PP-89-1

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UNITED STATES OF AMERICA
BEFORE THE DEPARTMENT OF ENERGY
OFFICE OF FOSSIL ENERGY
FE DOCKET NO. PP-89
BANGOR HYDRO-ELECTRIC COMPANY

APPLICATION OF BANGOR HYDRO-ELECTRIC COMPANY FOR A PRESIDENTIAL PERMIT MODIFICATION

Prepared for:
BANGOR HYDRO-ELECTRIC COMPANY
Bangor, Maine

Prepared by:
DEVINE TARBELL & ASSOCIATES, INC.
Portland, Maine

SEPTEMBER 2003

Devine Tarbell & Associates, Inc.
Consulting Engineers, Scientists, & Regulatory Specialists

Devine Tarbell & Associates, Inc.
Consulting Engineers, Scientists, & Regulatory Specialists

Principals:
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September 23, 2003

32.00.0244.01/8.0

Mr. Anthony J. Como
Office of Fossil Energy (FE-27)
U.S. Department of Energy
1000 Independence Avenue SW
Washington, DC 20585

VIA FED EX STANDARD
202-586-5935

Subject: **Application of Bangor Hydro-Electric Company for a Presidential Permit Modification**

Dear Mr. Como:

On behalf Bangor Hydro-Electric Company (BHE), Devine Tarbell & Associates, Inc. (DTA) is pleased to submit this application for a Presidential Permit Modification for the Proposed 345 kV Tie Line Project (Project). BHE is requesting a modification of the previously authorized transmission corridor, as issued in Presidential Permit PP-89 authorizing the construction, operation, maintenance, and connection of facilities for the transmission of electric energy between the U.S. and Canada. The authorized facilities consisted of 83.8 miles of 345,000-volt (345 kV) transmission line crossing the border at Baileyville, Maine, and terminating at a substation in Orrington, Maine. At the border, the facilities were to interconnect with similar facilities owned by New Brunswick Power Corporation (NB Power), a Crown corporation of Canada's Province of New Brunswick.

Enclosed is a $150 check (No. 268801) to cover the application fee and one original and 14 copies of the application and supporting Exhibits.

If you should have any questions or need additional information please do not hesitate to contact Fred Leigh of BHE at (207) 973-2543 or myself at (207) 775-4495. We look forward to working with DOE on this project.

Sincerely,

DEVINE TARBELL & ASSOCIATES, INC.

Gil A. Paquette, CWB, PWS
Project Manager

GAP/elt
Enclosures

cc: F. Leigh, BHE
J. Browne, Verrill & Dana
R. McAdam, Emera
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APPLICATION OF BANGOR HYDRO-ELECTRIC COMPANY FOR A PRESIDENTIAL PERMIT MODIFICATION

TABLE OF CONTENTS

Section	Title	Page No.
INTRODUCTION		4
BACKGROUND		5
A.	INFORMATION REGARDING THE APPLICANT	7
1.	Legal Name of the Applicant	7
2.	The Legal Name of all Partners	7
3.	Communications and Correspondence	7
4.	Foreign Ownership and Affiliations	8
5.	List of Existing Contracts with Foreign Governments or Foreign Private Concerns Relating to the Purchase, Sale or Delivery of Electric Energy	9
6.	Showing Including a Signed Opinion of Counsel	9
B.	INFORMATION REGARDING THE TRANSMISSION FACILITIES	9
1.	Technical Description	10
2.	General Area Map	12
3.	Applications for Facilities at 138 kV or Higher	12
C.	INFORMATION REGARDING ENVIRONMENTAL IMPACTS	14
1.	Statement of the Environmental Impacts of the Proposed Facilities Including a list of each floodplain, wetland, critical wildlife habitat, etc.	14
2.	A List of Known Historic Places	14
3.	Minimum Rights-of-Way for Construction, Operation and Maintenance of the Transmission Lines	14
4.	Threatened or Endangered Wildlife or Plant Life	15
D.	A BRIEF DESCRIPTION OF PRACTICAL ALTERNATIVES AND GENERAL IMPACTS	15

TABLE OF CONTENTS
(Continued)

Section	Title	Page No.

EXHIBITS

EXHIBIT A - CANADA NATIONAL ENERGY BOARD REASONS FOR DECISION - NEW BRUNSWICK POWER CORPORATION (EH-2-2002)
EXHIBIT B - OPINION OF COUNSEL
EXHIBIT C - TYPICAL STRUCTURES
EXHIBIT D - GENERAL AREA MAP
EXHIBIT E - SYSTEM IMPACT STUDY

UNITED STATES OF AMERICA

BEFORE THE DEPARTMENT OF ENERGY

OFFICE OF FOSSIL ENERGY

FE DOCKET N0. PP-89

BANGOR HYDRO-ELECTRIC COMPANY

APPLICATION OF BANGOR HYDRO-ELECTRIC COMPANY FOR A PRESIDENTIAL PERMIT MODIFICATION

INTRODUCTION

On January 22, 1996, pursuant to Executive Order 10485, as amended by Executive Order 12038, the Office of Fossil Energy (FE) of the U.S. Department of Energy (DOE) issued Bangor Hydro-Electric Company (BHE or the "Applicant") Presidential Permit PP-89 authorizing the construction, operation, maintenance and connection of facilities for the transmission of electric energy between the U.S. and Canada. The authorized facilities consisted of 83.8 miles of 345,000-volt (345 kV) transmission line crossing the border at Baileyville, Maine, and terminating at a substation in Orrington, Maine. At the border, the facilities were to interconnect with similar facilities owned by New Brunswick Power Corporation (NB Power), a Crown corporation of Canada's Province of New Brunswick. The Order limited use of the transmission line to a maximum rate of transmission, when combined with the facilities authorized to Maine Electric Power Company in President Permit PP-43, to a maximum rate of transmission, in the import mode, of 1,000 megawatts (MW). When the PP-43 facilities are out of service, operation of the BHE facilities was to be limited to a maximum rate of transmission of 700 MW in the import mode. At the time this transmission line is used to export electric energy to Canada, BHE understands that an appropriate exporting entity will be responsible for notifying DOE and obtaining the approvals to do so.

BHE is hereby requesting a modification of the previously authorized transmission corridor. In support of this request, BHE is submitting the following information:

BACKGROUND

As reflected in the initial application and supporting documentation, the planned overhead transmission line and associated existing substation and appurtenant equipment modifications in Maine (the "Project") will interconnect two existing bulk transmission systems, i.e., New England and New Brunswick, and have a thermal capacity of at least 1,000 MW at 345 kV. Actual power flows over the facilities will depend on daily operating and market conditions, and flow sharing with an existing circuit.

The Canadian facilities will be owned and operated by NB Power and will include approximately 60 miles of new overhead 345 kV line to be constructed from Pt. Lepreau, New Brunswick to the U.S. border at Baileyville, Maine. The National Energy Board of Canada has now approved that portion of the project (see Exhibit A).

BHE's portion of the Project was issued U.S. regulatory approvals in the 1990s, which included receipt of a Presidential Permit (PP-89) in January 1996. Those approvals were for a route known as the Stud Mill Road Route (SMRR), connecting Baileyville to Orrington, Maine. That route generally followed the road of the same name, but importantly, did depart from the road by several thousand feet at times. After obtaining both federal and state permits for the proposed facilities, BHE did not commence construction of the Project for various reasons. BHE received the original state permit in 1992, with permit extension requests granted by the Department of Environmental Protection (DEP) in 1994 and 1996. In 1999, Maritimes and Northeast Pipeline, L.L.C. (M&N) constructed a gas transmission pipeline in the vicinity of the Stud Mill Road and the Project's previously approved corridor. In 2001, acting on a request from BHE for a third extension of the relevant state environmental permits, the Board of Environmental Protection (BEP), Maine's

primary environmental review entity, conducted a hearing and indicated a preference to use a route more closely consolidated with established linear corridors.

Because NB Power has achieved recent approval from the National Energy Board for the Canadian facilities, BHE is now evaluating various engineering or modified route options with the purpose of designing a project that coordinates with the approved NB Power line and responds to the issues raised by BEP and certain stakeholders. Route options to be evaluated will include a new Consolidated Corridor Route (the CCR) that will utilize some of the previously permitted SMRR (e.g., those portions already adjacent to the Stud Mill Road, the pipeline, or other electric transmission line rights-of-ways [ROW]), while other portions of the proposed route will be moved nearer or adjacent to those features. BHE is in the process of meeting with stakeholders and regulators to assess alternative routes, all of which would be located within the Project area reflected in Exhibit D. BHE believes that coordination of that process with DOE's environmental review will be beneficial.

Characteristics of overhead electric transmission lines and the expected impacts are discussed generally below, however, exact engineering specifications and route modifications for the Project will be determined based on careful analysis of the purpose of the project, engineering and environmental constraints, and agency and stakeholder consultation. In addition to BHE's request for a Presidential Permit modification, BHE will also request DEP and Army Corps of Engineers approval of the modified route, and will request a Certificate of Public Convenience and Necessity from the Maine Public Utilities Commission.

A. INFORMATION REGARDING THE APPLICANT

1. Legal Name of the Applicant

The legal name of the Applicant is Bangor Hydro-Electric Company. BHE is a regulated electric utility operating in eastern and central Maine. BHE is a wholly owned subsidiary of Emera, Inc. of Halifax Nova Scotia, Canada. BHE has its principal place of business at 33 State Street, Bangor, Maine 04401.

2. The Legal Name of all Partners

For this project, BHE is partnering with New Brunswick Power Corporation (NB Power). NB Power is a Crown Corporation and a vertically integrated utility with generation and transmission facilities within the Province of New Brunswick, Canada. However, the Government of the Province of New Brunswick has announced its intention to restructure NB Power into a holding company and four operating companies. One of the operating companies will be NB Power Transmission, which will construct, own, and operate the New Brunswick portion of the Project. BHE will construct, own, and operate the U.S. portion.[1] Development and operation costs are or will be shared between NB Power and BHE per the terms of various existing or contemplated agreements, and recovered under the terms of a FERC-approved tariff.

3. Communications and Correspondence

All communications and correspondence regarding this Application should be addressed to the following persons:

[1] It is also possible that ISO-New England will regulate commerce over the line. In either event, FERC will approve the tariff.

Mr. Robert Bennett
Bangor Hydro Electric Co.
33 State St.
P.O. Box 920
Bangor, Me 04402-0920
207-973-2841

Mr. James L. Connors, Q.C.
Emera, Inc.
1894 Barrington St.
Barrington Tower
Halifax, Nova Scotia
Canada B3J 2A8
902-428-6454

4. Foreign Ownership and Affiliations

BHE is a wholly owned subsidiary of Emera, Inc. of Halifax, Nova Scotia. Emera, Inc. (EMA-TSX) is a diversified energy and services company, with 550,000 customers and $4.0 billion (Canadian dollars) in assets. Emera has two wholly owned regulated electric utility subsidiaries: Nova Scotia Power, Inc., and BHE. Nova Scotia Power supplies over 95 percent of the electric generation, transmission and distribution in Nova Scotia. BHE provides electric transmission and distribution services to 107,000 customers in eastern and central Maine. It is a member of the New England Power Pool, and is interconnected with the other New England utilities to the south, and with NB Power to the north. Emera's other principal holdings are a 12.5 percent interest in the M&N Pipeline, an 8.4 percent interest in the Sable Island Offshore Energy Project offshore platforms and sub-sea field gathering lines, Emera Energy Inc., and Emera Fuels.

As noted above, for this Project, BHE will have an affiliation with NB Power. NB Power is a Crown Corporation, owned by the provincial government of New Brunswick, Canada. NB Power will construct, own and operate the New Brunswick portion of the Project. BHE will construct, own and operate the U.S. portion. Development and operation costs are or will be shared between NB Power and BHE per the terms of various existing or contemplated agreements. In addition, these

agreements are intended to provide protections to BHE and NB Power, which recognize the mutual dependence of the two developers.

5. List of Existing Contracts with Foreign Governments or Foreign Private Concerns Relating to the Purchase, Sale or Delivery of Electric Energy

BHE has, or will have, agreements with NB Power, a Crown Corporation, to coordinate development and operation of the Project. These agreements do not address purchase, sale, and delivery of energy, which will be regulated by a FERC-approved tariff. BHE is part owner of the Maine Electric Power Company (MEPCO), which owns and operates an existing 345 kV tie line to New Brunswick, Canada. MEPCO has, or may have, contracts with NB Power or other Canadian entities for transmission service across the existing tie line.

6. Showing Including a Signed Opinion of Counsel

As set forth in an opinion of counsel attached hereto as Exhibit B, the construction, connection, operation or maintenance of the proposed transmission facilities described herein are within the corporate powers of BHE. Further, BHE has complied with, or will comply with, all pertinent federal and state laws related to the construction, operation or maintenance of the proposed Project.

B. INFORMATION REGARDING THE TRANSMISSION FACILITIES

The technical specifications and design details will be finalized after consultation with agencies and stakeholders, and after an evaluation of engineering data and costs. Other detailed information will be provided in a subsequent filing.

1(i). Technical Description

A. Number of Circuits

The Project will include one overhead circuit.

B. Operating Voltage/Frequency

The Project will be 345 kV AC at 60 cycles per second.

C. Conductor Size

The new line will consist of two overhead shield wires and three phases with two conductors per phase. The line will be constructed to have a minimum of 27 feet of ground clearance when the conductors are at maximum design sag. This ground clearance will meet or exceed National Electric Safety Code requirements. The shield and conductor wires are expected to be as follows:

Shield:	Two 7 No. 8 Alumoweld
Conductor:	1192.5 kcml, 45/7 ACSR code "Bunting"
	(2 per phase)
	Diameter: 1.302 inches
	Weight: 1.344 lb/ft
	Rated Breaking Strength: 32,000 lb

One shield wire may be replaced with an optical ground wire (OPGW) if BHE elects to install fiber communication as part of the Project. If BHE later desires to utilize any communication for purposes other than that required to operate the transmission line, BHE will notify DOE.

(ii) Overhead Line Additional Information

A. Wind and Ice Loading Parameters

The line will meet National Electric Safety Code Specifications (radial ice of 0.5-inch thickness and 4 ib/ft^2 of wind pressure).

B. Full Description and Drawing of a Typical Support Structure

Structure types, numbers, strength specifications and locations will be finalized after consultation with agencies and stakeholders, and an evaluation of engineering data and costs. This information will be provided in a subsequent filing.

One option is to use wood H-Frame design as the primary structure type. If this is presumed, tangent structures will be self-supporting. Light and medium angle structures will use guys to support the wood poles. Wood poles will be 70 to 110 feet in length and embedded 9 to 12 feet in the ground. Pole sizes will be class 1, H1, H2, H3, and H4 with an approximate ground-line diameter of 1.5 to 2.0 feet, and pole tops of approximately 1.0 feet in diameter. The use of steel poles that meet or exceed wood pole specifications is also an option that will be evaluated.

Steel pole dead-end and lattice structures could be utilized. If used, the steel pole dead-end structures will be founded on 9-foot concrete cylinders by 27 feet deep. These would typically be galvanized steel lattice design and 85 feet tall. Each lattice tower would have four cast-in-place concrete foundations, 5 feet in diameter and approximately 22 feet deep. Spacing between foundation centers would be 20 to 40 feet in a square pattern. Each would occupy between .02 and .04 acres. Typical steel and wood pole, tangent and lattice tower structure drawings are shown in Exhibit C.

C. Structure Spacing and Spans

The distance between the structures will vary from 340 to 1,240 feet, with an average span of 825 feet.

D. Conductor (phase) Spacing

Phase spacing for a horizontal orientation (as with wood H design) will be 26 feet.

E. Designed Line to Ground and Conductor Side Clearances

At maximum sag, clearance will be 27 feet to the vegetation below (at 212° F). Side clearances will be a minimum of 59 feet.

2. General Area Map

A map of the project area is included in Exhibit D. Among other features, the map identifies the coordinates and ownership of the facilities at the U.S. border with Canada. The various routing alternatives would be located within the area reflected in Exhibit D.

3. Applications for Facilities at 138 kV or Higher

(i) Expected Power Transfer Rating

While the line will have a thermal capacity of at least 1,000 MW, system conditions will limit import and export opportunities. The Project will create additional firm north-south (New Brunswick to Maine) transfer capacity of 300 MW (700 MW exist now) and additional firm south-north (Maine to

New Brunswick) transfer capacity of 400 MW (no firm capacity exists now). As no particular generator is being interconnected with this transmission project, actual transfers will depend on daily system conditions and market conditions for bulk power.

(ii) System power flow plots for the applicant's service area during heavy summer and light spring load periods, with and without the proposed international interconnection, for the year the line is scheduled to be placed in-service, and for the fifth year thereafter. The power flow plots submitted can be in the format customarily used by the utility, but the ERA requires a detailed legend with the power flows.

Power flows were conducted as part of the System Impact Study (SIS) conducted for the Project, which is attached as Exhibit E.

(iii) Data on the Line Design Features for Minimizing Television and/or Radio Interference

Due to the expected distance of the Project from homes, interference with television and radio signals is not expected. However, some radio interference could occur with vehicles but would be limited to localized receptions (particularly in the AM band) as vehicles pass under the line.

(iv) A Description of the Relay Protection Scheme, Including Equipment and Functional Devices

The SIS describes protection equipment and systems associated with the line (see Exhibit E). The actual protection design and equipment selection will be part of a Facility Study to be conducted in 2004. The final design will be subject to approval by the Northeast Power Coordinating Council's Task Force on System Protection.

C. INFORMATION REGARDING ENVIRONMENTAL IMPACTS

1. Statement of the Environmental Impacts of the Proposed Facilities Including a list of each floodplain, wetland, critical wildlife habitat, etc.

Specific information regarding environmental impacts of the proposed facilities will be provided in a subsequent filing. The document will identify the impacts of constructing, connecting, operating and maintaining the proposed facilities, including identification, as appropriate, of floodplains, wetlands, critical wildlife habitats, navigable waterway crossings, Indian lands, and historic sites.

2. A List of Known Historic Places

Information on historic places will be provided to DOE at a later date.

3. Minimum Rights-of-Way for Construction, Operation and Maintenance of the Transmission Lines

In sections designed with wood or steel H-frame construction, a 170-foot corridor will be created where the Project passes though areas that are wooded on both sides. To the extent the Project parallels the existing 345 kV MEPCO line, an additional 100-foot corridor will be cleared immediately adjacent to the existing corridor. To the extent the route follows an existing road or an existing gas pipeline, it will have a cleared width of between 100 and 170 feet. Exact clearing widths and distances will be calculated based on engineering, reliability, applicable requirements, and discussions with stakeholders. Consideration will be given to the safety of road traffic, the operation and maintenance requirements of the Project, the roadway, and the M&N pipeline.

4. Threatened or Endangered Wildlife or Plant Life

The Atlantic salmon (federally-listed endangered) and bald eagle (federally-listed threatened) are the only known federally listed species that may exist in the Project area. When the original Presidential Permit was issued, the bald eagle was listed as endangered. The Atlantic salmon was added as a federally-listed endangered species in eight rivers in Maine in November 2000. Prior to that date, the Atlantic salmon had no endangered species protective status. The Machias, East Machias, and Narraguagus Rivers, and certain tributaries of these rivers, may be crossed by the proposed Project depending on route selection. These rivers are included in the federal Atlantic salmon listing.

Three species of vascular plants that occur in Maine are listed under federal law (50 CFR, Part 17) as threatened or endangered species. The small whorled pogonia, and prairie white-fringed orchid, are both listed as threatened species, and Furbish's lousewort is listed as endangered. None of these three species are known to occur in the Project vicinity.

Throughout the permitting process, state and federal agencies, including the U.S. Fish and Wildlife Service, the National Marine Fisheries Service, Maine's Department of Inland Fisheries and Wildlife, and Atlantic Salmon Commission will be consulted regarding the presence of threatened or endangered wildlife or plant life that exist in the Project area. Specific information related to endangered or threatened wildlife or plant species will be provided to DOE in a subsequent submittal.

D. A BRIEF DESCRIPTION OF PRACTICAL ALTERNATIVES AND GENERAL IMPACTS

The purpose of the Project is to provide a second 345 kV tie line between New England and New Brunswick, with a location sufficiently distinct from that of the existing tie line in order to create a

redundant, more reliable energy transfer facility, to reduce line losses and thereby achieve associated environmental and economic benefits, and to improve access to competitive electric power generation sources in order to provide customer benefits in Maine, New England, and New Brunswick. This may include better power marketing opportunities for frequently dormant renewable generating facilities and other facilities in Maine. The increased integration of the New England Power Pool and the Maritimes control area will provide greater energy security for Maine and New England. The SIS supporting the Project indicates that an additional line is required to connect the BHE/MEPCO substation in Orrington, Maine to a new 345 kV overhead electric transmission line approved for construction originating at Pt. Lepreau, New Brunswick.

Once completed and operational, the Project will address the inadequacy of three important operating conditions posed by the existence of only a single 345 kV tie between New Brunswick and the U.S. These issues are as follows: 1) the lack of any redundancy and the associated reliability implications; 2) high line-losses due to operating only a single tie line; and 3) lack of sufficient capacity to facilitate the efficient transmission of generation capacity and the potential to increase competition and customer benefits.

Possible engineering alternatives to the proposed Project include: 1) uprating the MW capacity of the existing New Brunswick tie line; 2) converting the existing tie line to direct current (DC) thus increasing its capacity and changing its electrical characteristics; and 3) additional generation. These options will be evaluated and discussed in a subsequent submittal.

In addition to consideration of engineering alternatives, route options exist for siting the Project. Several potential transmission line corridors will be analyzed to determine suitability. The potential corridors will be assessed in consultation with state and federal agencies, landowners, and interested stakeholders. Several criteria, including location of other linear project corridors (e.g., road, transmission line, and gas pipeline corridors), environmental impacts, costs, access/constructability,

landowner impacts, and Project engineering requirements will be considered in assessing the route alternatives. Detailed discussions on route options will be presented in a subsequent submittal.

General Discussion of Transmission Line Environmental Impacts

Construction and maintenance along the Project route would have both permanent and temporary environmental impacts on the existing habitats and associated ecological communities. The temporary effects are generally related to the construction activities required to develop the new ROW, such as the clearing of overstory trees and vegetation, erection of the new structures, and temporary soil disturbance during construction. These impacts will be relatively minor, short term, and at a localized scale. Temporary construction related impacts are minimized by development and adherence to a detailed erosion control plan, and by scheduling to avoid work during particularly sensitive times for certain areas (e.g., avoiding work near waterfowl, bald eagle, or fish habitats during nesting/spawning periods, and by conducting work in wet areas during the winter construction months or on wooden mats).

Permanent terrestrial habitat effects will result from the unavoidable conversion of forested cover types to shrub or herbaceous types due to clearing. The vegetation in these newly cleared areas will be maintained in an early successional stage throughout the life of the Project through periodic maintenance. It is expected that herbaceous and small woody plants such as meadowsweet, alder, highbush blueberry, raspberries, blackberries, and several sedge and grass species, will dominate the ROW. This long-term conversion of forested cover types to shrub or herbaceous types can offer certain benefits to some wildlife species, including succulent grasses and flowering plants for grazing animals, the production of more fruit for wildlife consumption from berry producing species, and the direct benefits of food, cover, and nesting sites for species dependant on early successional habitats.

Maintained ROWs can provide habitat for early successional bird species such as the chestnut-sided warbler, yellow warbler, common yellowthroat, alder flycatcher, eastern kingbird, and the song sparrow. Wide ranging generalist species, such as coyote and red fox, may use the ROW as travel corridors. In addition, maintained utility ROWs are also used for foraging by several important game species such as white-tailed deer and wild turkey.

Alternately, an effect of a cleared ROW is that cover types important to certain species may be impacted. One common impact associated with transmission lines is the removal of dense coniferous forests that provide important winter cover and browse for whitetail deer (these areas are referred to as "Deer Wintering Areas"). BHE will work closely with Maine's Department of Inland Fisheries and Wildlife to identify Deer Wintering Areas in order to minimize or mitigate for impacts to these areas.

The Project will cross both perennial and intermittent streams, and may cross the Narraguagus, East Machias, and Machias Rivers or associated tributaries depending upon final route selection. Common species that comprise area warm water fisheries include smallmouth bass, chain pickerel, and sunfish. Coldwater species that may occur within the Project area include brook trout and Atlantic salmon. Erosion and sedimentation during construction and vegetation removal adjacent to waterbodies are impacts that may be associated with the construction of transmission line corridors. Sedimentation can result in reduced light penetration, smothering of aquatic feeding and spawning areas, and impairment of aquatic respiration. Removal of vegetation adjacent to waterbodies may increase water temperature due to solar exposure, which may impact coldwater fisheries. However, any impact would be short term, as the ROW will become covered by dense shrubs and emergent vegetation within two growing seasons. To minimize any negative impacts, vegetation will remain in place to the extent practicable to act as a buffer, and appropriate erosion and sedimentation controls will be used. Furthermore, all waterbody crossings will be spanned by the Project and no instream work is anticipated.

Some small amount of permanent impact to wetlands may occur as a result of structure placement or building access roads required to construct and operate the project. However, because transmission line structures span long distances, significant wetland impacts can generally be avoided. Also, although the existing wetland woody species may be converted to scrub-shrub cover type, the primary functions and values of water storage and water quality improvement of the wetlands are generally not impacted.

The specific environmental issues associated with the Project will be identified and analyzed with various state and federal agencies and stakeholders, and provided to DOE in a subsequent submittal.

WHEREFORE, BHE respectfully requests that the DOE modify, as necessary, BHE's Presidential Permit (PP-89) re-authorizing the construction, connection, operation, and maintenance for the facilities described herein for the transmission of electric energy at the international boundary between the U.S. and Canada.

Respectfully yours,

Ray Robinson
Chief Operating Officer
Bangor Hydro-Electric Company

SEPTEMBER 23, 2003
Date

Before me appeared Ray Robinson, who, being duly sworn, did testify that the forgoing was true and correct to the best of his knowledge and belief.

LU ANN WILLIAMS
Notary Public • Maine
My commission expires December 5, 2009

EXHIBITS

(Furnished upon request. Please call Odessa Hopkins at (202) 586-7751)