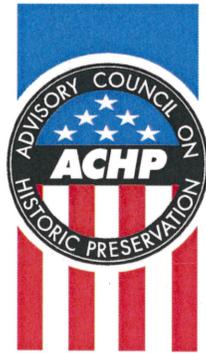


Milford Wayne Donaldson, FAIA
Chairman

Clement A. Price, Ph.D.
Vice Chairman

John M. Fowler
Executive Director



Preserving America's Heritage

February 22, 2013

The Honorable Jon Wellinghoff
Chairman
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

Dear Mr. Chairman:

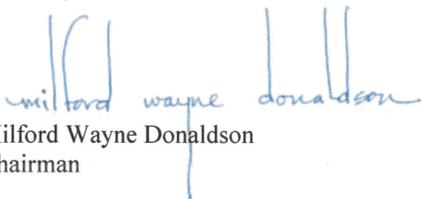
In accordance with Section 106 of the National Historic Preservation Act, 16 U.S.C. § 470f, and its implementing regulations, "Protection of Historic Properties," 36 C.F.R. part 800, I am providing to you the final comments of the Advisory Council on Historic Preservation (ACHP) on the proposed authorization by the Federal Energy Regulatory Commission (FERC) of a non-capacity license amendment for the Lowell Hydroelectric Project (FERC No. 2790).

Boott Hydropower, Inc. and the Eldred L. Field Hydroelectric Facility Trust (Boott), operators of the Lowell Hydroelectric Project, have applied for an amendment to their license to allow modifications to the Pawtucket Dam on the Merrimack River in Lowell, Massachusetts, for the Pneumatic Crest Gate System Installation Project (Project). In accordance with Section 110(l) of the National Historic Preservation Act, 16 U.S.C. § 470h-2(l), and 36 C.F.R. § 800.7(c)(4), you must take into account these comments and respond to them prior to reaching a decision on the referenced license amendment, and may not delegate these responsibilities.

In addition to the comments specific to the Project, our comments include a number of general recommendations to assist FERC with regard to FERC's overall approach to compliance with Section 106. The ACHP would welcome the opportunity to work with FERC staff to address these concerns.

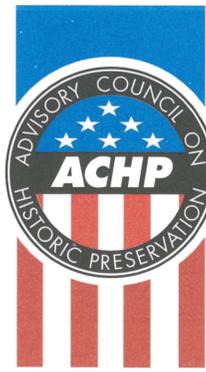
We look forward to your response.

Sincerely,


Milford Wayne Donaldson
Chairman

ADVISORY COUNCIL ON HISTORIC PRESERVATION

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Preserving America's Heritage

**Comments of the Advisory Council on Historic Preservation on
The proposed non-capacity license amendment by the Federal Energy Regulatory Commission
for Boott Hydropower, Inc.
To install a pneumatic crest gate system on Pawtucket Dam in Lowell, Massachusetts
February 22, 2013**

Background

Under the Federal Power Act and Energy Policy Act of 2005, the Federal Energy Regulatory Commission (FERC) must consider whether to approve a non-capacity license amendment for the Lowell Hydroelectric Project (FERC No. 2790-055), operated by Boott Hydropower, Inc. and the Eldred L. Field Hydroelectric Facility Trust (Boott), to allow modifications to the Pawtucket Dam on the Merrimack River in Lowell, Massachusetts, for the Pneumatic Crest Gate System Installation Project (Project or undertaking). The modifications to Pawtucket Dam proposed by Boott would involve removal of the existing five-foot high wooden flashboard system at the crest of the dam and replacement with a pneumatic crest gate system and associated compressor building.

The flashboard system is a 19th century technology utilizing stacked boards to increase the height of masonry dams. The flashboards are supported by steel pins or rods inserted into holes in the capstones on the crest of the dam. The flashboards have been used to increase the operating pool level (headpond elevation) for hydropower facilities, and are designed to fail, releasing water downstream, when the river level reaches flood stages. When the flashboards, which have been installed on the dam since it was modified to its current configuration in 1875, are in place, the dam is capable of ponding the river for a distance of about 23 miles. Over the past decades, changes in the steel rods used to support the flashboards and the recent use of plywood sheets instead of flashboards have resulted in inconsistent and unreliable performance maintaining stable operating pool levels during normal operations and reducing upstream backwater and flooding effects during high flows and flooding events.

The proposed pneumatic crest gate system would consist of multiple-operating-zone inflatable bladders anchored into the dam crest, with hinged steel panels (the "crest gates") on the upstream side of the bladders. By controlling air pressure within the bladders to increase or decrease crest gate height, the pneumatic crest gate system can maintain the normal headpond elevation and also adjust quickly to high flow events. A range of anchoring techniques and support structures have been proposed and discussed during the review process under Section 106 of the National Historic Preservation Act, 16 U.S.C. § 470f, and its implementing regulations at 36 C.F.R. part 800 (Section 106), including layering various amounts of concrete across the crest of the dam to serve as a base for placement and anchoring of the crest gate.

FERC has consulted with recognized Section 106 consulting parties, including the Massachusetts Historic Commission / Massachusetts State Historic Preservation Officer (SHPO), the Lowell National Historical Park (LNHP) supported by other representatives of the National Park Service (NPS) and Department of the Interior (DOI), the City of Lowell, Boott, and the Advisory Council on Historic Preservation (ACHP) about the potential effects of the Project on historic properties. The ACHP formally entered the Section

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106 consultation in August 2011. Although not recognized as consulting parties by FERC, a number of historic preservation entities, local governments, citizens groups, and individual citizens have expressed concerns about the undertaking, and its effects on historic properties, through correspondence with FERC. The primary issue is the potential adverse effects that the Project may have on the Pawtucket Dam and a number of historic districts in which it is a contributing element, including the Lowell Locks and Canals Historic District (LLCHD), which is a National Historic Landmark (NHL), the LNHP, and the Lowell Historic Preservation District (LHPD).

On January 8, 2013, FERC terminated consultation and requested the comments of the ACHP. In accordance with Section 800.7 of the Section 106 regulations, ACHP chairman Milford Wayne Donaldson appointed a panel of five ACHP members to consider the case and issue the formal comments of the ACHP. The panelists were provided copies of documents compiled from the Section 106 consultation to inform their review. On February 5, 2013, the panel conducted a site visit and public meeting and received testimony from consulting parties, including the Massachusetts SHPO, LNHP, and DOI, public officials, organizations, and members of the community. Subsequently, the panel prepared these comments for consideration by the Chairman of FERC in reaching his final decision on the Project.

Findings

I. The historic properties affected by the undertaking are extremely significant and unique. The Pawtucket Dam is a nationally significant historic engineering resource listed on the National Register of Historic Places (National Register) and designated as an NHL within the LLCHD. The LLCHD is nationally significant as it represents one of America's first great industrial cities. Currently, it encompasses the most historically significant extant aggregation of early 19th century industrial structures and artifacts in the United States. The Pawtucket Dam is also included as a nationally significant structure in the LHPD and the NPS's List of Classified Structures (LCS) for LNHP, both of which are listed on the National Register. The Pawtucket Dam is accordingly an element of the LNHP.

The Pawtucket Dam is a masonry dam built in sections in 1847 and 1875 at the Pawtucket Falls, to replace the earlier masonry and wood dams built between 1826 and 1833. This harnessing of a major river for power development was on a scale far larger than anything of this sort previously undertaken in the United States. The dam was constructed as part of a system of canals and mills developed in Lowell between 1796 and 1848, incorporating technological innovations and engineering achievements that received international recognition. It enabled the growth of an industrial community that ultimately became a model imitated throughout the United States and Europe.

The dam was designed by the Lowell Locks and Canals Company's Chief Engineer, James B. Francis. According to the Keeper of the National Register (Keeper), "During its heyday, based upon the power of harnessed water, Lowell developed into the cotton textile manufacturing center of the United States. By 1850 almost six miles of canals traversed the city, driving the waterwheels of 40 mill buildings, powering 320,000 spindles and almost 10,000 looms and giving employment to more than 10,000 workers. These canals depended on water drawn from the Merrimack River, and the Pawtucket Dam played (and continues to play) a pivotal role in providing water to the canals . . ."

In response to a dispute between FERC and the SHPO regarding the integrity and eligibility of the Pawtucket Dam, FERC requested clarification of the eligibility of Pawtucket Dam from the Keeper on September 19, 2011. On October 26, 2011, the Keeper issued its determination that Pawtucket Dam is eligible for, and listed in, the National Register for its historic and engineering significance under National Register Criteria for Evaluation A and C as a contributing structure in the nationally significant LLCHD. The Keeper further noted:

Under Federal law and regulations no distinction is made between properties determined individually eligible for the National Register and those determined eligible as contributing to a historic district. The Pawtucket Dam is significant as an element of an integrated historic industrial process which includes dams, canals, gates, locks, mill yards, machine shops, and managers and workers housing, which form perhaps the most historically significant extant collection of 19th century industrial buildings and structures in the country, and as such, the dam should not be evaluated individually apart from its functioning as a highly significant and integral component of a larger nationally important historic resource.

II. The undertaking will have adverse effects on Pawtucket Dam and on the historic districts to which it is a contributing element. The proposed permanent removal of the flashboard system, the installation of a pneumatic crest gate, and the alteration of the granite dam to accommodate the crest gate system will substantially and irreversibly change the historical appearance, historic fabric, physical form, and functionality of the Pawtucket Dam. The undertaking may also diminish the long term physical integrity of the dam due to potential changes in the flow and fall of water as it impacts the capstones and the methods of anchoring that may result in damage to the capstones or compromise the ability of the dam, as constructed, to achieve natural movement in response to changing flows.

The Section 106 regulations specify that “an adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property’s location, design, setting, materials, workmanship, feeling, or association.” 36 C.F.R. § 800.5(a)(1). The regulations further clarify that “Adverse effects on historic properties include, but are not limited to: (i) Physical destruction of or damage to all or part of the property; (ii) Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation and provision of handicapped access, that is not consistent with the Secretary’s Standards for the Treatment of Historic Properties (36 CFR part 68) and applicable guidelines; . . . (iv) Change of the character of the property’s use or of physical features within the property’s setting that contribute to its historic significance; (v) Introduction of visual, atmospheric or audible elements that diminish the integrity of the property’s significant historic features . . .” 36 C.F.R. § 800.5(a)(2). The proposed alteration of the Pawtucket Dam resulting from installation of a crest gate system would result in direct adverse effects in all the examples cited in the Section 106 regulations above.

In addition, the undertaking as currently proposed, will adversely affect the LLCHD, LNHP, and LHPD, in which the Pawtucket Dam is a contributing element. When an adverse effect results on a contributing element, the historic district in which it is located must be considered by the agency in its assessment of effects. More than just collections of related structures and buildings, the LLCHD, LNHP, and LHPD recognize an urban industrial historical landscape that developed around water power provided by the Pawtucket Dam and its associated canals. The historic design of Pawtucket Dam, including the flashboard system, encourages passive and informal water control to provide hydro-power to the canals and to help prevent flooding upstream, as suggested by the naturalistic edges and open areas in the originally designed 19th century flashboards. The proposed project would change significantly the character of Pawtucket Dam by establishing it as a crest gate mechanically controlled waterway. This would affect its historic presence, altering drastically the dam’s view corridors, destroying its historic functionality, eliminating ambient water sounds, and diminishing the unique engineering design association with its designer.

The proposed project is out of character with the existing surroundings, and would significantly compromise historic visual and spatial relationships, both from the dam side and down river. Furthermore, it is inconsistent with the Secretary of Interior’s Standards for Historic Preservation, 36 C.F.R. part 68, and thus will constitute an adverse effect on Pawtucket Dam, LLCHD, LNHP, and LHPD.

Indeed, conformance to these standards would preclude the major alterations of the dam and removal of the flashboard system required for the fitting of a crest gate system supported by compressed-air-filled bladders.

Specifically, the proposed work violates the Secretary's Standards in the following manner:

- 1) The distinctive materials and physical appearance of the flashboard system will not be retained at all. The essential historic characteristic of the often bent, leaking line of flashboard will be lost and replaced, allowing no random passage of water over its top or through its face, and eliminating the character-defining passage of some water through or over the system and over the rocky rapids below the dam during the summer and early fall period;
- 2) The removal of the entire flashboard system eliminates an essential engineering feature characterizing the historic dam;
- 3) The distinctive materials and features of the flashboard system and the top of the angled and hand-finished sloping granite capstones will be lost;
- 4) The bladder dam system alters the historic character of the dam;
- 5) The new concrete, steel crest gates, and fabric bladders are inconsistent with the historic fabric; and
- 6) Any intermediate piers that may have to be used are not visually compatible with the historic dam.

Boott has proposed steps to minimize and mitigate potential adverse effects. However, they are insufficient given the significance and importance of the numerous resources that will be affected by the Project. Boott's proposals include the potential elimination of intermediate piers; potential reduction in the amount of concrete used as a base for the crest gate and anchor matrix; variable placement of the crest gate on the capstones; variable anchoring systems; and use of a paint scheme to reduce the visibility of the bladders. Boott has proposed customizing the new compressor building in design and materials to resemble 19th century buildings in Lowell to mitigate the adverse effects. It has also proposed the construction of two exhibits with examples of the historic flashboard system and the new crest gate system for display near the dam. Such measures would appear cosmetic and are totally inadequate given the impacts of the proposed project.

III. There have been flaws in FERC's compliance with the Section 106 regulations for this undertaking. The Section 106 consultation for the Project has been characterized by ongoing consulting party concerns about the delineation of the Area of Potential Effects (APE), the identification and significance of historic properties that might be affected, the nature and scope of effects on historic properties, the lack of consideration of alternatives to the undertaking, and a limited plan to resolve adverse effects.

Prior to the initiation of Section 106 consultation by FERC, Boott contracted a consultant to carry out a study of the effects of the project on cultural resources and provided a draft report of its investigations to the Massachusetts SHPO and LNHP in October 2010. This caused concerns among stakeholders because they were unclear about the status of the Section 106 review being conducted by FERC. The Section 106 regulations allow a federal agency to delegate the initiation of Section 106 to an applicant but require appropriate prior notification to the SHPO as specified in Section 800.2(c)(5) of the regulations. Since FERC had not formally initiated the Section 106 review, it did not notify the SHPO regarding delegation of the initiation of the Section 106 review. The SHPO was not consulted in determination of the APE for the undertaking prior to the identification effort as required by Section 36 CFR 800.4(a)(1).

FERC initiated the Section 106 consultation in a letter dated April 26, 2011, delineating a limited APE for the undertaking and making a finding that no historic properties would be affected. By issuing a letter that

formally initiated consultation, delineated the APE, communicated the results of the identification and evaluation of historic properties and assessment of effect, FERC attempted to expedite the Section 106 process. While the Section 106 regulations allow a federal agency to address multiple steps at one time, it can take this approach only if the SHPO agrees. FERC did not obtain the SHPO's agreement.

FERC's subsequent consultation was characterized by limited interaction with consulting parties and the public. A number of individuals and entities that might have been appropriately recognized as consulting parties were not invited into the consultation. The Section 106 regulations state that the federal agency should, in consultation with the SHPO, identify any other parties entitled to be consulting parties and invite them to participate as such in the Section 106 process. 36 C.F.R. § 800.3(f). Such parties may include individuals and organizations with a demonstrated interest in the undertaking due to the nature of their legal or economic relation to the undertaking or affected properties, or their concern with the undertaking's effects on historic properties. 36 C.F.R. § 800.2(c)(5). Numerous local residents affected by upstream flooding linked to the dam, several local, regional, and national historic preservation organizations, and representatives of local governments with jurisdiction over residential areas affected by back-flooding from Pawtucket Dam submitted comments to FERC regarding the undertaking, but none were invited to be consulting parties. While FERC was within its rights under the regulations to exclude these parties, their absence undermined the effectiveness of the consultation.

FERC's delineation of APE for the undertaking does not follow the definition in the Section 106 regulations. In its letter dated April 26, 2011, FERC determined that the APE for the undertaking was restricted to the Pawtucket Dam itself and areas where construction activities would take place. FERC did not include the LLCHD, LNHP, or LHPD in the APE. According to guidance provided by the NPS and the ACHP, an adverse effect to a contributing element of a historic district is an adverse effect to the district as a whole. As such, the APE for this undertaking should include the areas encompassed by the LLCHD, LNHP, and LHPD.

FERC's assessment of effects was compromised by its failure to recognize that under Section 106 contributing elements in eligible or listed historic districts are treated the same as individual properties. In its letter dated April 26, 2011, FERC documented the basis of its determination of "no adverse effect" for the undertaking. FERC asserted that the Pawtucket Dam was not referenced as individually eligible on the 1976 and 1977 nomination forms for the LLCHD. Further, it concluded that the 1985 addition of a fishway/ladder had compromised the integrity of the dam. FERC indicated that the addition of the pneumatic crest gates would not be an adverse effect on LNHP or LLCHD, because the project does not alter any of the characteristics that make the LLCHD eligible. This conclusion was based on a misinterpretation of the nomination forms and failure to follow the guidance provided by the NPS and the ACHP that federal agencies must consider all criteria of eligibility that may be applicable for a property. This includes those not listed on a previous determination of eligibility or nomination for the National Register.

The Massachusetts SHPO and LNHP both objected to FERC's finding of "no adverse effect". In its letter to FERC dated May 10, 2011, the SHPO opined that the general repairs to the dam over time have been in-kind and have not compromised the dam's integrity, and the construction of the fishway / ladder in 1985 did not affect the overall integrity of the dam. The SHPO indicated that Pawtucket Dam retains sufficient integrity of location, design, setting, materials, workmanship, feeling, and association to be a contributing resource to LLCHD, and requested that FERC submit to the Keeper a request for clarification regarding the question of the Dam's eligibility and integrity. In its letter dated May 24, 2011, the LNHP also objected to FERC's effect determination, stating that the undertaking would adversely affect the Pawtucket Dam and the entirety of the LLCHD, LNHP, and LHPD because the dam is the focal point of the system that led to the establishment of the textile industry and the City of Lowell. Multiple other stakeholders objected to the "No Adverse Effect" determination. However, FERC resisted any

acknowledgment that the crest gate system would adversely affect the dam and associated historic districts.

Despite its issuance of the no adverse effect determination, FERC proposed the development of a Memorandum of Agreement (MOA) to address the “effects” of the undertaking. This suggests a misunderstanding of the Section 106 regulations. Under the Section 106 regulations, MOAs are only developed to set forth the steps to resolve adverse effects, which FERC denied applied to this Project.

Section 800.4(c)(2) of the Section 106 regulations states that when the federal agency and SHPO do not agree regarding a determination of eligibility, the agency official shall obtain a determination of eligibility from the Keeper pursuant to 36 C.F.R. part 63. Despite repeated reminders from consulting parties and other stakeholders of this requirement, FERC resisted referring the question of the eligibility of Pawtucket Dam to the Keeper. Finally, on September 19, 2011, FERC requested a determination of eligibility from the Keeper, which was issued on October 26, 2011. FERC, however, misinterpreted the Keeper’s determination to mean that Pawtucket Dam was individually eligible for inclusion on the National Register because of its historic and engineering significance. As a result, FERC changed its effect finding and determined that the undertaking would have an adverse effect on Pawtucket Dam, yet ignored the effects of the undertaking on LLCHD, LNHP, and LHPD. In a December 8, 2011, letter to consulting parties, FERC revised its effect determination and provided a draft MOA for comment which essentially included the same stipulations previously developed to address effects that it considered not adverse.

IV. FERC has failed to address the effects of the undertaking on an NHL and the requirements of Section 110(f) of the National Historic Preservation Act (NHPA). As noted, the Pawtucket Dam is a contributing element of the LLCHD, which has been designated an NHL. NHLs are nationally significant historic places designated by the Secretary of the Interior because they possess exceptional value or quality in illustrating or interpreting the heritage of the United States.

In carrying out its Section 106 review for the Project, FERC failed to comply with the requirements of Section 110(f) of the NHPA, 16 U.S.C. § 470h-2(f), and Section 800.10 of the Section 106 regulations regarding undertakings that may directly and adversely affect an NHL. Section 110(f) of the NHPA requires federal agencies to exercise a higher standard of care when considering undertakings that directly and adversely affect NHLs. It requires federal agencies “to the maximum extent possible” to “undertake such planning and actions as may be necessary to minimize harm” to NHLs from undertakings they carry out, financially assist, or license.

There is no question that the Project’s effects to the Pawtucket Dam are direct and adverse. Nevertheless, throughout the Section 106 consultation, FERC has refused to acknowledge the status of Pawtucket Dam as a contributing element of an NHL district, or to seriously consider the nature and extent of the adverse effects to Pawtucket Dam, the NHL District, and to the LNHP and LHPD. There is no evidence in the administrative record of the Section 106 consultation that FERC seriously considered alternatives to the Project that might minimize harm to the NHL. The ACHP must conclude that FERC has failed to meet the applicable statutory standard.

V. FERC has not adequately addressed the ramifications of Park founding legislation. The Lowell National Historical Park and the Lowell Historic Preservation District were established on June 5, 1978, via Public Law 95-290 (Lowell Act). 16 U.S.C. § 410cc-11(a)(1). The explicit purpose of the Lowell Act was “to preserve and interpret the nationally significant historical and cultural sites, structures, and districts in Lowell, Massachusetts, for the benefit and inspiration of present and future generations” 16 U.S.C. § 410cc-12(b). Among other things, Congress found that “certain sites and structures in Lowell, Massachusetts, historically and culturally the most significant planned industrial city in the United States, symbolize in physical form the Industrial Revolution” 16 U.S.C. § 410cc(a)(1).

The Lowell Act specifically prohibits federal entities from issuing “any license or permit to any person to conduct an activity within the park or preservation district unless such entity determines that the proposed activity will be conducted in a manner consistent with the standards and criteria established pursuant to Section 302(e) of this Act and will not have an adverse effect on the resources of the park or preservation district” 16 U.S.C. § 410cc-12(b).

While the Lowell Act does not specifically define the term “adverse effect,” the ACHP believes that Section 106 of the NHPA, the preeminent federal statute in *pari materia*, supplies its intended definition. The “adverse effect” term had a well established meaning in federal historic preservation practice and law by the time Congress drafted the Lowell Act in 1978. For instance, the procedures for implementing Section 106 published in the *Federal Register* in 1969 and 1970, and then in the Code of Federal Regulations at 36 C.F.R. § 800.9 (1975), defined an “adverse effect” in relevant part to “occur under conditions which include but are not limited to: (a) destruction or alteration of all or part of a property; ...[or] (c) Introduction of visual, audible, or atmospheric elements that are out of character with the property and its setting.” As explained above in these comments, and further detailed below, the Project would result in such adverse effects to Pawtucket Dam, the LLCHD, and the LNHP and LHPD. Accordingly, it is unclear how FERC could issue the license for the Project consistent with the Lowell Act.

In its letter dated April 26, 2011, initiating consultation under Section 106, FERC concluded that the proposed modifications to Pawtucket Dam could be conducted in a manner consistent with the standards established pursuant to the Lowell Act and would not have an adverse effect on the resources of the LNHP. In correspondence exchanged during the Section 106 consultation, Boott suggested that the proposed installation of a crest gate system on Pawtucket Dam is merely a modern feature or modern intrusion consistent with and representative of many others that have been allowed in LNHP and the LHPD. They reference interior items in buildings and structures, removable items, heating and air conditioning units, roadways, and businesses. However, the examples of projects suggested by Boott have not violated the standards for the LHPD established pursuant to the Lowell Act. The modifications and intrusions referenced, for the most part, are either located in building interiors or carefully located on the exterior to minimize visual impact, involve only small portions of the subject building, and are reversible.

Boott references the replacement of the University Avenue Bridge as an example of changes and modern intrusions in or adjacent to the Park and LHPD. The LNHP has noted that there was a finding of adverse effect for this project, which was mitigated by a context-sensitive design of the new bridge. In consultation on the proposed bridge, the LNHP prioritized the preservation of the Great River Wall, Canal Island, and Northern Canal gatehouses, all elements of the historic water supply system that includes the Pawtucket Dam. Consultation related to replacement of the University Avenue Bridge succeeded in providing infrastructure improvements necessary to the public that will blend in as well as possible, and provide for the preservation of the water power system itself, the highest priorities for preservation.

The crest gate proposal is not “merely another improved or modern technology”, but rather a fundamental change in the character, appearance, and mode of functioning of a central feature of the LNHP, LHPD, and LLCHD, an NHL. The crest gate is not just a modern addition to the vicinity of the Park and associated historic districts, but rather a direct adverse effect to the resource itself. It is the opinion of the LNHP and DOI that FERC will not be able to make a finding that the Project can and will be conducted in a manner that is consistent with the standards established pursuant to the Park founding legislation and will not have an adverse effect on the historic resources of the Park and LHPD. The ACHP concurs in that opinion.

It is also therefore questionable whether FERC can issue the license for the Project under the cited Lowell Act restriction since the Project may not be consistent with standards and criteria established pursuant to

Section 302(e) of this Act. Mr. Stephen Stowell, Administrator of the Lowell Historic Board, in his presentation at the ACHP panel meeting in Lowell on February 5, 2013, noted that to date, no formal application has been submitted by Boott or FERC to the Board for review. However, he noted that the Board has been informally involved with the most recent proposal from Boott as well as similar proposals in 1999 and 2006. In all instances, the Board has advised the proponent that the proposal may not meet the Board's design guidelines, issued under Section 302(e) of the Lowell Act, which are intended to preserve, protect, and maintain the integrity of Lowell's 19th century setting. However, without an application and plans submitted as part of its review process, the Board cannot make any formal determination regarding appropriateness and effect at this time.

VI. FERC's consideration of alternatives and its specification of "requirements" for the project fail to take into account the need to balance the agency's mission, the purpose and need for the undertaking, effects on significant historic properties, and the public interest. FERC's mission, as summarized in its Strategic Plan for FY 2009 – 2014, is to assist consumers in obtaining reliable, efficient and sustainable energy services at a reasonable cost through appropriate regulatory and market means. One of the major ways FERC fulfills this mission is by promoting the development of safe, reliable, and efficient energy infrastructure that serves the public interest. This summary of the FERC mission would seem to dovetail with the goals set forth in the Interagency Memorandum of Understanding (MOU) for Hydropower among DOI, Department of the Army (DOA)/Corps of Engineers, and Department of Energy (DOE) (March 24, 2010) that expresses the Administration's interest in supporting the maintenance and optimization of hydropower generation in a sustainable manner. It is important to note that this MOU stresses the need to promote an environmentally responsible approach to enhancing hydropower development that recognizes the need to preserve biological diversity, ecosystem function, our natural and cultural heritage, and recreational opportunities, and also recognizes that some geographic locations are not appropriate for new hydropower development.

The environmentally responsible approach promoted in the MOU for Hydropower is not demonstrated in the administrative record for this Section 106 consultation. Moreover, it does not appear that FERC engaged in a forthright consideration of alternatives in light of goals of the undertaking balanced by an adequate consideration of the real significance of the dam as a central component in multiple overlapping historic districts that include an NHL and a National Historical Park.

The justification for the project has varied over the decade or more that it has been in development. Correspondence and documentation from Boott and FERC reference benefits to the fisheries, minimizing backwater flooding effects, maintaining the project, continual failure of the flashboards, addressing concerns about workers' safety related to replacement and repair of the flashboards, and even preservation of Pawtucket Dam. However, in Boott's 2011 application for the license amendment and earlier discussions of the project, there seems to be at least an equal emphasis on increasing the average annual elevation of the head pond and the resultant efficiency and productivity of hydro facility (up to 10 percent). Following significant floods in 2006 and 2007, and throughout the current Section 106 consultation, there has been an emphasis on justifying the project by suggesting that the installation of the crest gate system is primarily an effort to address concerns expressed by local residents about flooding related to Pawtucket Dam operations over the past several years. This contrasts with Boott's June 16, 2008, correspondence to FERC, "Report on Backwater Analyses for the Pawtucket Dam," which suggests that Boott believes "that the results of these backwater analyses indicate that the Pawtucket Dam's flashboards have had little or no impact on upstream flooding conditions" (p. 4). Boott's September 18, 2009, "Technical Assessment of Spillway Crest Control Alternatives for the Pawtucket Dam" provides similar statements on pages 10 and 11.

This variability in justifications for the Project highlights the fact that there is an absence of data in the administrative record on flood damage reduction benefits from the crest gate system. Therefore, a more

rigorous analysis of benefits and costs appears warranted. Such an analysis should include adverse effects to historic properties as well as impacts to other cultural and natural resources and recreational and educational opportunities. Without such an analysis, the consideration of alternatives does not provide a realistic appraisal of cost/benefits for options which preserve historic resources.

As the responsible federal agency, FERC has an obligation to actively consider and balance the goals of the project and needs of the licensee with the effects of the project on the general environment, the significance of affected historic properties, their preservation value for the community and the nation, as well as other concerns of the local community. All of the factors should inform a decision about the project in the public interest. Throughout the consultation there was limited engagement by FERC in the discussions between Boott and LNHP regarding development of possible alternatives to the crest gate system as proposed. FERC and Boott appeared to fall back on the “FERC imposed requirement” that the licensee must ensure that any flashboard system be completely down during high flows. Such a requirement appears to be related to addressing concerns about backwater flooding, but does not appear to take into account all associated costs of the construction and use of a crest gate system, and suggests an apparent lack of sensitivity to the significance of the Dam, associated historic districts, and the LNHP.

The tradeoffs inherent in implementing the proposed project have not been adequately explored or represented to the public. Impacts on historic properties have been understated or dismissed. Similarly, FERC has disagreed with or dismissed the characterizations of the historic significance of the Pawtucket Dam, a contributing element of an NHL historic district, as well as its contribution to the LNHP and LHPD. As a result, impacts to the Pawtucket Dam, and the National Historical Park and associated historic districts, have been understated or dismissed.

VII. The replacement of the flashboard system is not an appropriate treatment for this historic dam. Traditional flashboards have been replaced by pneumatic and other mechanical crest gate systems at other locations to provide operational benefits. However, the replacement of the flashboard system is not appropriate for this historic dam, a central component of an NHL district and unit of the LNHP which is focused in part on the history of American waterpower development. The Dam is a major element of park interpretation and visitor experience at LNHP. The flashboards atop the dam provide a strong visual and aural impression. One member of the public, speaking at the ACHP public meeting in Lowell on February 5, 2013, described the dam, with its flashboards, as an elegant, functioning artifact. The ACHP notes that flashboards have been installed on the dam every year since James B. Francis became chief engineer. In their original historic configuration, the flashboards would still function effectively to maintain a head pond for the hydropower facility and act as an automatic relief valve for floods. The flashboard system is “a direct and evocative connection with the past” and the most striking example of the city’s industrial archaeology.

VIII. The purpose and need for the project are questionable to consulting parties and members of the public, including residents who have suffered from the effects of backwater flooding. Consulting parties and members of the local community have suggested that the main purpose of the project is to increase the average annual elevation of the head pond, thus increasing the efficiency and productivity of the hydro facility that currently relies on the dam by up to 10 percent. However, as the LNHP has noted, the historic and visual value of the traditional flashboard system on Pawtucket Dam outweighs any marginal increase in the licensee’s generating capacity or ease of operations.

IX. As the source of waterpower control that allowed the growth of the textile industry at this bend in the Merrimack River in the 19th century, the physical form of Lowell’s intact historical and cultural landscape begins with the Pawtucket Dam. The historic design of Pawtucket Dam encourages passive and informal water control to provide hydro-power to the canals and help to prevent flooding upstream, as suggested by the naturalistic edges and open areas in the originally designed 1875

flashboards. The proposed Project would change significantly the character of Pawtucket Dam by establishing it as a crest gate mechanically controlled waterway, would affect its historic presence, alter drastically the dam's view corridors, destroy its historic functionality, eliminate water sound contributions, and diminish its engineering design association with James B. Francis. The proposed project is also out of character with the existing surroundings, and would significantly compromise historic visual and spatial relationships, both from the dam side and down river.

Project Specific Recommendations

- 1) The ACHP strongly recommends that FERC not approve the Project to replace the existing flashboard system with a pneumatic crest gate system. The installation of the crest gate system will substantially and irreversibly change the historical appearance, historic fabric, physical form, and functionality of the Pawtucket Dam which is a central focus of a unique and highly significant, historic, urban industrial complex. Pawtucket Dam is a contributing element of multiple historic districts, including an NHL, and is centrally important to the LNHP.
- 2) Prior to considering any modifications to the dam, FERC should re-examine, more rigorously, the purpose and need used to justify the project and any resulting FERC "requirements," and fully consider the significance of the historic properties affected.
- 3) The ACHP recommends that FERC advise Boott to focus on an alternative that relies on a rehabilitation of the historic flashboard system as originally designed across the entire length of the dam. The Massachusetts SHPO made a similar recommendation early in the Section 106 consultation. In order to accomplish this, FERC and Boott should thoroughly evaluate the technical and economic feasibility of reconstructing the flashboard system according to its historic designs. FERC should evaluate claims that the historical flashboard configuration worked appropriately as designed in response to high water events and also facilitated drain-down and dry out of river system soils during the time required to refurbish flashboards after failure. FERC should take into account the damage to the dam and the compromise of the original functionality of the flashboard system which resulted from Boott's modifications to the flashboards since receiving its license in order to increase the annual average elevation of the head pond. Those modifications included an increase in pin diameter and strength, a reduction of the spacing between pins, the use of plywood instead of flashboards, and an increase in the height of the flashboards to five feet above capstones.
- 4) FERC should evaluate Pawtucket Dam, the LLCHD, LNHP, and LHPD as encompassing a historic landscape and traditional cultural landscape. FERC should be sensitive to select only alternatives that are consistent with the Secretary of the Interior's Standards for the Treatment of Historic Properties, Preservation Brief 36: Protecting Cultural Landscapes (NPS, 1994), and The Guidelines for the Treatment of Cultural Landscapes (NPS, 1996).
- 5) Given the significance of the resources affected by this undertaking and the continued operation of the hydro facility, FERC should consider requiring Boott to prepare a "Master Plan" for that portion of Merrimack River system affected by operation of the Lowell Hydroelectric Project. The Master Plan should be developed in collaboration with the LNHP, City of Lowell, municipalities with jurisdiction over the river and riverbanks, and identify opportunities and alternatives for restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation, and handicapped access required for continuous use. In addition, the Master Plan should address appropriate measures to modify aspects of the hydro facility operation that effect significant visual, atmospheric, or audible elements associated with significant historic features of Pawtucket Dam, LLCHD, LHPD, and LNHP.

General Agency Recommendations

The ACHP's review of this Project has highlighted the need for FERC to review and update its protocols for compliance with Section 106 to better reflect the consultative nature of the Section 106 review process and the responsibility of the federal agency to actively explore a full range of alternatives.

- 1) FERC should follow the Section 106 regulations and formally notify SHPO regarding delegation of the initiation of Section 106 to applicants. Informal delegation or activity by an applicant to pursue the identification of historic properties and assess effects prior to formal involvement of the federal agency can often create confusion among stakeholders.
- 2) In accordance with the Section 106 regulations, FERC should be more expansive in identifying and inviting potential consulting parties into the Section 106 consultation. The Section 106 regulations state that individuals and organizations with a demonstrated interest in an undertaking may participate as consulting parties due to the nature of their legal or economic relation to the undertaking or affected properties, or their concern with the undertaking's effects on historic properties. The ACHP interprets these qualifying characteristics broadly, and encourages agencies to do likewise.
- 3) FERC's Ex Parte rules can create an impediment to open and inclusive consultation and should be reviewed to determine if there are ways to make FERC compliance procedures more compatible with Section 106 policies and goals.
- 4) FERC must give serious consideration to the impact of its undertakings on historic properties and cultural heritage as it considers the technical aspects and program goals of those undertakings.
- 5) FERC has an obligation under Section 106 to actively explore a full range of alternatives that can avoid, minimize, or mitigate the adverse effects of undertakings. Development of alternatives should not be left exclusively to the project applicant or imposed on consulting parties.
- 6) FERC should develop procedures to comply with Section 110(f) of NHPA when NHLs that may be affected by an undertaking are encountered in project planning.