projects. Don't be afraid to think outside the box and document your work so others may learn from it.

### Steps to help ensure a successful outcome:

1. Determine if the dam proposed for removal and/or associated properties are listed in the National Register of Historic Places, a state or Tribal register of historic places, or whether they are eligible for listing on such a register.
2. Determine what the community sentiment is toward the dam and its impoundment. Do they feel they have historic value?
3. If the dam is listed in the National Register (or eligibility needs to be evaluated for such listing), contact your state or Tribal historic preservation office to ensure that the proper laws and procedures are followed. Even if the dam or associated properties are not eligible, if you sense there is a segment of the community who views the dam as historic, it is also a good idea to get the SHPO/THPO involved.
4. Commit to exploring a range of options for preservation, mitigation, interpretation, and documentation. Respect the viewpoints of others involved.
5. Remember that historic preservation of a dam and environmental restoration of a river are not mutually exclusive goals.

### Additional Resources

For the latest in historic preservation practices, how to locate your state historic preservation office, nominating a structure to the National Register of Historic Places, and much more, visit the following websites:

*Advisory Council on Historic Preservation:* <http://www.achp.gov>

*National Conference of State Historic Preservation Officers:*  
<http://www.sso.org/ncshpo>

*National Park Service Historic Preservation Services:* [www.cr.nps.gov/hps](http://www.cr.nps.gov/hps)

*Society for Industrial Archaeology:* [www.sia-web.org](http://www.sia-web.org)

## APPENDIX A

### CASE STUDIES

Oftentimes real life examples provide the answers, inspiration, or lessons needed to move forward with a project. These case studies presented below are broken into two sections.

Oftentimes real life examples provide the answers, inspiration, or lessons needed to move forward with a project.

The first set of case studies is a selection of projects that highlight some of the different options laid out in *“Options for Achieving Historic Preservation and Dam Removal Goals.”*

The second set of case studies serve as examples of both lessons learned and complications that could arise.



Photo Credit: Scott Martin

above: Power Dam, Pigg River, VA

## Options for Achieving Historic Preservation and Dam Removal Goals

**Issue:** Documentation, Interpretation, Partial Preservation

**Result:** Improved Public Education Through Use of a Museum Exhibit, Improved Habitat for Migratory Fish

### *Reading Public Museum Dams, Wyomissing Creek, Pennsylvania*

The Reading Public Museum dams were built at the turn of the 20<sup>th</sup> century to form two small ornamental ponds and enhance the landscape of the property. The upper dam was 3-foot high and 45-foot long. The 8-foot high, 60-foot long lower dam was constructed of rock. These dams were removed by the Museum in September 2004 because the dams were deteriorated and a financial burden to maintain. Migratory fish are expected to benefit from the removals once additional blockages downstream on the Schuylkill River have been addressed.

### **Mitigation:**

Because the dams were eligible for listing on the National Register of Historic Places, the removal plans incorporated an historical review as required by Section 106 of the National Historic Preservation Act. Mitigation included photo documentation of each dam, a written narrative, the preservation of portions of the lower dam, and the preservation of the rock walls that surrounded the impoundments. The museum is also in the process of developing signage for the site and incorporating a public education component.



Photo Spread: American Rivers Photo Library

top: Reading Public Museum Dam after removal  
bottom: during removal

Contact Sara Deuling with American Rivers at 717-763-0741 for more information.



**Issue:** Submerged Cultural Resource, Documentation and Partial Preservation

**Result:** *Study of Submerged Cultural Resource, Improved Habitat for Migratory Fish*

*Embrey Dam, Rappahannock River, Virginia*



Photo Spread: American Rivers Photo Library



above: Embrey Dam  
right: Ambursen style inside Embrey Dam

In 1910, Embrey Dam was built slightly downstream of an 1853 crib dam. The 22-foot-high, 770-foot structure generated hydroelectric power until the 1960s. The city also used water diverted by the dam into the Rappahannock Canal as a water source for its public water supply until early 2000. The dam had outlived its original purpose and was in a state of disrepair, prompting federal, state, and local officials to work with environmental and conservation groups to remove the dam and reopen the river. In 2004, the dam was removed by the Army Corps of Engineers, restoring the river for American and hickory shad and other migratory species.

**Process:**

The Section 106 review for the removal of Embrey Dam encompassed a project area that included five historic resources, including the 20<sup>th</sup> century reinforced concrete Ambursen style Embrey Dam, the associated power plant, a portion of the Rappahannock Canal, a raceway for an ironworks, and the 19<sup>th</sup> century crib dam submerged in the Embrey Dam impoundment. While the dam was removed to restore natural habitat and a shad fishery, a thorough Section 106 review ensured the historic resources were recorded and interpreted.

**Mitigation:**

The entire dam was recorded photographically before and during demolition. These photographs were then archived with local and state agencies. Once the impoundment was



drained, an archaeological team studied and documented the 19th century crib dam prior to its removal. In addition, part of the Embrey Dam abutment was left in place for posterity.

Public interpretation is another important component of the Embrey Dam Memorandum of Agreement. The Army Corps of Engineers—the lead federal agency for the project—is committed to producing educational panels explaining the Embrey Dam’s history. These panels will be installed near the dam site and a brochure on the industrial history of the site will be published for heritage tourism.

*Contact John Tippet with Friends of the Rappahannock at 540-373-3448 for more information.*



Photo Credit: Theresa Jarrells

above: Rappahannock River looking upstream toward the former Embrey Dam site

**Issue:** Partial Preservation, Interpretation

**Result:** *Innovative Preservation of a Historic Resource, Improved Water Quality*

*Kent Dam, Cuyahoga River, Ohio*



The Kent Dam, originally built in 1836 in conjunction with the Pennsylvania & Ohio Canal, was once responsible for supplying power that fueled the city of Kent's industrial boom. Both the dam and the lock are historically unique in several ways: the dam is the oldest masonry dam in Ohio, as well as the second oldest arch dam in the United States, and reportedly the 19<sup>th</sup> oldest dam in the country. However, the dam was a major contributor to violations in water quality standards for the Middle Cuyahoga's warm water habitat designation. The impoundment lacked sufficient dissolved oxygen levels and did not provide adequate aquatic habitat, and the dam was a barrier to fish migration.



**Process:**

The Ohio Environmental Protection Agency's (Ohio EPA) "Middle Cuyahoga TMDL Report"<sup>19</sup> and the issuance of a new discharge permit at Kent's wastewater treatment plant drew attention to the water quality shortcomings created by the dam.

The City of Kent and other stakeholders making up the Kent Dam Advisory Committee worked to develop a plan to meet water quality standards by "restoring a free-flowing bypass of the river" around the dam. This plan called for the removal of the sluice gate and concrete retaining wall, and modification of the canal lock.

In accordance with Section 106 of the National Historic Preservation Act, the U.S. EPA and later the Army Corps of Engineers began consultation with the Ohio State Historic Preservation Office (SHPO). It was determined that because the Kent Industrial District is listed on the National Register of Historic Places, the Kent Dam and Main Street Bridge are



contributing resources to this district; therefore removing the sluice gate and retaining wall and modifying the canal lock would have an adverse effect upon the Kent Dam Industrial District.

### Mitigation:

Section 106 consultation by the federal agencies with the SHPO, City, and other stakeholders, initiated the review and negotiation process. The City of Kent, the Kent Historical Society, and other project partners consented to certain conditions or stipulations—each allowing some flexibility in the positions of their organizations—in order to restore the natural riverine function of the Cuyahoga and minimize the effects of the project on the Kent Industrial District.

Project mitigation at Kent was two-fold, including both documentation and historic interpretation. Prior to modification of the historic structures, the city hired a qualified consultant to ensure HAER Level II documentation of the dam, associated structures to be removed, and the impoundment. Kent also retained a consultant to prepare a report on the history and significance of the dam, the canal as it relates to Kent and the historic district, and other historic resources that comprise the historic district and had a role in the development of Kent.

The City of Kent took a unique approach in reconciling historic interests with ecological considerations of the river, resulting in a new space that draws people to the river and celebrates the area's heritage. Keeping the dam and the water feature it provided was very important to the community.

To restore a free-flowing river, the project engineers modified the existing canal and lock, leaving part of it for historic purposes but removing enough structure to allow the Cuyahoga River to flow freely. The dam itself was left intact becoming the focal point of the site. Project designers incorporated a pump system that allows water to flow over the face of the dam—recreating the aesthetic appeal of the dam as it previously appeared.

A historical interpretive park was also created behind the dam, providing public access to the dam, bridge, and lock wall. Interpretive signs are displayed that describe the history of the historic landscape, including the dam, canal, and bridge.

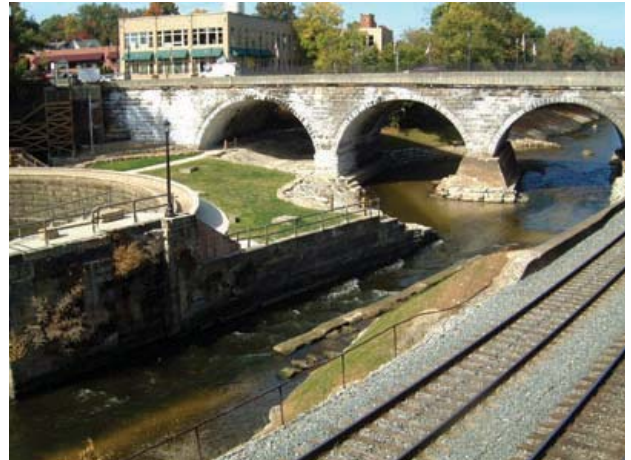


Photo Spread: City of Kent

top: looking upstream after the river was restored  
bottom: looking downstream after the river was restored

**Issue: Potential Adaptive Reuse and Public Education Opportunities**

**Result:** *Improved Habitat for Migratory Fish*

*Bull Run Hydroelectric Project, Sandy and Little Sandy Rivers, Oregon*

The Little Sandy Dam and the Marmot Dam were built in 1908 and 1912, respectively, as part of hydropower project undertaken by the Mount Hood Company. In April 2003, Portland General Electric (PGE) executed a Historic Properties Management Plan (HPMP) as part of their settlement agreement with the Federal Energy Regulatory Commission (FERC) to surrender its hydroelectric license at the Bull Run Project. The project is comprised of two dams, the Marmot Dam on the Sandy River and the Little Sandy Diversion



Photo Spread: American Rivers Photo Library

top: Marmot Dam during removal  
bottom: After removal

Dam on the Little Sandy River. As part of this settlement agreement, the Marmot Dam was removed in July 2007 to restore access to historic fish spawning habitat. The Little Sandy Diversion Dam is scheduled for removal summer 2008.

**Process:**

Because of the location of the Marmot and Little Sandy dams near potential archaeological sites, the project licensee (PGE) undertook surveys to examine

archaeological resources, potential ethnographic data, and historic significance of project facilities. Three archaeological sites were discovered during the survey, but only one was recommended as eligible for the National Register of Historic Places.

While the decommissioning plan avoided impacting the archaeological sites, PGE agreed to consult with the Bureau of Land Management (BLM)\* staff archaeologist, the appropriate tribes, and the Oregon State Historic Preservation Office (SHPO) to determine additional steps should plans change. Finally, an evaluation of the historic structures revealed eligibility for the National Register of Historic Places for the Marmot Dam, Little Sandy Diversion Dam, Bull Run Water Conveyance Systems, Roslyn Lake Earth-fill Dikes, Powerhouse Intake, Penstocks and Surge Tank, Bull Run Powerhouse, and Bull Run Transformer Building and Machine Shop.



Photo Credit: American Rivers Photo Library

above: Little Sandy Dam, Little Sandy River, OR

### Mitigation:

In accordance with an agreement negotiated with the FERC, the SHPO, and the Advisory Council on Historic Preservation, PGE agreed to a series of steps to mitigate for adverse effects to project facilities. PGE commissioned Historic American Engineering Report Level I measured drawings, photographic documentation, and a written history of all National Register-eligible facilities.

PGE also developed a marketing proposal for potential adaptive reuse of the powerhouse and provided the public an opportunity to tour the facilities prior to decommissioning. These “open houses” engaged the community and allowed for educational presentations on the history of hydroelectricity, the Bull Run Project, and the project’s role in the area’s development. The SHPO may also choose to select historically significant architectural elements for public education, curation, or reuse.

\*The BLM administers approximately nine percent of the project lands.

*Contact Brett Swift with American Rivers at 503-827-8648 for more information.*



**Issue: Documentation, Partial Preservation**

**Result:** *Improved Habitat for Migratory Fish*

*Irving Mill Dam, Ridley Creek, Pennsylvania*

Irving Mill Dam was a 12-foot by 100-foot stone dam originally built to power the Irving Mill. The dam was roughly two miles upstream from the confluence of Ridley Creek and the Delaware River and was the first blockage of five along this creek preventing the migration of anadromous fish, including American shad. While the Irving Mill is eligible for listing on the National Historic Register and is still in use as a business, it no longer functions as a mill and the owner expressed a willingness to remove the dam in efforts to restore Ridley Creek. The National Oceanic and Atmospheric Administration (NOAA), Pennsylvania Historic and Museum Commission (PHMC), and others entered into a memorandum of agreement (MOA) to mitigate the adverse effects of the project, including the removal of Irving Mill Dam and the filling of the canal associated with the mill raceway.

Photo Spread: American Rivers Photo Library



above: Irving Mill Dam  
right: after removal



**Mitigation:**

Documentation and partial preservation were incorporated as mitigation for the project's effects to historic resources. Documentation consisted of archival quality 35mm black and white photographs of the Irving Mill Dam prior to its removal. In addition to photographs of the dam, a narrative history of the Irving Mill was included with the photographs. These materials are retained by the PHMC. In addition, a 5-foot section of the dam was preserved to allow for historical interpretation.

*Contact Sara Deuling with American Rivers at 717-763-0741 for more information.*

## Issue: Preservation In Service

**Result:** *Innovative Bypass Channel Fishway Construction, Improved Habitat for Migratory Fish*

### *Heishman's Mill Dam, Conodoguinet Creek, Pennsylvania*

Located in West Pennsboro Township, Heishman's Mill is a restored grist mill built in 1800 that operated into the 1940s. The owner of the mill, who has spent the past 30 years restoring it, considers the dam an integral part of the mill complex and does not want it removed. In addition, Heishman's Mill is included on a list of properties previously identified as having local significance worthy of acknowledgment by the Pennsylvania State Historic Preservation Office. The property is currently being considered for listing on the National Register of Historic Places.

### Mitigation:

Although it was determined that the original dam would not be removed, project partners still sought a way to provide migratory fish with access to upstream spawning habitat. In order to provide fish passage at the dam, American Rivers, the Pennsylvania Fish and Boat Commission, and the U.S. Fish and Wildlife Service examined traditional fish ladders as well as more recent fish passage technology, including a bypass channel fishway—one that wholly circumvents the barrier and resembles, in both form and function, a side-channel or natural tributary of the main river system.

The project partners and the dam owner found common ground in the bypass channel fishway option as it did not affect the dam, enables fish passage, and creates additional river-like habitat that has been lost due to the impoundment created by the dam.

*Contact Serena McClain with American Rivers at 202-347-7550 for more information.*



Photo Spread: American Rivers Photo Library

top: Heishman's Mill Dam  
above left: Bypass Channel  
bottom: Bypass Gate

**Issue:**      **Documentation, Interpretation**

**Result:**      *Improved Fish Habitat in the Merced River and Elimination of Dam Safety Concerns*

*Cascade Diversion Dam, Merced River, California; Yosemite National Park*

The Cascade Diversion Dam was a timber crib dam constructed in 1917 to divert the flow of the main stem of the Merced River into a hydroelectric generating facility. The facilities were taken offline in the mid-1980s as the dam deteriorated and the hydropower system became outdated. The further deteriorated dam suffered significant damage during a flood event in 1997. Because of safety concerns and its impact on natural resources in the Merced Wild and Scenic River corridor within Yosemite National Park, the dam was removed in 2003.



Photo Spread: Friends of the River

above: Cascade Diversion Dam

**Process:**

The Cascades Diversion Dam and intake structure with screens were determined to be eligible for inclusion in the National Register of Historic Places in 1982. As the owner of the dam and proponent of river restoration, the National Park Service evaluated the impacts associated with the demolition, relocation, and/or rehabilitation of all components of the Yosemite Hydroelectric Power Plant (also known as the Cascades Powerhouse) in 1986.



This evaluation included the removal of the dam, which was identified as the preferred alternative. With the completion of this evaluation, the National Park Service finished the consultation process associated with Section 106 of the National Historic Preservation Act. As part of this process, the National Park Service signed a Memorandum of Agreement with the California State Historic Preservation Officer and the Advisory Council on Historic Preservation.



above: Cascade Diversion Dam after removal

#### Mitigation:

The memorandum identified stipulations for dam removal, including the preparation of Historic American Engineering Report documentation, the submittal of archival photographs and narrative to the State Historic Preservation Officer and the Fresno Metropolitan Museum, and the development of an accurate scale model of the entire Merced River hydroelectric system.

## Lessons Learned

**Issue:**      **Getting The Process Right**

**Result:**    *Improved Inter-Agency Coordination, Standard Guidelines, Improved Habitat for Migratory Fish*

*McGoldrick Dam, Ashuelot River, New Hampshire*



The McGoldrick Dam on the Ashuelot River was a six-foot high timber crib dam, built in 1828 and later capped with concrete. The dam diverted water into a power canal that supplied water to eight manufacturing facilities until 1950. The dam was removed in August 2001 to promote the restoration of a historic fishery.

**Process:**

During the planning of the McGoldrick Dam removal—New Hampshire’s first dam removal for the purpose of river restoration—the Section 106 process was overlooked. Failure to coor-



Photo Spread: Stephanie Lindloff

top: McGoldrick Dam before removal  
bottom: after removal



dinate with the State Historic Preservation Office (SHPO) early in the project resulted in a delay of more than a year. Upon coordination, project partners were notified that a historic resource investigation of the dam and associated properties was required.

The SHPO found the dam and canal to be eligible for listing in the National Register of Historic Places because it “represented a rare survival of an early attempt to harness waterpower on a moderately large scale.” Because the planned dam removal was found to adversely affect the property, a Memorandum of Agreement (MOA) for mitigation of adverse effects was executed among the U.S. Fish and Wildlife Service, the New Hampshire Department of Environmental Services, and the New Hampshire SHPO.

#### Mitigation:

The MOA included conditions such as taking archival quality photographs of the dam to be stored with the SHPO and development and installation of interpretive signage concerning the significance of the dam and canal at the former dam site. In addition, original plans to fill a portion of the canal with the rubble generated from the dam deconstruction were changed to dispose of the rubble at an off-site location, leaving the canal untouched.

#### Lessons Learned:

The project highlights the need for early coordination with all relevant state and federal agencies. It is now well understood in New Hampshire that historic preservation interests must be involved early in the planning of a project. Generalized guidelines have been developed in New Hampshire for conducting architectural and archaeological resource reviews specific to dam removal projects in an effort to standardize the process.<sup>20</sup>

*Contact Stephanie Lindloff with American Rivers at 518-482-2631 for more information.*

## APPENDIX B

### HISTORIC PRESERVATION LAW

Federal and state historic preservation laws were developed in order to “foster conditions under which our modern society and our prehistoric and historic resources can exist in productive harmony.” Below is an overview of federal, state, and tribal historic preservation law and how these laws specifically relate to dam removal, including discussion of how the laws are triggered and the process involved.

#### Federal Historic Preservation Law

Depending on the dam involved, several federal preservation laws could be triggered in a dam removal<sup>21</sup>. The National Historic Preservation Act, in particular Section 106, is activated most often. However, the Archaeological Resources Protection Act and guidelines set forth by the Federal Energy Regulatory Commission (FERC) can also apply to dam removal projects.

##### *National Historic Preservation Act*

The *National Historic Preservation Act* (NHPA) of 1966<sup>22</sup> is the primary federal law governing historic preservation. Regulations implementing<sup>23</sup> the NHPA were issued by the Advisory Council on Historic Preservation (ACHP) and are the working basis for the NHPA. The NHPA is considered a “process-based” law – it does not dictate a certain outcome, but rather ensures that historic preservation concerns are integrated into the planning and implementation of federal actions and attempts to resolve any conflicts through consultation.<sup>24</sup> Its primary preservation mechanism is called the “Section 106” review, which refers to the corresponding section of the NHPA. Section 106 requires federal agencies, as part of their planning process, to consider the impacts of their actions on historic and cultural resources and to provide the ACHP an opportunity to comment on these findings.<sup>25</sup>

The NHPA and its amendments established the National Register of Historic Places (see *Determining Historic Value*) and authorized the ACHP to promulgate regulations that form the foundation of federal government action in the areas of historic preservation and historic properties management.

##### *What Initiates the Section 106 Process?*<sup>26</sup>

When there is a federal undertaking<sup>27</sup>—essentially federal involvement in a project (e.g., federally owned property, federally funded project, project requiring a federal permit,

project receiving federal assistance) - and the project could impact properties that are listed in the National Register of Historic Places *or* the project could impact properties that have the potential to be listed in the National Register, then the responsible federal agency *must* initiate a Section 106 review (36 CFR 800). If there is more than one federal agency involved in a project, a lead agency should be identified to effectively coordinate the process.

In reality, most dam removals require federal permits—a Clean Water Act (CWA) Section 404 permit<sup>28</sup> and, in conjunction with the Section 404 permit, a Rivers and Harbors Act Section 10 permit<sup>29</sup>—issued by the Army Corps of Engineers (Army Corps). If the Army Corps will eventually need to issue a federal permit for a dam removal, then a Section 106 review is required. The Army Corps typically coordinates with the relevant State Historic Preservation Office to incorporate the Section 106 consultation into their permitting process. In some cases, however, the timing of this coordination (i.e., after the permit application is received by the Army Corps) may be considered too late in the project’s development. Some projects may require the initiation of Section 106 consultation during the development of alternatives. The acceptable approach and process varies from state to state.

The lead federal agency is required to consult with the State or Tribal Historic Preservation Office (SHPO/THPO), the public<sup>30</sup>, local government, the permit or licensee applicant, and other interested parties to determine whether the project has the potential to affect properties that are historically significant, regardless of whether or not their historic significance has already been identified.

If the action could affect properties with potential historic significance those properties must be professionally evaluated in accordance with standards set forth in 36 CFR 61, to determine whether or not they meet the criteria for listing in the National Register of Historic Places<sup>31</sup>.

#### Example projects that could trigger a Section 106 review

- A federal agency issues a grant to local watershed group to remove a dam that was once used to power a gristmill in the early 1900s.
- An Army Corps of Engineers CleanWater Act Section 404 permit is required before a state fisheries agency can remove an aging mill dam to restore fish passage.
- A hydropower dam’s license to operate has expired, and they are filing a license surrender application with FERC with the intent of removing the dam.

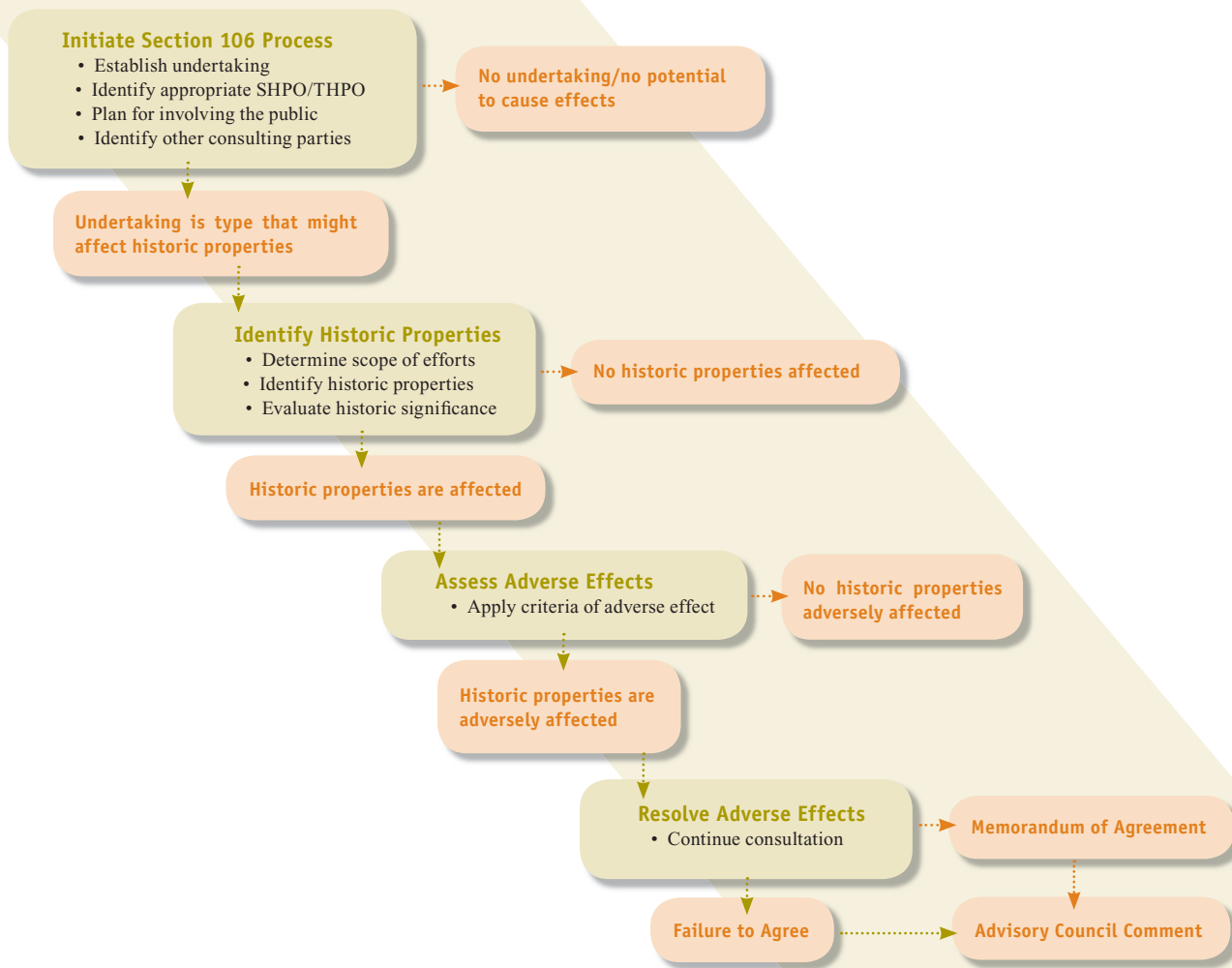
#### State Historic Preservation Office/Tribal Historic Preservation Office

The NHPA authorizes the creation of state and tribal historic preservation offices (SHPO/THPO) to manage the NHPA on a state or tribal level, review nominations to the National Register of Historic Places, and consult with the appropriate federal agencies during Section 106 reviews. SHPOs/THPOs play an important role in assessing the impacts of undertakings on historic properties and in developing Memoranda of Agreement.

If it is determined that the properties are eligible for listing in the National Register and that the proposed project could result in *adverse* effects on those properties, the federal agency must seek the advice of the appropriate SHPO/THPO and consulting parties to avoid, minimize, or mitigate those effects. Section 106 strongly encourages preservation, but the project may proceed despite adverse effects on historic properties if it is deemed to be in the best interest of the public. In such situations, appropriate mitigation and minimization of the adverse effects should be addressed in the Section 106 process, resulting in the development of a legally binding document, a Memorandum of Agreement, between the federal agency, the SHPO/THPO, and consulting parties as appropriate. Avoidance, minimization, and mitigation may include alternative project designs and locations, professional documentation of the resource prior to the undertaking, preserving portions of the resource, recovery of data from the site, and interpretive signage.<sup>32</sup>

## Section 106 Process

Section 106 Regulations Flow Chart<sup>33</sup>



### National Historic Preservation Act with a Twist—Additional Review Required

Certain projects may require additional steps in the Section 106 review process, whether it be through a specific set of agency guidelines or supplemental laws that support the NHPA. The following paragraphs will examine how hydropower relicensing is affected by Section 106 review and how the discovery of or potential for archaeological resources can also affect a project.

#### *Hydropower Licensing and Historic Preservation*

When proposing the removal of hydropower dams that are regulated by the Federal Energy Regulatory Commission (FERC), whether it is voluntary license surrender on the part of the owner or the denial of a license renewal application by FERC, a Section 106 review will be required. In 2002, FERC released *Guidelines for the Development of Historic Properties Management Plans for FERC Hydroelectric Projects*<sup>34</sup> as part of their effort to comply with Section 106 of the NHPA. Generally, FERC fulfills Section 106 by entering into an agreement with the dam owner, the ACHP, and the state, which is later incorporated into the dam license. Typically, the agreement requires the license applicant to develop and implement a Historic Properties Management Plan (HPMP), which provides a process for understanding and managing the dam removal's potential impacts on historic resources. The HPMP should identify historic properties, set historic preservation goals, assess project effects and mitigation/management measures, and provide for implementation of the preferred alternative.

When planning a dam removal on federal or tribal lands, one must also be aware that, while the structure itself may or may not be considered to be eligible for listing in the National Register, the impounded water could be preserving an archaeological site.

#### *Archaeological Resources Protection Act*

When planning a dam removal on federal<sup>35</sup> or tribal lands, one must also be aware that, while the structure itself may or may not be considered to be eligible for listing in the National Register, the impounded water could be preserving an archaeological site. The Archaeological Resources Protection Act (ARPA)<sup>36</sup> provides for the preservation and handling of archaeological resources found on federal and tribal lands, such as pottery, basketry, bottles, weapons, weapon projectiles, tools, structures or portions of structures, pit houses, rock paintings, rock carvings, intaglios, graves, fishing weirs, etc. According to



the ARPA, archaeological resources are the material remains of past human life or activity at least 100 years old that are of archaeological interest. The ARPA establishes a permit system for excavation and other research at archaeological sites on federal and tribal lands and sets up criminal and/or civil penalties for violation of the Act. If an archaeological site is discovered prior to a dam removal, project managers should work within the confines of the ARPA to obtain a permit that will allow the project to proceed. If archaeological resources are discovered during the process of removing the dam, all activity should cease, and project managers should follow steps similar to those outlined below under *Inadvertent Discoveries* in the section on Tribal Historic Preservation law. If the archaeological site will not be excavated, then ARPA permits should not be needed<sup>37</sup> for the project; however, it is best to consult with both the Federal land manager and lead Federal agency before proceeding.

### *National Environmental Policy Act*

The essence of the National Environmental Policy Act (NEPA) is that, before a federal agency embarks on any major action that may significantly affect the environment, the federal agency must consider the environmental impacts of that action. Among the consequences considered under a NEPA analysis are hydrological/geological, biological/ecological, and social. Social consequences include evaluation of the impact of the proposed action to any potential historic or cultural resources. ACHP encourages federal agencies to coordinate their Section 106 process with their NEPA review.

### **Tribal Historic Preservation Law**

For a dam removal project on federal or tribal land where project leaders believe artifacts such as human remains, funerary objects<sup>38</sup>, sacred objects, or objects of cultural patrimony<sup>39</sup> may be discovered or are accidentally uncovered during the course of a dam removal, the project is subject to the Native American Graves Protection and Repatriation Act (NAGPRA), in addition to Section 106 and ARPA. The excavation and inadvertent discovery provisions of NAGPRA apply only to federal and tribal lands. Under NAGPRA, tribal lands are lands (including private lands) within the exterior boundaries of an Indian reservation. If the burial ground is not on federal or tribal land, then the excavation and inadvertent discovery provisions of NAGPRA do not apply.<sup>40</sup> Federal agencies must also consult with Indian tribes that attach religious and cultural significance to historic properties, regardless of their location<sup>41</sup>. Section 101(d)(2) of the National Historic Preservation Act allows tribes meeting certain criteria to assume SHPO/THPO responsibilities on tribal lands.<sup>42</sup>

### *Native American Graves Protection and Repatriation Act*<sup>43</sup>

The Act is divided into two sections: intentional archaeological excavations (section 10.3) and inadvertent discoveries (section 10.4).

#### **Intentional Archaeological Excavations**

When removing a dam at a site where there is knowledge of tribal artifacts,<sup>44</sup> the entity undertaking the removal will need to follow the process outlined below. These regulations permit the intentional excavation of artifacts from federal or tribal lands only if the objects are excavated or removed following the requirements of the Archaeological Resources Protection Act (ARPA)<sup>45</sup> and its implementing regulations.

- The excavation of tribal artifacts must be done in consultation with and/or the consent, if on tribal lands, of the Native American tribe affected.
- If the project is on federal land, prior to issuing any permits for the proposed work, the federal agency official must notify tribes with a likely cultural relationship to the artifacts in writing and include a detailed outline of the planned activities and proposed times and places for future meetings to further discuss the excavation plans. If the project is also subject to Section 106 review, the agency official should continue to coordinate with the SHPO/THPO and others involved in the review process.
- Once an agreement is reached on the historic nature of the site and the actions to be taken, the federal agency official must submit a detailed plan of action.
- The affected tribe(s) has the right to ensure the remains are excavated or removed following the standards set by the Archaeological Resources Protection Act and to ensure the artifacts are disposed according to the chain of custody established in section 10.6 of the ARPA.

#### **Inadvertent Discoveries**<sup>46</sup>

In the majority of dam removal cases where an archaeological component exists, the artifacts tend to be inadvertently discovered rather than intentionally excavated. If, in the process of removing a dam, tribal artifacts (e.g., a fishing weir or remains of a once-submerged village) are discovered, all work must stop immediately, and the following steps must be taken:

- The discovery must be reported immediately (without delay) via telephone, with follow-up written confirmation, to a federal agency official with respect to federal lands or the appropriate tribal leader with respect to tribal lands.

- No later than three days after written notification is received, the appropriate official must certify receipt of the notice and take immediate steps to secure and protect the artifacts. In the case of a project on federal land, the agency official must notify the affected tribes via telephone and through written confirmation.
- Once proper notification has gone out, the project will then follow the consultation and disposition steps outlined above in *Intentional Archaeological Excavations*.
- If the project is otherwise lawful, activity may resume 30 days after receipt of the certification of written notification. Activity may also resume any time after a written, binding agreement has been reached between the federal agency and the affected tribes.

### **State Historic Preservation Law**

All states have an historic preservation office that coordinates historic preservation activities. States are given certain responsibilities under the National Historic Preservation Act (section 101(b)(3)):

- Conduct surveys and maintain inventories of historic properties;
- Identify and nominate eligible properties to the National Register;
- Prepare and implement a comprehensive statewide historic preservation plan;
- Administer a federal historic preservation grant program;
- Advise and assist federal agencies in carrying out their historic preservation responsibilities;
- Cooperate with the Advisory Council, other federal agencies, and others to ensure that historic properties are considered at all levels of planning and development (i.e., Section 106);
- Provide public information and education;
- Cooperate with and assist local governments in their historic preservation programs; and
- Consult with federal agencies on federal undertakings and other resource management activities.

States may also have their own historic preservation guidelines and/or regulations.<sup>47</sup> State historic preservation laws vary, but many parallel the NHPA and several require assessment of impacts from state actions on historic resources.<sup>48</sup> Some state preservation laws take archaeological and tribal concerns into consideration, sometimes going further than the federal law. The state of Florida, for example, passed laws<sup>49</sup> protecting human burials, skeletal remains, and associated burial artifacts found on public and private land in the

state, including submerged land. State law such as this is significant in that it fills a legal gap when federal jurisdiction stops at public land.

Because this report is an overview, it is important to check specific state historic preservation laws before proceeding with a dam removal project.

**Some state preservation laws take archaeological and tribal concerns into consideration, sometimes going further than the federal law.**

To further illustrate this point, examples from a few states are included and discussed in further detail in Appendix C. Find current state law by checking with the appropriate State Historic Preservation Office, a list of these offices can be found on the National Conference of State Historic Preservation Officers' web site: [www.ncshpo.org](http://www.ncshpo.org).

### **Local Historic Preservation Law**

Local governments may also have historic preservation ordinances, which may complement federal and state laws by regulating private actions. For example, local ordinances can require a special permit before a historic property can be altered (see, for example, [www.cr.nps.gov/hps/workingonthepast](http://www.cr.nps.gov/hps/workingonthepast)).<sup>50</sup> Therefore, it is important to check with local officials regarding local preservation ordinances prior to initiating a dam removal project.



## APPENDIX C

### STATE HISTORIC PRESERVATION LAWS

While there are national laws in place that serve to protect historic resources, each state has the ability to interpret historic preservation in its own way. Because of the potential variability among the states, it is important to examine state, as well as federal, law. The purpose of this appendix is not to provide a comprehensive look at preservation law in each of the 50 states but rather to provide examples of how state law compares with federal requirements and evolves to address specific issues relevant to each state. This appendix explores both the regulatory climate and the practical applicability of state regulations in Vermont, Pennsylvania, California, and Wisconsin.

#### Vermont

Vermont is undergoing a planning process to identify and prioritize historic dams for preservation and protection purposes.<sup>51</sup> As a part of this process, Vermont has proposed a series of categories by which to weigh the historic value of each of the state's dams. The categories include:

1. How long a dam has been at a particular location;
2. The extent to which an historic environment still exists around a dam site (e.g., buildings or archaeological remains that are part of the original community);
3. The extent to which features directly associated with the historical function of a dam remain present to illustrate what the dam was for and how it worked (e.g., mill buildings, canals, etc.);
4. Intrinsic physical characteristics of the dam as it exists today to determine whether it might represent a particularly unusual type of dam, or might be important in the history of dams and engineering;
5. The age of the existing dam within which the time period it was built (e.g., the earlier a dam was built within the period of that type of construction may have greater value); and
6. The extent to which the dam possesses historical integrity—meaning the degree to which the original design, workmanship, and material of the dam remains.

This information will provide the state with criteria by which to protect and, in some cases, restore certain dams to achieve historic preservation purposes while allowing removal of others for public safety and environmental purposes.

Although preservation options for historic dams will vary by structure as part of the consultation process, Vermont's Historic Preservation Office<sup>52</sup> has recommended the following mitigation options for adverse effects to dams as part of the removal or breaching process:<sup>53</sup>

1. Document and research affected resources;
2. Fund a feasibility study for a new use of associated buildings;
3. Assist project partners or current or new owners in funding and implementing a feasible new use;
4. Move decommissioned buildings to another, appropriate location.
5. Attach appropriate easements to deeds to ensure long term preservation of decommissioned buildings;
6. Develop off-site mitigation such as:
  - a. interpretation of the impacted resource;
  - b. research;
  - c. development of a trust fund to repair and maintain dams listed as high priority for preservation; and
7. Provide any other historic preservation-related public benefits.

## Pennsylvania

The Commonwealth of Pennsylvania has taken a different approach than Vermont when it comes to evaluating the potential historical significance of dams. Where Vermont has chosen to prioritize dams considered worthy of preservation-in-place or requiring extensive mitigation if considered for removal, Pennsylvania has typically taken a more selective approach when requiring detailed evaluations of the potential historical significance of a dam proposed for removal. This makes Pennsylvania particularly worthy of study considering it is one of the oldest states in the country and also leads the nation in the number of dams that are removed each year.

As determined by the Pennsylvania History Code and the National Historic Preservation Act (NHPA), the Pennsylvania Historical and Museum Commission (PHMC) is the designated SHPO and therefore administers all state historic preservation programs and activities through the Bureau for Historic Preservation. This includes reviewing the potential for a dam removal project to affect historic properties or cultural resources. In general, the Pennsylvania History Code is modeled after the NHPA, and therefore compliance with federal and state historic preservation law can be achieved in a parallel process.

In recent years, the Commonwealth of Pennsylvania, which has a proactive dam removal program spearheaded by the Department of Environmental Protection's Dam Safety Program and the Pennsylvania Fish and Boat Commission, has worked toward better integration and communication with the SHPO. Increased consultation among the agencies has led to a framework for determining whether a dam removal project may affect historic properties or archaeological resources and, if so, determining what type of mitigation may be appropriate.

### *What gives a dam historic value in Pennsylvania?*

Many of the dams that are eligible for the National Register of Historic Places, and also under consideration for removal in Pennsylvania, are old mill dams. Generally speaking, if the mill, dam, or raceway are intact, the SHPO will request avoidance, minimization, or mitigation of the project's potential adverse effects. Other less intact structures may also be considered historic, but typically more weight is given to intact structures.

### *When are archaeological issues raised in Pennsylvania?*

If the extent of the dam proposed for removal is within the stream bed, the PHMC generally does not require archaeological investigation. However, if abutments extending well into the stream bank would be removed, or if the removal of the dam will require significant disturbance of the land, PHMC takes a more active role in reviewing the removal plans and requesting avoidance, minimization, or mitigation of the project's adverse effects.

### *What type of historic mitigation is required for dam removal in Pennsylvania?*

The most common form of mitigation required in Pennsylvania is documentation. An example of a project that has required the execution of a Section 106 Memorandum of Agreement is the Irving Mill Dam on Ridley Creek (see Appendix B for case study).

## **California**

Dam removal in California is often a different undertaking than it is in many other states. Dam removal projects tend to be large in both scale and scope, involve a lengthier decision-making process, and because of this dams are frequently more expensive to remove. In addition to undergoing Section 106 review, both the California Environmental Quality Act (CEQA) and the California Public Resources Code 5024<sup>54</sup> contain triggers that can activate an historic review on dam removal projects.

CEQA mirrors the National Environmental Policy Act (NEPA) by requiring state and local agencies to identify environmental impacts of a proposed project and evaluate both the significance of said impacts and the potential need for alternatives or mitigation. Historic

resources are considered part of the environment and trigger CEQA, especially when a dam removal project may be eligible for listing in the California Register of Historical Resources. Other CEQA triggers are (1) projects undertaken by a public agency and (2) discretionary<sup>54</sup> projects on private land. During this review process, the lead public agency works with CEQA and the SHPO (of the State Historic Resources Commission) to undertake an initial study of the project and prepare either an Environmental Impact Report (EIR) or Negative Declaration (no significant impact on the historic resource). If an EIR is prepared, it provides a comprehensive look at the affected resource and identifies alternatives or mitigation to minimize these impacts to the historic resource. CEQA guidelines strongly encourage avoidance or preservation in place but recognize that this is not always feasible. They contend that documentation (drawings, photographs, or displays) does not mitigate the destruction of a structure but require that “all feasible” mitigation be done even if it does not mitigate for the full historic significance of the structure. Documentation does, at the very least, play an important archival role.<sup>56</sup>

The Committee on Cultural Resources of the Modern Age, part of the State Historic Resources Commission, was established to encourage awareness and the exchange of ideas on mid-century historic resources and to facilitate their potential listing in both the state and National Register.

It is also noteworthy to consider the age differences of the structures on each coast when comparing East Coast dam removal projects with those in California. There are both fairly new and very old structures on both coasts, but generally, dam removal projects in California focus on much younger dams when compared to many of the older mill dams being removed on the East Coast. While some would consider this an indicator that it is easier to escape historic review in California, they would be mistaken. California historic preservation law does not have a minimum age requirement for considering the addition of a structure to the California Register of Historical Resources. The Committee on Cultural Resources of the Modern Age, part of the State Historic Resources Commission, was established to encourage awareness and the exchange of ideas on mid-century historic resources and to facilitate their potential listing in both the state and National Register.

While dams have yet to be addressed directly, discussions have centered on “modern landscapes reflecting the aesthetic values, technological developments, and rapidly changing and diversifying cultures of the mid-twentieth century.” If dams built mid-century are deemed an important historic resource for the community, they would be eligible for the California Register and thus subject to state historic review laws. This has the potential to impact significantly more structures than in many other states.<sup>57</sup>



## Wisconsin

Like Pennsylvania, the state of Wisconsin is considered a leader in removing dams to restore rivers. The Wisconsin Historical Society is the SHPO. They are both a state agency and a private membership organization and are responsible for “collecting, advancing, and disseminating knowledge” about Wisconsin and its historical resources. In addition to the federal requirements of Section 106, there are state regulations on historic preservation that could play a significant role when pursuing a dam removal project.<sup>58</sup>

Wisconsin statutes on historic preservation contain specific instruction in dealing with submerged cultural resources. As was discussed in the section on *Inadvertent Discoveries* above, the impoundment of a dam has the potential to cover and possibly preserve historic and cultural resources. Removal of a dam may uncover those resources and expose sensitive artifacts to both the natural elements and to illegal scavenging. While language in Wisconsin’s regulations on submerged cultural resources deals mainly with the protection of those resources and their designation as significant, its potential effect on dam removal projects, particularly when there is a known submerged cultural resource, makes it useful to examine key points as laid out by the law.

Areas of submerged cultural resources are managed by both the Wisconsin Historical Society and the Wisconsin Department of Natural Resources, coordinating the preservation, management, and public use of said land. The agencies also work together to designate certain submerged cultural areas as bottomland preserves. Criteria for designating submerged land and resources as a bottomland preserve are:

- A submerged resource is determined to be of historic significance and everyone is in agreement that a preserve will facilitate preservation, management, and public use;
- An inventory of the submerged cultural resources has been conducted; and
- A plan for management (including recreation) has been established and a manager has been designated.

The Wisconsin Historical Society is also responsible for the review of and recommendation on issuance of permits, as requested by the State Archaeologist, and the Secretary of the Department of Natural Resources.<sup>59</sup>

## Endnotes

<sup>1</sup> For more information on the ecological impacts of dams to rivers and the restoration potential of dam removal, see *Ten Reasons Why Dams Damage Rivers* and *The Ecology of Dam Removal* at [http://www.americanrivers.org/site/PageServer?pagename=AR7\\_Guide\\_DamRemoval](http://www.americanrivers.org/site/PageServer?pagename=AR7_Guide_DamRemoval).

<sup>2</sup> For an example of historic discovery, please refer to the Embrey Dam removal case study in the appendix.

<sup>3</sup> See <http://www.nps.gov/nr/about.htm>

<sup>4</sup> See <http://www.nps.gov/nr/listing.htm>

<sup>5</sup> Section 106 is specific about the rights of Federally-recognized tribes; all other tribes are afforded the same rights as the general public. The regulations define the term “THPO” as those tribes that have assumed SHPO responsibilities on their tribal lands and have been certified pursuant to Section 101(d)(2) of the NHPA. Nevertheless, tribes that have not been so certified have the same consultation and concurrence rights as THPOs when the undertaking takes place, or affects historic properties, on their tribal lands. The practical difference is that during such undertakings, THPOs would be consulted in lieu of the SHPO, while non-certified tribes would be consulted in addition to the SHPO. <http://achp.gov/106summary.html>

<sup>6</sup> Project applicant is the project manager or partner who is applying for the federal grant or permit triggering inclusion of the lead federal agency and the Section 106 process.

<sup>7</sup> The state dam safety office may have archival records of dams under its jurisdiction. These records may contain useful historical information about the subject dam and site.

<sup>8</sup> *How to Apply National Register Criteria for Evaluation*. National Register Bulletin 15, (Washington: National Park Service, 1997), <http://www.nps.gov/history/nr/publications/bulletins/nrb15/>

<sup>9</sup> Guidelines for Evaluating and Documenting Traditional Cultural Properties, National Register Bulletin 38, (Washington: National Park Service, 1998), <http://www.nps.gov/history/nr/publications/bulletins/nrb38/>

<sup>10</sup> Louis Berger & Associates. 2000. Preserving Vermont’s Most Significant Historic Dams. Phase I: Narrowing the Universe of Dams. Prepared for: State of Vermont, U.S. Department of Interior, Lake Champlain Basin Program and Preservation Trust of Vermont.

<sup>11</sup> It should be noted that “notching” has variable definitions. For the purposes of this report “notching” means removal of a portion of the dam to the depth of the streambed and to a width suitable for providing fish passage.

<sup>12</sup> See Historic American Engineering Record, National Park Service, <http://www.nps.gov/history/hdp/>

<sup>13</sup> See <http://www.nps.gov/hdp/standards/index.htm>

<sup>14</sup> See <http://www.achp.gov/NHPA.pdf>

<sup>15</sup> Barrett, Brenda. “A Framework for Creative Mitigation.” *Cultural Resource Management*: No. 3, 1999.

<sup>16</sup> Ibid.

<sup>17</sup> For more information about the book *River Runs Free* produced by the Fredericksburg Free Lance-Star, visit [http://fredericksburg.com/marketplace/EmbryDamBook/index\\_html](http://fredericksburg.com/marketplace/EmbryDamBook/index_html).

<sup>18</sup> A conservation easement is a way for a landowner to permanently protect the environmental or cultural value of his or her land while continuing to own it. It is a legal agreement between a landowner and a government agency or nonprofit organization that permanently limits development of the land. Even if an owner sells the land or passes it to his or her heirs, the conservation easement remains in effect.

<sup>19</sup> To read the Middle Cuyahoga TMDL Report, visit <http://www.epa.state.oh.us/dsw/tmdl/CuyahogaRiverMiddleTMDL.html>.

<sup>20</sup> See New Hampshire Division of Historical Resources, Generalized Guidelines for Research and Reporting: Scope of Work for Proposed Dam Removals Pertaining to Historical and Archaeological Resources: [http://www.des.state.nh.us/dam/damRemoval/Guidelines\\_for\\_historical.pdf](http://www.des.state.nh.us/dam/damRemoval/Guidelines_for_historical.pdf)

<sup>21</sup> See [http://www.americanrivers.org/site/DocServer/Permitting\\_Dam\\_Removal-The\\_State\\_of\\_\\_Several\\_\\_States.pdf?docID=6721](http://www.americanrivers.org/site/DocServer/Permitting_Dam_Removal-The_State_of__Several__States.pdf?docID=6721) for important federal laws involved in a dam removal.

<sup>22</sup> 16 U.S.C. 470 et seq. - to read the law and recent amendments see [http://www.cr.nps.gov/local-law/FHPL\\_HistPrsvt.pdf](http://www.cr.nps.gov/local-law/FHPL_HistPrsvt.pdf)

<sup>23</sup> 36 C.F.R. §800 - to read the regulations see <http://www.gpoaccess.gov/index.html>

<sup>24</sup> Introduction to Section 106 Review Participant’s Course Book, Advisory Council on Historic Preservation, 2002.

<sup>25</sup> Information about Section 106, including a citizen’s guide, can be found on the ACHP website at [www.achp.gov](http://www.achp.gov).

<sup>26</sup> See [www.cr.nps.gov/nr/results.htm](http://www.cr.nps.gov/nr/results.htm)

<sup>27</sup> If a listed property is privately owned and there is no federal involvement in the proposed project, then there may be no federally mandated limits on how the property owner manages the property.

<sup>28</sup> U.S. Code, title 33, sec. 1344

<sup>29</sup> U.S. Code, title 33, sec. 403

<sup>30</sup> The federal agency is not technically required to consult with the public but rather to “seek and consider” the views of the public.

<sup>31</sup> See the Secretary of the Interior’s Professional Qualification Standards at <http://www.nps.gov/history/local-law/gis/html/quals.html>.

<sup>32</sup> Introduction to Section 106 Review Participant’s Course Book, Advisory Council on Historic Preservation, 2002.

<sup>33</sup> Flow chart produced by the Advisory Council on Historic Preservation and can be accessed at the website: [www.achp.gov/regsflow.html](http://www.achp.gov/regsflow.html)

<sup>34</sup> See <http://www.ferc.gov/industries/hydropower/gen-info/guidelines/hpmp.pdf> for a copy of the Guidelines for the Development of Historic Properties Management Plans for FERC Hydroelectric Projects.

<sup>35</sup> Federal lands are defined as (1) all lands owned and administered by the United States as part of the national park system, national wildlife refuge system, or national forest system and (2) all other lands the fee title to which is held by the United States (with the exception of the Outer Continental Shelf and lands owned by the Smithsonian).

<sup>36</sup> This information originates from 16 U.S.C. § 470aa - 470mm and can be found on the National Park Service website.

<sup>37</sup> Unless the dam itself has been determined to be an archaeological structure.

<sup>38</sup> Human remains and funerary objects refer to the physical remains of the body of a person of Native American ancestry and items that, as part of the death rite or ceremony of a culture, are reasonably believed to have been placed intentionally at the time of death or later with or near individual human remains.

<sup>39</sup> Sacred objects are items that are ceremonial objects required for Native American leaders to practice traditional Native American religions, while objects of cultural patrimony are objects that have continuing historical, cultural, or traditional importance central to the tribe itself.

<sup>40</sup> Other state and federal cultural preservation laws may apply, and state or local cemetery laws may also apply. For information on other state and federal cultural preservation laws, contact the appropriate State Historic Preservation Office.

<sup>41</sup> C.F.R. 800.2(c)(2)(II).

<sup>42</sup> For additional information on the 1992 amendment and inclusion of Tribal Historic Preservation Officers, visit the Advisory Council on Historic Preservation’s website at [www.achp.gov/thpo.html](http://www.achp.gov/thpo.html).

<sup>43</sup> The Native American Graves Protection and Repatriation Act can be found at [http://www.cr.nps.gov/local-law/FHPL\\_NAGPRA.pdf](http://www.cr.nps.gov/local-law/FHPL_NAGPRA.pdf); its regulations are outlined in 43 C.F.R. §10, which can be found at <http://www.cr.nps.gov/nagpra/MANDATES>.

<sup>44</sup> The report’s use of the term ‘artifacts’ is used to refer to human remains, funerary objects, sacred objects, and objects of cultural patrimony.

<sup>45</sup> See 16 U.S.C. Section 470aa et seq.

<sup>46</sup> These can be very costly. Project managers should examine existing inventories, National/State Register listings, and previous survey reports to identify the potential for sites to exist. Then you can build into the project the need to deal with sites if/when discovered.

<sup>47</sup> Julia H. Miller, A Laypersons Guide to Historic Preservation Law. National Trust for Historic Preservation Information Series 2000.

<sup>48</sup> Ibid.

<sup>49</sup> Chapters 872 and 267, Florida Statutes and Public Law 96-95. For more information, visit the Florida Office of Cultural and Historical Programs at [dhr.dos.state.fl.us/archaeology/FS872](http://dhr.dos.state.fl.us/archaeology/FS872).

<sup>50</sup> Julia H. Miller, A Laypersons Guide to Historic Preservation Law. National Trust for Historic Preservation Information Series 2000.

<sup>51</sup> Preserving Vermont’s Most Significant Historic Dams - Phase I: Narrowing the Universe of Dams, prepared by The Louis Berger Group, Inc. for the State of Vermont Division for Historic Preservation, 2000.

<sup>52</sup> For more information on Vermont’s programs contact Giovanna Peebles, State Archaeologist at (802) 828-3050 and see [www.historicvermont.org](http://www.historicvermont.org).

<sup>53</sup> Mitigation Options for Adverse Effects Relating to Historic Dam Removal or Breaching, State of Vermont Agency of Commerce and Community Development, 1999.

<sup>54</sup> California Public Resources Code 5024 is the regulation that triggers consultation with the Office of Historic Preservation when a project will impact state-owned land.

<sup>55</sup> According to the Office of Historic Preservation, discretionary refers to a project where an agency must issue an approval for judgment on the project.

<sup>56</sup> For more information on the California Environmental Quality Act (CEQA), please refer to [www.ohp.parks.ca.gov/default.asp?page\\_id=21721](http://www.ohp.parks.ca.gov/default.asp?page_id=21721).

<sup>57</sup> To learn more about national guidelines on mid-century resources, please review the *National Register Guidelines for Evaluating and Nominating Properties that have Achieved Significance within the Past Fifty Years* at [www.cr.nps.gov/nr/publications/bulletins/nrb22/](http://www.cr.nps.gov/nr/publications/bulletins/nrb22/).

<sup>58</sup> For a more in-depth look at Wisconsin's Section 106 review process, visit the Wisconsin Historical Society at [www.wisconsinhistory.org/hp/protecting/106\\_intro.asp](http://www.wisconsinhistory.org/hp/protecting/106_intro.asp).

<sup>59</sup> To learn more about Wisconsin's statutes on historic preservation, review the fact sheet provided by the Wisconsin Historical Society at [www.wisconsinhistory.org/hp/handouts/statutes.pdf](http://www.wisconsinhistory.org/hp/handouts/statutes.pdf).





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