(original)

DE 13-318

MONADNOCK PAPER MILLS, INC.
c/o HYDRO MANAGEMENT GROUP LLC
55 UNION STREET, 4TH FLOOR
BOSTON, MA 02108

TELEPHONE: +617-367-0032
FAX: +207-872-2764
E-MAIL: EANDERSON@ESSEXHYDRO.COM

November 23, 2016

Debra A. Howland
Executive Director
New Hampshire Public Utilities Commission
21 South Fruit Street, Suite 10
Concord, NH 03301-2429

Re: Monadnock Paper Mills Application for Certification of the Pierce Dam Power Station as a Class I REC Eligible Facility

Dear Executive Director Howland,

Hydro Management Group, LLC as REC aggregator and agent for Monadnock Paper Mills Inc. ("MPM"), is pleased to submit an original and two copies of this application for qualification of Pierce Dam Station as a NH Class I REC eligible facility.

MPM is seeking Class I certification of Pierce Dam Station for the incremental new production of approximately 576,476 kWh over its historic baseline of 2.1 M kWh. This production is the result of an improvement to the facility's efficiency and an increase in the output of renewable energy pursuant to RSA 363-F:4(i). These capital investments include the installation of Automatic Pond Level Control ("APLC") systems which were made after January 1, 2006.

An electronic copy has also been sent via email to your attention at executive.director@puc.nh.gov, with a copy to Ms. Barbara Bernstein at Barbara.bernstein@puc.nh.gov.

Thank you for your consideration of this matter and please feel free to contact me at 617-367-0032 or eanderson@essexhydro with any further inquiries or requests for clarification.

Sincerely,

Monadnock Paper Mills Inc.
by Hydro Management Group, LLC
as authorized agent

State of New Hampshire
Public Utilities Commission
21 S. Fruit Street, Suite 10, Concord, NH 03301-2429

DRAFT

APPLICATION FORM FOR

RENEWABLE ENERGY SOURCE ELIGIBILITY FOR
CLASS I, CLASS II AND CLASS IV SOURCES (NON-BIOMASS)

Pursuant to New Hampshire Administrative Code Puc 2500 Rules including Puc 2505.08, Certification of Certain Customer-Sited Sources

- Please submit one (1) original and two (2) paper copies of the completed application and cover letter* to:

Debra A. Howland
Executive Director
New Hampshire Public Utilities Commission
21 South Fruit Street, Suite 10
Concord, NH 03301-2429

- Send an electronic version of the completed application and the cover letter electronically to executive.director@puc.nh.gov.

* The cover letter must include complete contact information and identify the renewable energy class for which the applicant seeks eligibility. Pursuant to Puc 2505.01, the Commission is required to render a decision on an application within 45 days of receiving a completed application.

If you have any questions please contact Barbara Bernstein at (603) 271-6011 or Barbara.Bernstein@puc.nh.gov.

1) Check the applicable class:

Eligibility Requested for **Class I** ☐ **Class II** ☒ **Class IV** ☐

2) General Information

Applicant Name:	Monadnock Paper Mills, Inc.				
Mailing Address:	c/o Hydro Management Group, LLC				
Town/City:	Boston	State:	MA	Zip Code:	02108
Primary Contact:	Elise Anderson				
Telephone:	617-367-0032	Cell:	815-404-8673		
Email address:	eanderson@essexhydro.com				

3) Facility Information

Facility Name: Pierce Dam

Monadnock Paper Mills, Inc.

117 Antrim Rd

Mailing Address: Bennington NH 03442

Physical Address: 1 Cross Street

Town/City: Bennington State: NH Zip Code: 03442

If the facility does not have a physical address, provide the Latitude _____ & Longitude _____

Facility Owner: Monadnock Paper Mills, Inc.

Telephone: 603-588-8255 Cell: _____

Email address: bmaloy@mpm.com

If different from the owner:

Facility Operator: Mark Lombardi

Telephone: 603-588-8694 Cell: _____

Email address: mlombardi@mpm.com

4) Provide a general description of the renewable energy facility including size, a general summary of equipment and operation. *(The box provided will expand to accommodate the description.)*

(1) Pierce Dam, 420 feet long and 28 feet high, located 900 feet downstream of the Monadnock Dam and constructed of concrete with two spillway sections, 168 feet long and 122 feet long on a dogleg alignments, provided with 2-foot-high flashboards; (2) a reservoir having minimal pondage; (3) a gated intake structure and powerhouse, located at the right dam abutment, containing two turbine-generator units rated at 220 kW and 550 kW; (4) a tailrace partially encircling an island and re-entering the main channel of the river approximately 600 feet downstream of the main dam; and (6) appurtenant facilities.

Pierce Station is a net seller, all of the generation produced by Pierce Station is used by the commercial production of Monadnock Paper Mills Inc. Station service or parasitic load is purchased from Eversource (formerly Public Service Company of New Hampshire).

See ATTACHMENT 18 – Project Description & Description of Facility Upgrades

Fuel Type: Hydropower Gross Nameplate Capacity*: 0.770 MW

Initial Date of Commercial Operation: 06/1975

If different, the Original Date of Operation: _____

**The gross nameplate capacity should match the interconnection agreement and the GIS database. If it does not, please provide an explanation in the box below. (The box provided will expand to accommodate the explanation.)*

Provide the pertinent pages of the interconnection agreement as ***Attachment 4*** *of the Application. If the interconnection agreement is a confidential document, there is no need to send more than the first few pages, the page that verifies the nameplate capacity of the facility and the signature pages. This will ensure that the applicant is not required to submit both original and redacted versions of the application.*

If the facility is not required to have an interconnection agreement, provide explanation as to why an interconnection agreement is not required as ***Attachment 4.***

5) NEPOOL/GIS Asset ID and Facility Code

In order to qualify your facility's electrical production for RECs, you must register with the NEPOOL – GIS. Contact information for the GIS administrator follows:

James Webb
Registry Administrator, APX Environmental Markets
224 Airport Parkway, Suite 600, San Jose, CA 95110
Office: 408.517.2174
jwebb@apx.com

Mr. Webb will assist you in obtaining a GIS facility code and an ISO-New England asset ID number.

GIS Facility Code # NON39971 Asset ID # NON39971

If your facility is seeking Class I certification for the incremental new production of hydroelectric technologies to produce energy, proceed to question 6. Otherwise proceed to question 7.

6) Complete the following **as *Attachment 6:***

6.i) Demonstrate that the facility has had capital investments after January 1, 2006 resulting in an improvement of the facility's efficiency or an increase in the output of renewable energy pursuant to RSA 362-F:4(i). Include the Historical Generation Baseline as defined by RSA 362-F:2, X (a).

The average annual production of a hydroelectric facility from the later of January 1, 1986 or the date of first commercial operation through December 31, 2005. If the hydroelectric facility experienced an upgrade or expansion during the historical generation baseline period, actual generation for that entire period shall be adjusted to estimate the average annual production that would have occurred had the upgrade or expansion been in effect during the entire historical generation baseline period.

If your facility is seeking Class I certification for repowered Class III or Class IV sources, proceed to question 7. Otherwise proceed to question 8.

7) Complete the following **as *Attachment 7:***

7.i) Demonstrate that the facility has had new capital investments for the purpose of restoring unusable generation or adding to the existing capacity, including NHDES environmental permitting requirements for new plants pursuant to RSA 362-F:4, I (i).

7.ii) Provide documentation that 80 percent of the facility's tax basis in the resulting plant and equipment of the eligible generation capacity, including the NHDES permitting requirements for new plants, but exclusive of any tax basis in real property and intangible assets, is derived from the new capital investments pursuant to RSA 362-F:4, I (j).

If your facility is seeking Class I certification for formerly nonrenewable energy electric generation facilities, proceed to question 8. Otherwise, proceed to question 9.

8) Complete the following **as *Attachment 8:***

8.i) Provide documentation that 80 percent of its tax basis in the resulting generation unit, including NHDES permitting requirements for new plants, but exclusive of any tax basis in real property and intangible assets, is derived from the new capital investments pursuant to Puc 2505.07.

If your facility is seeking Class IV certification for a hydroelectric facility with a gross nameplate capacity of one megawatt or greater, proceed to question 9. Otherwise, proceed to question 10.

9) Complete the following as ***Attachment 9:***

9.i) Provide proof that the facility has installed upstream and downstream diadromous fish passages that have been approved under the terms of the facility's license or exemption from the Federal Energy Regulatory Commission pursuant to RSA 362-F:4, IV (a).

9.ii) Provide documentation that, when required, the facility has documented applicable state water quality certification pursuant to section 401 of the Clean Water Act for hydroelectric projects pursuant to RSA 362-F:4, IV (a).

If your facility is located in a control area adjacent to the New England control area, complete question 10.

10) Provide the following as ***Attachment 10***.

10.i) Submit proof that the energy is delivered within the New England control area and such delivery is verified as required in Puc 2504.01(a)(2) a. to e.

If your facility is a customer-sited source, proceed to question 11. Pursuant to RSA 362-F:2, V, a customer-sited source means a source that is interconnected on the end-use customer's side of the retail electricity meter in such a manner that it displaces all or part of the metered consumption of the end-use customer.

11) If the facility is a customer-sited source you must retain the services of an independent monitor directly, or if participating in an aggregation pursuant to Puc 2506, complete the following. Note that the aggregator must work with an independent monitor responsible for the verification of the production of energy from the customer-sited source.

Independent Monitor's Name: William P. Short III

Town/City: P.O. Box 237173, New York State: New York Zip Code: 10023-7173

Telephone: (917) 206-0001 Cell: (201) 970-3707

Email address: w.shortiii@verizon.net

(A list of independent monitors is available at:
http://www.puc.nh.gov/Sustainable%20Energy/Renewable_Energy_Source_Eligibility.htm.)

Mr. William P. Short III (approved by the Commission in DE 09-255 as an independent monitor) effective April 7, 20 I 0 will act as the independent monitor for Pierce Station. Mr. Short will be responsible for reading the meters and reporting the output to the GIS administrator. Mr. Short would report to the GIS both the behind-the-meter production and the excess power output delivered into the Eversource (formerly PSNH) distribution system. The GIS would then be responsible for determining the new RPS RECs based on the % of the gross production qualified as new by the NH Public Utilities Commission.

12) Provide all necessary regulatory approvals, including any reviews, approvals or permits required by NHDES or the environmental protection agency in the facility's state as **Attachment 12. (Not applicable)**

13) Provide a general description of how the generation facility is connected to the regional power pool via the local electric distribution utility. Please note that this information will be posted as public record. (*The box provided will expand to accommodate the description.)*

The site is located in Bennington, NH, and interconnects at 34.5kW to a tap on line 313 which is normally fed radially from Jackman substation. The facility interconnects to the Eversource (formerly PSNH) 34.5KW system through a 3000 KVA, 34.5-2.4KW transformer bank, connected in a delta-delta configuration. All units generate at 2.4 KW and connect directly to the 2.4 KW bus, which is also the source of power for the plants 2400 volt motor load. MPM's 2.4 KV system is an ungrounded delta system.

14) If applicable, provide verification of any certifications that have been received for this facility as **Attachment 14. A copy of the project license issued by the Federal Energy Regulatory Commission is included as Attachment 14.**

15) Check "Yes" if the facility has been certified under another non-federal jurisdiction's RPS. If "yes", provide attachments from each of the states where certification has been received. Label as Attachment 15.	yes	no
	☒	☐

Massachusetts	☐	Connecticut	☐	Rhode Island	☐	Maine	☒	All certifications have been attached.	☒

16) The project described in this application will meet the metering requirements of Puc 2506 including:	
I agree ☒	Electricity generation in megawatt hours shall be reported to the GIS quarterly with a statement that the submission is accurate by the owner of the source, the IM, or a designated representative.
I agree	A revenue quality meter is used to measure the electricity generated.

☒	
I agree ☒	The facility owner has certified to the IM that the meter operates according to manufacturing standards.
I agree ☒	The meter shall be maintained according to the manufacturer's recommendations.

17 a&b

(a) The Undersigned declares under penalty of perjury that there are no prohibited relationships between the Applicant and other involved parties and, in addition,

(b) that the information provided on this application is accurate.

ANDREW J. LOCKE	/ Andrew Locke, President Hydro Management Group, LLC /
	Typed signature required

Contact Barbara Bernstein at Barbara.bernstein@puc.nh.gov or 603-271-6011 with questions and comments.

18) If necessary, provide additional information that will assist in classification of the facility as **Attachment 18**.

Application Checklist:		**check**
1-3	All general and facility information has been provided in numbers 1), 2) and 3).	**X**
4	The gross nameplate capacity matches the interconnection agreement and the GIS database.	**X**
4	Pertinent pages of the interconnection agreement have been provided as **Attachment 4**.	**X**
5	A GIS Asset ID and facility code have been obtained and provided on the application.	**X**
6	If your facility is seeking Class I certification for the incremental new production of hydroelectric technologies to produce energy, **Attachment 6**	**X**
7	If your facility is seeking Class I certification for repowered Class III or IV sources, **Attachment 7.**	
8	If your facility is seeking Class I certification for formerly nonrenewable energy electric generation facilities, **Attachment 8**.	
9	If your facility is seeking Class IV certification for the electric production of hydroelectric technologies with a nameplate capacity of one megawatt or greater, **Attachment 9**.	
10	If your facility is located in a control area adjacent to the New England control area, **Attachment 10**.	
11	If the facility is a customer-sited source you have retained the services of an independent monitor and noted the independent monitor on the application.	**X**
12	All necessary regulatory approvals, including any reviews, approvals or permits required by NHDES or the environmental protection agency in the facility's state have been provided as **Attachment 12.**	**N/A**
13	A general description of how the generation facility is connected to the regional power pool via the local electric distribution utility has been provided.	**X**
14	If applicable, provide verification of any certifications that have been received for this facility as **Attachment 14.**	**X**

15	If applicable, verification of all renewable portfolio standard program certifications that have been received for this facility in other states, provided as **Attachment 15.**	**X**
16	The project meets the metering requirements of Puc 2506.	**X**
17a	A statement that there are no prohibited relationships between the Applicant and other involved parties.	**X**
17b	A statement by the owner attesting to the accuracy of the contents of the application.	**X**
18	If necessary, other pertinent information that will assist in classification of the facility provided as **Attachment 18.**	**X**

Note: Attachment numbers are matched with the number on the application. There are no attachments numbered 1, 2, 3, 5, 11, 13, 16, or 17. A separate attachment for the affidavit will be accepted.

Attachment 4

Interconnection Agreement

Dated May 18, 1992

6/16 Copy to M. Cole

#070

PSNH

FILE COPY

INTRA-COMPANY BUSINESS MEMO

Public Service of New Hampshire

Subject Final Interconnection Report - Monadnock Paper Mills (SESD # 070)

From	P.J. Bradshaw	District	Date May 18, 1992
To	S.B. Wicker, Jr.		Reference

cc: (No Attachments)
D.L. Bacon
J.A.S. Breton
R.E. Evans
M.F. Fraser
R. Leatherbee
R.T. Hybsch
R.G. Prince
J. Van Oudenhove
G.H. Crotto

Circulated Copy:(No Attachments)
P.A. Magoun
P.C. Martin

Enclosed is the final interconnection report for Monadnock Paper Mills (SESD #070). Please forward it to the developer and make a complete internal distribution.

P.J. Bradshaw
ext 3157
e-mail "BRADSHAW"

PJB/ps2
FIN070.WPF

PSNH INTERCONNECTION REPORT FOR

CUSTOMER GENERATION

Monadnock Paper Mills

SESD SITE NO. 070

P.J. Bradshaw
May 18, 1992

sufficient water exists and units are available. The 750 KVA unit in the plant itself is usually the first to be started if water is low. However, there are no hard and fast unit commitment procedures. Any combination of units could be running at a given time. None of the units have black-start capability. Without an energized PSNH power supply to synchronize to, none can be brought on line.

With the exception of the recently added 200 KVA induction machine, the generation at MPM has been in service for decades . Each of the machines has some level of fault protection, however the site as presently configured does not meet modern PSNH interconnection requirements for a site of this capacity. The primary concern is the delta-delta transformer that serves as a GSU. Since there is no ground source at MPM, PSNH customers connected phase to ground on the 313 line could be exposed to excessive voltages if generation at the plant continued to run after the breaker at Jackman s/s tripped for a line to ground fault.

Rather than require that each machine at MPM be brought into compliance with today's criteria, this report will specify a protection and control package to be implemented primarily at the interface between PSNH and MPM (See sketch SK-PJB-070-3).

B. Electrical Components

1. Plant Steam Unit
Generator: Toshiba induction, 200 KW, .80 PF, 2400V, 1800 RPM
Turbine: Worthington S2R, 260 HP @ 4000 RPM
Governer: Woodward 505 electronic governer.

2. Plant Hydro
Generator: Electric Machinery synchronous, 750 KVA, 261a, .80 PF, 2200V, 180 RPM.
Exciter: 14 KW, 125V, 112a, 750 RPM
Turbine: Horizontal shaft hydroturbine, 1000 HP

3. Pierce Station #1
Generator: Westinghouse synchronous, 500 KVA, 120a, 2400V, 150 RPM.
Exciter: Westinghouse belt driven, 21KW, 125V, 168a, 1200 RPM.
Turbine: Vertical shaft hydroturbine.

4. Pierce Station #2
Generator: Westinghouse synchronous, 220 KVA, 53a, 2400V, 225 RPM.
Exciter: Westinghouse belt driven, 11.5 KW, 125V, 92a, 1200 RPM.
Turbine: Vertical shaft hydroturbine.

5. Monadnock Station #1
Generator: Electric Machinery synchronous, 125 KVA, 31.5a, .80 PF 2300 V, 180 RPM.
Exciter: Static
Turbine: Vertical shaft hydroturbine.

6. Monadnock Station #2
Generator: Westinghouse synchronous, 375 KVA, 94a, .80 PF, 2300 V, 257 RPM.
Exciter: Westinghouse, shaft mounted, 10 KW, 125V, 80a, 257 RPM, 31.5a
Turbine: Vertical shaft hydroturbine.

7. Generator Stepup Transformer: 3-1000 KVA, 34400-4360Y/2520V, Z=6.05%, configured as Delta-Delta bank.

8. Grounding Bank (new requirement): 3-100 KVA, Z=3.5% - 4.5%. See section IV.A.

9. Three phase vacuum interrupting device (new requirement). See section IV.A.

10. Three phase air break switch (new requirement). See section IV.A.

III. PSNH REQUIREMENTS - GENERAL

A. Safety Considerations

1. The connection of the facility to the PSNH system must not compromise the safety of PSNH's customers, personnel, or the owner's personnel.

2. The generating facility must not have the capability of energizing a de-energized PSNH circuit.

3. An emergency shutdown switch with facility status indicator lights, and a disconnecting device with a visible open shall be made available for unrestricted use by PSNH personnel. The operation of the switch shall cause all of the facility's generation to be removed from service, and shall block all automatic startup of generation until the switch is reset. The status lights, mounted with the shutdown switch, shall be located outdoors at a position acceptable to PSNH operating division personnel. A red light shall indicate that the facility has generation connected to the PSNH system. A green light shall indicate that all generation is disconnected from the PSNH system. The lights shall be driven directly from auxiliary switches located on the breakers tripped by the shutdown switch. The disconnecting device with visible open shall be located between the PSNH system and the facility's generation.

Attachment 6

Pierce Station Automatic Pond Level Control (APLC) Upgrades – Invoices

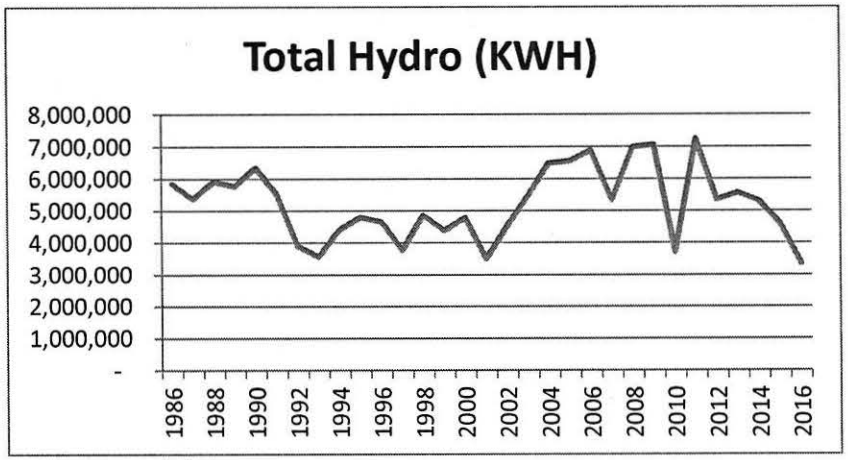
&

Average Annual Production 2005- 2016 with calculated % for Pierce Station
(Historic Generation Baseline Estimate)

The statute defines "Historic Generation Baseline" as follows: The average annual production of a hydroelectric facility from the later of January 1, 1986 or the date of first commercial operation through December 31, 2005. If the hydroelectric facility experienced an upgrade or expansion during the historical generation baseline period, actual generation for that entire period shall be adjusted to estimate the average annual production that would have occurred had the upgrade or expansion been in effect during the entire historical generation baseline period. MFM is required to provide the average annual production for the facility from 1986 through 2005, in accordance with this statutory requirement.

Attached is system generation from 1986 to present, but Pierce Dam Power Station data is only available back to 2005. If you take the % power that was generated by Pierce Station from 2005-2016 (excluding 2010 when MPM had an extended outage at the Mill), it can be shown that Pierce Dam Power generated about 42.1% of the system power. By applying this factor to total hydro production from 1986-December 31, 2005, the historic generation baseline is estimated to be 2,111,634 kWh annually for Pierce Dam Power Station.

Year	Total Hydro (KWH)	Pierce Station	%	Estimated Pierce (Pre-2005)
1986	5,851,800			2,465,146
1987	5,369,200			2,261,845
1988	5,917,000			2,492,613
1989	5,770,000			2,430,687
1990	6,346,400			2,673,503
1991	5,529,700			2,329,458
1992	3,904,052			1,644,632
1993	3,565,900			1,502,181
1994	4,399,400			1,853,304
1995	4,787,900			2,016,965
1996	4,653,800			1,960,473
1997	3,766,300			1,586,603
1998	4,859,092			2,046,955
1999	4,366,800			1,839,571
2000	4,781,700			2,014,353
2001	3,494,300			1,472,019
2002	4,520,012			1,904,113
2003	5,466,300			2,302,749
2004	6,490,500			2,734,207
2005	6,559,400	2701300	*41.2%*	
2006	6,895,800	2584000	*37.5%*	
2007	5,324,000	2090600	*39.3%*	
2008	6,989,900	2823500	*40.4%*	
2009	7,064,700	3847900	*54.5%*	
2010	3,704,100	1620300	*43.7%*	
2011	7,243,902	3265900	*45.1%*	
2012	5,334,900	2275100	*42.6%*	
2013	5,560,500	2189900	*39.4%*	
2014	5,297,500	2078500	*39.2%*	
2015	4,585,600	1845500	*40.2%*	
2016	3,352,500	1421300	*42.4%*	



BASELINE AVERAGE	
(Annual KWh)	2,111,634

42.1%

Weekly Hydro Generation

	220 KVA Weekly Readings	Weekly KWH	500 KVA Weekly Readings	Weekly KWH
1/3/2005	9687100		2100500	
1/10/2005	9690500	3400	2181800	81300
1/17/2005	9713500	23000	2251500	69700
1/24/2005	9724500	11000	2326600	75100
1/31/2005	9724500	0	2392000	65400
2/7/2005	9724500	0	2446000	54000
2/14/2005	9729800	5300	2515900	69900
2/21/2005	9744300	14500	2596400	80500
2/28/2005	9745700	1400	2661000	64600
3/7/2005	9745700	0	2714500	53500
3/14/2005	9745700	0	2776500	62000
3/21/2005	9745700	0	2834700	58200
3/28/2005	9745700	0	2902200	67500
4/4/2005	9771900	26200	2971800	69600
4/11/2005	9794700	22800	3029600	57800
4/18/2005	9810900	16200	3093600	64000
4/25/2005	9814200	3300	3159000	65400
5/2/2005	9837700	23500	3221400	62400
5/9/2005	9850400	12700	3282600	61200
5/16/2005	9850400	0	?	?
5/23/2005	9869500	19100	3393900	?
5/31/2005	9888300	18800	3465700	71800
6/6/2005	9904500	16200	3521900	56200
6/13/2005	9923100	18600	3543200	21300
6/20/2005	?	?	?	?
6/27/2005	9942200	?	3613000	?
7/5/2005	9942200	0	3669700	56700
7/11/2005	9946100	3900	3724800	55100
7/18/2005	9946700	600	3778900	54100
7/25/2005	9946700	0	3796500	17600
8/1/2005	9948300	1600	3796500	0
8/8/2005	9948300	0	3796500	0
8/15/2005	9948300	0	3796500	0
8/22/2005	9960100	11800	3796500	0
8/29/2005	9960100	0	3796500	0
9/5/2005	9960100	0	3796500	0
9/12/2005	9960100	0	3796500	0
9/19/2005	9960100	0	3796500	0
9/26/2005	9960100	0	3796500	0
10/3/2005	9960100	0	3796500	0
10/10/2005	9980500	20400	3806200	9700
10/17/2005	10004800	24300	3867600	61400
10/24/2005	33200	28400	3928400	60800
10/31/2005	60100	26900	3990300	61900
11/7/2005	87000	26900	4051500	61200
11/14/2005	110000	23000	4113400	61900
11/21/2005	132400	22400	4176000	62600
11/28/2005	160600	28200	4239900	63900
12/5/2005	189300	28700	4304600	64700
12/12/2005	200800	11500	4367900	63300
12/19/2005	200800	0	4429100	61200
12/26/2005	200800	0	4488300	59200
Total		494600		2206700
				2701300

Weekly Hydro Generation

	220 KVA Weekly Readings	Weekly KWH	500 KVA Weekly Readings	Weekly KWH
1/2/2006	225800	25000	4550900	62600
1/9/2006	252800	27000	4611600	60700
1/16/2006	268000	15200	4677800	66200
1/23/2006	292600	24600	4741300	63500
1/30/2006	315800	23200	4805500	64200
2/6/2006	338800	23000	4869500	64000
2/13/2006	360600	21800	4932400	62900
2/20/2006	381900	21300	4933000	600
2/27/2006	?	?	?	?
3/6/2006	414800	?	5043700	?
3/13/2006	438700	23900	5051200	7500
3/20/2006	452800	14100	5117300	66100
3/27/2006	472400	19600	5133100	15800
4/3/2006	498300	25900	5133100	0
4/10/2006	522600	24300	5133100	0
4/17/2006	546400	23800	5133100	0
4/24/2006	571900	25500	5133100	0
5/1/2006	595000	23100	5133100	0
5/8/2006	619200	24200	5133100	0
5/15/2006	642400	23200	5141300	8200
5/22/2006	661000	18600	5199300	58000
5/30/2006	683800	22800	5260000	60700
6/5/2006	700800	17000	5286100	26100
6/12/2006	717700	16900	5347800	61700
6/19/2006	732200	14500	5406800	59000
6/26/2006	734100	1900	5460900	54100
7/3/2006	751300	17200	5522500	61600
7/10/2006	751700	400	5573700	51200
7/17/2006	755300	3600	5618800	45100
7/24/2006	774100	18800	5620100	1300
7/31/2006	782600	8500	5643500	23400
8/7/2006	808500	25900	5643500	0
8/14/2006	823400	14900	5643500	0
8/21/2006	827300	3900	5643800	300
8/28/2006	844700	17400	5682400	38600
9/4/2006	872800	28100	5682400	0
9/11/2006	894800	22000	5682400	0
9/18/2006	894800	0	5682400	0
9/25/2006	914100	19300	5682400	0
10/2/2006	935300	21200	5682400	0
10/9/2006	970600	35300	5682400	0
10/16/2006	993000	22400	5715200	32800
10/23/2006	993900	900	5787600	72400
10/30/2006	997700	3800	5857200	69600
11/6/2006	1016900	19200	5936100	78900
11/13/2006	1036500	19600	6003300	67200
11/20/2006	1070100	33600	6075100	71800
11/27/2006	1099600	29500	6150000	74900
12/4/2006	1114200	14600	6223300	73300
12/11/2006	1124100	9900	6292600	69300
12/18/2006	?	?	?	?
12/25/2006	1143700	?	6388500	?
Total		890400		1693600
				2584000

Weekly Hydro Generation

	220 KVA Weekly Readings	Weekly KWH	500 KVA Weekly Readings	Weekly KWH
1/2/2007	1155500	11800	6468400	79900
1/8/2007	1164600	9100	6538600	70200
1/15/2007	1192800	28200	6615500	76900
1/22/2007	1200700	7900	6691000	75500
1/29/2007	1215300	14600	6719400	28400
2/5/2007	1251500	36200	6719400	0
2/12/2007	1281700	30200	6719400	0
2/19/2007	1304800	23100	6719400	0
2/26/2007	1320800	16000	6719400	0
3/5/2007	1363500	42700	6719400	0
3/12/2007	1399500	36000	6719400	0
3/19/2007	1420500	21000	6786100	66700
3/26/2007	1447700	27200	6846100	60000
4/2/2007	1480300	32600	6924300	78200
4/9/2007	1511900	31600	7002400	78100
4/16/2007	1532300	20400	7080400	78000
4/23/2007	1545400	13100	7107900	27500
4/30/2007	1560800	15400	7144200	36300
5/7/2007	1578400	17600	7176900	32700
5/14/2007	1601400	23000	7176900	0
5/21/2007	1622800	21400	7176900	0
5/28/2007	1634000	11200	7250000	73100
6/4/2007	1634000	0	7290200	40200
6/11/2007	1637800	3800	7358000	67800
6/18/2007	1637800	0	7413200	55200
6/25/2007	1646900	9100	7422500	9300
7/2/2007	1646900	0	7422500	0
7/9/2007	1646900	0	7422500	0
7/16/2007	1667400	20500	7455600	33100
7/23/2007	1672200	4800	7500200	44600
7/30/2007	1680200	8000	7533400	33200
8/6/2007	1680200	0	7533400	0
8/13/2007	1680200	0	7533400	0
8/20/2007	1680200	0	7533400	0
8/27/2007	1680200	0	7533400	0
9/4/2007	1680200	0	7533400	0
9/10/2007	1680200	0	7533400	0
9/17/2007	1698300	18100	7533400	0
9/24/2007	1698300	0	7533400	0
10/1/2007	1698300	0	7533700	300
10/8/2007	1698300	0	7533700	0
10/15/2007	1726500	28200	7533700	0
10/22/2007	1761200	34700	7533700	0
10/29/2007	1780100	18900	7533700	0
11/5/2007	1815200	35100	7533700	0
11/12/2007	1849800	34600	7533700	0
11/19/2007	1873500	23700	7552900	19200
11/26/2007	1873500	0	7599100	46200
12/3/2007	1878600	5100	7657900	58800
12/10/2007	1913800	35200	7657900	0
12/17/2007	1948700	34900	7657900	0
12/24/2007	1983500	34800	7657900	0
12/31/2007	1998200	14700	7716300	58400
Total		842700		1247900
				2090600

Weekly Hydro Generation

	220 KVA Weekly Readings	Weekly KWH	500 KVA Weekly Readings	Weekly KWH
1/7/2008	1998200	0	7784500	68200
1/14/2008	2015200	17000	7840700	56200
1/21/2008	2027400	12200	7931700	91000
1/28/2008	2027400	0	7991500	59800
2/4/2008	2060200	32800	8003100	11600
2/11/2008	2084700	24500	8080500	77400
2/18/2008	2117800	33100	8155800	75300
2/25/2008	2151400	33600	8229700	73900
3/3/2008	2186900	35500	8297000	67300
3/10/2008	2220600	33700	8369000	72000
3/17/2008	2249700	29100	8443300	74300
3/24/2008	2277200	27500	8512600	69300
3/31/2008	2305700	28500	8583000	70400
4/7/2008	2326800	21100	8650500	67500
4/14/2008	2337000	10200	8698100	47600
4/21/2008	2352000	15000	8745000	46900
4/28/2008	2361700	9700	8799200	54200
5/5/2008	2371000	9300	8854500	55300
5/12/2008	2371200	200	8917800	63300
5/19/2008	2371200	0	8966700	48900
5/26/2008	2371200	0	8992500	25800
6/2/2008	2371200	0	9001200	8700
6/9/2008	2371200	0	9001200	0
6/16/2008	2371200	0	9017900	16700
6/23/2008	2371200	0	9034400	16500
6/30/2008	2371200	0	9034400	0
7/7/2008	2371200	0	9072900	38500
7/14/2008	2371200	0	9078200	5300
7/21/2008	2371200	0	9092100	13900
7/28/2008	2371200	0	9152800	60700
8/4/2008	2371200	0	9222900	70100
8/11/2008	2371200	0	9287100	64200
8/18/2008	2371200	0	9355600	68500
8/25/2008	2371200	0	9355600	0
9/1/2008	2371200	0	9355600	0
9/8/2008	2371200	0	9355600	0
9/15/2008	2371200	0	9355600	0
9/22/2008	2371200	0	9355600	0
9/29/2008	2371200	0	9355600	0
10/6/2008	2371200	0	9355600	0
10/13/2008	2371200	0	9355600	0
10/20/2008	2371200	0	9375800	20200
10/27/2008	2371200	0	9394900	19100
11/3/2008	2407400	36200	9453300	58400
11/10/2008	2437300	29900	9463300	10000
11/17/2008	2437800	500	9535100	71800
11/24/2008	2443600	5800	9603600	68500
12/1/2008	2464300	20700	9679100	75500
12/8/2008	2485100	20800	9760300	81200
12/15/2008	2503000	17900	9810100	49800
12/22/2008	2538200	35200	9886200	76100
12/29/2008	2572500	34300	9965500	79300
Total		574300		2249200
				2823500

Weekly Hydro Generation

	220 KVA Weekly Readings	Weekly KWH	500 KVA Weekly Readings	Weekly KWH
1/5/2009	2608400	35900	44600	79100
1/12/2009	2632800	24400	110400	65800
1/19/2009	2632800	0	168900	58500
1/26/2009	2632800	0	221200	52300
2/2/2009	2671600	38800	221200	0
2/9/2009	2709700	38100	221200	0
2/16/2009	2716000	6300	283800	62600
2/23/2009	2716000	0	340800	57000
3/2/2009	2734900	18900	382900	42100
3/9/2009	2736300	1400	454600	71700
3/16/2009	2770800	34500	533100	78500
3/23/2009	2803300	32500	608300	75200
3/30/2009	2834400	31100	681600	73300
4/6/2009	2865300	30900	754600	73000
4/13/2009	2896300	31000	825600	71000
4/20/2009	2906700	10400	893000	67400
4/27/2009	2932600	25900	935600	42600
5/4/2009	2939000	6400	981600	46000
5/11/2009	2956400	17400	1051700	70100
5/18/2009	2962100	5700	1128700	77000
5/25/2009	2965900	3800	1176500	47800
6/1/2009	2986200	20300	1205400	28900
6/8/2009	3001700	15500	1231400	26000
6/15/2009	3032800	31100	1246800	15400
6/22/2009	3066000	33200	1329700	82900
6/29/2009	3097600	31600	1413300	83600
7/6/2009	3131100	33500	1496100	82800
7/13/2009	3136100	5000	1581200	85100
7/20/2009	3162000	25900	1599400	18200
7/27/2009	3192200	30200	1644300	44900
8/3/2009	3227900	35700	1727600	83300
8/10/2009	3242600	14700	1802400	74800
8/17/2009	3269400	26800	1818400	16000
8/24/2009	3305200	35800	1829600	11200
8/31/2009	3333500	28300	1900900	71300
9/8/2009	3355500	22000	1960500	59600
9/14/2009	3384100	28600	1960500	0
9/21/2009	3413000	28900	1966900	6400
9/28/2009	3436800	23800	1966900	0
10/5/2009	3453500	16700	1966900	0
10/12/2009	3458600	5100	2026700	59800
10/19/2009	3489800	31200	2026700	0
10/26/2009	3504100	14300	2060200	33500
11/2/2009	3533900	29800	2141700	81500
11/9/2009	3538500	4600	2216900	75200
11/16/2009	3538500	0	2277900	61000
11/23/2009	3566200	27700	2357000	79100
11/30/2009	3586200	20000	2421100	64100
12/7/2009	3611000	24800	2491700	70600
12/14/2009	3632500	21500	2546800	55100
12/21/2009	3662600	30100	2610300	63500
12/28/2009	3695600	33000	2690300	80000
Total		1123100		2724800
				3847900

Weekly Hydro Generation

	220 KVA Weekly Readings	Weekly KWH	500 KVA Weekly Readings	Weekly KWH
1/4/2010	3728000	32400	?	?
1/11/2010	3763300	35300	?	?
1/18/2010	3799000	35700	?	?
1/25/2010	3834300	35300	?	?
2/1/2010	3866500	32200	?	?
2/8/2010	3899600	33100	?	?
2/15/2010	3933500	33900	?	?
2/22/2010	3967600	34100	?	?
3/1/2010	3999500	31900	?	?
3/8/2010	4027400	27900	?	?
3/15/2010	4056700	29300	2820300	?
3/22/2010	4080700	24000	2874300	54000
3/29/2010	4101900	21200	2935300	61000
4/5/2010	4120100	18200	2991800	56500
4/12/2010	4139500	19400	3055900	64100
4/19/2010	4147500	8000	3110100	54200
4/26/2010	4153900	6400	3183800	73700
5/3/2010	4153900	0	3239400	55600
5/10/2010	4153900	0	3285500	46100
5/17/2010	4170100	16200	3308700	23200
5/24/2010	4197700	27600	3308700	0
5/31/2010	4198700	1000	3308700	0
6/7/2010	4198700	0	3308700	0
6/14/2010	4217300	18600	3308700	0
6/21/2010	4233000	15700	3308700	0
6/28/2010	4237700	4700	3308700	0
7/5/2010	4237700	0	3308700	0
7/12/2010	4237700	0	3308700	0
7/19/2010	4237700	0	3308700	0
7/26/2010	4237700	0	3308700	0
8/2/2010	4237700	0	3308700	0
8/9/2010	4237700	0	3308700	0
8/16/2010	4237700	0	3308700	0
8/23/2010	4237700	0	3308700	0
8/30/2010	4237700	0	3308700	0
9/6/2010	4237700	0	3308700	0
9/13/2010	4237700	0	3308700	0
9/20/2010	4238300	600	3323800	15100
9/27/2010	4238700	400	3323800	0
10/4/2010	4238700	0	3323800	0
10/11/2010	4261600	22900	3323800	0
10/18/2010	4267400	5800	3350100	26300
10/25/2010	4304100	36700	3351500	1400
11/1/2010	4310600	6500	3351500	0
11/8/2010	4347800	37200	3351500	0
11/15/2010	4381100	33300	3373500	22000
11/22/2010	4394200	13100	3428900	55400
11/29/2010	4394200	0	3506300	77400
12/6/2010	4417000	22800	3517400	11100
12/13/2010	4424200	7200	3572300	54900
12/20/2010	4439400	15200	3645600	73300
12/27/2010	4454700	15300	3681500	35900
total		759100		861200
				1620300

Weekly Hydro Generation

	220 KVA Weekly Readings	Weekly KWH	500 KVA Weekly Readings	Weekly KWH
1/3/2011	4483400	28700	3681500	0
1/10/2011	4518000	34600	3681500	0
1/17/2011	4549600	31600	3681500	0
1/24/2011	4579400	29800	3681600	100
1/31/2011	4606300	26900	3681600	0
2/7/2011	4633200	26900	3681600	0
2/14/2011	4660100	26900	3681600	0
2/21/2011	4689400	29300	3681600	0
2/28/2011	4725800	36400	3681600	0
3/7/2011	4758100	32300	3690200	8600
3/14/2011	4799600	41500	3765000	74800
3/21/2011	4819200	19600	3839000	74000
3/28/2011	4848100	28900	3915100	76100
4/4/2011	4872600	24500	3980400	65300
4/11/2011	4900700	28100	4065800	85400
4/18/2011	4927700	27000	4130800	65000
4/25/2011	4949300	21600	4215200	84400
5/2/2011	4973200	23900	4287400	72200
5/9/2011	4973800	600	4350200	62800
5/16/2011	4988000	14200	4374300	24100
5/23/2011	5011600	23600	4438800	64500
5/31/2011	5015800	4200	4498000	59200
6/6/2011	5015800	0	4520900	22900
6/13/2011	5023300	7500	4524700	3800
6/20/2011	5024000	700	4564300	39600
6/27/2011	5053800	29800	4599600	35300
7/5/2011	5063500	9700	4643100	43500
7/11/2011	5076900	13400	4658100	15000
7/18/2011	5076900	0	4658100	0
7/25/2011	5086200	9300	4658100	0
8/1/2011	5086200	0	4658100	0
8/8/2011	5086200	0	4658100	0
8/15/2011	5086200	0	4658100	0
8/22/2011	5088300	2100	4663400	5300
8/29/2011	5093000	4700	4688100	24700
9/5/2011	5123300	30300	4767300	79200
9/12/2011	5158900	35600	4814300	47000
9/19/2011	5167300	8400	4877100	62800
9/26/2011	5198200	30900	4877400	300
10/3/2011	5218400	20200	4958400	81000
10/10/2011	5252700	34300	5039200	80800
10/17/2011	5256800	4100	5113000	73800
10/24/2011	5291600	34800	5191000	78000
10/31/2011	5319100	27500	5268800	77800
11/7/2011	5354500	35400	5347300	78500
11/14/2011	5387800	33300	5421200	73900
11/21/2011	5401900	14100	5498000	76800
11/28/2011	5401900	0	5574900	76900
12/5/2011	5436700	34800	5653300	78400
12/12/2011	5470600	33900	5726600	73300
12/19/2011	5517000	46400	5805800	79200
12/26/2011	5538500	21500	5863600	57800
Total		1083800		2182100
				3265900

Weekly Hydro Generation

	220 KVA Weekly Readings	Weekly KWH	500 KVA Weekly Readings	Weekly KWH
1/2/2012	5571100	32600	5944400	80800
1/9/2012	5580600	9500	6028300	83900
1/16/2012	5580600	0	6091500	63200
1/23/2012	5580600	0	6142000	50500
1/30/2012	5594200	13600	6218100	76100
2/6/2012	5615600	21400	6299900	81800
2/13/2012	5615600	0	6362700	62800
2/20/2012	5615600	0	6404400	41700
2/27/2012	5615600	0	6457500	53100
3/5/2012	5615600	0	6525900	68400
3/12/2012	5628700	13100	6593900	68000
3/19/2012	5652700	24000	6674700	80800
3/26/2012	5655700	3000	6745200	70500
4/2/2012	5655700	0	6788100	42900
4/9/2012	5680500	24800	6788600	500
4/16/2012	5695000	14500	6788600	0
4/23/2012	5707300	12300	6788600	0
4/30/2012	5734900	27600	6838800	50200
5/7/2012	5743300	8400	6894600	55800
5/14/2012	5758200	14900	6971400	76800
5/21/2012	5788000	29800	7051800	80400
5/28/2012	5804400	16400	7064000	12200
6/4/2012	5827600	23200	7121200	57200
6/11/2012	5854100	26500	7202700	81500
6/18/2012	5858500	4400	7268000	65300
6/25/2012	5885900	27400	7277800	9800
7/2/2012	5890100	4200	7277800	0
7/9/2012	5890100	0	7277800	0
7/16/2012	5890100	0	7277800	0
7/23/2012	5890100	0	7277800	0
7/30/2012	5890100	0	7277800	0
8/6/2012	5890100	0	7277800	0
8/13/2012	5890100	0	7277800	0
8/20/2012	5919600	29500	7277800	0
8/27/2012	5923300	3700	7277800	0
9/4/2012	5923600	300	7277800	0
9/10/2012	5923600	0	7277800	0
9/17/2012	5923600	0	7277800	0
9/24/2012	5923600	0	7277800	0
10/1/2012	5926000	2400	7280200	2400
10/8/2012	5957000	31000	7290600	10400
10/15/2012	5967100	10100	7290600	0
10/22/2012	5986100	19000	7290600	0
10/29/2012	5986800	700	7349200	58600
11/5/2012	6013300	26500	7414300	65100
11/12/2012	6029200	15900	7467600	53300
11/19/2012	6033000	3800	7487300	19700
11/26/2012	6044100	11100	7487300	0
12/3/2012	6071100	27000	7487300	0
12/10/2012	6098300	27200	7487300	0
12/17/2012	6130400	32100	7487300	0
12/24/2012	6160200	29800	7487300	0
12/31/2012	6189400	29200	7487800	500
Total		650900		1624200
				2275100

Weekly Hydro Generation

	220 KVA Weekly Readings	Weekly KWH	500 KVA Weekly Readings	Weekly KWH
1/7/2013	6198000	8600	7487800	0
1/14/2013	6202400	4400	7487800	0
1/21/2013	6228600	26200	7496100	8300
1/28/2013	6258100	29500	7496100	0
2/4/2013	6281900	23800	7543000	46900
2/11/2013	6294900	13000	7577100	34100
2/18/2013	6321100	26200	7586000	8900
2/25/2013	6343800	22700	7586000	0
3/4/2013	6350100	6300	7621000	35000
3/11/2013	6380800	30700	7640800	19800
3/18/2013	6404400	23600	7713200	72400
3/25/2013	6412700	8300	7791800	78600
4/1/2013	6420500	7800	7872800	81000
4/8/2013	6446700	26200	7955900	83100
4/15/2013	6471100	24400	8036500	80600
4/22/2013	6495700	24600	8118200	81700
4/29/2013	6506600	10900	8196300	78100
5/6/2013	6529000	22400	8205900	9600
5/13/2013	6554900	25900	8214700	8800
5/20/2013	6570700	15800	8247900	33200
5/27/2013	6585900	15200	8305200	57300
6/3/2013	6601600	15700	8384300	79100
6/10/2013	6608200	6600	8456500	72200
6/17/2013	6630900	22700	8537600	81100
6/24/2013	6649200	18300	8596500	58900
7/1/2013	6654700	5500	8641200	44700
7/8/2013	6654700	0	8662000	20800
7/15/2013	6654700	0	8662000	0
7/22/2013	6673200	18500	8662900	900
7/29/2013	6673200	0	8680000	17100
8/5/2013	6684500	11300	8693600	13600
8/12/2013	6691900	7400	8696300	2700
8/19/2013	6692200	300	8696300	0
8/26/2013	6692200	0	8696300	0
9/2/2013	6692200	0	8696300	0
9/9/2013	6716100	23900	8696300	0
9/16/2013	6735100	19000	8741500	45200
9/23/2013	6741400	6300	8816700	75200
9/30/2013	6741900	500	8816700	0
10/7/2013	6741900	0	8816700	0
10/14/2013	6741900	0	8833700	17000
10/21/2013	6741900	0	8833700	0
10/28/2013	6754300	12400	8833700	0
11/4/2013	6754400	100	8834100	400
11/11/2013	6782200	27800	8834100	0
11/18/2013	6794300	12100	8834100	0
11/25/2013	6810000	15700	8834100	0
12/2/2013	6830300	20300	8903100	69000
12/9/2013	6866500	36200	8903100	0
12/16/2013	6889000	22500	8903100	0
12/23/2013	6904900	15900	8903100	0
12/30/2013	6938200	33300	8928900	25800
Total		748800		1441100
				2189900

Weekly Hydro Generation

	220 KVA Weekly Readings	Weekly KWH	500 KVA Weekly Readings	Weekly KWH	
1/6/2014	6975900	37700	8928900	0	
1/13/2014	7008700	32800	8974600	45700	
1/20/2014	7038200	29500	9055200	80600	
1/27/2014	7062500	24300	9086700	31500	
2/3/2014	7088800	26300	9086700	0	
2/10/2014	7111200	22400	9086700	0	
2/17/2014	7125700	14500	9086700	0	
2/24/2014	7145500	19800	9089200	2500	
3/3/2014	7175000	29500	9089200	0	
3/10/2014	7192800	17800	9089200	0	
3/17/2014	7220700	27900	9089200	0	
3/24/2014	7254600	33900	9089200	0	
3/31/2014	7284700	30100	9101200	12000	
4/7/2014	7310100	25400	9173000	71800	
4/14/2014	7335800	25700	9248200	75200	
4/21/2014	7359700	23900	9319600	71400	
4/28/2014	7385400	25700	9351800	32200	
5/5/2014	7411300	25900	9394300	42500	
5/12/2014	7437600	26300	9414900	20600	
5/19/2014	7455100	17500	9428000	13100	
5/26/2014	7487700	32600	9452100	24100	
6/2/2014	7512200	24500	9498000	45900	
6/9/2014	7544200	32000	9498000	0	
6/16/2014	7550900	6700	9498000	0	
6/23/2014	7550900	0	9498000	0	
6/30/2014	7561900	11000	9533800	35800	
7/7/2014	7580600	18700	9568700	34900	
7/14/2014	7599000	18400	9626000	57300	
7/21/2014	7614600	15600	9673600	47600	
7/28/2014	7636800	22200	9686500	12900	
8/4/2014	7669500	32700	9686500	0	
8/11/2014	7673000	3500	9686500	0	
8/18/2014	7692900	19900	9729300	42800	
8/25/2014	7699900	7000	9729500	200	
9/1/2014	7699900	0	9729500	0	
9/8/2014	7699900	0	9729500	0	
9/15/2014	7699900	0	9729500	0	
9/22/2014	7699900	0	9729500	0	
9/29/2014	7699900	0	9729500	0	
10/6/2014	7699900	0	9729500	0	
10/13/2014	7699900	0	9729500	0	
10/20/2014	7699900	0	9729500	0	
10/27/2014	7720000	20100	9771800	42300	
11/3/2014	7727800	7800	9829600	57800	
11/10/2014	7727800	0	9850900	21300	
11/17/2014	7727800	0	9850900	0	
11/24/2014	7727800	0	9850900	0	
12/1/2014	7728100	300	9866600	15700	
12/8/2014	7734300	6200	9933600	67000	
12/15/2014	7734300	0	11200	77600	(Meter turned over---10011200)
12/22/2014	7755700	21400	89000	77800	
12/29/2014	7777700	22000	167900	78900	
Total		839500		1239000	
				2078500	

Weekly Hydro Generation

	220 KVA Weekly Readings	Weekly KWH	500 KVA Weekly Readings	Weekly KWH
1/5/2015	7804500	26800	246100	78200
1/12/2015	7823200	18700	298700	52600
1/19/2015	7832400	9200	318400	19700
1/26/2015	7845500	13100	396900	78500
2/2/2015	7876900	31400	397300	400
2/9/2015	7909700	32800	397300	0
2/16/2015	7942400	32700	397300	0
2/23/2015	7972600	30200	397300	0
3/2/2015	7993500	20900	397300	0
3/9/2015	8009100	15600	397300	0
3/16/2015	8036300	27200	397300	0
3/23/2015	8068700	32400	397300	0
3/30/2015	8093800	25100	440800	43500
4/6/2015	8102400	8600	526000	85200
4/13/2015	8131000	28600	606500	80500
4/20/2015	8161500	30500	686200	79700
4/27/2015	8190200	28700	763500	77300
5/4/2015	8216500	26300	820200	56700
5/11/2015	8222100	5600	820200	0
5/18/2015	8246500	24400	820200	0
5/25/2015	8257000	10500	820200	0
6/1/2015	8257000	0	820200	0
6/8/2015	8282800	25800	856100	35900
6/15/2015	8295800	13000	856100	0
6/21/2015	8305500	9700	856100	0
6/28/2015	8328000	22500	856100	0
7/5/2015	8339400	11400	924300	68200
7/12/2015	8357100	17700	950400	26100
7/19/2015	8366200	9100	950400	0
7/26/2015	8366200	0	950400	0
8/2/2015	8372900	6700	953000	2600
8/9/2015	8372900	0	953000	0
8/16/2015	8372900	0	953000	0
8/23/2015	8372900	0	953000	0
8/30/2015	8385400	12500	1000600	47600
9/6/2015	8385600	200	1000600	0
9/13/2015	8390100	4500	1000600	0
9/20/2015	8416400	26300	1000600	0
9/27/2015	8416400	0	1000600	0
10/4/2015	8416400	0	1000600	0
10/11/2015	8416400	0	1000600	0
10/18/2015	8416400	0	1000600	0
10/25/2015	8416400	0	1000600	0
11/1/2015	8437400	21000	1000600	0
11/8/2015	8468000	30600	1000600	0
11/15/2015	8498900	30900	1000600	0
11/22/2015	8534600	35700	1000600	0
11/29/2015	8570300	35700	1000600	0
12/6/2015	8595600	25300	1000600	0
12/13/2015	8625100	29500	1010100	9500
12/20/2015	8629300	4200	1066800	56700
12/27/2015	8648300	19000	1142800	76000
Total		870600		974900
				1845500

Weekly Hydro Generation

	220 KVA Weekly Readings	Weekly KWH	500 KVA Weekly Readings	Weekly KWH
1/4/2016	8669100	20800	1225200	82400
1/11/2016	8688800	19700	1254100	28900
1/18/2016	8701900	13100	1335100	81000
1/25/2016	8733800	31900	1344100	9000
2/1/2016	8766000	32200	1344100	0
2/8/2016	8798500	32500	1391000	46900
2/15/2016	8812400	13900	1433500	42500
2/22/2016	8833600	21200	1492500	59000
2/29/2016	8855500	21900	1573300	80800
3/7/2016	8887900	32400	1654500	81200
3/14/2016	8919500	31600	1720500	66000
3/21/2016	8949800	30300	1800300	79800
3/28/2016	8951200	1400	1882000	81700
4/4/2016	8966600	15400	1963800	81800
4/11/2016	8977000	10400	2044400	80600
4/18/2016	8984700	7700	2119200	74800
4/25/2016	9003400	18700	2140200	21000
5/2/2016	9017900	14500	2140200	0
5/9/2016	9050000	32100	2140200	0
5/16/2016	9064000	14000	2140200	0
5/23/2016	9068800	4800	2140200	0
5/30/2016	9068800	0	2140200	0
6/6/2016	9068800	0	2140200	0
6/13/2016	9072200	3400	2140200	0
6/20/2016	9072200	0	2140200	0
6/27/2016	9072200	0	2140200	0
7/4/2016	9072200	0	2140200	0
7/11/2016	9072200	0	2140200	0
7/18/2016	9072200	0	2140200	0
7/25/2016	9072200	0	2140200	0
8/1/2016	9072200	0	2140200	0
8/7/2016	9072200	0	2140200	0
8/14/2016	9072200	0	2140200	0
8/21/2016	9072200	0	2140200	0
8/28/2016	9072200	0	2140200	0
9/4/2016	9072200	0	2140200	0
9/11/2016	9072200	0	2140200	0
9/18/2016	9072200	0	2140200	0
9/25/2016	9072200	0	2140200	0
10/2/2016	9072200	0	2140200	0
10/9/2016	9072200	0	2140200	0
10/16/2016	9072200	0	2140200	0
				1421300

Pierce Station Automatic Pond Level Control (APLC) Upgrades – Invoices

MPM GL Transactions Log - Transactions by InvcName, Date
10-1790-MC084A

Invoice Vendor	InvcVendName	Amount charged (Base)_1	Date/Time Processed	Journal Entry Name	Invoice number	Transaction type
80246P	C & T Marine Corp. (Clewes/C and T Marine)	$ 1,278.15	12/2/2014 13:22	AP-234889	2335-F	Invoice expense
78881P	Diamond Thermal Services (Diamond Technical)	$ 19.90	10/1/2014 17:11	AP-231675	1315	Invoice expense
78881P	Diamond Thermal Services (Diamond Technical)	$ 39.75	10/1/2014 17:11	AP-231675	1315	Invoice expense
78881P	Diamond Thermal Services (Diamond Technical)	$ 93.00	10/1/2014 17:11	AP-231675	1315	Invoice expense
74193P	Grainger, Inc.	$ 329.41	10/4/2014 16:06	AP-231922	9555862300	Invoice expense
74193P	Grainger, Inc.	$ 46.08	10/1/2014 17:22	AP-231681	9550281662	Invoice expense
74123P	MSC Industrial Supply Company	$ 7.52	10/23/2014 9:09	AP-232880	77220384	Invoice expense
74123P	MSC Industrial Supply Company	$ 318.20	10/23/2014 9:09	AP-232879	77220374	Invoice expense
80258P	Whitehall Control System	$ 5,876.35	9/10/2014 17:01	AP-230638	12656	Invoice expense
		$ 8,008.36				

C&T Marine

DEC 1 2014

C&T MARINE INC
1 BEECHWOOD COURT
PORTSMOUTH, VIRGINIA 23702
Phone (757) 545-0513 Fax (757) 545-0515

INVOICE

Invoice Number 2335-F
Invoice Date 11/17/2014

MONADNOCK PAPER MILLS
ANTRIM ROAD
BENNINGTON, NH 03442
(603)5888277
KEITH BLANC
ATTENTION: ACCOUNTS PAYABLE

COMPLETED 11/6/2014
Due Date
Terms NET-30

CUSTOMER I.D. MPM01
CONTRACT / P.O. # ~~90832~~ 91062

JOB ORDER NUMBER 2335

DESCRIPTION / SUBJECT: PIERCE HYDRO STATION

		UNIT	TOTAL
0001	ASSIST IN INSTALLATION OF POND LEVEL CONTROL AT PIERCE HYDRO STATION		
	8 HOURS @ $135.00/HR	$	1,080.00
	TRAVEL EXPENSE		
	HOTEL	$	-
	MEALS	$	9.00
	291 MILES @ $0.65/MI	$	189.15
	TOTAL	$	1,278.15
	PREVIOUSLY INVOICED	$	-
	AMOUNT THIS INVOICE		$1,278.15

MCO 8VA

Approved By:
Please Remit All Payments To:
C&T MARINE INC
1 Beechwood Court
Portsmouth, VA 23702

OR

E.F.T.
TIN: 46-4641032
NAME OF BANK: WELL'S FARGO
BANK ACCT. NUMMBER: 7514254288
BANK ROUTING NUMBER: 051400549
DUNS NUMBER: 079278777
CAGE CODE: OJZ79

Terms: All bills are due upon presentation. Those not paid within 30 days of the billing date will be subject to a finance charge computed on the basis of a PERIODIC RATE of one and one-half percent (1.5%) per month (18.0 ANNUAL PERCENTAGE RATE) on the unpaid balance.

DIAMOND THERMAL SYSTEMS
11 Depot Street
S. Grafton, MA 01560
Division of Benchmark Industries, Inc.

WWW.DIAMONDTHERMALSYSTEMS.COM

SEP 29 2014

Invoice

Date	Invoice #
9/26/2014	1315

Bill To	Ship To
Monadnock Paper Mills, Inc 117 Antrim Road Bennington, NH 03442-4205	Monadnock Paper Mills, Inc. 117 Antrim Road Bennington, NH 03442 Attn: Keith Blanc

P.O. No.	Terms	Due Date	Rep	Ship Date	Ship Via	FOB
90898	Net 30	10/26/2014	DS	9/26/2014	UPS	ORIGIN

Item	Description	Qty	Rate	Amount
CHR-386142	SRF 5-1CR Chromalox Self Regulating Heat Trace Cable: 5W/ft, 120VAC, Tinned Copper Braid, Polyolefin Outer Jacket	20	4.65	93.00
CHR-386206	RG-PK-1 Chromalox Roof & Gutter Power/End Termination Kit (1)	1	39.75	39.75
CHR-386257	RG-EK-1 Chromalox Roof & Gutter End Termination Kit (1)	1	8.25	8.25
Shipping & Handling	Shipping & Handling	1	11.65	11.65
	MARK ALL BOXES AND PACKING SLIPS PO# 90898			
	MCo 84A			

Thank you for this opportunity. We look forward to working with you on this and future projects.

Phone #	Fax #
508-887-8874	

Subtotal	$152.65
Sales Tax (0.0%)	$0.00
Total	**$152.65**

GRAINGER

370 E INDUSTRIAL PARK DR
MANCHESTER, NH 03109-5310
www.grainger.com

ORIGINAL INVOICE

GRAINGER ACCOUNT NUMBER	805943479
INVOICE NUMBER	9555862300
INVOICE DATE	09/30/2014
DUE DATE	10/30/2014
AMOUNT DUE	$596.69

SHIP TO

OCT 1 2014

MONADNOCK PAPER MILLS INC.
117 ANTRIM RD
STOCKROOM
BENNINGTON NH 03442-0000

PO NUMBER:	90911
CALLER:	KEITH BLANC
CUSTOMER PHONE:	6035883311
ORDER NUMBER:	1218631908
INCO TERMS:	FOB ORIGIN

BILL TO
MONADNOCK PAPER MILLS INC
NFIB 36263775
117 ANTRIM RD
BENNINGTON NH 03442-4205

THANK YOU!

FEI NUMBER 38-1150280
FOR QUESTIONS ABOUT THIS INVOICE OR ACCOUNT CALL *1-800-472-4643*

PO LINE #	ITEM #	DESCRIPTION	QUANTITY	UNIT PRICE	TOTAL
1	1LEZ3	SPIRAL WRAP MANUFACTURER # T25F-C	1	93.43	93.43
2	1LEZ4	SPIRAL WRAP MANUFACTURER # T38F-C	1	173.85	173.85
3	2GLP3	PLUG IN CIRCUIT BREAKER,15A,1P,10KA,240 MANUFACTURER # QO115EPD	1	329.41	329.41
		Delivery #6272121171 Date Shipped:09/30/2014 Carrier: UPS GROUND No:of Pkgs: Wt: 6.110 Trk #:1Z2X98300327023725 1Z2X98300327037934			

MC084A

INVOICE SUB TOTAL 596.69

These items are sold for domestic consumption. If exported, purchaser assumes full responsibility for compliance with US export controls. Diversion contrary to US law prohibited.

PAYMENT TERMS Net 30 days - PAY THIS INVOICE. NO STATEMENT SENT. PAYABLE IN U.S. DOLLARS.

AMOUNT DUE ***$596.69***

PLEASE DETACH THIS PORTION AND RETURN WITH YOUR PAYMENT

BILL TO:

MONADNOCK PAPER MILLS INC
NFIB 36263775
117 ANTRIM RD
BENNINGTON NH 03442-4205
UNITED STATES OF AMERICA

REMIT TO:
GRAINGER
DEPT. 805943479
PALATINE, IL 60038-0001

805943479955586230010000596691000000010000000100000014103091

X	ACCOUNT NUMBER	DATE	INVOICE NUMBER	AMOUNT DUE
	805943479	09/30/2014	9555862300	$596.69

FOR COMMENTS OR CHANGE OF ADDRESS, ENTER INFORMATION ON REVERSE SIDE

GRAINGER

370 E INDUSTRIAL PARK DR
MANCHESTER, NH 03109-5310
www.grainger.com

ORIGINAL INVOICE

GRAINGER ACCOUNT NUMBER	805943479
INVOICE NUMBER	9550281662
INVOICE DATE	09/23/2014
DUE DATE	10/23/2014
AMOUNT DUE	$46.08

SHIP TO

MONADNOCK PAPER MILLS INC. SEP 25 2014
117 ANTRIM RD
STOCKROOM
BENNINGTON NH 03442-0000

PO NUMBER:	900884
CALLER:	KEITH BLANC
CUSTOMER PHONE:	6035883311
ORDER NUMBER:	1218150686
INCO TERMS:	FOB ORIGIN

BILL TO
MONADNOCK PAPER MILLS INC
NFIB 36263775
117 ANTRIM RD
BENNINGTON NH 03442-4205

THANK YOU!

FEI NUMBER 36-1150280
FOR QUESTIONS ABOUT THIS INVOICE OR ACCOUNT CALL *1-800-472-4643*

PO LINE #	ITEM #	DESCRIPTION	QUANTITY	UNIT PRICE	TOTAL
1	5JMH7	SUPPORT GRIP,FIBER OPTIC,0.23-0.32 IN MANUFACTURER # 022291017 Delivery #6271517193 Date Shipped:09/23/2014 Carrier: UPS GROUND No:of Pkgs: Wt: 0.030 Trk #:1Z2X98300326391464 MC084A	1	46.08	46.08
				INVOICE SUB TOTAL	46.08

These items are sold for domestic consumption. If exported, purchaser assumes full responsibility for compliance with US export controls. Diversion contrary to US law prohibited.

PAYMENT TERMS Net 30 days - PAY THIS INVOICE. NO STATEMENT SENT. PAYABLE IN U.S. DOLLARS. *AMOUNT DUE* *$46.08*

▲ PLEASE DETACH THIS PORTION AND RETURN WITH YOUR PAYMENT ▲

BILL TO:

MONADNOCK PAPER MILLS INC
NFIB 36263775
117 ANTRIM RD
BENNINGTON NH 03442-4205
UNITED STATES OF AMERICA

REMIT TO:
GRAINGER
DEPT. 805943479
PALATINE, IL 60038-0001

805943479955028166210000046081000000010000000100000014102376

X	ACCOUNT NUMBER	DATE	INVOICE NUMBER	AMOUNT DUE
	805943479	09/23/2014	9550281662	$46.08

FOR COMMENTS OR CHANGE OF ADDRESS, ENTER INFORMATION ON REVERSE SIDE

INVOICE

75 MAXESS ROAD
MELVILLE NY 11747-0000

OCT 15 2014

Invoice Number	Purchase Order No.
77220384	90956

Ordered by: KEITH BLANC

Sub-Total:	7.52
Shipping, Handling & Surcharge:	0.00
Sales Tax:	0.00
Total:	**$7.52**

ORIGINAL PACKING SLIP #: 7722038

Customer Number: 00636157

Bill To: MONADNOCK PAPER MILLS,INC
117 ANTRIM ROAD
BENNINGTON NH 03442

Ship To: MONADNOCK PAPER MILLS INC.
STOCKROOM
117 ANTRIM ROAD
BENNINGTON NH 03442

Any questions or concerns? Please call your local branch or 1-800-645-7270 between 7:00AM and 11:00PM EST.

Packing Slip No.	Order Date	Invoice Date	Ship Via	Merchandise Total
7722038	10/08/14	10/08/14	UPS GROUND	7.52

Quantity Ordered	Quantity Shipped	Unit of Measure	MSC Item / Description	Manufacturer Item / Your Item	Unit Price	Discounted Unit Price	Extended Price	Tax
1	1	EA	60614666 8-7/8 X 6-7/8 PANELS	AW108P upc code: 0307820517934	10.03	7.5200	7.52	N

THANK YOU FOR YOUR ORDER

MC084A

VISA DISCOVER Set up payment processing via www.mscdirect.com or Call 1-800-645-7270 to make a payment today!

IMPORTANT - Please detach and return this portion to ensure proper credit. Be sure to include your customer number on your check.

This purchase is governed exclusively by MSC's Terms and Conditions that can be found in MSC's current catalog and at www.mscdirect.com. MSC's acceptance of your order is predicated on your assent to MSC's Terms and Conditions, unless you have entered into a separate product purchase agreement with MSC that continues to be in effect on the date of your order. Such agreement, depending upon its terms, may supersede MSC's Terms and Conditions.

Ordered By: KEITH BLANC
Payment Terms: OPEN ACCOUNT - N/30
Invoice Type: Open Account
Due Date: 11/07/14

Sub-Total:	7.52
Shipping, Handling & Surcharge:	0.00
Sales Tax:	0.00
Total:	**$7.52**

Customer Name	
MONADNOCK PAPER MILLS,INC	
Customer Number	**Invoice Number**
00636157	77220384
Amount Due	**Amount Enclosed**
$7.52	

Remit To:

MSC INDUSTRIAL SUPPLY CO.
DEPT CH 0075
PALATINE IL 60055-0075

00636157000000075200001077220384 4

INVOICE

75 MAXESS ROAD
MELVILLE NY 11747-0000

OCT 15 2014

Invoice Number	Purchase Order No.
77220374	90956

Ordered by: KEITH BLANC

Sub-Total:	318.20
Shipping, Handling & Surcharge:	0.00
Sales Tax:	0.00
Total:	**$318.20**

ORIGINAL PACKING SLIP #: 7722037

Customer Number: 00636157

Bill To: MONADNOCK PAPER MILLS,INC
117 ANTRIM ROAD
BENNINGTON NH 03442

Ship To: MONADNOCK PAPER MILLS INC.
STOCKROOM
117 ANTRIM ROAD
BENNINGTON NH 03442

Any questions or concerns? Please call your local branch or 1-800-645-7270 between 7:00AM and 11:00PM EST.

Packing Slip No.	Order Date	Invoice Date	Ship Via	Merchandise Total
7722037	10/08/14	10/08/14	UPS GROUND	318.20

Quantity Ordered	Quantity Shipped	Unit of Measure	MSC Item / Description	Manufacturer Item / Your Item	Unit Price	Discounted Unit Price	Extended Price	Tax
1	1	EA	64052749	1084-4XSCHC upc code: 78205170184 10X8X4 SS HINGED BOX NEMA 4X JIC ENCLOSURE	424.26	318.2000	318.20	N

THANK YOU FOR YOUR ORDER

MCO 84A

Set up payment processing via www.mscdirect.com or Call 1-800-645-7270 to make a payment today!

MSC products and services are subject to U.S. export control laws and regulations. Diversion contrary to U.S. law is prohibited.
See MSC's standard terms and conditions of sale for further information.

IMPORTANT - Please detach and return this portion to ensure proper credit. Be sure to include your customer number on your check.

This purchase is governed exclusively by MSC's Terms and Conditions that can be found in MSC's current catalog and at www.mscdirect.com. MSC's acceptance of your order is predicated on your assent to MSC's Terms and Conditions, unless you have entered into a separate product purchase agreement with MSC that continues to be in effect on the date of your order. Such agreement, depending upon its terms, may supersede MSC's Terms and Conditions.

Ordered By: KEITH BLANC
Payment Terms: OPEN ACCOUNT - N/30
Invoice Type: Open Account
Due Date: 11/07/14

Sub-Total:	318.20
Shipping, Handling & Surcharge:	0.00
Sales Tax:	0.00
Total:	**$318.20**

Customer Name	
MONADNOCK PAPER MILLS,INC	
Customer Number	**Invoice Number**
00636157	77220374
Amount Due	**Amount Enclosed**
$318.20	

Remit To:

MSC INDUSTRIAL SUPPLY CO.
DEPT CH 0075
PALATINE IL 60055-0075

00636157000003182060001O772203745

SEP 8 2014

Invoice

Whitehall Control Systems
Automated Motor Control

PO BOX 89
WOODVILLE, MA 01784

DATE	INVOICE #
7/25/2014	12656

BILL TO	SHIP TO
Monadnock Paper Mills 117 Atrim Road Bennington,NH 03442-4205	Monadnock Paper Mills 117 Atrim Road Bennington,NH 03442

P.O. NUMBER	TERMS	SHIP	VIA	F.O.B.	PROJECT
69368		7/25/2014			

QUANTITY	ITEM CODE	DESCRIPTION	PRICE EACH	AMOUNT
1	SERVICE	Control panel for level control at pierce station +Honey position motor+ 0-5 psi level probe	5,850.00	5,850.00
1	UPS	Shipping and Handling	26.35	26.35
1	SERVICE	set of gears	0.00	0.00

MC084A

Total $5,876.35

Phone #	E-mail
508-497-2475	rdwhitehallcontrolsys@verizon.net

Attachment 14

Project License – Issued by the Federal Energy Regulatory Commission (FERC)
(Issued 2014)

401 Water Quality Certificate (Issued 2016)

147 FERC ¶ 62,156
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Monadnock Paper Mills, Inc. Project No. 6597-013

ORDER ISSUING NEW LICENSE

(May 23, 2014)

INTRODUCTION

1. On July 31, 2012, Monadnock Paper Mills, Inc. (Monadnock Paper) filed, pursuant to sections 4(e) and 15 of the Federal Power Act (FPA),[1] an application for a new license to continue operation and maintenance of its Monadnock Hydroelectric Project No. 6597 (Monadnock Project or project). The project's authorized capacity being licensed is 1.889 megawatts (MW). The project has four developments, three of which have generating facilities, located along a five-mile reach of the Contoocook River in Hillsborough County, New Hampshire.[2] The project does not occupy any federal lands.

2. As discussed below, this order issues a new license for the project.

BACKGROUND

3. The Commission issued the original license for the project in 1984, and the license will expire on July 31, 2014.[3]

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[1] 16 U.S.C. §§ 797(e) and 808 (2012).

[2] The Contoocook River is a tributary of the Merrimack River, a navigable waterway of the United States. Because the project is located on a stream over which Congress has jurisdiction under the Commerce Clause, affects interstate commerce through its connection to an interstate power grid, and underwent post-1935 construction, it is required to be licensed pursuant to section 23(b) of the FPA. *See* 16 U.S.C. § 817 (2012).

[3] 28 FERC ¶ 62,280.

4. On January 17, 2013, the Commission issued a public notice that was published in the *Federal Register* accepting the application for filing; soliciting motions to intervene and protests; indicating the application was ready for environmental analysis; and soliciting comments, recommendations, preliminary terms and conditions, and preliminary fishway prescriptions.[4] The notice set March 18, 2013, as the deadline for filing motions to intervene, protests, comments, recommendations, preliminary terms and conditions, and preliminary prescriptions. American Whitewater and the Merrimack Valley Paddlers jointly filed comments and a timely motion to intervene.[5] The U.S Department of the Interior (Interior) and the New Hampshire Department of Environmental Services (New Hampshire DES) filed comments and recommendations.

5. An Environmental Assessment (EA) was prepared by Commission staff and issued on July 16, 2013, analyzing the impacts of the proposed project and alternatives to it. Monadnock Paper filed comments on the EA on August 16, 2013. Interior filed comments on the EA on August 19, 2013, and September 24, 2013. The interventions, comments, and recommendations have been fully considered in determining whether, and under what conditions, to issue the license.

PROJECT DESCRIPTION

A. Project Facilities

6. The 1.889-MW Monadnock Project consists of four developments: Powder Mill, Monadnock, Pierce, and Paper Mill (listed from upstream to downstream). The Powder Mill Development is a storage development that includes a dam and impoundment, but no generating facilities. The Monadnock, Pierce, and Paper Mill Developments operate in a run-of-river mode and each includes a dam, powerhouse, and impoundment. The developments are described in more detail below.

Powder Mill Development

7. The Powder Mill Development consists of: (1) a 366-foot-long, 18.6-foot-high dam at river mile (RM)[6] 46.08, with a spillway section that has a crest elevation of

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[4] 78 *Fed. Reg.* 6314 (January 30, 2013).

[5] Timely, unopposed motions to intervene are granted by operation of Rule 214(c) of the Commission's Rules of Practice and Procedure. *See* 18 C.F.R. § 385.214(c) (2013).

[6] In this order, river mile is defined as the distance in miles along the Contoocook River's course, starting from its confluence with the Merrimack River.

675.44 feet National Geodetic Vertical Datum of 1929 (NGVD) plus 2-foot-high flashboards; (2) a 435-acre impoundment with a normal maximum water surface elevation of 677.44 feet NGVD with the flashboards; (3) a 15-foot-wide, 35-foot-long regulating gatehouse structure with four 2.5-foot-wide, 2.5-foot-high wooden vertical slide gates; (4) a 21-foot-long outlet pipe at the base of the dam; and (5) appurtenant facilities.

8. There are no project recreational facilities at this development; however, a boat launch located in the project boundary at Route 202 provides informal access to the Powder Mill impoundment about 0.5 RM upstream of the Powder Mill dam.

Monadnock Development

9. The Monadnock Development is located approximately 4,200 feet downstream of the Powder Mill dam. The Monadnock Development consists of: (1) a 515-foot-long, 22-foot-high dam at RM 45.28 with a 165-foot-long spillway section with a crest elevation of 663.8 feet NGVD plus 2-foot-high flashboards; (2) a 5-acre impoundment with a normal maximum water surface elevation of 665.88 feet NGVD (1 inch above the top of the flashboards); (3) a 32-foot-wide, 14-foot-high intake structure equipped with four 5.5-foot-wide, 8-foot-high headgates; (4) a 75-foot-long, 20-foot-wide powerhouse at the west end of the dam containing one 125-kilowatt (kW) turbine-generating unit and one 298-kW turbine-generating unit for a total installed capacity of 423 kW; (5) a local transmission system that connects all three power-generating developments to Monadnock Paper's production facility and includes: (a) two 2.3-kilovolt (kV) generator leads, one 20 feet long and one 25 feet long; (b) a 2,190-foot-long, 2.3-kV transmission line; and (c) a 200-foot-long, 2.3-kV supply bus; (6) a 100-foot-long tailrace; and (7) appurtenant facilities.

10. The Monadnock Development creates a 50-foot-long bypassed reach. Monadnock Paper operates and maintains a tailwater fishing access site at the Monadnock Development. The site includes a parking area on the western shoreline along a retaining wall downstream of Monadnock dam.

Pierce Development

11. The Pierce Development is located approximately 900 feet downstream of the Monadnock dam. The Pierce Development consists of: (1) a 420-foot-long, 28-foot-high dam at RM 45.11 that includes a 290-foot-long spillway with a crest elevation of 651.4 feet NGVD, 2-foot-high flashboards, and a 10.0-foot-wide, 0.5-foot-high minimum flow notch; (2) a 7-acre impoundment with a normal maximum water surface elevation of 653.4 feet NGVD with the flashboards; (3) a 32-foot-wide, 21-foot-high intake structure equipped with three 9-foot-wide, 12-foot-high wooden slide gates; (4) a 25-foot-long, 35-foot-wide powerhouse at the east end of the dam containing one 500-kW turbine-generating unit and one 220-kW turbine-generating unit for a total installed capacity of

720 kW; (5) two 2.3-kV generator leads, one 15 feet long and one 25 feet long, that connect the powerhouse to the project's 2,190-foot-long, 2.3-kV transmission line; (6) a 600-foot-long tailrace; and (7) appurtenant facilities.

12. The Pierce Development creates a 750-foot-long bypassed reach. There are no project recreation facilities at this development.

Paper Mill Development

13. The Paper Mill Development is located approximately 1,140 feet downstream of the Pierce dam. The Paper Mill Development consists of: (1) a 280-foot-long, 19-foot-high dam at RM 44.9 that includes a 142-foot-long gravity spillway with a crest elevation of 627.6 feet NGVD;[7] (2) a 6-foot-wide, 8-foot-high timber waste gate with a 6-foot-wide, 6-foot-high minimum flow cut-out; (3) a 5-acre impoundment with a normal maximum water surface elevation of 627.6 feet NGVD; (4) a 300-foot-long, 24-foot-wide power canal and headgate structure with three 6-foot-wide, 8-foot-high wooden slide gates and a 24-foot-wide, 10-foot-long forebay; (5) a 30.0-foot-wide, 7.5-foot-high intake structure and a 10-foot-diameter, 200-foot-long steel penstock; (6) a 22-foot-wide, 27-foot-long generating room (powerhouse) located on the lower level of Monadnock Paper's production facility containing a 746-kW turbine generating unit; (7) a 150-foot-long, 2.3-kV generator lead that connects the powerhouse to the project's 2,190-foot-long, 2.3-kV transmission line; (8) a 186-foot-long tailrace; and (9) appurtenant facilities.

14. The Paper Mill Development creates a 1,300-foot-long bypassed reach. Monadnock Paper operates and maintains a boat launch facility at the tailrace of this development. This recreation facility includes a parking area, picnic tables, benches, a foot trail, and a put-in for launching non-motorized boats at the confluence of the Paper Mill Development tailrace and the Contoocook River.

B. Project Boundary

15. The project boundary encloses 633 acres and covers approximately 5 miles of the Contoocook River from the upstream end of the Powder Mill impoundment to approximately 1,000 feet downstream of the confluence of the Paper Mill tailrace and bypassed reach. The project boundary around the impoundments is generally established by contour elevations that are the impoundments' normal maximum water surface elevations. At the dams, powerhouses, and recreation areas, the boundary is established by metes and bounds. At the downstream end of the Paper Mill Development, the

[7] The Paper Mill spillway is configured for 2-foot-high flashboards, but Monadnock Paper does not install them because they could cause overtopping of the power canal during floods.

boundary encloses approximately 1,000 feet of the Contoocook River downstream of the Paper Mill tailrace and more than 30 acres of land that is occupied by the project's powerhouse, a portion of the project's transmission system, a project recreation area, and Monadnock Paper's non-project production facility.

C. Current Project Operation

16. As discussed in more detail below, the Powder Mill Development, which produces no power, is operated in a store-and-release mode where the impoundment is generally maintained at a stable elevation during the winter and summer and allowed to fluctuate up to 4 feet during the spring and fall. The three downstream developments are operated in run-of-river mode year round. Combined, the three downstream developments generate approximately 6,085 megawatt-hours (MWh) annually.

17. The Powder Mill, Monadnock, and Pierce Developments have 2-foot-high flashboards that are designed to fail when overtopped by 2 feet. The flashboards are typically installed year-round except during periods when they have failed from overtopping due to ice and/or high flows. Flashboard failures are infrequent, but when they do occur it is typically during spring run-off (i.e., between March and April). Failed flashboards are reinstalled when the water surface elevations decrease to between 0.5 to 1.0 foot below each dam's spillway crest elevation.

Powder Mill Development

18. Inflow to the Powder Mill Development enters the impoundment after passing through the upstream Noone Mills Hydroelectric Project (FERC Project No. 4318) which is located approximately 10 miles upstream of the Powder Mill dam. Water from the Powder Mill impoundment is released through the wooden slide gates and outlet pipe at the base of the dam during normal operation and over the spillway during high flows. The Powder Mill Development operates in a store-and-release mode where water is stored during high flow periods to be released later for downstream generation at the Monadnock, Pierce, and Paper Mill Developments.

19. During normal operation, Monadnock Paper maintains the impoundment water surface elevation between elevations 673.44 (4.0 feet below the normal maximum water surface elevation) and 677.44 feet NGVD (top of the flashboards). Impoundment drawdowns greater than 2 feet below the normal maximum water surface elevation (677.44 feet NGVD) occur infrequently and drawdowns 4 feet below the normal maximum water surface elevation are rare.

20. Monadnock Paper is required by the current license to release a year-round minimum flow of 13 cubic feet per second (cfs), or inflow (whichever is less), immediately downstream of the Powder Mill dam. However, in order to meet a required 70-cfs minimum flow downstream of the Paper Mill Development, Monadnock Paper

releases a year-round minimum flow of 70-cfs, or inflow (whichever is less), from the Powder Mill Development. When the impoundment is full (i.e., at elevation 677.44 feet NGVD) and inflow is less than 70 cfs, Monadnock Paper typically releases all inflow through one of the vertical slide gate openings. When the impoundment is full and inflow is greater than 70 cfs but less than 270 cfs (i.e., the hydraulic capacity of the four vertical slide gates), Monadnock Paper releases all inflow through one or more of the four vertical slide gates. When the impoundment is full and inflow is greater than 270 cfs, the four vertical slide gates operate at maximum hydraulic capacity and all remaining flow is passed over the spillway.

Monadnock Development

21. The Monadnock Development operates in a run-of-river mode. During normal operation, Monadnock Paper maintains the impoundment water surface elevation at or above 665.88 feet NGVD (1 inch above the top of the flashboards). Inflow from the Powder Mill Development is either released through the powerhouse or passed over the spillway.

22. Monadnock Paper is required by the current license to release a year-round minimum flow of 13 cfs or, inflow (whichever is less), to the bypassed reach. The Monadnock Development uses flows between 77 cfs (minimum hydraulic capacity of the powerhouse) and 314 cfs (maximum hydraulic capacity of the powerhouse) to generate electricity. When inflow is less than 90 cfs (the minimum operating capacity of the powerhouse plus the minimum flow), the Monadnock Development does not operate and all flow is released over the spillway into the bypassed reach. At flows between 90 and 327 cfs (the minimum and maximum operating capacities of the powerhouse plus the minimum flow), 13 cfs is released into the bypassed reach and the remaining flow is used for generation and released through the powerhouse. At flows greater than 327 cfs, the Monadnock Development operates at its maximum capacity and all remaining flow is passed over the spillway.

Pierce Development

23. The Pierce Development operates in a run-of-river mode. During normal operation, Monadnock Paper maintains the impoundment water surface elevation at or above 653.4 feet NGVD (top of the flashboards). Inflow from the Monadnock Development is either released through the powerhouse or passed over the spillway.

24. Monadnock Paper is required by the current license to release a year-round minimum flow of 13 cfs or, inflow (whichever is less), to the bypassed reach. The Pierce Development uses flows between 26 cfs (minimum hydraulic capacity of the powerhouse) and 436 cfs (maximum hydraulic capacity of the powerhouse) to generate electricity. When inflow is less than 39 cfs (the minimum operating capacity of the powerhouse plus the minimum flow), the Pierce Development does not operate and all

flow is released over the spillway into the bypassed reach. At flows between 39 and 449 cfs (the minimum and maximum operating capacities of the powerhouse plus the minimum flow), 13 cfs is released through the minimum flow notch in the spillway to the bypassed reach and the remaining flow is used for generation and released through the powerhouse. At flows greater than 449 cfs, the Pierce Development operates at its maximum capacity, and all remaining flow is passed over the spillway.

Paper Mill Development

25. There are no flashboards at the Paper Mill Development. The Paper Mill Development operates in a run-of-river mode where Monadnock Paper maintains the impoundment water surface elevation at or above 627.6 feet NGVD (spillway crest elevation) with minimal impoundment fluctuation. Inflow from the Pierce Development is released through the powerhouse, passed over the spillway, or released through the minimum flow cut-out in the timber waste gate.

26. Monadnock Paper is required to release a year-round minimum flow of 13 cfs or, inflow (whichever is less), into the bypassed reach[8] and release a year-round minimum flow of 70 cfs, or inflow (whichever is less), downstream of the Paper Mill Development at the confluence of the Paper Mill tailrace and bypassed reach.

27. The Paper Mill Development uses flows between 140 cfs (minimum hydraulic capacity of the powerhouse) and 466 cfs (maximum hydraulic capacity of the powerhouse) to generate electricity. When inflow is less than 153 cfs (the minimum operating capacity of the powerhouse plus the minimum bypassed reach flow), the Paper Mill Development does not operate and all flow is released over the spillway into the bypassed reach. At flows between 153 and 479 cfs (the minimum and maximum operating capacities of the powerhouse plus the minimum bypassed reach flow), 13 cfs is released through the minimum flow cut-out in the timber waste gate to the bypassed reach and the remaining flow is used for generation and released through the powerhouse. At flows greater than 479 cfs, the Paper Mill Development operates at its maximum capacity and all remaining flow is passed over the spillway.

D. Relicensing Proposal

28. Monadnock Paper proposes to continue to operate the Monadnock, Pierce, and Paper Mill Developments in run-of-river mode and provide the same minimum flows as it is currently required to release. It also proposes to continue to allow public access to

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[8] Monadnock Paper typically releases a minimum flow just above the required 13-cfs minimum flow in the bypassed reach based on the size of the cut-out in the timber waste gate.

lands within the project boundary and to continue to operate and maintain the Monadnock tailwater fishing access site and the Paper Mill boat launch facility.

29. At the Powder Mill Development, Monadnock Paper proposes to: (1) increase the minimum flow released downstream of the dam, from 13 cfs to 70 cfs or inflow, whichever is less; (2) maintain a stable impoundment during winter ice-in conditions; (3) maintain the impoundment at elevation 677.44 feet NGVD from May 1 through August 31; and (4) discontinue drawdowns greater than 3 feet below the top of the flashboards.

30. Monadnock Paper proposes to install signage to mark public access areas and restricted areas. It also proposes to implement an historic properties management plan (HPMP), filed with the Commission on May 9, 2013, that establishes: (1) a process for identifying the nature and significance of historic properties that may be affected by project maintenance and operation and/or public access; (2) a decision-making process for considering potential effects to historic properties; (3) goals for the preservation of historic properties; (4) guidelines for routine maintenance and operation activities as they relate to historic properties; and (5) procedures for consulting with the New Hampshire State Historic Preservation Officer (New Hampshire SHPO).

SUMMARY OF LICENSE REQUIREMENTS

31. As summarized below, the license, which authorizes 1.889 MW of renewable energy, requires a number of measures to protect and enhance fisheries resources, water quality, terrestrial resources, recreation, and cultural resources at the project.

32. To protect water quality and aquatic habitat in the Contoocook River, the license requires Monadnock Paper to operate the Powder Mill Development in a store-and-release mode and operate the three downstream developments in a run-of-river mode. In addition, the license requires Monadnock Paper to provide a 70-cfs minimum flow downstream of the Powder Mill and Paper Mill Developments to protect aquatic resources downstream of Powder Mill and areas downstream of the Paper Mill tailrace. To protect aquatic habitat in the project bypassed reaches, the license requires a 13-cfs minimum flow in the bypassed reaches of the Monadnock, Pierce, and Paper Mill developments. To monitor water quality, flow releases, and impoundment levels, the license requires Monadnock Paper to develop and implement plans.

33. To protect native wetlands and fish and wildlife habitat at the project, the license requires Monadnock Paper to develop a plan to monitor invasive plants and participate in the development of a long-term management plan to control invasive species in the Powder Mill impoundment.

34. To enhance and maintain recreational opportunities at the project, the license requires Monadnock Paper to develop a recreation plan that includes: (1) plans for installing public safety and informational signage within the project boundary; and (2)

provisions for operating and maintaining the Monadnock tailwater fishing access site, Paper Mill tailwater boat launch, and the Route 202 boat launch.

35. To protect cultural resources, the license requires Monadnock Paper to implement the HPMP for the project included in a Programmatic Agreement (PA) executed between the Federal Energy Regulatory Commission and the New Hampshire Division of Historical Resources on October 29, 2013.

WATER QUALITY CERTIFICATION

36. Under section 401(a)(1) of the Clean Water Act (CWA),[9] the Commission may not issue a license authorizing the construction or operation of a hydroelectric project unless the state water quality certifying agency either has issued water quality certification (certification) for the project or has waived certification by failing to act on a request for certification within a reasonable period of time, not to exceed one year. Section 401(d) of the CWA provides that the certification shall become a condition of any federal license that authorizes construction or operation of the project.[10]

37. On February 1, 2013, Monadnock Paper applied to the New Hampshire DES for water quality certification for the Monadnock Project, which New Hampshire DES received on February 1, 2013. On January 31, 2014, New Hampshire DES issued a water quality certification for the Monadnock Project that contains 14 conditions. Eight of the conditions are general or administrative and are not discussed further.

Certification Conditions

38. Condition E-9 requires Monadnock Paper to: (1) operate the Powder Mill Development in a store-and-release mode; (2) maintain the Powder Mill Development at or above a water surface elevation of 677.44 feet NGVD (top of flashboards) from January 1 to February 28 and from May 1 to August 31, maintain the impoundment at or above elevation 676.94 feet NGVD from November 1 to December 31, and maintain the impoundment between elevations 674.44 and 677.44 feet NGVD during the remainder of the year; (2) operate the Monadnock, Pierce, and Paper Mill developments in a run-of-river mode; (3) reinstall flashboards as soon as practicable after a failure or temporary removal; (4) release 13 cfs, or inflow, whichever is less, into the Monadnock, Pierce and Paper Mill bypassed reaches; and (6) release 70 cfs or inflow, whichever is less, immediately downstream of the Powder Mill and Paper Mill Developments.

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[9] 33 U.S.C. §1341(a)(1) (2012).

[10] 33 U.S.C. §1341(d) (2012).

39. Condition E-10 requires Monadnock Paper to develop an operation and maintenance plan that describes procedures for complying with the requirements of condition E-9.

40. Condition E-11 requires Monadnock Paper to develop a plan for monitoring and reporting project operation, including impoundment elevations, inflows, turbine flows, bypassed reach flows, and power generation.

41. Condition E-12 requires Monadnock Paper to develop a plan to monitor, analyze, and report water quality in the project area.

42. Condition E-13 requires Monadnock Paper to develop a plan to monitor and control invasive species in the project area.

43. Condition E-14 requires Monadnock Paper to construct, operate and maintain fishways if required by the Secretary of U.S. Department of the Interior, pursuant to section 18 of the Federal Power Act.

Impoundment Refill Procedure

44. Condition E-9(h) establishes procedures for refilling the impoundments after flashboard replacement or drawdowns for maintenance or emergencies. Specifically, condition E-9(h) requires that when inflow to the impoundment exceeds 93 cfs during refill, Monadnock Paper release 70 cfs downstream and store all flow in excess of 70 cfs. When inflow is less than 93 cfs, condition E-9(h) requires Monadnock Paper to pass 75 percent of the inflow downstream and use the remaining 25 percent to refill the impoundment.

45. In a letter filed on March 14, 2013, Interior recommended that Monadnock Paper refill the impoundments by passing 50 percent of inflow downstream and storing the remaining flow. In the EA,[11] staff recommended this procedure because it would ensure that dewatered littoral habitat and freshwater mussels in the impoundments are rewetted (inundated) in a reasonable time while ensuring that downstream flows and habitat are protected. Condition E-9(h), which is discussed below, would also ensure downstream flows are maintained while refilling the impoundments in a timely manner.

Water Quality Monitoring

46. Condition E-12 requires Monadnock Paper to monitor water quality in the Powder Mill and Monadnock impoundments, in the Contoocook River downstream of the Powder Mill dam, in the Pierce and Paper Mill bypassed reaches, and in the Contoocook River

[11] *See* EA at 74.

downstream of the Paper Mill Development to ensure that the required minimum flows meet New Hampshire DES water quality standards.

47. While dissolved oxygen (DO) levels of water entering the project area can be impaired at times, in its license application, Monadnock Paper presented the results of a water quality survey that demonstrates that DO generally meets New Hampshire DES standards during warm, low-flow periods. In the EA, staff concluded that the project would not likely contribute to or exacerbate DO problems in the Contoocook River because the project would not store any water or change flows (i.e. it would operate in run-of-river mode) during the summer when low DO is most likely to occur.[12] Based on this information, staff did not recommend requiring water quality monitoring. However, water quality monitoring is required by condition E-12 of the certification and is therefore made part of the license.

48. All 14 conditions of the certification are set forth in Appendix A of this order and incorporated into the license by ordering paragraph (D). Article 401 requires the licensee to file, for Commission approval, plans and reports required by the certification conditions, notify the Commission of emergencies and other activities, and file amendment applications, as appropriate.

COASTAL ZONE MANAGEMENT ACT

49. Under section 307(c)(3)(A) of the Coastal Zone Management Act (CZMA),[13] the Commission cannot issue a license for a project within or affecting a state's coastal zone unless the state CZMA agency concurs with the license applicant's certification of consistency with the state's CZMA program, or the agency's concurrence is conclusively presumed by its failure to act within six months of its receipt of the applicant's certification.

50. Because the Monadnock Project is not located within New Hampshire's coastal zone and would not affect coastal resources, the New Hampshire DES found that a consistency certification is not required.[14]

SECTION 18 FISHWAY PRESCRIPTIONS

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[12] *See* EA at 79.

[13] 16 U.S.C. §1456(c)(3)(A) (2012).

[14] *See* record of communication with Chris Williams, New Hampshire DES, filed April 22, 2013.

51. Section 18 of the FPA[15] provides that the Commission shall require the construction, maintenance, and operation by a licensee of such fishways as may be prescribed by the Secretary of the Interior or Secretary of Commerce, as appropriate.

52. By letter filed March 14, 2013, the Secretary of Interior (Interior) requested that the Commission reserve authority to prescribe fishways. Consistent with Commission policy, Article 402 of the license reserves the Commission's authority to require fishways that may be prescribed by Interior for the Monadnock Project.

THREATENED AND ENDANGERED SPECIES

53. Section 7(a)(2) of the Endangered Species Act of 1973[16] requires federal agencies to ensure that their actions are not likely to jeopardize the continued existence of federally listed threatened and endangered species, or result in the destruction or adverse modification of their designated critical habitat.

54. In a letter dated January 7, 2014,[17] the U.S. Fish and Wildlife Service stated that no federally listed or proposed threatened or endangered species or critical habitat are known to occur in the project area. In the EA, staff concluded that none of the proposed action alternatives would affect federally listed threatened or endangered species or adversely modify any critical habitat. Therefore, no further action under the Endangered Species Act is required.

NATIONAL HISTORIC PRESERVATION ACT

55. Under section 106 of the National Historic Preservation Act (NHPA)[18] and its implementing regulations,[19] federal agencies must take into account the effect of any proposed undertaking on properties listed or eligible for listing in the National Register of Historic Places (National Register), defined as historic properties, and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on the undertaking. This generally requires the Commission to consult with the State Historic Preservation Officer (SHPO) to determine whether and how a proposed action may affect historic properties, and to seek ways to avoid or minimize any adverse effects.

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[15] 16 U.S.C. § 811 (2012).

[16] 16 U.S.C. § 1536(a) (2012).

[17] Letter added to public record by staff on January 24, 2014.

[18] 16 U.S.C. § 470 *et seq.* (2012).

[19] 36 C.F.R. Part 800 (2013).

56. The Pierce dam and powerhouse, Monadnock dam and powerhouse, Paper Mill dam, and Monadnock Paper's production facility are contributing structures of the town of Bennington Historic District, which was listed in the National Register in April 2010. New Hampshire Covered Bridge No. 8, which is located at the southern end of the Powder Mill impoundment and maintained by the New Hampshire Department of Transportation (New Hampshire DOT), is an individual historic property listed in the National Register and located within the project's Area of Potential Effect (APE). In a letter filed on September 16, 2009, the New Hampshire SHPO indicated that Monadnock Paper's production facility is eligible for listing in the National Register.

57. Monadnock Paper conducted an Archeological Phase IA study within the project's APE that identified 36 archeologically sensitive areas at the Powder Mill, Monadnock, and Paper Mill Developments. Of the total 36 areas, 32 were identified as medium or high sensitivity areas for intact Native American archeological resources, while the remaining four were identified as areas of sensitivity for historic Euro-American archeological resources. The study report concluded that the majority of the 36 archeologically sensitive areas are currently exposed to varying degrees of erosion due to their proximity to laterally cut riverbanks, riverbank undercutting, and bank slumping. The report also concluded that recreational access to certain areas within the project's APE could potentially affect archeologically sensitive areas, but to lesser degree than erosion.

58. To protect existing archeological resources and listed and eligible historic properties that could be affected by project-related activities, Monadnock Paper prepared an HPMP in consultation with the New Hampshire SHPO and filed the HPMP with the Commission on May 9, 2013. In the EA, Commission staff determined that relicensing the project would not likely have an effect on the identified historic resources because no new construction is proposed and there is no evidence to suggest that continued project operations would contribute to shoreline erosion at the known archeological sensitive areas at the project. However, with implementation of the HPMP, any potential adverse effects on historic properties at the project from future project-related modifications would be avoided or mitigated.[20] On October 29, 2013, the Commission executed a Programmatic Agreement (PA) with the New Hampshire SHPO and invited Monadnock Paper to concur. Monadnock Paper concurred. Execution of the PA demonstrates the Commission's compliance with section 106 of the NHPA. Article 404 requires Monadnock Paper to implement the PA and its approved HPMP.

RECOMENDATIONS OF FEDERAL AND STATE FISH AND WILDLIFE AGENCIES PURSUANT TO SECTION 10(j) OF THE FPA

[20] *See* EA at 59.

59. Section 10(j)(1) of the FPA[21] requires the Commission, when issuing a license, to include conditions based on recommendations submitted by federal and state fish and wildlife agencies pursuant to the Fish and Wildlife Coordination Act,[22] to "adequately and equitably protect, mitigate damages to, and enhance fish and wildlife (including related spawning grounds and habitat)" affected by the project.

60. In response to the January 17, 2013, public notice that the project was ready for environmental analysis, Interior filed seven recommendations under section 10(j).[23] Three recommendations were determined to be outside the scope of section 10(j) and are discussed in the next section. The license includes conditions consistent with one of the remaining four recommendations made by Interior: prepare a plan for monitoring run-of-river operation and minimum bypassed reach flows (certification condition E-10).

61. In the EA, staff recommended the impoundment refill procedures recommended by Interior under section 10(j);[24] however, the certification requires different impoundment refill procedures that would provide essentially the same environmental protection. Because the refill procedures included in the certification are mandatory,[25] they are required by the license (certification condition E-9(h)) and the refill procedure recommended by Interior is not included in the license because its implementation would conflict with condition E-9(h).

62. Commission staff made an initial determination that portions of two of Interior's recommendations may be inconsistent with the comprehensive planning standard of section 10(a)(1) and the public interest standard of section 4(e) of the FPA. By letter dated July 22, 2013, Commission staff advised Interior of its preliminary determination and attempted to resolve the apparent inconsistency. Interior filed a letter September 18, 2013, that it did not wish to pursue a section 10(j) meeting to attempt to resolve the inconsistencies; therefore, no resolution of the inconsistencies could be reached.

Powder Mill Impoundment Elevations

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[21] 16 U.S.C. § 803(j)(1) (2012).

[22] 16 U.S.C. §§ 661 *et seq.* (2012).

[23] Interior filed the recommendations on March 14, 2013, and revised two of the seven recommendations in a letter filed September 24, 2013.

[24] *See* EA at 74.

[25] *See* American Rivers v. FERC, 129 F.3d 99 (2nd Cir. 1997).

63. Interior recommended (recommendation 2) limiting drawdown of the Powder Mill impoundment to elevation 675.44 feet NGVD to protect mussels and control invasive plants. Historically, Monadnock Paper has operated the Powder Mill impoundment between elevations 673.44 and 677.44 feet NGVD. In its license application, Monadnock Paper proposed to modify operation of this development and limit drawdowns to 674.44 feet NGVD. In the EA,[26] staff concluded that there is no evidence that drawdowns below 675.44 feet NGVD are harming aquatic resources and that implementing this requirement would unnecessarily limit some of Monadnock Paper's operational flexibility. Because Interior's recommendation to restrict drawdowns at the Powder Mill Development to 675.44 feet NGVD does not appear necessary for protecting existing aquatic resources in the Powder Mill impoundment, this recommendation is not included in the license.

Pierce and Paper Mill Minimum Bypassed Reach Flows

64. In its license application, Monadnock Paper proposed to continue to release a 13-cfs minimum flow in the bypassed reaches of the Pierce and Paper Mill Developments. Interior recommended (recommendation 3) minimum bypassed reach flows of 40 cfs at the Pierce Development and 60 cfs at the Paper Mill Development to increase available habitat for adult and juvenile brown trout, adult longnose dace, and benthic macroinvertebrates. In the EA,[27] staff concluded that Interior's recommended minimum flows would not provide any benefit for brown trout because the trout fishery is primarily a recreational put-and-take fishery that is supported by stocking. Staff also concluded that there is no evidence that the existing aquatic resources are limited by the existing 13-cfs bypassed reach flows. Because Interior's recommended bypassed reach flows would have no significant benefits for aquatic resources that would justify the $21,740 and $25,250 annual cost at the Pierce and Paper Mill Developments, respectively, the license does not adopt Interior's recommended minimum bypassed reach flows. Instead, the license requires Monadnock Paper to continue to provide 13-cfs minimum bypassed reach flows at the Pierce and Paper Mill Developments (certification condition E-9(g)). These flows would continue to protect fish in the Pierce and Paper Mill bypassed reaches during operation of the Monadnock Project.

Conclusion

65. For the above reasons, in accordance with FPA section 10(j)(2)(A), Interior's recommendations 2 and 3 are inconsistent with the comprehensive planning standard of sections 4(e) and 10(a) of the FPA. In accordance with section 10(j)(2)(B) of the FPA, the measures required by the license, including the Powder Mill impoundment water

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[27] *See* EA at 77 and 78.

surface elevation restrictions and the 13-cfs Pierce and Paper Mill bypassed reach minimum flows, will adequately and equitably protect, mitigate damages to, and enhance fish and wildlife resources affected by this project.

SECTION 10(a)(1) OF THE FPA

66. Section (10)(a)(1) of the FPA[28] requires that any project for which the Commission issues a license be best adapted to a comprehensive plan for improving or developing a waterway or waterways for the use or benefit of interstate or foreign commerce; for the improvement and utilization of waterpower development; for the adequate protection, mitigation, and enhancement of fish and wildlife; and for other beneficial public uses, including irrigation, flood control, water supply, recreation, and other purposes.

A. Interior Recommendations

67. Interior made three recommendations under section 10(j) that are not specific measures to protect, mitigate damages to, or enhance fish and wildlife. Consequently, these recommendations are not considered under section 10(j) of the FPA, but are considered under the broad public-interest standard of section 10(a)(1).

Run-of-River Operation of the Powder Mill Development

68. Interior recommended (recommendation 1) that Monadnock Paper operate the Powder Mill Development in a run-of-river mode. In the EA,[29] staff did not recommend this measure because: (1) there is no evidence that the ongoing, infrequent fluctuations of the impoundment adversely affect aquatic resources; and (2) the measure would unnecessarily limit operational flexibility. In a letter filed on September 24, 2013, Interior modified its recommendation to allow for occasional drawdowns of the Powder Mill impoundment, except from January 1 to February 28 and from May 1 to August 31 when the development would be operated in run-of-river mode. Interior's modified recommendation is consistent with certification condition E-9 which is required by the license.

Water Quality Study

69. Interior recommended (recommendation 5) that Monadnock Paper monitor water quality for a minimum of three years after the license is issued. In the EA, staff

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[28] 16 U.S.C. § 803(a)(1) (2012).

[29] *See* EA at 76.

concluded that the project would not be likely to affect water quality in the Contoocook River because the project would not store any water or change flows (i.e., it would operate in run-of-river mode) during the summer when low DO is most likely to occur.[30] However, water quality monitoring consistent with Interior's recommendation 5 is required by certification condition E-12 and is therefore made part of the license.

Invasive Species Plan

70. Interior recommended (recommendation 7) that Monadnock Paper develop a plan for monitoring and controlling invasive species at the project. In the EA,[31] Commission staff recommended this measure because variable leaf milfoil, yellow iris, and purple loosestrife, which occur in the project area, can adversely affect native wetland plant communities and reduce their value as wildlife foraging and nesting habitat. Interior's recommendation for an invasive species plan is consistent with certification condition E-13; therefore, it is required by the license.

B. Comments on the EA

Impoundment Elevations

71. Water quality certification condition E-9(b) requires the licensee to maintain the Powder Mill impoundment at elevation 677.44 feet NGVD from January 1 to February 28, and from May 1 to August 31. In comments on the EA, Monadnock Paper states that high flow river conditions could prevent reinstallation of flashboards to achieve the January 1 and May 1 target elevation (i.e., 677.44 feet NGVD) for the Powder Mill impoundment. Monadnock Paper also notes that requiring the Powder Mill impoundment to be maintained at elevation 677.44 feet NGVD from May 1 through August 31 would limit its ability to draw down the impoundment for annual maintenance. However, condition E-9 specifies that the flashboards should be reinstalled as soon as reasonably practical and contemplates temporary modification of the operating regime for activities such as annual maintenance. These exceptions should allow Monadnock Paper sufficient flexibility to meet the target elevations and perform maintenance. Any such temporary modification of project operation, due to high flows or other factors, must be reported to the Commission (Article 401(c)).

Impoundment Refill Procedure

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[30] *See* EA at 79.

[31] *See* EA at 49 and 75.

72. Monadnock Paper states that staff's recommendation to refill the impoundments by passing 50 percent of inflow downstream and storing 50 percent of the inflow would take significantly longer to refill the impoundments than the historical refill method of releasing minimum flows and refilling the impoundment with the remaining inflow. Historically, Monadnock Paper refilled the impoundments by releasing minimum flows (13 or 70 cfs) and using the remaining inflow to refill impoundments. Under most conditions, the historic refill procedure would refill the impoundment quicker than the staff-recommended refill procedure. However, the license does not require Monadnock Paper to refill the impoundments as recommended by staff. Instead, the license requires that when inflow equals or exceeds 93 cfs, Monadnock Paper release 70 cfs (i.e., the minimum flow for the Powder Mill and Paper Mill Developments). The remaining flow is to be used to refill the impoundment. When inflow is less than 93 cfs, certification condition E-9(h) requires Monadnock Paper to release 75 percent of the inflow and use the remaining 25 percent for refill of the impoundment. The refill procedures, required by certification condition E-9(h), will refill the impoundment faster or slower, depending on inflow, than the historic or staff-recommended procedures. However, all refill procedures would protect aquatic resources by maintaining flows downstream and refilling the impoundments in a timely manner.

73. Historically, Monadnock Paper has infrequently drawn the Powder Mill impoundment down as far as elevation 673.44 feet NGVD. In its comments, Interior states that limiting drawdowns of the Power Mill impoundment to elevation 675.44 feet NGVD is necessary to protect mussels and control invasive plants. As indicated in the EA, there is no evidence that these historical drawdowns have resulted in harm to aquatic resources; therefore, staff did not recommend limiting drawdowns to elevation 675.44 feet NGVD.[32] Water quality certification condition E-9(b) allows drawdowns to the elevation proposed by Monadnock Paper (i.e., elevation 674.44 feet NGVD); however, it also specifies that drawdowns below 675.44 feet NGVD must be minimized and occur no more frequently than the historical average of approximately 2 percent of the time.

Paper Mill Development Flashboards

74. Currently, Monadnock Paper does not install flashboards on the Paper Mill dam because using flashboards could cause flooding from overtopping of the power canal. In its comments, Monadnock Paper requests that the license include the ability to install flashboards on the Paper Mill dam if the potential flooding issue is resolved in the future. The license does not authorize installation of flashboards at the Paper Mill Development because no changes have been proposed that would prevent flooding from overtopping of the power canal. If, however, Monadnock Paper addresses this issue in the future and

[32] *See* EA at 77.

wants to install flashboards on the Paper Mill dam, it may file an application to amend the license.

Water Quality

75. In its comments, Interior states that post-license water quality monitoring is needed to ensure that state water quality standards are being met. Certification condition E-12, which is required by the license (ordering paragraph (D)), requires water quality monitoring.

Reservoir Operation Report

76. Monadnock Paper proposes to limit drawdowns of the Powder Mill impoundment to 3 feet (between elevations 674.44 and 677.44 feet NGVD), rather than the 4-foot drawdown range (i.e., down to elevation 673.44 feet NGVD) it has historically used.[33] To address the potential effects of this limit on dam safety, staff recommended in the EA that prior to changing project operation, Monadnock Paper develop and file with the Commission's Division of Dam Safety and Inspections (D2SI) New York Regional Engineer, for approval, a reservoir operation report describing the effects of limiting impoundment drawdowns at the Powder Mill Development on local flooding and the adequacy of the Powder Mill dam spillway.

77. In its comments, Monadnock Paper states that it does not believe this measure is necessary because the 435-acre Powder Mill impoundment is too small to influence downstream flooding and the incremental volume forfeited by limiting drawdowns to 674.44 feet NGVD is only 300 acre feet. In the EA, staff reported that drawdowns below elevation 674.44 feet NGVD have historically occurred only 0.5 percent of the time.[34] Information in the record suggests that historically, drawdowns below elevation 674.44 feet NGVD were related to project maintenance or releases for downstream flow needs (i.e., minimum flows or generation), not for additional storage. Because limiting drawdowns to elevation 674.44 feet NGVD would be similar to how the project has historically operated and would eliminate very little storage capacity, there would be no impact on spillway adequacy or local flooding. Therefore, the license does not require the reservoir operation report.

Invasive Species Plan

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[33] *See* EA at 19.

[34] *See* EA at 48.

78. In the EA, Commission staff recommended that Monadnock Paper develop a plan to monitor the project area for invasive plant species and that Monadnock Paper consult with the New Hampshire DES and Interior to develop reasonable measures to control the invasive species if monitoring indicates that invasive plant species are adversely affecting native wetlands or fish and wildlife habitat.[35] In its comments, Monadnock Paper states that monitoring for invasive plants is not necessary and requests a description of "reasonable measures" that could be implemented to control or eliminate invasive plants. As the EA noted, several invasive species are known to occur in the project area (i.e., variable leaf milfoil, yellow iris, and purple loosestrife) which have potential to adversely affect native wetland plant communities at the project. Reasonable measures that could be implemented to control invasive species include signage describing invasive species and techniques to control their distribution or mechanical removal or chemical treatment. To control invasive species in the project area, the license requires Monadnock Paper to develop and implement an invasive species monitoring plan (certification condition E-13).

Route 202 Boat Launch

79. Monadnock Paper states that it should not be required to operate and maintain the Route 202 boat launch because the site, which it owns, is not currently a project facility nor is it maintained by Monadnock Paper.

80. In the EA, Commission staff recommended that Monadnock Paper develop and implement a recreation plan that includes measures for operating and maintaining the Route 202 boat launch at the Powder Mill Development, as well as the two existing project recreational facilities at the Monadnock and Paper Mill Developments.[36] The parking area that provides access to the Route 202 boat launch is located outside of the project boundary and maintained by New Hampshire DOT. However, the Route 202 boat launch is located within the project boundary and is not currently maintained by any entity. The recreation inventory study results did not indicate a current need for new amenities or enhancements at this site; however, the Route 202 boat launch is the second most used recreation site in the project area and designating this popular site a project facility would ensure continued public access for the term of the new license. Therefore, Article 403 of the license requires Monadnock Paper to maintain the Route 202 boat launch as a project facility under the recreation plan.

C. Project Boundary

[35] *See* EA at 75.

[36] *See* EA at 54, 55, 75, and 76.

81. The project boundary must enclose all project works that are to be licensed and include "only those lands necessary for operation and maintenance of the project and for other project purposes, such as recreation, shoreline control, or protection of environmental resources."[37]

82. As noted above, the existing project boundary encloses 633 acres, which covers approximately 5 miles of the Contoocook River. At the downstream end of the Paper Mill Development, the boundary encloses approximately 1,000 feet of the Contoocook River downstream of the confluence of the bypassed reach and the Paper Mill tailrace and more than 30 acres of land that is occupied by the project's powerhouse, a portion of the project's transmission system, a project recreation area, and Monadnock Paper's non-project production facility.

83. It appears that some of these lands (e.g., lands to the north of the tailrace not occupied by the project's transmission line and the reach of the Contoocook River downstream of the tailrace) may not serve a project purpose. If this is the case, they should be removed from the project boundary. Conversely, it appears that portions of the project's transmission facilities are not enclosed within the project's boundary. Article 203 therefore requires the licensee to file a report and revised project boundary map, proposing to: (1) eliminate from the project boundary, any land and non-project facilities that are not needed for the project; and (2) bring into the project boundary all licensed project facilities.

ADMINISTRATIVE PROVISIONS

A. Annual Charges

84. The Commission collects annual charges from licensees for administration of the FPA. Article 201 provides for the collection of these charges.

B. Exhibit F and G Drawings

85. The Exhibit F drawings filed on February 12, 2013, and April 2, 2013, are approved and made part of the license (ordering paragraph (C)). The Commission requires licensees to file sets of approved project drawings on microfilm and in electronic file format. Article 202 requires the filing of these drawings.

86. The Exhibit G drawings filed on January 9, 2013, show a project boundary that does not include several sections of the project's 2,190-foot-long transmission line. In addition, the Exhibit G shows the project boundary enclosing more than 30 acres of land and water adjacent to and downstream of the Paper Mill Development that do not appear

[37] Section 4.41(h)(2) of the regulations, 18 C.F.R. § 4.41(h)(2) (2013).

to be necessary for the operation and maintenance of the project. This area extends approximately 1,000 feet downstream of the confluence of the Paper Mill tailrace and bypassed reach and approximately 900 feet north of where the project transmission line passes through Monadnock Paper's production facility. Because the entire length of the transmission line is not enclosed within the project boundary and it appears that some land and water near the Paper Mill Development is not needed for operation and maintenance of the Monadnock Project, the Exhibit G drawings are not approved. Article 203 requires Monadnock Paper to file a report and revised Exhibit G drawings that propose to: (1) eliminate from the project boundary, any land and non-project facilities that are not needed for the project; and (2) bring into the project boundary all licensed project facilities, including the entire length of the 2,190-foot-long transmission line.

C. Amortization Reserve

87. The Commission requires that, for new major licenses, non-municipal licensees must set up and maintain an amortization reserve account upon license issuance. Article 204 requires the establishment of the account.

D. Headwater Benefits

88. Some projects directly benefit from headwater improvements that were constructed by other licensees, the United States, or permittees. Article 205 requires the licensee to reimburse such entities for these benefits if they were not previously assessed and reimbursed.

E. Use and Occupancy of Project Lands and Waters

89. Requiring a licensee to obtain prior Commission approval for every use or occupancy of project land or waters would be unduly burdensome. Therefore, Article 405 allows the licensee to grant permission, without prior Commission approval, for the use and occupancy of project lands and waters for such minor activities as landscape plantings or single family boat docks. Such uses must be consistent with the purposes of protecting and enhancing the scenic, recreational, and environmental values of the project.

F. Commission Approval of Resource Plans, Notification, and Filing of Amendments

90. In Appendix A, there are certain certification conditions that either do not require the licensee to file plans with the Commission for approval; do not require the licensee to file reports with the Commission; or require agency, but not Commission notification of emergencies and other activities. Therefore, Article 401 requires the licensee to: file the plans with the Commission for approval; file reports with the Commission after

monitoring has been completed; notify the Commission of emergencies and other activities; and file amendment applications, as appropriate.

STATE AND FEDERAL COMPREHENSIVE PLANS

91. Section 10(a)(2)(A) of the FPA[38] requires the Commission to consider the extent to which a project is consistent with federal or state comprehensive plans for improving, developing, or conserving a waterway or waterways affected by the project.[39] Under section (10)(a)(2)(A), federal and state agencies filed 30 comprehensive plans that address various resources in New Hampshire. Of these, staff identified and reviewed nine comprehensive plans that are relevant to this project.[40] No conflicts were found.

APPLICANT'S PLANS AND CAPABILITIES

92. In accordance with sections 10(a)(2)(C) and 15(a) of the FPA,[41] Commission staff evaluated Monadnock Paper's record as a licensee for these areas: (A) conservation efforts; (B) compliance history and ability to comply with the new license; (C) safe management, operation, and maintenance of the project; (D) ability to provide efficient and reliable electric service; (E) need for power; (F) transmission services; (G) cost effectiveness of plans; and (H) actions affecting the public. The staff's findings in each of the following areas are accepted.

A. Conservation Efforts

93. Section 10(a)(2)(C) of the FPA requires the Commission to consider the electricity consumption improvement program of the applicant, including its plans, performance, and capabilities for encouraging or assisting its customers to conserve electricity cost-effectively, taking into account the published policies, restrictions, and requirements of state regulatory authorities. All power generated by the Monadnock Project is used by Monadnock Paper's production facility.

94. Our review of Monadnock Paper filing under section 16.10 and other publicly available information indicates that Monadnock Paper supported a variety of energy conservation initiatives over the previous license term, including the installation of an energy saving heat exchanger, energy saving lamps, and motion activated occupancy

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[38] 16 U.S.C § 803(a)(2)(A) (2012).

[39] Comprehensive plans for this purpose are defined at 18 C.F.R. § 2.19 (2013).

[40] The list of applicable plans can be found in section 5.5 of the EA.

[41] 16 U.S.C. §§ 803(a)(2)(C) and 808 (a) (2012).

switches at its production facility. Monadnock Paper also conserves energy by performing frequent preventive maintenance on its existing project equipment and by encouraging its employees to conserve energy. These initiatives helped Monadnock Paper reduce its annual energy consumption by approximately 794,948 kwh. We conclude that Monadnock Paper is making a reasonable effort in encouraging energy conservation.

B. Compliance History and Ability to Comply with the New License

95. Based on a review of Monadnock Paper's compliance with the terms and conditions of the existing license, staff finds Monadnock Paper's overall record of making timely filings and compliance with its license is satisfactory. Therefore, staff believes Monadnock Paper can satisfy the conditions of a new license.

C. Safe Management, Operation, and Maintenance of the Project

96. Staff has reviewed Monadnock Paper's record of management, operation, and maintenance of the Monadnock Project pursuant to the requirements of 18 C.F.R. Part 12 and the Commission's Engineering Guidelines and periodic Independent Consultant's Safety Inspection Reports. Staff concludes that the dams and other project works are safe, and that there is no reason to believe that Monadnock Paper cannot continue to safely manage, operate, and maintain these facilities under a new license.

D. Ability to Provide Efficient and Reliable Electric Service

97. Staff has reviewed Monadnock Paper's plans and its ability to operate and maintain the project in a manner most likely to provide efficient and reliable electric service. Staff's review indicates that Monadnock Paper regularly inspects the project turbine-generator units to ensure they continue to perform in an optimal manner, schedules maintenance to minimize effects on energy production, and since the project has been in operation, has undertaken several initiatives to ensure the project is able to operate reliably into the future. Staff concludes that Monadnock Paper is capable of operating the project to provide efficient and reliable electric service in the future.

E. Need for Power

98. To assess the need for power, staff looked at the licensee's present and anticipated future use of project power, together with the need for power in the operating region in which the project is located. Historically, the Monadnock Project has generated an average of 6,085 MWh annually and as proposed the estimated average annual generation would be unchanged. Electricity generated from the Monadnock Project will help fulfill about 40 percent of Monadnock Paper's power needs at its production facility.

99. Further, the project is located in the Northeast Power Coordinating Council, Inc. (NPCC) region of the North American Electric Reliability Council (NERC). NERC

annually forecasts electrical supply and demand in the nation and the region for a 10-year period. NERC's most recent report on annual supply and demand projections indicates that, for the period 2014–2023, total summer demand is projected to increase from 26,929 MW to 29,038 MW. The project, as licensed, has the potential to supply about 1.889 MW of this demand. Staff concludes that the project's low-cost power will help continue to meet Monadnock Paper's power needs and the need for power in the NPCC region.

F. Transmission Services

100. The project includes approximately 0.45 mile of transmission line that connects the generators at the three downstream developments to Monadnock Paper's production facility. Monadnock Paper is proposing no changes that would affect its own or other transmission services in the region. The project and project transmission line are important elements in providing power and voltage control to Monadnock Paper.

G. Cost Effectiveness of Plans

101. Monadnock Paper plans to make a number of operational modifications to enhance environmental resources affected by the project. Based on Monadnock Paper's record as an existing licensee, staff concludes that these plans are likely to be carried out in a cost-effective manner.

H. Actions Affecting the Public

102. Monadnock Paper provided extensive opportunity for public involvement in the development of its application for a new license for the Monadnock Project. During the previous license period, Monadnock Paper implemented several measures to enhance the public use of project lands and facilities, and operated the project with consideration for the protection of downstream uses of the Contoocook River. Monadnock Paper uses the project to help meet the power needs of its production facility.

PROJECT ECONOMICS

103. In determining whether to issue a new license for an existing hydroelectric project, the Commission considers a number of public interest factors, including the economic benefits of project power. Under the Commission's approach to evaluating the economics of hydropower projects, as articulated in *Mead Corp.*,[42] the Commission uses current costs to compare the costs of the project and likely alternative power with no forecasts concerning potential future inflation, escalation, or deflation beyond the license issuance date. The basic purpose of the Commission's economic analysis is to provide a general estimate of the potential power benefits and the costs of a project, and of

[42] 72 FERC ¶ 61,027 (1995).

reasonable alternatives to project power. The estimate helps to support an informed decision concerning what is in the public interest with respect to a proposed license.

104. In applying this analysis to the Monadnock Project, staff considered three options: no-action alternative, Monadnock Paper's proposal, and the project as licensed herein.[43] Under the no-action alternative, the project would continue to operate as it does now. The project has an installed capacity of 1.889 MW, has a dependable capacity of 1.889 MW, and generates an average of 6,085 MWh of electricity annually. The average annual project cost is about $195,242, or $32.09/MWh. When the estimate of average generation is multiplied by the alternative power cost of $69.00/MWh,[44] the total value of the project's power is $419,865 in 2013 dollars. To determine whether the project is currently economically beneficial, the project's cost is subtracted from the value of the project's power. Therefore, the project costs $224,623, or $36.91/MWh, less to produce power than the likely alternative cost of power.

105. Monadnock Paper does not propose any changes to the project that would affect generation or project costs; therefore, as proposed by Monadnock Paper, project economics would be the same as described above for the no-action alternative.

106. As licensed herein with the mandatory conditions and staff measures, the levelized annual cost of operating the project would be about $200,932, or $33.02/MWh. Based on the same amount of estimated average generation of 6,085 MWh as licensed, the project would produce power valued at $419,865 when multiplied by the $69.00/MWh value of the project's power. Therefore in the first year of operation, project power will cost $218,933, or $35.98/MWh, less than the likely cost of alternative power.

COMPREHENSIVE DEVELOPMENT

107. Sections 4(e) and 10(a)(1) of the FPA[45] require the Commission to give equal consideration to the power development purposes and to the purposes of energy conservation; the protection, mitigation of damage to, and enhancement of fish and wildlife; the protection of recreational opportunities; and the preservation of other aspects of environmental quality. Any license issued shall be such as in the Commission's judgment will be best adapted to a comprehensive plan for improving or developing a

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[43] Details of staff's economic analysis for the project as licensed herein and for various alternatives are included in the EA issued July 16, 2013.

[44] The alternative power cost of $69.00 per MWh is based on Monadnock Paper's current power purchase rate for operation of its production facility.

[45] 16 U.S.C. §§ 797(e) and 803(a)(1) (2012).

waterway or waterways for all beneficial public uses. The decision to license this project, and the terms and conditions included herein, reflect such consideration.

108. The EA for the Monadnock Project contains background information, analysis of effects, and support for related license articles. Based on the record of this proceeding, including the EA and the comments thereon, licensing the Monadnock Project as described in this order would not constitute a major federal action significantly affecting the quality of the human environment. The project will be safe if operated and maintained in accordance with the requirements of the license.

109. Based on staff's independent review and evaluation of the project, recommendations from the resource agencies and the no-action alternative, as documented in the EA, the proposed Monadnock Project, with the staff-recommended measures, is best adapted to a comprehensive plan for improving or developing the Contoocook River.

110. This alternative was selected because: (1) issuance of a new license will serve to maintain a beneficial, dependable, and inexpensive source of electric energy; (2) the required environmental measures will protect and enhance fish and wildlife resources, water quality, recreational resources, and historic properties; and (3) the 1.889 MW of electric capacity comes from a renewable resource that does not contribute to atmospheric pollution.

LICENSE TERM

111. Section 15(e) of the FPA[46] provides that any new license issued shall be for a term that the Commission determines to be in the public interest, but not less than 30 years or more than 50 years. The Commission's general policy is to establish 30-year terms for projects with little or no redevelopment, new construction, new capacity, or environmental mitigation and enhancement measures; 40-year terms for projects with a moderate amount of such activities; and 50-year terms for projects with extensive measures.[47] Because this license requires little or no redevelopment, new construction, new capacity, or environmental mitigation and enhancement measures, this license is for a term of 30 years. Furthermore, because the term of the current license does not expire until July 31, 2014, this license order is not effective until August 1, 2014.[48]

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[46] 16 U.S.C. § 808(e) (2012).

[47] *See* Consumers Power Co., 68 FERC ¶ 61,077, at 61,383-84 (1994).

[48] For this reason, the various deadlines in the license articles are measured from the August 1, 2014, effective date of this license rather than from the order issuance date.

The Director Orders:

(A) This license is issued to Monadnock Paper Mills, Inc. (licensee), for a period of 30 years, effective August 1, 2014, to operate and maintain the Monadnock Hydroelectric Project (project). This license is subject to the terms and conditions of the Federal Power Act (FPA), which is incorporated by reference as part of this license, and subject to the regulations the Commission issues under provisions of the FPA.

(B) The project consists of:

(1) All lands, to the extent of the licensee's interests in those lands, described in the project description and project boundary discussion of this order.

(2) Project works that include the following four hydropower developments:

Powder Mill Development

The Powder Mill Development consists of: (1) a 366-foot-long, 18.6-foot-high dam with a 228-foot-long gated, concrete gravity spillway section with a crest elevation of 675.44 feet National Geodetic Vertical Datum of 1929 (NGVD) plus 2-foot-high flashboards, a 91-foot-long earth embankment section with a concrete core wall, and a 47-foot-long earth embankment with section a concrete core wall; (2) a 4-foot-wide, 4-foot-high gated trash sluiceway; (3) a 435-acre impoundment with a storage capacity of 1,940 acre-feet and a normal maximum water surface elevation of 677.44 feet NGVD; (4) a 15-foot-wide, 35-foot-long regulating gatehouse structure with four 2.5-foot-wide, 2.5-foot-high wooden vertical slide gates, and a trashrack with 1-inch clear bar spacing connected to a 4-foot diameter, approximately 21-foot-long outlet pipe at the base of the dam; and (5) appurtenant facilities.

Monadnock Development

The Monadnock Development consists of: (1) a 515-foot-long, 22-foot-high dam with a 165-foot-long concrete spillway section with a crest elevation of 663.8 feet NGVD plus 2-foot-high flashboards, a 75-foot-long earth embankment section with a concrete core wall, a 50-foot-long concrete non-overflow section, a 25-foot-long earth embankment section with a concrete core wall, and a 200-foot-long earthen embankment section; (2) a 6-foot-wide, 6-foot-high timber waste gate; (3) a 5-acre impoundment with a storage capacity of 240 acre-feet and a normal maximum water surface elevation of 665.88 feet NGVD (1 inch above the top of the flashboards); (4) a 32-foot-wide, 14-foot-high intake structure equipped with four 5.5-foot-wide, 8-foot-high headgates and a trashrack with 1-inch clear bar spacing; (5) a 75-foot-long, 20-foot-wide powerhouse containing one 125-kilowatt (kW) turbine-generating unit and one 298-kW turbine-

generating unit for a total installed capacity of 423 kW; (6) a local transmission system that connects all three power-generating developments to Monadnock Paper's production facility and includes: (a) two 2.3-kilovolt (kV) generator leads, one 20 feet long and one 25 feet long; (b) a 2,190-foot-long, 2.3-kV transmission line; and (c) a 200-foot-long, 2.3-kV supply bus; (7) a 100-foot-long tailrace; and (8) appurtenant facilities.

Pierce Development

The Pierce Development consists of: (1) a 420-foot-long, 28-foot-high dam that includes a 290-foot-long concrete spillway with a crest elevation of 651.4 feet NGVD, 2-foot-high flashboards, and a 10.0-foot-wide, 0.5-foot-high minimum flow notch; (2) a 7-acre impoundment with a storage capacity of 51-acre-feet and a normal maximum water surface elevation of 653.4 feet NGVD; (3) a 32-foot-wide, 21-foot-high intake structure equipped with three 9-foot-wide, 12-foot-high wooden slide gates and a trashrack with 0.5- to 1.0-inch clear bar spacing; (4) a 25-foot-long, 35-foot-wide powerhouse containing one 500-kW turbine-generating unit and one 220-kW turbine-generating unit for a total installed capacity of 720 kW; (5) two 2.3-kV generator leads, one 15 feet long and one 25 feet long, that connect the powerhouse to Monadnock Paper's 2,190-foot-long, 2.3-kV transmission line; (6) a 600-foot-long tailrace; and (7) appurtenant facilities.

Paper Mill Development

The Paper Mill Development consists of: (1) a 280-foot-long, 19-foot-high dam that includes a 142-foot-long concrete gravity spillway with a crest elevation of 627.6 feet NGVD; (2) a 6-foot-wide, 8-foot-high timber waste gate with a 6-foot-wide, 6-foot-high minimum flow cut-out; (3) a 5-acre impoundment with a storage capacity of 25 acre-feet and a normal maximum water surface elevation of 627.6 feet NGVD; (4) a 300-foot-long, 24-foot-wide power canal and headgate structure with three 6-foot-wide, 8-foot-high wooden slide gates and a 24-foot-wide, 10-foot-long forebay; (5) a 30.0-foot-wide, 7.5-foot-high intake structure with a trashrack with 0.5- to 1.0-inch clear bar spacing and a 10-foot-diameter, 200-foot-long steel penstock; (6) a 22-foot-wide, 27-foot-long generating room (powerhouse) located on the lower level of Monadnock Paper's production facility containing a 746-kW turbine generating unit; (7) a 150-foot-long, 2.3-kV generator lead that connects the powerhouse to Monadnock Paper's 2,190-foot-long, 2.3-kV transmission line; (8) a 186-foot-long tailrace; and (9) appurtenant facilities.

The project works generally described above are more specifically shown and described by those portions of Exhibits A and F shown below:

Exhibit A: The following sections of Exhibit A filed on July 31, 2012:

Exhibit A – Section 2.0, pages 2-1 through 2-22, entitled "Project Description",

and Appendix A, pages A-1 through A-5, entitled "Project Specifications."

Exhibit F: The following sections of Exhibit F filed on February 12, 2013, and April 2, 2013:

Exhibit F Drawing	FERC No. 6597-	Description
Sheet F-1	1001	Paper Mill Development Site Plan
Sheet F-2	1002	Paper Mill Development Dam Plan and Elevation
Sheet F-3	1003	Paper Mill Development Turbine Arrangement
Sheet F-4	1004	Pierce Development Site Plan
Sheet F-5	1005	Pierce Development Powerhouse Details
Sheet F-6	1006	Monadnock Development Site Plan
Sheet F-7	1007	Monadnock Development Powerhouse Details
Sheet F-8	1008	Monadnock Development Powerhouse Section
Sheet F-9	1009	Powder Mill Development Dam Plan, Elevation, and Section
Sheet F-10	1010	Powder Mill Development Gate House Plan and Section
Sheet F-11	1011	Single Line Electrical Diagram

(3) All of the structures, fixtures, equipment or facilities used to operate or maintain the project, all portable property that may be employed in connection with the project, and all riparian or other rights that are necessary or appropriate in the operation or maintenance of the project.

(C) The Exhibits A and F described above are approved and made part of this license.

(D) This license is subject to the conditions submitted by New Hampshire Department of Environmental Services under section 401(a)(1) of the Clean Water Act, 33 U.S.C. §1341(a)(1) (2012), as those conditions are set forth in Appendix A to this order.

(E) This license is also subject to the articles set forth in Form L-10 (Oct. 1975), entitled "Terms and Conditions of License for Constructed Major Project Affecting the Interests of Interstate and Foreign Commerce" (*see* 54 F.P.C. 1799 *et seq.*), as reproduced

at the end of this order, including the following additional articles:

Article 201. *Administrative Annual Charges*. The licensee shall pay the United States annual charges, as determined in accordance with the provisions of the Commission's regulations in effect from time to time, to reimburse the United States for the cost of administration of Part 1 of the Federal Power Act. The authorized installed capacity for that purpose is 1.889 megawatts.

Article 202. *Exhibit F Drawings*. Within 45 days of the effective date of this license, the licensee shall file the approved exhibit drawings in aperture card and electronic file formats.

(a) Three sets of the approved exhibit drawings shall be reproduced on silver or gelatin 35mm microfilm. All microfilm shall be mounted on type D (3-1/4" X 7-3/8") aperture cards. Prior to microfilming, the FERC Project-Drawing Number (i.e., P-6597-1001 through P-6597-1011) shall be shown in the margin below the title block of the approved drawing. After mounting, the FERC Drawing Number shall be typed on the upper right corner of each aperture card. Additionally, the Project Number, FERC Exhibit (i.e., F-1, etc.), Drawing Title, and date of this license shall be typed on the upper left corner of each aperture card.

Two of the sets of aperture cards shall be filed with the Secretary of the Commission, ATTN: OEP/DHAC. The third set shall be filed with the Commission's Division of Dam Safety and Inspections (D2SI) New York Regional Office.

(b) The licensee shall file two separate sets of exhibit drawings in electronic raster format with the Secretary of the Commission, ATTN: OEP/DHAC. A third set shall be filed with the D2SI New York Regional Office. Exhibit F drawings must be identified as Critical Energy Infrastructure Information (CEII) material under 18 C.F.R. § 388.113(c) (2013). Each drawing must be a separate electronic file, and the file name shall include: FERC Project-Drawing Number, FERC Exhibit, Drawing Title, date of this license, and file extension in the following format [P-6597-1001, F-1, Description, MM-DD-YYYY.TIF]. Electronic drawings shall meet the following format specification:

IMAGERY – black & white raster file
FILE TYPE – Tagged Image File Format (TIFF), CCITT Group 4
RESOLUTION – 300 dpi desired (200 dpi min)
DRAWING SIZE FORMAT – 24" X 36" (min), 28" X 40" (max)
FILE SIZE – less than 1 MB desired

Article 203. *Exhibit G Drawings*. Within 90 days of the effective date of the license, the licensee shall file, for Commission approval, a report and revised Exhibit G drawings that propose to: (1) eliminate from the project boundary, any land and non-

project facilities that are not needed for the project; and (2) bring into the project boundary all licensed project facilities, including the entire length of the 2,190-foot-long transmission line. The Exhibit G drawings must comply with sections 4.39 and 4.41 of the Commission's regulations.

Article 204. *Amortization Reserve.* Pursuant to section 10(d) of the Federal Power Act, a specified reasonable rate of return upon the net investment in the project shall be used for determining surplus earnings of the project for the establishment and maintenance of amortization reserves. The licensee shall set aside in a project amortization reserve account at the end of each fiscal year, one half of the project surplus earnings, if any, in excess of the specified rate of return per annum on the net investment. To the extent that there is a deficiency of project earnings below the specified rate of return per annum for any fiscal year, the licensee shall deduct the amount of that deficiency from the amount of any surplus earnings subsequently accumulated, until absorbed. The licensee shall set aside one-half of the remaining surplus earnings, if any, cumulatively computed, in the project amortization reserve account. The licensee shall maintain the amounts established in the project amortization reserve account until further order of the Commission.

The specified reasonable rate of return used in computing amortization reserves shall be calculated annually based on current capital ratios developed from an average of 13 monthly balances of amounts properly included in the licensee's long-term debt and proprietary capital accounts as listed in the Commission's Uniform System of Accounts. The cost rate for such ratios shall be the weighted average cost of long-term debt and preferred stock for the year, and the cost of common equity shall be the interest rate on 10-year government bonds (reported as the Treasury Department's 10-year constant maturity series) computed on the monthly average for the year in question plus four percentage points (400 basis points).

Article 205. *Headwater Benefits.* If the licensee's project was directly benefited by the construction work of another licensee, a permittee, or the United States on a storage reservoir or other headwater improvement during the term of the original license (including extensions of that term by annual licenses), and if those headwater benefits were not previously assessed and reimbursed to the owner of the headwater improvement, the licensee shall reimburse the owner of the headwater improvement for those benefits, at such time as they are assessed, in the same manner as for benefits received during the term of this new license. The benefits will be assessed in accordance with Part 11, Subpart B, of the Commission's regulations.

Article 401. *Commission Approval, Notification, and Filing of Reports and Amendments*

(a) Requirement to File Plans for Commission Approval

Various conditions of this license found in the New Hampshire Department of Environmental Services (New Hampshire DES) 401 water quality certification (certification) conditions (Appendix A) require the licensee to prepare plans in consultation with other entities for approval by New Hampshire DES for submittal to the Commission, and implement specific measures without prior Commission approval. The following table indicates the agencies that the licensee must consult before preparing the plans along with the deadline for filing the plans with the Commission for approval. The plans are listed below.

New Hampshire DES certification condition no.	Plan name	Due date
10(a),(c)	Operation and maintenance plan	Within 6 months from the effective date of the license
11	Impoundment level and flow Monitoring Plan	Within 6 months from the effective date of the license
12	Water quality sampling and analysis plan	Within 6 months from the effective date of the license and at least 60 days prior to implementation of the plan
13(a),(b)	Invasive Species Monitoring Plan	Within 6 months from the effective date of the license and at least 60 days prior to implementing the plan

The licensee shall include with each plan filed with the Commission documentation that the licensee developed the plan in consultation with the New Hampshire DES, New Hampshire Department of Fish and Game, and the U.S. Department of the Interior and has received approval from these agencies, as appropriate. The Commission reserves the right to make changes to any plan submitted. Upon Commission approval, the plan becomes a requirement of the license, and the licensee shall implement the plan or changes in project operations or facilities, including any changes required by the Commission.

(b) Requirement to File Reports

Certain of New Hampshire DES's certification conditions require the licensee to file reports with other entities. These reports will document compliance with requirements of this license and may have bearing on future actions. Each such report shall also be submitted to the Commission. These reports are listed in the following

table:

New Hampshire DES WQC condition no.	Description	Due Date
10(c)	Annual operation deviation report	By March 31 each year
11	Annual impoundment level and flow report	By March 31 each year
12(f)	A report indicating no water quality monitoring has occurred or the water quality monitoring summary report	By January 31 each year until monitoring is initiated and then within 6 months of completing water quality monitoring

The licensee shall submit to the Commission documentation of any consultation with the aforementioned entities, and copies of any comments and recommendations made by any consulted entity in connection with each report. The Commission reserves the right to require changes to project operations or facilities based on the information contained in the report and any other available information.

(c) Requirement to Notify the Commission of Planned and Unplanned Deviations from License Requirements

Various New Hampshire DES certification conditions would allow the licensee to temporarily modify project operation under certain conditions. The Commission shall be notified prior to implementing such modifications, if possible, or in the event of an emergency, as soon as possible, but no later than 10 days after each such incident.

New Hampshire DES WQC condition no.	Notification requirement
9(a),(b),(c), 10(a),(b),(c)	Notification of temporary modification of project operation

(d) Requirement to File Amendment Applications

Some of the conditions in Appendix A contemplate the New Hampshire DES ordering unspecified, long-term changes to project operation or facilities based on new information or results of studies or monitoring required by the certification, but do not appear to require Commission approval for such changes (e.g., operational changes to mitigate for effects on water quality, and construction and operation of upstream and

downstream fish passage facilities). Such changes may not be implemented without prior Commission authorization granted after the filing of an application to amend the license.

Article 402. *Reservation of Authority to Prescribe Fishways*. Authority is reserved to the Commission to require the licensee to construct, operate, and maintain, or provide for the construction, operation, and maintenance of such fishways as may be prescribed by the Secretary of the Interior pursuant to section 18 of the Federal Power Act.

Article 403. *Recreation Plan*. Within 6 months of the effective date of this license, the licensee shall file a recreation plan for Commission approval. The plan shall include, but not necessarily be limited to, the following: (1) a schedule for installing public safety and informational signage within the project boundary; (2) a schedule for maintenance of new (Route 202 boat launch) and existing (Monadnock tailwater fishing access site and Paper Mill tailwater boat launch) facilities; and (3) a provision to operate and maintain the facilities over the term of the license.

The licensee shall prepare the plan after consultation with the New Hampshire Fish and Game Department (New Hampshire FGD). The licensee shall include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to New Hampshire FGD, and specific descriptions of how New Hampshire FGD's comments are accommodated by the plan. The licensee shall allow for a minimum of 30 days for New Hampshire FGD to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing shall include the licensee's reasons based on project-specific information.

The Commission reserves the right to require changes to the plan. Implementation of the plan shall not begin until the licensee is notified by the Commission that the plan is approved. Upon Commission approval, the licensee shall implement the plan according to the approved schedule, including any changes required by the Commission.

Article 404. *Programmatic Agreement and Historic Properties Management Plan*. The licensee shall implement the "Programmatic Agreement Between the Federal Energy Regulatory Commission and the New Hampshire State Division of Historical Resources (New Hampshire SHPO) for Managing Historic Properties that may be Affected by a Issuing a License to Monadnock Paper Mills, Inc. for the Continued Operation of the Monadnock Hydroelectric Project in Hillsborough County, New Hampshire (FERC No. 6597)", executed on October 29, 2013, including but not limited to the Historic Properties Management Plan (HPMP) for the Project dated October 2013. In the event that the Programmatic Agreement is terminated, the licensee shall continue to implement the provisions of its approved HPMP. The Commission reserves the authority to require changes to the HPMP at any time during the term of the license. If

the Programmatic Agreement is terminated, the licensee shall obtain approvals from or make notifications to the Commission and the New Hampshire SHPO where the HPMP calls upon the licensee to do so.

Article 405. *Use and Occupancy.* (a) In accordance with the provisions of this article, the licensee shall have the authority to grant permission for certain types of use and occupancy of project lands and waters and to convey certain interests in project lands and waters for certain types of use and occupancy, without prior Commission approval. The licensee may exercise the authority only if the proposed use and occupancy is consistent with the purposes of protecting and enhancing the scenic, recreational, and other environmental values of the project. For those purposes, the licensee shall also have continuing responsibility to supervise and control the use and occupancies for which it grants permission, and to monitor the use of, and ensure compliance with the covenants of the instrument of conveyance for, any interests that it has conveyed, under this article. If a permitted use and occupancy violates any condition of this article or any other condition imposed by the licensee for protection and enhancement of the project's scenic, recreational, or other environmental values, or if a covenant of a conveyance made under the authority of this article is violated, the licensee shall take any lawful action necessary to correct the violation. For a permitted use or occupancy, that action includes, if necessary, canceling the permission to use and occupy the project lands and waters and requiring the removal of any non-complying structures and facilities.

(b) The type of use and occupancy of project lands and waters for which the licensee may grant permission without prior Commission approval are: (1) landscape plantings; (2) non-commercial piers, landings, boat docks, or similar structures and facilities that can accommodate no more than 10 water craft at a time and where said facility is intended to serve single-family type dwellings; (3) embankments, bulkheads, retaining walls, or similar structures for erosion control to protect the existing shoreline; and (4) food plots and other wildlife enhancement. To the extent feasible and desirable to protect and enhance the project's scenic, recreational, and other environmental values, the licensee shall require multiple use and occupancy of facilities for access to project lands or waters. The licensee shall also ensure, to the satisfaction of the Commission's authorized representative, that the use and occupancies for which it grants permission are maintained in good repair and comply with applicable state and local health and safety requirements. Before granting permission for construction of bulkheads or retaining walls, the licensee shall: (1) inspect the site of the proposed construction, (2) consider whether the planting of vegetation or the use of riprap would be adequate to control erosion at the site, and (3) determine that the proposed construction is needed and would not change the basic contour of the impoundment shoreline. To implement this paragraph (b), the licensee may, among other things, establish a program for issuing permits for the specified types of use and occupancy of project lands and waters, which may be subject to the payment of a reasonable fee to cover the licensee's costs of administering the permit program. The Commission reserves the right to require the

licensee to file a description of its standards, guidelines, and procedures for implementing this paragraph (b) and to require modification of those standards, guidelines, or procedures.

(c) The licensee may convey easements or rights-of-way across, or leases of project lands for: (1) replacement, expansion, realignment, or maintenance of bridges or roads where all necessary state and federal approvals have been obtained; (2) storm drains and water mains; (3) sewers that do not discharge into project waters; (4) minor access roads; (5) telephone, gas, and electric utility distribution lines; (6) non-project overhead electric transmission lines that do not require erection of support structures within the project boundary; (7) submarine, overhead, or underground major telephone distribution cables or major electric distribution lines (69-kV or less); and (8) water intake or pumping facilities that do not extract more than one million gallons per day from a project impoundment. No later than January 31 of each year, the licensee shall file three copies of a report briefly describing for each conveyance made under this paragraph (c) during the prior calendar year, the type of interest conveyed, the location of the lands subject to the conveyance, and the nature of the use for which the interest was conveyed.

(d) The licensee may convey fee title to, easements or rights-of-way across, or leases of project lands for: (1) construction of new bridges or roads for which all necessary state and federal approvals have been obtained; (2) sewer or effluent lines that discharge into project waters, for which all necessary federal and state water quality certification or permits have been obtained; (3) other pipelines that cross project lands or waters but do not discharge into project waters; (4) non-project overhead electric transmission lines that require erection of support structures within the project boundary, for which all necessary federal and state approvals have been obtained; (5) private or public marinas that can accommodate no more than 10 water craft at a time and are located at least one-half mile (measured over project waters) from any other private or public marina; (6) recreational development consistent with an approved report on recreational resources of an Exhibit E; and (7) other uses, if: (i) the amount of land conveyed for a particular use is five acres or less; (ii) all of the land conveyed is located at least 75 feet, measured horizontally, from project waters at normal surface elevation; and (iii) no more than 50 total acres of project lands for each project development are conveyed under this clause (d)(7) in any calendar year. At least 60 days before conveying any interest in project lands under this paragraph (d), the licensee must file a letter with the Commission, stating its intent to convey the interest and briefly describing the type of interest and location of the lands to be conveyed (a marked Exhibit G map may be used), the nature of the proposed use, the identity of any federal or state agency official consulted, and any federal or state approvals required for the proposed use. Unless the Commission authorized representative, within 45 days from the filing date, requires the licensee to file an application for prior approval, the licensee may convey the intended interest at the end of that period.

(e) The following additional conditions apply to any intended conveyance under paragraph (c) or (d) of this article:

(1) Before conveying the interest, the licensee shall consult with federal and state fish and wildlife or recreation agencies, as appropriate, and the State Historic Preservation Officer.

(2) Before conveying the interest, the licensee shall determine that the proposed use of the lands to be conveyed is not inconsistent with any approved report on recreational resources of an Exhibit E; or, if the project does not have an approved report on recreational resources, that the lands to be conveyed do not have recreational value.

(3) The instrument of conveyance must include the following covenants running with the land: (i) the use of the lands conveyed shall not endanger health, create a nuisance, or otherwise be incompatible with overall project recreational use; (ii) the grantee shall take all reasonable precautions to ensure that the construction, operation, and maintenance of structures or facilities on the conveyed lands will occur in a manner that will protect the scenic, recreational, and environmental values of the project; and (iii) the grantee shall not unduly restrict public access to project waters.

(4) The Commission reserves the right to require the licensee to take reasonable remedial action to correct any violation of the terms and conditions of this article, for the protection and enhancement of the project's scenic, recreational, and other environmental values.

(f) The conveyance of an interest in project lands under this article does not in itself change the project boundaries. The project boundaries may be changed to exclude land conveyed under this article only upon approval of revised Exhibit G drawings (project boundary maps) reflecting exclusion of that land. Lands conveyed under this article will be excluded from the project only upon a determination that the lands are not necessary for project purposes, such as operation and maintenance, flowage, recreation, public access, protection of environmental resources, and shoreline control, including shoreline aesthetic values. Absent extraordinary circumstances, proposals to exclude lands conveyed under this article from the project shall be consolidated for consideration when revised Exhibit G drawings would be filed for approval for other purposes.

(g) The authority granted to the licensee under this article shall not apply to any part of the public lands and reservations of the United States included within the project boundary.

(F) The licensee shall serve copies of any Commission filing required by this order on any entity specified in the order to be consulted on manners relating to that

filing. Proof of service on these entities must accompany the filing with the Commission.

(G) This order constitutes final agency action. Any party may file a request for rehearing of this order within 30 days from the date of its issuance, as provided in section 313(a) of the FPA, 16 U.S.C. § 825*l* (2012), and section 385.713 of the Commission's regulations, 18 C.F.R. § 385.713 (2013). The filing of a request for rehearing does not operate as a stay of the effective date of this license or of any other date specified in this order. The licensee's failure to file a request for rehearing shall constitute acceptance of this order.

Jeff C. Wright
Director
Office of Energy Projects

Form L-10

(October, 1975)

FEDERAL ENERGY REGULATORY COMMISSION

TERMS AND CONDITIONS OF LICENSE FOR CONSTRUCTED MAJOR PROJECT AFFECTING THE INTERESTS OF INTERSTATE OR FOREIGN COMMERCE

Article 1. The entire project, as described in this order of the Commission, shall be subject to all of the provisions, terms, and conditions of the license.

Article 2. No substantial change shall be made in the maps, plans, specifications, and statements described and designated as exhibits and approved by the Commission in its order as a part of the license until such change shall have been approved by the Commission: Provided, however, That if the Licensee or the Commission deems it necessary or desirable that said approved exhibits, or any of them, be changed, there shall be submitted to the Commission for approval a revised, or additional exhibit or exhibits covering the proposed changes which, upon approval by the Commission, shall become a part of the license and shall supersede, in whole or in part, such exhibit or exhibits theretofore made a part of the license as may be specified by the Commission.

Article 3. The project area and project works shall be in substantial conformity with the approved exhibits referred to in Article 2 herein or as changed in accordance with the provisions of said article. Except when emergency shall require for the protection of navigation, life, health, or property, there shall not be made without prior approval of the Commission any substantial alteration or addition not in conformity with the approved plans to any dam or other project works under the license or any substantial use of project lands and waters not authorized herein; and any emergency alteration, addition, or use so made shall thereafter be subject to such modification and change as the Commission may direct. Minor changes in project works, or in uses of project lands and waters, or divergence from such approved exhibits may be made if such changes will not result in a decrease in efficiency, in a material increase in cost, in an adverse environmental impact, or in impairment of the general scheme of development; but any of such minor changes made without the prior approval of the Commission, which in its judgment have produced or will produce any of such results, shall be subject to such alteration as the Commission may direct.

Article 4. The project, including its operation and maintenance and any work incidental to additions or alterations authorized by the Commission, whether or not conducted upon lands of the United States, shall be subject to the inspection and supervision of the Regional Engineer, Federal Energy Regulatory Commission, in the

region wherein the project is located, or of such other officer or agent as the Commission may designate, who shall be the authorized representative of the Commission for such purposes. The Licensee shall cooperate fully with said representative and shall furnish him such information as he may require concerning the operation and maintenance of the project, and any such alterations thereto, and shall notify him of the date upon which work with respect to any alteration will begin, as far in advance thereof as said representative may reasonably specify, and shall notify him promptly in writing of any suspension of work for a period of more than one week, and of its resumption and completion. The Licensee shall submit to said representative a detailed program of inspection by the Licensee that will provide for an adequate and qualified inspection force for construction of any such alterations to the project. Construction of said alterations or any feature thereof shall not be initiated until the program of inspection for the alterations or any feature thereof has been approved by said representative. The Licensee shall allow said representative and other officers or employees of the United States, showing proper credentials, free and unrestricted access to, through, and across the project lands and project works in the performance of their official duties. The Licensee shall comply with such rules and regulations of general or special applicability as the Commission may prescribe from time to time for the protection of life, health, or property.

Article 5. The Licensee, within five years from the date of issuance of the license, shall acquire title in fee or the right to use in perpetuity all lands, other than lands of the United States, necessary or appropriate for the construction maintenance, and operation of the project. The Licensee or its successors and assigns shall, during the period of the license, retain the possession of all project property covered by the license as issued or as later amended, including the project area, the project works, and all franchises, easements, water rights, and rights or occupancy and use; and none of such properties shall be voluntarily sold, leased, transferred, abandoned, or otherwise disposed of without the prior written approval of the Commission, except that the Licensee may lease or otherwise dispose of interests in project lands or property without specific written approval of the Commission pursuant to the then current regulations of the Commission. The provisions of this article are not intended to prevent the abandonment or the retirement from service of structures, equipment, or other project works in connection with replacements thereof when they become obsolete, inadequate, or inefficient for further service due to wear and tear; and mortgage or trust deeds or judicial sales made thereunder, or tax sales, shall not be deemed voluntary transfers within the meaning of this article.

Article 6. In the event the project is taken over by the United States upon the termination of the license as provided in Section 14 of the Federal Power Act, or is transferred to a new licensee or to a nonpower licensee under the provisions of Section 15 of said Act, the Licensee, its successors and assigns shall be responsible for, and shall

make good any defect of title to, or of right of occupancy and use in, any of such project property that is necessary or appropriate or valuable and serviceable in the maintenance and operation of the project, and shall pay and discharge, or shall assume responsibility for payment and discharge of, all liens or encumbrances upon the project or project property created by the Licensee or created or incurred after the issuance of the license: Provided, That the provisions of this article are not intended to require the Licensee, for the purpose of transferring the project to the United States or to a new licensee, to acquire any different title to, or right of occupancy and use in, any of such project property than was necessary to acquire for its own purposes as the Licensee.

Article 7. The actual legitimate original cost of the project, and of any addition thereto or betterment thereof, shall be determined by the Commission in accordance with the Federal Power Act and the Commission's Rules and Regulations thereunder.

Article 8. The Licensee shall install and thereafter maintain gages and stream-gaging stations for the purpose of determining the stage and flow of the stream or streams on which the project is located, the amount of water held in and withdrawn from storage, and the effective head on the turbines; shall provide for the required reading of such gages and for the adequate rating of such stations; and shall install and maintain standard meters adequate for the determination of the amount of electric energy generated by the project works. The number, character, and location of gages, meters, or other measuring devices, and the method of operation thereof, shall at all times be satisfactory to the Commission or its authorized representative. The Commission reserves the right, after notice and opportunity for hearing, to require such alterations in the number, character, and location of gages, meters, or other measuring devices, and the method of operation thereof, as are necessary to secure adequate determinations. The installation of gages, the rating of said stream or streams, and the determination of the flow thereof, shall be under the supervision of, or in cooperation with, the District Engineer of the United States Geological Survey having charge of stream-gaging operations in the region of the project, and the Licensee shall advance to the United States Geological Survey the amount of funds estimated to be necessary for such supervision, or cooperation for such periods as may mutually agreed upon. The Licensee shall keep accurate and sufficient records of the foregoing determinations to the satisfaction of the Commission, and shall make return of such records annually at such time and in such form as the Commission may prescribe.

Article 9. The Licensee shall, after notice and opportunity for hearing, install additional capacity or make other changes in the project as directed by the Commission, to the extent that it is economically sound and in the public interest to do so.

Article 10. The Licensee shall, after notice and opportunity for hearing, coordinate the operation of the project, electrically and hydraulically, with such other projects or power systems and in such manner as the Commission may direct in the

interest of power and other beneficial public uses of water resources, and on such conditions concerning the equitable sharing of benefits by the Licensee as the Commission may order.

Article 11. Whenever the Licensee is directly benefited by the construction work of another licensee, a permittee, or the United States on a storage reservoir or other headwater improvement, the Licensee shall reimburse the owner of the headwater improvement for such part of the annual charges for interest, maintenance, and depreciation thereof as the Commission shall determine to be equitable, and shall pay to the United States the cost of making such determination as fixed by the Commission. For benefits provided by a storage reservoir or other headwater improvement of the United States, the Licensee shall pay to the Commission the amounts for which it is billed from time to time for such headwater benefits and for the cost of making the determinations pursuant to the then current regulations of the Commission under the Federal Power Act.

Article 12. The operations of the Licensee, so far as they affect the use, storage and discharge from storage of waters affected by the license, shall at all times be controlled by such reasonable rules and regulations as the Commission may prescribe for the protection of life, health, and property, and in the interest of the fullest practicable conservation and utilization of such waters for power purposes and for other beneficial public uses, including recreational purposes, and the Licensee shall release water from the project reservoir at such rate in cubic feet per second, or such volume in acre-feet per specified period of time, as the Commission may prescribe for the purposes hereinbefore mentioned.

Article 13. On the application of any person, association, corporation, Federal agency, State or municipality, the Licensee shall permit such reasonable use of its reservoir or other project properties, including works, lands and water rights, or parts thereof, as may be ordered by the Commission, after notice and opportunity for hearing, in the interests of comprehensive development of the waterway or waterways involved and the conservation and utilization of the water resources of the region for water supply or for the purposes of steam-electric, irrigation, industrial, municipal or similar uses. The Licensee shall receive reasonable compensation for use of its reservoir or other project properties or parts thereof for such purposes, to include at least full reimbursement for any damages or expenses which the joint use causes the Licensee to incur. Any such compensation shall be fixed by the Commission either by approval of an agreement between the Licensee and the party or parties benefiting or after notice and opportunity for hearing. Applications shall contain information in sufficient detail to afford a full understanding of the proposed use, including satisfactory evidence that the applicant possesses necessary water rights pursuant to applicable State law, or a showing of cause why such evidence cannot concurrently be submitted, and a statement as to the relationship of the proposed use to any State or municipal plans or orders which may

have been adopted with respect to the use of such waters.

Article 14. In the construction or maintenance of the project works, the Licensee shall place and maintain suitable structures and devices to reduce to a reasonable degree the liability of contact between its transmission lines and telegraph, telephone and other signal wires or power transmission lines constructed prior to its transmission lines and not owned by the Licensee, and shall also place and maintain suitable structures and devices to reduce to a reasonable degree the liability of any structures or wires falling or obstructing traffic or endangering life. None of the provisions of this article are intended to relieve the Licensee from any responsibility or requirement which may be imposed by any other lawful authority for avoiding or eliminating inductive interference.

Article 15. The Licensee shall, for the conservation and development of fish and wildlife resources, construct, maintain, and operate, or arrange for the construction, maintenance, and operation of such reasonable facilities, and comply with such reasonable modifications of the project structures and operation, as may be ordered by the Commission upon its own motion or upon the recommendation of the Secretary of the Interior or the fish and wildlife agency or agencies of any State in which the project or a part thereof is located, after notice and opportunity for hearing.

Article 16. Whenever the United States shall desire, in connection with the project, to construct fish and wildlife facilities or to improve the existing fish and wildlife facilities at its own expense, the Licensee shall permit the United States or its designated agency to use, free of cost, such of the Licensee's lands and interests in lands, reservoirs, waterways and project works as may be reasonably required to complete such facilities or such improvements thereof. In addition, after notice and opportunity for hearing, the Licensee shall modify the project operation as may be reasonably prescribed by the Commission in order to permit the maintenance and operation of the fish and wildlife facilities constructed or improved by the United States under the provisions of this article. This article shall not be interpreted to place any obligation on the United States to construct or improve fish and wildlife facilities or to relieve the Licensee of any obligation under this license.

Article 17. The Licensee shall construct, maintain, and operate, or shall arrange for the construction, maintenance, and operation of such reasonable recreational facilities, including modifications thereto, such as access roads, wharves, launching ramps, beaches, picnic and camping areas, sanitary facilities, and utilities, giving consideration to the needs of the physically handicapped, and shall comply with such reasonable modifications of the project, as may be prescribed hereafter by the Commission during the term of this license upon its own motion or upon the recommendation of the Secretary of the Interior or other interested Federal or State agencies, after notice and opportunity for hearing.

Article 18. So far as is consistent with proper operation of the project, the Licensee shall allow the public free access, to a reasonable extent, to project waters and adjacent project lands owned by the Licensee for the purpose of full public utilization of such lands and waters for navigation and for outdoor recreational purposes, including fishing and hunting: Provided, That the Licensee may reserve from public access such portions of the project waters, adjacent lands, and project facilities as may be necessary for the protection of life, health, and property.

Article 19. In the construction, maintenance, or operation of the project, the Licensee shall be responsible for, and shall take reasonable measures to prevent, soil erosion on lands adjacent to streams or other waters, stream sedimentation, and any form of water or air pollution. The Commission, upon request or upon its own motion, may order the Licensee to take such measures as the Commission finds to be necessary for these purposes, after notice and opportunity for hearing.

Article 20. The Licensee shall clear and keep clear to an adequate width lands along open conduits and shall dispose of all temporary structures, unused timber, brush, refuse, or other material unnecessary for the purposes of the project which results from the clearing of lands or from the maintenance or alteration of the project works. In addition, all trees along the periphery of project reservoirs which may die during operations of the project shall be removed. All clearing of the lands and disposal of the unnecessary material shall be done with due diligence and to the satisfaction of the authorized representative of the Commission and in accordance with appropriate Federal, State, and local statutes and regulations.

Article 21. If the Licensee shall cause or suffer essential project property to be removed or destroyed or to become unfit for use, without adequate replacement, or shall abandon or discontinue good faith operation of the project or refuse or neglect to comply with the terms of the license and the lawful orders of the Commission mailed to the record address of the Licensee or its agent, the Commission will deem it to be the intent of the Licensee to surrender the license. The Commission, after notice and opportunity for hearing, may require the Licensee to remove any or all structures, equipment and power lines within the project boundary and to take any such other action necessary to restore the project waters, lands, and facilities remaining within the project boundary to a condition satisfactory to the United States agency having jurisdiction over its lands or the Commission's authorized representative, as appropriate, or to provide for the continued operation and maintenance of nonpower facilities and fulfill such other obligations under the license as the Commission may prescribe. In addition, the Commission in its discretion, after notice and opportunity for hearing, may also agree to the surrender of the license when the Commission, for the reasons recited herein, deems it to be the intent of the Licensee to surrender the license.

Article 22. The right of the Licensee and of its successors and assigns to use or occupy waters over which the United States has jurisdiction, or lands of the United States under the license, for the purpose of maintaining the project works or otherwise, shall absolutely cease at the end of the license period, unless the Licensee has obtained a new license pursuant to the then existing laws and regulations, or an annual license under the terms and conditions of this license.

Article 23. The terms and conditions expressly set forth in the license shall not be construed as impairing any terms and conditions of the Federal Power Act which are not expressly set forth herein.

APPENDIX A

New Hampshire Department of Environmental Services (DES)
Water Quality Certification Conditions
Filed January 31, 2014

E-1. **Compliance with Certification Conditions.** The Applicant shall operate and maintain the Activity to comply with the conditions of this certification.

E-2. **Compliance with Water Quality Standards.** The Activity shall not cause or contribute to a violation of New Hampshire surface water quality standards. Should DES determine that the Activity is causing or contributing to violations of surface water quality standards, DES may modify this Certification in accordance with condition E-4 of this Certification.

E-3. **Approval of Project Changes.** The Applicant shall consult with and receive prior written approval from DES regarding any proposed modifications to the Activity that could have a significant or material effect on the facts, findings or conditions of this Certification, including any changes to project operation or approved plans required by this Certification.

E-4. **Modification of Certification.** The conditions of this Certification may be amended and additional terms and conditions added as necessary to ensure compliance with New Hampshire surface water quality standards, when authorized by law, and after notice and opportunity for hearing.

E-5. **Reopening FERC License**. DES may, at any time, request that FERC reopen the license for the Activity to consider modifications to the license if necessary to ensure compliance with New Hampshire surface water quality standards.

E-6. **Compliance Inspections**. The Applicant shall allow DES to inspect the Activity and its impacts on affected surface waters at any time to monitor compliance with the conditions of this Certification.

E-7. **Posting of Certification and Operation and Maintenance Plan.** A copy of this Certification and the approved Operation and Maintenance Plan (condition E-10) shall be posted within each of the Project powerhouses within seven days of receiving written approval of the Operations and Maintenance Plan from DES.

E-8. **Transfer of Certification.** Within 15 days after filing an application with FERC for transfer of ownership of the FERC license, the Applicant shall provide a copy of the application to DES. Within 15 days following a transfer of ownership for the FERC license and/or this Certification, the Applicant shall notify DES in writing of the date of the transfer and provide contact information (legal name, mailing address, email (if available) and phone number) for the new owner.

E-9. **Project Operation:**

a. The Applicant shall operate the project in a seasonal run-of-river mode. During the periods January 1 to February 28 and May 1 through August 31, inflow to the Powder Mill Pond shall equal outflow immediately downstream from the

confluence of the Paper Mill bypass reach and tailrace on an instantaneous basis. At all times, fluctuations of the Monadnock, Pierce and Paper Mill impoundment water surface elevations shall be minimized. This operating regime may be temporarily modified for short periods due to operating emergencies beyond the control of the Applicant or other reasons after consulting with DES, the NHFGD and USFWS (see Condition E-9.e. below for notification requirements).

b. Unless due to operating emergencies beyond the control of the Applicant (such as flashboard failure due to high flows), pre-approved maintenance, or other reasons specified in the DES approved Operations and Maintenance Plan (see Condition E-10), the Applicant shall maintain the Powder Mill Pond water surface elevation at or above 677.44 feet NGVD (top of flashboards) from January 1 to February 28 and from May 1 through August 31 and at or above 676.94 NGVD(6 inches below the top of flashboards) from November 1 through December 31. At all other times(except for emergencies, pre-approved maintenance or other reasons specified in the DES approved Operations and Maintenance Plan) the elevation shall be kept between 674.44 feet and 677.44 feet NGVD. Drawdowns (for any reason) below 675.44 feet NGVD shall be minimized and shall not occur more frequently than the historical average of approximately 2% of the time over any five year period and no more than 7 days in any given year for meeting short-term power demand. In addition, at all times, the Applicant shall maintain:
    i. The Monadnock impoundment water surface elevation at least one inch above the top of the flashboards (665.88 feet NGVD) when flashboards are in place or at least 1 inch above the dam crest (663.88 feet NGVD) when the flashboards have been temporarily removed due to failure or other reasons;
    ii. The Pierce impoundment water surface elevation at or above the top of the flashboards (653.4 feet NGVD) or at or above the dam crest (651.4 NGVD) when the flashboards have been temporarily removed due to failure or other reasons; and
    iii. The Paper Mill impoundment water surface elevation at or above the crest of the dam (627.6 feet NGVD; there are no flashboards at this facility).
c. Except in the case of emergencies or for other reasons specified in the DES approved Operations and Maintenance Plan (see Condition E-10), the maximum drawdown rate shall be no more than 6 inches per day.
d. Flashboards shall be reinstalled as soon as reasonably practicable after failure or temporary removal for other reasons.
e. Except as noted below, the Applicant shall notify and receive NHFGD approval prior to drawing Powder Mill Pond down for maintenance or below 2 feet (elevation 675.44) for any reason. Notification shall identify the level of drawdown necessary, timing and duration, and method for ensuring minimum

flow and refill requirements are met. Notification shall be provided at least 60 days in advance unless due to operating emergencies beyond the control of the Applicant [such as flashboard failure due to high flows or other situations described in the DES approved Operations and Maintenance Plan (Condition E-10)] in which case notification shall be provided as soon as reasonably practicable but no longer than 24 hours after the emergency event has occurred. DES and NHFGD approval is not required prior to drawing the pond down for emergency situations such as when extreme levels of precipitation are forecasted and it is necessary to draw the pond down to reduce the potential for flooding, or other emergency situations as described in the DES approved Operations and Maintenance Plan.

f. During periods when the Powder Mill impoundment water surface elevation may fluctuate, the Applicant shall provide a minimum flow of 70 cfs, or inflow (whichever is less), immediately downstream of the Powder Mill Development and at the confluence of the tailrace and bypass reach of the Paper Mill Development. This flow is contingent upon monitoring data which confirms that state water quality standards for dissolved oxygen are attained at this flow downstream of the Paper Mill development. If monitoring indicates that this minimum flow is not sufficient to meet state dissolved oxygen standards, the applicant shall conduct a study to determine the minimum flow that is sufficient to meet state dissolved oxygen standards. The new approved minimum flow shall then become the required minimum flow and the Operations and Maintenance Plan (see Condition E-10) shall be revised accordingly to reflect this change.

g. The Applicant shall provide the following year-round, continuous minimum flows to the project bypass reaches provided these flows are confirmed to meet state water quality standards for dissolved oxygen (Env-Wq 1702.19):

    i. 13 cfs, or inflow (whichever is less), at the Monadnock facility;
    ii. 13 cfs, or inflow (whichever is less), at the Pierce facility; and
    iii. 13 cfs, or inflow (whichever is less), at the Paper Mill facility.

    If monitoring indicates that any of these bypass flows are not sufficient to meet state dissolved oxygen standards, the applicant shall conduct a study to determine the bypass flow that is sufficient to meet state dissolved oxygen standards. The new approved bypass flow shall then become the required minimum flow for that bypass reach and the operations and maintenance plan (see Condition E-10) shall be revised accordingly to reflect this change.

h. During refilling of the impoundments after flashboard replacement, dam maintenance or emergency drawdown, the Applicant shall operate the project such that when inflow equals or exceeds 93 cfs, the minimum downstream flow of 70 cfs shall be released and the remainder shall be used for refill. When inflow is less than 93 cfs, 75% of the inflow shall be passed

downstream and 25% shall be used for refill. If the Applicant anticipates refilling more than one impoundment at once, prior consultation with the DES, NHFGD, and USFWS shall be required so that an appropriate refill regime may be developed. This refill protocol may be modified on a case-by-case basis after consulting with DES, NHFGD, and USFWS and after receiving written approval from DES.

E-10. **Operation and Maintenance Plan:**

a. Within two (2) months (or a later date acceptable to DES) from the effective date of the license, the Applicant shall submit to, and obtain DES approval of an Operation and Maintenance Plan for the Activity that describes in detail how the Activity will be operated and maintained to comply with run-of-river, minimum flow and impoundment fluctuation requirements included in this Certification (Condition E-9). The plan shall also include procedures that will implemented should the Activity not be in compliance with the conditions of this Certification, including notification of appropriate regulatory authorities and a schedule for implementation of the plan. The Applicant shall then implement the approved plan.

b. Any proposed modifications to the approved Operation and Maintenance Plan shall be submitted to DES for review and approval. Proposed modifications shall not be implemented until approved by DES. Exceptions to the approved Operation and Maintenance Plan may be granted by DES on a case-by-case basis, as necessary, in consultation with the Applicant, USFWS, and NHFGD.

c. The Applicant shall notify DES not more than 24 hours after any significant deviations from the approved Operation and Maintenance Plan. The notification shall include an explanation as to why the deviations occurred, a description of corrective actions taken, and how long it will take until the operations will comply with the approved Operation and Maintenance Plan. The Applicant shall maintain a log of deviations. A summary of the deviations shall be submitted annually to DES not later than December 31 of each year. The submittal shall also include the number of days drawdowns below 2 feet (elevation 675.44) occurred in Powder Mill Pond during the year as well as the reason and duration for each drawdown below 2 feet (i.e., power generation, maintenance, flood storage, minimum flow, etc.).

E-11. **Monitoring and Reporting Plan for Impoundment Level and Flow:** Within three (3) months (or a later date acceptable to DES) from the effective date of the FERC license, the Applicant shall prepare and submit to DES for approval, a plan for monitoring, recording and reporting impoundment water surface elevations, inflows, turbine flows, bypass flows and power generation. To the maximum extent feasible, monitoring and recording of data shall be automated and collected continuously (i.e, at least every hour). The plan shall include a description and design of the mechanisms and structures that will be used, including equipment accuracy, frequency of measurement, the level of automation and any periodic maintenance and/or calibration necessary to ensure the devices work properly. The

plan shall also address how data will be recorded to verify proper operations and how these data will be maintained for inspection by DES and other resource agencies. The plan shall also include a schedule for when the plan will be implemented. The Applicant shall consult with DES, NHFGD, and USFWS in developing these plans and shall respond to agency comments. The Applicant shall then implement the DES approved plan.

E-12. **Water Quality Sampling and Analysis Plan:** The Applicant shall conduct water quality monitoring surveys after the FERC license is reissued. Prior to conducting the surveys a Sampling and Analysis Plan (SAP) shall be developed in consultation with DES, NHFGD, and USFWS, and shall be submitted to DES for approval within two (2) months (or a later date acceptable to DES) from the effective date of the license. The Applicant shall then implement the approved SAP. Unless otherwise authorized or directed by DES, the SAP shall, as a minimum, include the following.

a. Continuous (at least every 30 minutes) monitoring for dissolved oxygen (concentration and daily average percent saturation) and temperature in Powder Mill Pond and the Monadnock impoundment, in the river downstream of the Powder Mill Pond dam, in the Pierce and Paper Mill bypass channels, and in the river downstream of the Paper Mill development during periods of low flow and high temperature. Measurements shall include times when the minimum flows are being passed as well as when water levels in Powder Mill Pond are stable and being fluctuated for power generation. If requested by DES, dissolved oxygen and temperature profiles shall also be taken in the impoundments mentioned above.

b. Monitoring for chlorophyll-a (algae) and nutrients in Powder Mill Pond.

c. Sampling and laboratory protocols, including quality assurance/ quality control provisions.

d. Sufficient monitoring to allow the surface waters to be assessed for compliance with these parameters in accordance with the DES Consolidated Assessment and Listing Methodology[49].

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[49] The 2012 Consolidated Assessment and Listing Methodology is available at http://des.nh.gov/organization/divisions/water/wmb/swqa/2012/documents/2012-calm.pdf.

e. Initiation of data collection during the first low-flow season (i.e., stream flows less than three times 7Q10) after FERC license issuance. Depending on the results of the first year, DES may require additional years of monitoring.

f. A schedule for filing summary reports, a description of what will be provided in the reports and a schedule for uploading monitoring results into the DES Environmental Monitoring Database (EMD).

E-13. **Invasive Species**:

a. The Applicant shall, within six (6) months (or a later date if acceptable to DES) from the effective date of the license, prepare and submit to DES for approval, a plan to monitor invasive plant species, such as variable leaf milfoil (*Myriophyllum heterophyllum*), yellow iris (*Iris pseudacorus*), and purple loosestrife (*Lythrum salicaria*), at the project. The plan shall include, but not be limited to, the following: (1) a description of the monitoring method; (2) frequency of monitoring; (3) a schedule for filing monitoring reports with DES, NHFGD, USFWS, and FERC; and (4) a description of and implementation schedule for providing public information about species. The Applicant shall consult with the DES, NHFGD and USFWS in developing the Invasive Species Monitoring Plan and shall then implement the DES approved plan.

b. The Applicant shall participate with DES and others in the development of a Long Term Management Plan (LTMP) to control invasive species in Powder Mill Pond and shall comply with any Project operational requirements specified in the DES approved LTMP provided they do not conflict with this Certification.

E-14. **Fish Passage.** Should the Secretary of the Interior pursuant to Section 18 of the Federal Power Act require the Applicant to construct, operate and maintain any fish passage facilities for the Project, those requirements shall become a condition of this Certification.

Monadnock Paper Mills, Inc.
Attn: Brian Maloy, Environmental Services Manager
117 Antrim Road
Bennington, NH 03442-4205

WATER QUALITY CERTIFICATION

In Fulfillment of

Section 401 of the United States Clean Water Act (33 U.S.C 1341)

WQC # 2013-FERC-001.1

Project Name:	Monadnock Hydroelectric Project
Project Location:	Bennington, Greenfield, Peterborough, and Hancock, New Hampshire
Affected Waterbody:	Contoocook River
Owner/Applicant:	Monadnock Paper Mills, Inc. 117 Antrim Road Bennington, NH 03442-4205
Appurtenant License:	Federal Energy Regulatory Commission No. P-6597
Date of Approval:	March 11, 2016 (subject to Conditions below)

A. INTRODUCTION

Monadnock Paper Mills, Inc. (the Applicant) owns and operates the Monadnock Hydroelectric Project (i.e., the Activity or Project) and proposes the continued operation of the Activity for hydropower generation.

The Activity consists of a series of four existing concrete gravity dams: Powder Mill Pond, Monadnock, Pierce, and Paper Mill, the latter three having existing power stations with a total installed capacity of 1,889 kW. The project works also include four impoundments and appurtenant facilities, including transmission lines. The Activity is located in Hillsborough County, New Hampshire, with impoundments of facilities sited in the towns of Bennington, Greenfield, Peterborough, and Hancock. According to the Applicant, the Activity boundary follows the normal full pond elevation around each of the project impoundments. The upstream extent of the Activity boundary extends approximately 3.6 miles upstream of the Powder Mill Pond headwaters on the Contoocook River. The downstream extent of the Activity boundary is the Antrim Road Bridge over the Contoocook River.

This 401 Water Quality Certification (Certification) documents laws, regulations, determinations and conditions related to the Activity for the attainment and maintenance of NH surface water quality standards, including the provisions of NH

RSA 485-A:8 and NH Code of Administrative Rules Env-Wq 1700, for the support of designated uses identified in the standards.

B. WATER QUALITY CERTIFICATION APPROVALs

Based on the facts, findings and conditions noted below, the New Hampshire Department of Environmental Services (DES) has determined that there is reasonable assurance that construction and operation of the Activity will not violate surface water quality standards. DES hereby issues this Water Quality Certification (Certification), subject to the conditions in Section E, in accordance with Section 401 of the United States Clean Water Act (33 U.S.C. 1341) and RSA 485-A:12,III. This Certification replaces WQC # 2013-FERC-001 issued on January 31, 2014.

C. STATEMENT OF FACTS AND LAW

C-1. Section 23 of the United States Federal Power Act (Title 16 U.S. Code, Chapter 12, Subchapter I, Section 817(1)) states

> "[i]t shall be unlawful for any person, State, or municipality, for the purpose of developing electric power, to construct, operate, or maintain any dam, water conduit, reservoir, power house, or other works incidental thereto across, along, or in any of the navigable waters of the United States, or upon any part of the public lands or reservations of the United States (including the Territories), or utilize the surplus water or water power from any Government dam, except under and in accordance with the terms of a permit or valid existing right-of-way granted prior to June 10, 1920, or a license granted pursuant to this chapter."

C-2. Section 4 of the United States Federal Power Act (Title 16, U.S. Code, Chapter 12, Subchapter I, Section 797(e) authorizes FERC

> "[t]o issue licenses to citizens of the United States, or to any association of such citizens, or to any corporation organized under the laws of the United States or any State thereof, or to any State or municipality for the purpose of constructing, operating, and maintaining dams, water conduits, reservoirs, power houses, transmission lines, or other Project works necessary or convenient for the development and improvement of navigation and for the development, transmission, and utilization of power across, along, from, or in any of the streams or other bodies of water over which Congress has jurisdiction..."

C-3. Section 401 of the United States Clean Water Act (Title 33 U.S. Code, Chapter 26, Subchapter IV, Section 1341) states

> "[a]ny applicant for a federal license or permit to conduct any activity including, but not limited to, the construction or

> operation of facilities, which may result in any discharge into the navigable waters, shall provide the licensing or permitting agency a certification from the State in which the discharge originates or will originate...that any such discharge will comply with the applicable provisions of sections 301, 302, 303, 306, and 307 of this title."

C-4. Clean Water Act Section 401(a) states "[n]o license or permit shall be granted until the certification required by this section has been obtained or has been waived...No license or permit shall be granted if certification has been denied by the State..."

C-5. Clean Water Act Section 401(a) and NH RSA 485-A:12,III authorizes DES to verify that the Project maintains compliance with NH surface water quality standards. RSA 485-A:12, III states:

> "No activity, including construction and operation of facilities, that requires certification under section 401 of the Clean Water Act and that may result in a discharge, as that term is applied under section 401 of the Clean Water Act, to surface waters of the state may commence unless the department certifies that any such discharge complies with the state surface water quality standards applicable to the classification for the receiving surface water body. The department shall provide its response to a request for certification to the federal agency or authority responsible for issuing the license, permit, or registration that requires the certification under section 401 of the Clean Water Act. Certification shall include any conditions on, modifications to, or monitoring of the proposed activity necessary to provide assurance that the proposed discharge complies with applicable surface water quality standards. The department may enforce compliance with any such conditions, modifications, or monitoring requirements as provided in RSA 485-A:22."

C-6. Env-Wq 1700, Surface Water Quality Regulations, effective May 21, 2008, fulfills the requirements of Section 303 that the State of New Hampshire adopt water quality standards consistent with the provisions of the Clean Water Act.

C-7. Env-Wq 1701.02 provides that the surface water quality regulations shall apply to all surface waters and to any person who causes point or nonpoint source discharge(s) of pollutants to surface waters, or who undertakes hydrologic modifications, such as dam construction or water withdrawals, or who undertakes any other activity that affects the beneficial uses or the level of water quality of surface waters.

C-8. Env-Wq 1702.46 defines surface waters as "perennial and seasonal streams, lakes, ponds and tidal waters within the jurisdiction of the state, including all

streams, lakes, or ponds bordering on the state, marshes, water courses and other bodies of water, natural or artificial," and waters of the United States as defined in 40 CFR 122.2.

C-9. Env-Wq 1703.01 (c) states that "[a]ll surface waters shall provide, wherever attainable, for the protection and propagation of fish, shellfish and wildlife, and for recreation in and on the surface waters."

C-10. Env-Wq 1703.01 (d) states that "[u]nless the flows are caused by naturally occurring conditions, surface water quantity shall be maintained at levels adequate to protect existing and designated uses."

C-11. Env-Wq 1703.19 states that:

> "(a) The surface waters shall support and maintain a balanced, integrated and adaptive community of organisms having a species composition, diversity, and functional organization comparable to that of similar natural habitats of a region; and
>
> (b) Differences from naturally occurring conditions shall be limited to non-detrimental differences in community structure and function."

C-12. FERC issued a license for the Project on August 27, 1984; the license expired on August 1, 2014. The Applicant applied for a new FERC license on July 31, 2012 (i.e., the final license application). FERC completed an Environmental Assessment of the final license application on July 16, 2013.

C-13. The US Fish and Wildlife Service (USFWS) has provided recommended conditions for the FERC license for the Monadnock Hydroelectric Project to protect, mitigate damages to, and enhance fish and wildlife resources pursuant to Section 10(j) of the Federal Power Act [16 U.S.C. 803(j)(1)]. The recommended conditions and supporting information were presented in letters from USFWS to FERC dated March 14, 2013, August 13, 2013, and September 18, 2013.

C-14. In 2007, DES issued a 401 Certification for a National Pollutant Discharge Elimination System permit issued to the Applicant by the U.S. Environmental Protection Agency (Permit No. NH0000230). This permit and certification were relevant to a discharge of treated effluent from paper manufacturing processes, not operation of the Monadnock Hydroelectric Project.

C-15. On February 1, 2013, the Applicant submitted an application and associated supplemental information for Water Quality Certification to DES. On July 19, 2013, DES requested additional information from the Applicant because the information submitted in the application was insufficient to determine whether water quality standards would be met in all areas affected by the Activity. On August 16, 2013, 28 days after the DES request, the Applicant provided the information that was requested.

C-16. DES issued a draft Certification for public comment from December 19, 2013 to January 20, 2014. Comments were received from the U.S. Fish and Wildlife Service (USFWS) and the Applicant.

C-17. On January 31, 2014, DES issued a final Certification and Response to Public Comments and posted both documents on the DES website at http://des.nh.gov/organization/divisions/water/wmb/section401/ferc.htm.

C-18. On February 28, 2014, the Applicant filed an appeal of the final Certification with the N.H. Water Council. After consultation with the Applicant additional information was received and revisions were made to the Certification. Since substantive changes were made, the revised Certification was made available for public comment prior to finalizing.

C-19. On May 23, 2014, FERC issued a new license for the Project based, in part, on the DES Certification issued on January 31, 2014.

C-20. RSA 485-A:18,I Investigation and Inspection; Records states the following: "Any authorized member or agent of the department may enter any land or establishment for the purpose of collecting information that may be necessary to the purposes of this chapter and no owner of such establishment shall refuse to admit any such member or employee."

C-21. DES issued a draft of the proposed revised Certification for public comment from January 29, 2016 to February 29, 2016. No comments were received.

D. FINDINGS

D-1. The Applicant owns and operates the Monadnock Hydroelectric Project, which requires a federal license under Section 23 of the Federal Power Act. The Applicant filed an application for a New Major Project Less than 5 MW to FERC on July 31, 2012. According to the Applicant, commercial and industrial dams have operated at this location for over 100 years.

D-2. The project requires a Certification under RSA 485-A:12, III and Section 401 of the Clean Water Act.

D-3. Monitoring requirements are appropriate for this Project during operational and non-operational periods to achieve the goals stated in Section E of this Certification, pursuant to Section 401 of the United States Clean Water Act (Title 33 U.S. Code, Chapter 26, Subchapter IV, Section 1341(d)), which provides that

> "[a]ny certification provided under this section shall set forth any effluent limitations and other limitations, and monitoring requirements necessary to assure that any applicant for a Federal license or permit will comply with any applicable effluent limitations and other limitations...and shall become a condition on any Federal license or permit subject to the provisions of this section."

D-4. The Monadnock Hydroelectric Project consists of a series of four existing concrete gravity dams: Powder Mill Pond, Monadnock, Pierce, and Paper Mill, the latter three having existing power stations with an approximate total installed capacity of 1,889 kW. The project works also include four impoundments and appurtenant facilities, including transmission lines.

a. The Powder Mill Pond Dam is a concrete gravity structure consisting of earthen embankments, with concrete core walls at river mile (RM)[1] 46.08. It is 366 feet long and 18.6 feet high, with a 228-foot-long spillway section that has a crest elevation of 675.44 feet based on 1929 National Geodetic Vertical Datum (NGVD) without flashboards and an elevation of 677.44 feet NGVD at the top of 2-foot-high flashboards. At the normal pond elevation (677.44 feet NGVD), the dam impoundment has a volume of approximately 1,940 acre-feet, a surface area of approximately 435 acres, and extends upstream approximately 3.6 miles. The total contributing drainage area at the Powder Mill Dam is 184 square miles. The Powder Mill Pond development also includes a 15-foot-wide, 35-foot-long regulating gatehouse structure with four 2.5-foot-wide, 2.5-foot-high wooden vertical slide gates (with 2 foot wide by 2 foot high openings); a 4 foot by 4 foot flood gate; and a 21-foot-long, 4-foot diameter outlet pipe at the base of the dam.

b. The Monadnock Dam is a concrete gravity dam located 4,200 feet downstream of the Powder Mill Dam at RM 45.28. It has a total length of 515 feet, a maximum height of 22 feet, and a 165-foot-long spillway section (15.67 feet high) with a crest elevation of 663.80 feet NGVD without flashboards and an elevation of 665.80 feet NGVD at the top of 2-foot-high flashboards. To pass minimum flow, the Applicant installed a 10-foot-wide by seven-inch-high notch in the flashboards in the October, 2015. The dam has a total impoundment area of approximately 5 acres at the normal pool level (665.80 feet NGVD when flashboards are installed), which extends upstream to the toe of the Powder Mill Dam. Water from the impoundment is diverted through a 32-foot-wide, 14-foot-high intake structure equipped with four 5.5-foot-wide, 8-foot-high headgates with 5-foot by 7.5-foot openings to a 75-foot-long, 20-foot-wide powerhouse at the west end of the dam. The powerhouse contains one 125-kilowatt (kW) turbine-generating unit and one 298-kW turbine-generating unit for a total installed capacity of 423 kW. The individual flow capacity range of each turbine is 65 to 90 cfs and 120 to 240 cfs for a total combined turbine flow capacity range of 65 to 330 cfs. After passing through the turbines, the water is discharged back to the river approximately 100 feet downstream of the dam. The dam also has a 5-foot by 5-foot floodgate that opens into the tailrace. The bypass channel at this development is approximately 50 feet long.

[1] River mile is defined as the distance in miles along the Contoocook River, starting from its confluence with the Merrimack River.

c. The Pierce Dam is a concrete gravity dam located approximately 900 feet downstream from the Monadnock Dam at RM 45.11. It has a total length of 420 feet, a maximum height of 28 feet and a 290-foot-long spillway with a crest elevation of 651.40 feet NGVD without flashboards and 653.40 feet NGVD at the top of 2-foot-high flashboards. To pass minimum flow the Applicant, in November 2015, increased the size of the notch in the flashboards from 10-foot-wide by six-inches-high to 10-foot-wide by seven-inches-high. The dam has a total impoundment area of approximately 7 acres at the normal full pool (653.40 feet NGVD when flashboards are installed) which extends upstream to the toe of a portion of the Monadnock dam however it does not inundate a small section of the bypass reach on the east side of the dam. Water from the impoundment is diverted through a 32-foot-wide, 21-foot-high intake structure equipped with three 9-foot-wide, 12-foot-high wooden slide gates to a 25-foot-long, 35-foot-wide powerhouse at the east end of the dam. A new spillgate (anticipated to be 3-foot-wide by 2-foot-high) is proposed to be constructed in 2016 to pass minimum bypass reach flows when the impoundment must be lowered below the concrete dam crest for maintenance such as flashboard repair. The powerhouse contains one 500-kW turbine-generating unit and one 220-kW turbine-generating unit for a total installed capacity of 720 kW. The individual flow capacity range of each turbine is 55 to 139 cfs and 134 to 309 cfs for a total combined turbine flow capacity range of 55 to 448 cfs. After passing through the turbines, the water is discharged through a tailrace. The tailrace partially encircles an island and re-enters the main channel of the river approximately 600 feet downstream of the main dam. The bypass channel at this development is approximately 750 feet long.

d. The Paper Mill Dam is a concrete gravity dam located 1,140 feet downstream of the Pierce Dam at RM 44.9. It has a total length of 280 feet, a maximum height of 19 feet and a 142-foot-long gravity spillway with a crest elevation of 627.64 feet NGVD (the dam does not currently have any flashboards). The dam has a 6-foot-wide, 8-foot-high timber waste gate with a 16-inch-wide, 16-inch-high cut-out with the bottom of the cut-out at elevation 625.31 feet NGVD. The Applicant proposes to increase the size of the cut-out to 20-inches-wide by 20-inches-high to pass the minimum bypass flow. The dam has a total impoundment area of approximately 5 acres which extends upstream approximately 1,140 feet at full pool elevation (627.64 feet NGVD). Water from the impoundment is diverted through and a 300-foot-long, 24-foot-wide power canal and headgate structure with three 6-foot-wide, 8-foot-high wooden slide gates and a 24-foot-wide, 10-foot-long forebay. The diverted water is then passed through a 30.0-foot-wide, 7.5-foot-high intake structure and a 10-foot-diameter, 200-foot-long steel penstock that leads to a 22-foot-wide, 27-foot-long generating room (powerhouse) located on the lower level of Monadnock Paper's production facility. The generating room contains one 746-kW turbine generating unit with a flow capacity range of 193 to 378 cfs. After passing through the turbine, the water is discharged through a tailrace and re-enters the river

approximately 800 feet downstream of the dam. The bypass channel at this development is approximately 1300 feet long.

e. Minimum flows are required at the Project as per Article 26 of the 1984 FERC project license. The Project has a required continuous minimum flow through the Project of 70 cfs or inflow (whichever is less) as measured immediately downstream of the Powder Mill development and at the confluence of the tailrace and bypass reach of the Paper Mill development. At each of the three downstream developments (Monadnock, Pierce, and Paper Mill), the 1984 license also requires the Applicant to release a year-round minimum flow of 13 cfs, or inflow (whichever is less), in the bypass reach.

f. According to the Applicant's final FERC license application (FERC application), the Project has been operated in a seasonal run-of- river mode. The Powder Mill Pond Dam is operated to regulate the flow of the river to the three lower dams for the maintenance of minimum flows and the generation of power at these sites. The downstream dams, Monadnock, Pierce, and Paper Mill, have generating facilities and are operated in a run-of-river mode, taking advantage of flows released by the Powder Mill Pond Dam. When inflow equals or exceeds required minimum flows plus minimum flows needed for generation, the optimum generating flow (300 cfs) for the three hydroelectric developments downstream is released from the Powder Mill Pond Dam. According to the FERC application, storage ponding and releasing is typically implemented only occasionally at Powder Mill Pond for maintenance activities at the other downstream developments, to maintain minimum flows to downstream developments, and to accommodate flood flows, and rarely for meeting short-term energy demands.

While the 1984 FERC license allowed for daily or weekly storage and release, the FERC application indicated that the Applicant operated on a seasonal store and release mode for 6 months of the year. According to the FERC application, this operational regime is primarily associated with maintenance, minimum flows, and flood storage. During the summer season, the Applicant maintains Powder Mill Pond at normal full pond elevation in support of NH Fish and Game Department (NHFGD) fishery management objectives (i.e., to promote largemouth bass spawning). The Applicant does not manipulate pond levels for power generation in the winter months which allows for ice-over conditions to be maintained for public fishing.

As discussed in Fact C-18, the Applicant appealed the final Certification issued for this Project in January, 2014. As a result of subsequent consultation, it is understood that the Applicant will operate the Project year-round in a run-of-river mode by maintaining impounded water levels at normal full pool (except for maintenance activities and during emergency conditions).

According to flow calculations submitted by the Applicant in 2015, if inflow was equal to the maximum combined turbine capacity plus minimum bypass flow, and the wicket gates were then opened for full power generation, the water level in the Monadnock, Pierce, and Paper Mill impoundments would drop a maximum of approximately 8, 7 and 11 inches respectively.

The Applicant typically conducts a drawdown once per year for annual maintenance on the hydro facilities. This drawdown usually lasts approximately one to two weeks (and sometimes longer) depending on the issues that arise. The Applicant has historically refilled the impoundments for the Project by retaining the excess flow above the amount needed for maintenance of minimum outflow requirements. In a letter dated August 16, 2013 to FERC, the Applicant stated that according to the current license, the Applicant must provide State and federal agencies with notification at least 60 days prior to temporary maintenance drawdowns. The notification identifies the level of drawdown necessary, timing and duration, method for ensuring minimum flow requirements are met during drawdown, and the opportunity for agencies to respond to notification. The Applicant proposes to continue this notification procedure under the new license.

g. In 2014 and 2015, the Applicant installed Automated Pond Level Control Systems (APLCSs) at each of the four developments to minimize fluctuations in the impoundments. All are now in operation. The level controls are accurate to +/- 0.01 feet. In response to elevation changes, and to control water leaving the ponds, the pond level transmitter sends a signal to the level controller that controls the four vertical slide gates at the Powder Mill Pond development and the turbine wicket gates at the three hydropower developments.

D-5. The Contoocook River, Powder Mill Pond, other impoundments, and unnamed wetlands in the Project area are surface waters of the state under Env-Wq 1702.46. Surface waters that could be potentially affected by this Activity and their associated AU numbers (where available*) include the following:

Assessment Unit (AU)	Water body Name
NHRIV700030104-23	Contoocook River – Boglie Brook Dam to Otter Brook
NHRIV700030106-08	Contoocook River – Otter Brook to Powder Mill Pond
NHLAK700030107-03	Powder Mill Pond
NHRIV700030108-03	Contoocook River – Powder Mill Dam to Monadnock Dam
NHIMP700030108-01	Monadnock Dam

Assessment Unit (AU)	Water body Name
NHIMP700030108-02	Pierce Dam
NHIMP700030108-03	Paper Mill Dam
NHRIV700030108-05	Contoocook River – Paper Mill Dam to upstream of Monadnock Paper Mill NPDES
* DES has assigned Assessment Unit (AU) identification numbers to surface waters that appear on 1:24,000 scale hydrography. Consequently, not all surface waters currently have an AU number. Surface waters that do not have an AU number are still considered surface waters of the State in accordance with Env-Wq 1702.46.	

D-6. The surface waters that may be potentially affected by the Activity are all Class B water bodies. Therefore, Class B New Hampshire surface water quality standards apply to the water bodies affected by the Activity. Class B water bodies are considered suitable for fishing, swimming, and, after adequate treatment, as a water supply.

D-7. According to the 2012 Section 303(d) list of impaired waters, the following surface waters in the vicinity of the proposed Activity, which have assigned AU numbers, are listed as impaired. All impairments, with the exception of those highlighted in bold (which have approved Total Maximum Daily Load studies), are on the Section 303(d) List.

Assessment Unit (AU)	Water body Name	Cause of Impairment (Designated Use Impaired)
NHRIV700030104-23	Contoocook River – Boglie Brook Dam to Otter Brook	Dissolved Oxygen (AL) **Mercury (FC)**
NHRIV700030106-08	Contoocook River – Otter Brook to Powder Mill Pond	**E.coli (PCR)** Aluminum (AL) pH (AL) **Mercury (FC)**
NHLAK700030107-03	Powder Mill Pond	Chlorophyll-a (PCR) Aluminum (AL) Dissolved Oxygen (AL) Dissolved Oxygen Saturation (AL) **Non-Native Plants (AL)**
Notes: AL = Aquatic Life, PCR = Primary Recreation, SCR = Secondary Recreation, FC = Fish Consumption, SFC = Shellfish Consumption Impairments highlighted in bold have approved Total Maximum Daily Load studies. All other impairments are on the Section 303(d) List.		

D-8. The Contoocook River within the Activity boundary is impacted by the Activity's four impoundments, three bypass reaches, and three tailraces. In addition, the regulated river flows from the Project influence the river flows downstream.

The impoundments, bypass reaches, and tailraces are created by the presence of the Powder Mill Dam, Monadnock Dam, Pierce Dam, and Paper Mill Dam. The diversion of water through powerhouses during hydroelectric power generation reduces the quantity of water available to bypass reaches. The presence of dams and the subsequent creation of impoundments at each development reduces water velocity and increases river residence time beyond that which occurs under unimpounded conditions. Store and release operations manipulate water levels in Powder Mill Pond. These conditions may promote variable water quality conditions, particularly water temperature and dissolved oxygen, and can foster the development of aquatic plant communities, including phytoplankton that can influence other water quality parameters such as pH and water clarity.

D-9. Water Quality Study. The Applicant studied the water quality of the Contoocook River from upstream of Powder Mill Pond to below the Paper Mill Dam tailrace during 2010 to address the water quality concerns raised by DES and other resource agencies during the pre-filing consultation period. The study consisted of continuous (every 30 minutes for approximately 2 to 3 weeks) measurements of dissolved oxygen and temperature using datasondes as well as monthly grab samples for nutrients, chlorophyll-a, bacteria, pH, alkalinity, and specific conductance. The study was conducted in June, July, August, and September 2010. During this time, the river flow ranged from approximately 30 to 50 cfs, which is approximately half the normal level for this period based on historical observations from 1945-2008. No hydropower was generated during the study because of the low flows.

a. Dissolved oxygen was compliant with state water quality standards in all areas except Powder Mill Pond. In Powder Mill Pond, dissolved oxygen fell below state standards (no less than 5 mg/L or a daily average of 75% saturation) on one day during the two to three week monitoring period in 2010 (4.92 mg/L and 71% daily average percent saturation on July 26, 2013). Powder Mill Pond is listed as impaired for dissolved oxygen on the 2012 NH 303(d) List. The minimum dissolved oxygen in the Monadnock impoundment was just above the dissolved oxygen standards (5.20 mg/L and daily average of 77.1% saturation). The minimum dissolved oxygen in the Pierce and Paper Mill impoundments were substantially above the dissolved oxygen standards (6.43 and daily average of 84.5% saturation in the Pierce impoundment and 6.56 mg/L and daily average of 85.1% saturation in the Paper Mill impoundment). Minimum impoundment temperature ranged from 72.2 °F (22.3°C) to 75.3°F (24.1°C). Maximum impoundment water temperatures ranged from 81.8°F (27.7°C) to 84.2°F (29.1°C).

b. Temperature measurements from deployed loggers showed a relatively small increase in average temperature from upstream of the project (71 °F) to below the project (73 °F)[2].

2. From Table 4-4, in the July 2012 Final Study Report (p.14 of the 2010 Water Quality Study Report (Revised)).

c. Nutrient concentrations were highest at the station approximately one mile upstream of the Activity, indicating upstream sources of nutrients to Powder Mill Pond. Total phosphorus concentrations ranged from 46 to 106 ug/L upstream of the Activity and 30-48 ug/L downstream. Nitrate and total Kjeldahl nitrogen were only detected upstream of the Activity at 0.1 and 1.59 mg/L, respectively. Ammonia concentrations did not change appreciably from upstream (0.305 mg/L) to downstream of the Activity (0.227-0.26 mg/L).

d. Chlorophyll-a concentrations were generally low during the study. The highest concentration of 4.76 ug/L was measured in Powder Mill Pond, however, this water body is listed as impaired for chlorophyll-a on the 2012 NH 303(d) List based on measurements from other studies that exceeded the threshold of 15 ug/L.

e. Instantaneous (i.e., grab) measurements of dissolved oxygen and water temperature were taken in the Powder Mill Pond reach and in the bypass channels for the Monadnock and Pierce developments in July, August and September of 2010. Estimated flows ranged from 31 to 56 cfs. The Paper Mill bypass reach was sampled in June and July of 2012. Estimated flows ranged from 31 to 47 cfs. All flow was spilling into the bypass reaches during the sampling events because river flows were too low to generate power. Dissolved oxygen ranged from 6.62 to 8.00 mg/L and temperature ranged from 66.6 °F (19.4 °C) to 75.2 °F (24.0 °C). Monitoring to determine compliance with the 75 percent daily average percent saturation standard [Env-Wq 1703.07 (b)] at flows equal to the current minimum allowable bypass flow of 13 cfs, and when power was being generated, was not conducted in the Pierce and Paper Mill bypass reaches (the longest bypass reaches).

f. Compliance with the 75 percent saturation dissolved oxygen standard was not directly measured in the Powder Mill Pond reach where the current minimum required flow is 70 cfs or inflow, whichever is less. However, since 1) flows during the study were well less than 70 cfs (i.e., approximately 30 to 50 cfs), and 2) average daily dissolved oxygen percent saturation met standards in the downstream Monadnock impoundment, which extends up to the Powder Mill Pond dam, it is expected that average daily percent saturation standard for dissolved oxygen is also met in the Powder Mil Pond reach.

g. Dissolved oxygen and temperature monitoring was not conducted downstream of the Paper Mill development (where the river transitions to low gradient) to determine if state dissolved oxygen standards were met at the current minimum flow of 70 cfs or inflow (whichever is less). However, since the project is going to be operated in run-of-river mode and since dissolved oxygen was substantially above standards in the upstream Paper Mill impoundment at relatively low flows (30 to 50 cfs), it is expected that dissolved oxygen standards will also be met in the reach downstream of the Paper Mill development.

h. Based on previous studies, Powder Mill Pond is categorized as eutrophic and listed as impaired for dissolved oxygen and chlorophyll-a on the New Hampshire 303(d) List of Impaired Waters.

i. Infrequent occurrences of non-attainment with established dissolved oxygen criteria were observed in Powder Mill Pond in 2010, which is consistent with the impairment for dissolved oxygen in Powder Mill Pond on the 2012 NH 303(d) List. Pollutant loadings from upstream point and nonpoint sources can impact the concentrations of DO and chloropyll a. Since 2009, phosphorus loadings from two upstream wastewater treatment plants have been reduced (Jaffrey in 2009 and Peterborough in 2012). The effects of this change in pollutant loading on dissolved oxygen and chlorophyll-a in Powder Mill Pond is unknown. Conceptually, however, DES expects that reductions in pollutant loading, combined with operating the project in a run-of-river mode by maintaining the pond at normal full pool (except for maintenance or emergencies), will ultimately improve dissolved oxygen and chlorophyll levels.

j. Based on the above, additional water quality monitoring may be warranted to confirm compliance with dissolved oxygen standards when minimum allowable flows are passed downstream in the Pierce and Paper Mill bypass reaches. Based on the annual flow duration curve in Appendix E of the FERC application, inflows of 13 cfs or less occur less than one percent of the time. Consequently, minimum bypass flows of 13 cfs are expected to occur most often when inflow is within the operating range of the turbines and flow is passed through the turbines (which is only done when power is generated).

D-10. Freshwater Mussel Study. The Applicant completed a study of freshwater mussels to address concerns raised by DES and other resource agencies during the pre-filing consultation period. The study was conducted in 2010 and consisted of field surveys of the perimeter of each impoundment to a depth of approximately 6 feet and the river reaches below each dam. Ten sites within Powder Mill Pond ranging in size from 0.2 acres up to 3.8 acres were surveyed. Eastern elliptio (*Elliptio complanata*)were found in all sites and were the most dominant species. The eastern floater (*Pyganodon cataracta*) was also found at 3 of the sites in Powder Mill Pond. A single remnant triangle floater shell (*Alasmidont a undulata*) was found in the Pierce reach. Eastern elliptio and eastern floaters are generalists that use pond, lakes and small rivers as preferred habitat. Brook floaters (a state-protected species) were not found during the survey.

The Applicant concluded that, although somewhat lacking in species diversity, the survey results indicate that Activity waters contain healthy mussel populations and also provide a wide range of reproductive hosts for many of the freshwater mussel species found in New Hampshire.

In a letter dated August 13, 2013 to FERC, the USFWS stated that the mussel survey results showed lower densities in beds found at shallower elevations

(i.e., in beds more frequently exposed to routine project operations).

In a letter dated May 22, 2011, DES commented that the mussel populations described by the Applicant (i.e., mainly one tolerant species with some indication of the presence of two other species) do not necessarily represent a healthy condition.

Operating the project year-round as a run-of-river operation by maintaining impounded water levels at normal full pool (except for maintenance activities or emergency conditions) as committed to by the Applicant may benefit mussel abundance and diversity.

D-11. Baseline Fish Survey and Instream Flow Study. The Applicant completed a baseline fish survey and instream flow study to address fisheries concerns raised by DES and other resource agencies during the pre-filing consultation period. The baseline fish survey took place on October 2011 and consisted of electroshocking at four locations in the study area. Aquatic habitat suitability in relation to instream flow was evaluated using the Instream Flow Incremental Methodology (IFIM) modeling approach and a Physical Habitat Simulation Model (PHABSIM). Field data to calibrate the model was collected in July 2011 for the following river flows:

Site/Reach	Low	Mid	High
Powder Mill	23 cfs	63 cfs	117 cfs
Pierce	23 cfs	63 cfs	117 cfs
Paper Mill	15 cfs	63 cfs	109 cfs
Downstream Antrim	26 cfs	62 cfs	105 cfs

The calibration data were used to populate a PHABSIM model to predict habitat over a range of incremental flows from 10 to 120 cfs. In addition, a habitat duration and time-series analysis was completed so that the frequency and duration of various levels of suitable habitat could be evaluated. The results of the studies have been evaluated by fisheries experts at USFWS and the New Hampshire Fish and Game Department (NHFGD). It should be noted that the NHFGD manages Powder Mill Pond as a warmwater fishery. Several bass fishing tournaments are held annually on the pond. NHFGD manages the bypass and riverine reaches of the Contoocook River near Bennington, including the project waters of the Monadnock, Pierce and Paper Mill developments as a put and take trout fishery. Annual stocking of brown and rainbow trout is conducted below the Powder Mill and Monadnock dams.

a. The range of flows modeled for the study was from 10 cfs to 120 cfs. The median monthly flows in the study area exceed 120 cfs (the upper end of the study) during all months other than July through October. Therefore,

findings from the study are most applicable to the summer and early fall seasons.

b. Calibration data was collected at 9 transects: two downstream of Antrim, 4 below the Paper Mill dam, 1 below the Pierce dam, and 2 below the Powder Mill dam.

c. Weighted useable area (WUA) represents the aquatic habitats available to aquatic biota. WUA is calculated using the parameters (depth, velocity and substrate) forecast for each cell[3] as they relate to the Habitat Suitability Indices (HSI) criteria established for the target species and lifestage of interest. Selected target species for use as indicators of habitat suitability were brown trout (adult and juvenile), longnose dace (adult and juvenile) and benthic macroinvertebrates. For each cell the PHABSIM model rates each parameter based on the HSI criteria from 0.0 to 1.0. These values are then multiplied by the known area of the cell. All the areas are then summed to arrive at a total WUA for each transect. The WUA for each transect is then summed to arrive at the total available habitat for each study site, flow increment and target species. One unit of WUA represents 1 square foot of usable habitat.

   Results are often expressed as a percent of maximum WUA which is the WUA at a certain flow divided by the highest WUA modeled for the range of flows studied. Since the range of flows studied only represents summer and early fall conditions, the maximum WUA metric represents the percent of WUA available under summer and early fall conditions, not during the entire year.

d. Due to the short length of the Monadnock Dam bypass reach (50 feet), the Applicant and consulting agencies did not include this reach in the instream flow study. The Applicant requested that the existing bypass reach minimum flow requirement (13 cfs) in the 1984 FERC license be used for the new FERC license. The USFWS agrees and has recommended that the bypass reach minimum flow for the Monadnock Dam continue to be 13 cfs.

e. The Pierce bypass channel is the second longest bypass reach (750 feet) and is dominated by high gradient falls, fast flowing pool and riffle complexes strewn with large boulders, and large deep pools. The composite WUA / discharge relationship curve for the target fish species for the Pierce dam bypass reach is shown in Figure 9[4] below. Results of the study indicate that the Pierce Dam bypass reach minimum flow requirement in the 1984 FERC license (13 cfs) provides approximately 40% of maximum WUA for adult brown trout, 50% of maximum WUA for juvenile brown trout, 65% of maximum WUA for adult longnose dace, 95% of maximum WUA for juvenile longnose dace, and approximately

3. In PHABSIM, a "cell" is an increment of width of a stream channel multiplied by its length to give an area.
4. Figure 9 is from the July 2012 Final License Application.

10% of maximum WUA for benthic macroinvertebrates. In the FERC application, the Applicant requested that the minimum flow requirement in the 1984 FERC license be used for the new FERC license. The USFWS recommended that the bypass reach minimum flow requirement be increased to 40 cfs in order to increase WUA.

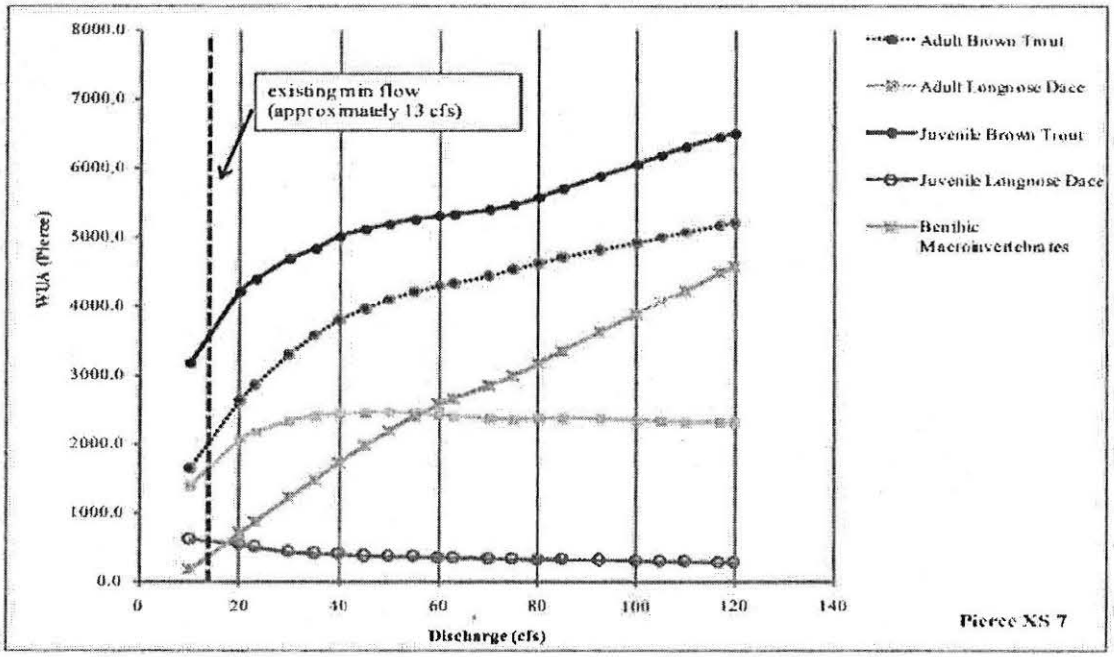


FIGURE 9. COMPOSITE WUA/DISCHARGE RELATIONSHIP FOR THE PIERCE BYPASSED REACH.

Percent of Maximum Weighted Usable Area for Target Fish Species in the Pierce Dam Bypass Reach at Different Flows		
Species	**Flow=13 cfs**	**Flow=40 cfs**
Adult Brown Trout	40%	73%
Juvenile Brown Trout	50%	77%
Adult Long Nose Dace	65%	99%
Juvenile Long Nose Dace	95%	65%
Benthic Macroinvertebrates	10%	38%

f. The Paper Mill dam bypass reach is the longest bypass (1300 feet) and consists primarily of a high gradient bedrock dominated reach below the dam and a low gradient riffle-run-pool habitat complex located immediately upstream of the tailrace. The composite WUA / discharge relationship curve for the target fish species for the Paper Mill dam bypass reach is shown in Figure 8[5] below. Results of the study indicate that the Paper Mill bypass reach minimum flow requirement in the 1984

5. Figure 8 is from the July 2012 Final License Application.

FERC license (13 cfs) provides approximately 50% of maximum WUA for adult brown trout, 64% of maximum WUA for juvenile brown trout, 48% of maximum WUA for adult longnose dace, 71% of maximum WUA for juvenile longnose dace, and approximately 25% of maximum WUA for benthic macroinvertebrates. In the FERC application, the Applicant requested that the minimum flow requirement in the 1984 FERC license be used for the new FERC license. The USFWS recommended that the bypass reach minimum flow requirement be increased to 60 cfs in order to increase the WUA.

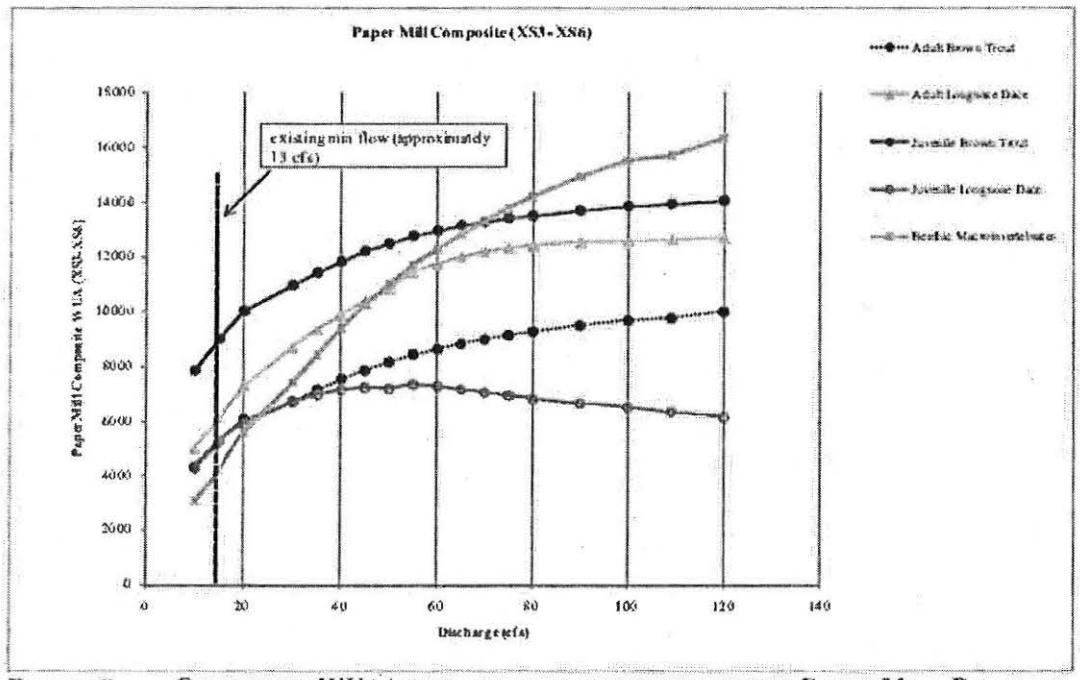


FIGURE 8. COMPOSITE WUA/DISCHARGE RELATIONSHIP FOR THE PAPER MILL BYPASSED REACH.

Percent of Maximum Weighted Usable Area for Target Fish Species in the Paper Mill Dam Bypass Reach at Different Flows		
Species	**Flow=13 cfs**	**Flow=60 cfs**
Adult Brown Trout	50%	86%
Juvenile Brown Trout	64%	92%
Adult Long Nose Dace	48%	93%
Juvenile Long Nose Dace	71%	99%
Benthic Macroinvertebrates	25%	75%

g. The results of this study also indicate that the existing downstream minimum flow requirement (70 cfs or inflow if less) downstream of the Activity provides approximately 84% of maximum WUA for adult brown trout, 92% of maximum WUA for juvenile brown trout, 99% of maximum WUA for adult longnose dace, 74% of maximum WUA for juvenile longnose dace, and approximately 86% of maximum WUA for benthic macroinvertebrates. In the FERC application, the Applicant requested

that the minimum flow requirement in the 1984 FERC license be used for the new FERC license. The USFWS agreed and recommended that the minimum flow through the project continue to be 70 cfs (or inflow if less). Since the Applicant clarified that it proposes to operate the project year-round in a run-of-river mode by maintaining impounded water levels at normal full pool (except for maintenance activities or emergency conditions), the minimum flow requirement of 70 cfs or inflow (whichever is less) would only apply when the pond is drawn down and refilled for scheduled maintenance or emergencies.

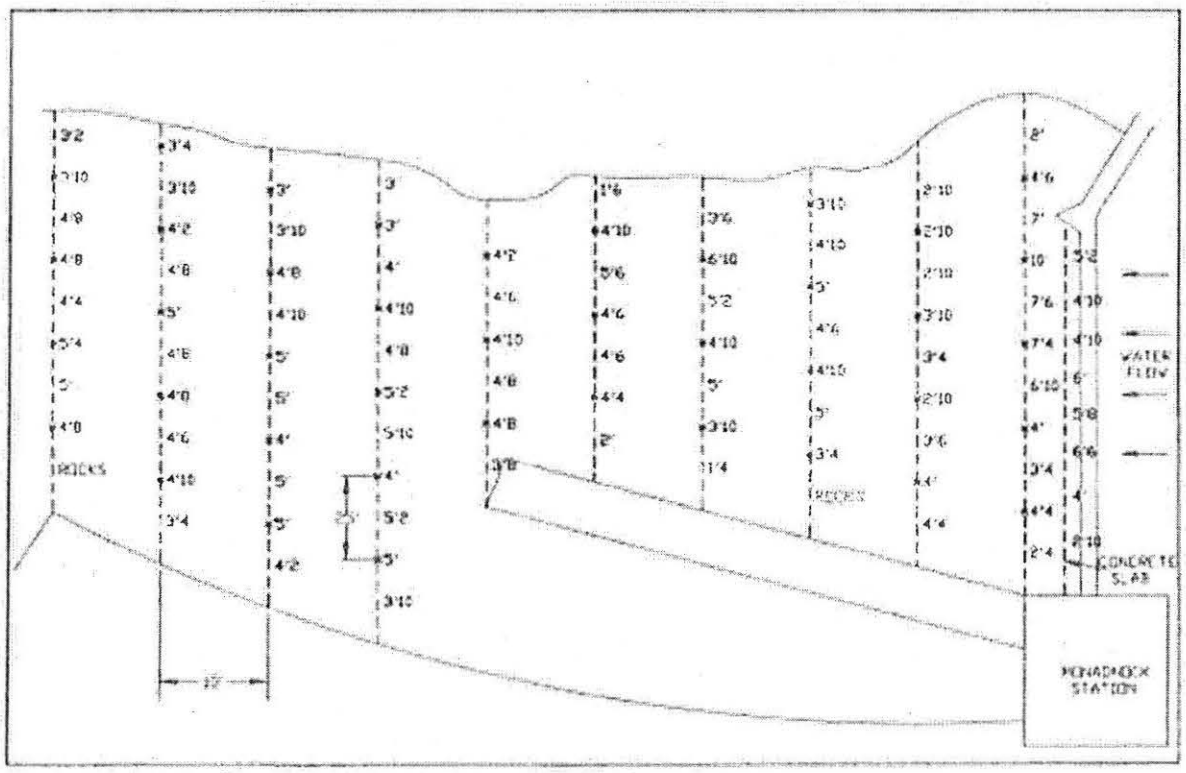
h. The applicant discharges treated effluent to the Contoocook River below the project. Dilution calculations for the discharge permit are based on a 7Q10 low flow in the river of 16.5 cfs. The minimum flow through the project recommended by the applicant and USFWS (70 cfs or inflow) is higher than the 7Q10 and, therefore, should not affect dilution of the treated effluent.

i. The NHFGD has advised DES (personal communication with Carol Henderson and Executive Director Glenn Normandeau in December 2013), that although the NHFGD recognizes the relationship between bypass flows on aquatic habitat and the fish and benthic community in the bypass reaches, their primary concern is the fishery within Powder Mill Pond. Increasing bypass flows could result in the need for the Applicant to frequently fluctuate the water level in Powder Mill Pond below the top of flashboards to meet the short-term energy demand, which could, in turn, negatively impact the fishery in Powder Mill Pond. With this in mind, the existing minimum bypass flow of 13 cfs at the three developments is considered not ideal but acceptable, in this case, by the NHFGD.

j. DES concurs with the USFWS recommendations for minimum flow through the project of 70 cfs or inflow (whichever is less) and with the NHFGD recommendation to continue requiring a minimum flow of 13 cfs or inflow (whichever is less) in the bypass reaches for the Monadnock, Pierce and Paper Mill developments in order to meet state water quality standards (Env Wq 1703.19). This concurrence is caveated in section D-9.j regarding the potential need for monitoring to confirm that dissolved oxygen standards in the Pierce and/or Paper Mill bypass reaches are being attained at a minimum bypass flow of 13 cfs.

k. In November 2014, the Applicant advised DES that there are no low level outlets that discharge to the bypass channels at the Pierce and Monadnock developments. Consequently, when the water level in these impoundments fall below the elevation necessary to pass the minimum flows over the concrete spillway when the flashboards are not in place, minimum flows cannot currently be met unless other means are implemented.

In May 2015 at the Monadnock development, the Applicant took soundings every 25 feet along 11 cross-sections spaced at approximate 10 foot intervals. The sections extended from the toe of the dam downstream approximately 100 feet along the main river channel and included the main (widest part) of the bypass channel below the main spillway but did not include the relatively small (approximately 50-foot-long) bypass reach located just below the right (east) abutment of the dam that is oriented at an angle to the river and main spillway axis. On the day of the soundings, no water was flowing over the Monadnock spillway and the water level at the Pierce dam was reported to be at the top of the flashboards. As shown in the figure below, the soundings indicated that with the Pierce impoundment at the top of flashboards, there would be at least two feet of water in the majority of the main bypass channel below the main spillway.



As a majority of the main bypass channel below the dam would be sufficiently inundated, and since maintenance generally occurs relatively infrequently, DES (after consultation with the NHFGD), agreed that as long as maintenance drawdowns at Monadnock are conducted when the Pierce impoundment was at or above the top of flashboards, additional measures (such as construction of a spill gate, installation of siphons, etc.) would not be necessary to pass minimum flows in the small section of bypass channel on the east side of the Monadnock dam.

At the Pierce development, the Applicant advised DES in August, 2015 that they

would construct a new spill gate in 2016 to pass the minimum bypass channel flow when the impoundment needs to be lowered below the concrete crest elevation of the dam for maintenance of flashboards, etc. The new spill gate is anticipated to be 3-feet-wide and 2-feet-high.

D-12. Run-of-River Operations. According to the FERC application (p. 2-21), "... storage ponding and releasing is typically implemented only occasionally at Powder Mill Pond for maintenance activities at the other downstream developments, to maintain minimum flows to downstream developments, to accommodate flood flows, and rarely for meeting short-term energy demands." The three downstream dams are operated in run-of-river mode. During the summer season (May 1 to August 31), the Applicant maintains Powder Mill Pond at normal full pond in support of fishery management objectives (i.e. to promote largemouth bass spawning). Further, the FERC application (p. 2-24) states that the Applicant "...does not typically manipulate pond levels in the winter months, so that ice-over conditions are maintained for public fishing."

a. The Applicant's proposal in the FERC license application is consistent with USFWS' recommendation to maintain Powder Mill Pond at normal full pool from January 1 through February 28 and from May 1 through August 31.

b. Except for maintenance activities or emergency conditions, the Applicant now proposes to operate Powder Mill Pond in a year-round run-of-river mode by maintaining Powder Mill Pond at normal full pool. DES concurs with the Applicant's proposal as it could potentially benefit water quality.

D-13. Powder Mill Pond Water Level Study. The Applicant completed a Drawdown Modeling and Shoreline Habitat Assessment in Powder Mill Pond in 2010. For this study, the Applicant created a bathymetric map of the Powder Mill Pond and maps of abutting wetland communities. The Applicant also reviewed historical records of water surface elevation in the pond between October 1, 2006 and April 30, 2012. This information was used to assess the potential effects of Powder Mill Pond water level management on existing wetland and littoral habitat.

a. The frequency analysis of average daily Powder Mill Pond water surface elevation showed that the water level was drawn down by 2 feet or less approximately 97.8% of the time. Drawdowns greater than 2 feet occurred 2.2% of the time (approximately 8 days / year on average) and drawdowns greater than 3 feet occurred only 0.2% of the time (approximately 1 day per year on average) over an approximate 5.5 year period. In the last 14 years, the water surface elevation has not been drawn down the full 4-feet authorized in the 1984 FERC license for the Activity.

The information from the study is summarized in the table below. The percent of time shown in the table are based on the period October 1, 2006 to April 30, 2012 and include drawdowns for purposes other than power generation, such as flood storage, maintenance, and satisfying minimum flow requirements. According to the FERC application (p. 2-23)

"Because MPM draws the Powder Mill Pond for purposes other than to enhance power generation, such as for flood storage, maintenance, and to satisfy minimum flow requirements, it is impossible to discern from reservoir elevation data presented in Figure 3-1 the frequency of drawdown for generation purposes only." The maximum number of days per year that the water surface elevation was drawn down more than 2 feet was approximately 18 days in 2011 (from July to November)[6]. According to the Applicant, maintenance drawdowns are conducted once per year and usually last one to two weeks depending on the issues that arise. Historically, it appears that drawdowns greater than 2 feet for power generation occurred infrequently.

Drawdown Depth from Full Pool in feet	Water Surface Elevation (WSEL) in feet NGVD29	Percent of time* WSEL is at or above this level
0	677.44	58.5%
1	676.44	82.4%
2	675.44	97.8%
3	674.44	99.8%
4	673.44	100%

* Based on records from October 1, 2006 through April 30, 2012. Values include drawdowns for power generation, maintenance, flood storage and minimum flow.

The study also demonstrated the impact of water level fluctuations in Powder Mill Pond on its surface area, volume, and littoral area. As shown in the table below, a drawdown of 2 feet would reduce the lake area by 24%, lake volume by 46%, and littoral area by 28%. Operating in a year-round run-of-river mode should result in more aquatic habitat being available for longer periods of time which should benefit aquatic life.

.Draw-down Depth from Full Pool in feet	Lake Surface Area		Lake Volume		Lake Littoral Area*	
	Acres	% of full pool	Acre-feet	% of full pool	Acres	% of littoral area
0	508	100%	1932	100%	449	100%
1	438	86%	1460	76%	378	84%
2	384	76%	1051	54%	325	72%
3	337	66%	691	36%	278	62%
4	291	57%	377	19%	232	52%
5	139	27%	157	8%	79	18%
6	60	12%	66	3%	0	0%
7	35	7%	19	1%		
8	6	1%	1	0%		
9	0	0%	0	0%		

6. From Table 3-1 in the July 2012 Final License Application.

* Littoral area is defined as the lake surface area between 0 and 6 feet in depth (449 acres, which is 508 acres at 0 feet minus 60 acres at 6 feet). Changes in littoral area were estimated from changes in lake surface area.

b. Studies of the riparian wetlands around the edge of Powder Mill Pond found that existing and historic operations have resulted in a productive system with a diverse array of wetland and aquatic habitats. Given that the conditions in this Certification should reduce the magnitude and frequency of pond fluctuations, operating the Activity in accordance with this Certification is not expected to adversely impact existing wetland and plant communities.

c. The 1984 FERC license allowed a maximum drawdown depth of 4 feet. In the FERC license application, the Applicant proposed to change the maximum drawdown at the Powder Mill Pond Development to 3 feet below the permanent crest elevation of the dam (maximum drawdown elevation of 672.44 feet NGVD) except in cases of maintenance or emergency preparedness.

d. Based on the FERC license application, the USFWS recommended that the maximum drawdown depth for power generation be 2 feet (maximum draw down elevation of 675.44 feet NGVD) as limiting the drawdown range could benefit the distribution and/or abundance of the mussel population and could help to limit the occurrence of variable leaf milfoil.

e. The NHFGD (personal communication with Carol Henderson in December 2013) recommends that fall drawdowns for lakes be made no later than November 1 (and preferably before October 15) in order to protect hibernating wildlife from exposure. To ensure that drawdowns below 2 feet are not conducted during critical periods (such as fish spawning), the NHFGD has also requested that the Applicant be required to contact them at least 14 days in advance, and receive their approval, prior to drawing Powder Mill Pond down. This will help ensure protection of the fishery.

f. During the spring season (March 1 through April 30), river flows are typically higher than the hydraulic capacity of the turbines in the development. The mean of the daily average flows at the project in March and April are 616 and 948 cfs, respectively. The maximum hydraulic capacity for power generation by the project is 448 cfs (at the Pierce development). During the fall season (September 1 through December 31), river flows are lower. The mean of the daily average flows at the project in September, October, November, and December are 130, 204, 313, and 377 cfs, respectively. However, these flows fall within the operating range of 55 to 448 cfs for the turbines in the downstream developments.

g. When the Applicant was originally proposing to store and release water at Powder Mill Pond, the USFWS recommended that Powder Mill Pond be drawn down and refilled gradually during the spring and fall on a weekly

or seasonal basis.

h. As discussed in Finding D-9, water quality impairments (dissolved oxygen and chlorophyll-a) have been documented in Powder Mill Pond. As a minimum, to prevent conditions from becoming worse, restrictions should be in place to prevent the magnitude and frequency of drawdowns (especially those below 2 feet) from exceeding historical levels.

i. Subsequent to filing the FERC license application and issuance of Certification on January 31, 2014 , the Applicant advised DES that, except for maintenance activities and emergency conditions, they propose to operate Powder Mill Pond in a year-round run-of-river mode by maintaining Powder Mill Pond at normal full pool. Because this will reduce the magnitude and frequency of fluctuations in the pond, which should benefit aquatic life, DES concurs with the Applicant's proposal.

j. To ensure that maintenance drawdowns (excluding emergency drawdowns) comply with minimum flow requirements and are not conducted during critical fishery periods (January through February and May through August) unless absolutely necessary, the Applicant should be required to notify and, in some cases, obtain DES and/or NHFGD approval prior to conducting the drawdown.

D-14. Ramping Rate Study (Drawdown and Refill). The Applicant completed a Drawdown Modeling and Shoreline Habitat Assessment to address concerns raised by DES and other resource agencies during the pre-filing consultation period. The drawdown modeling consisted of predicting the rate of change for water levels and shoreline exposure during typical drawdowns.

a. The drawdown study assumed that 300 cfs would be released from Powder Mill Pond during a typical drawdown. According to the Applicant, this release rate is equivalent to the minimum hydraulic capacity of the three downstream developments (i.e., 300 cfs at Paper Mill). This is not the minimum flow needed to generate power. The minimum flows needed to generate power and maintain minimum bypass flows at each development are 78 cfs at the Monadnock, 68 cfs at the Pierce, and 206 cfs at the Paper Mill development. The model showed that, for inflows of 100 and 200 cfs, the drawdown would expose littoral area in Powder Mill Pond at rates between 3.5 and 2 acres per hour, respectively. These rates would amount to exposing 19% and 11% of the littoral area in the first 24 hours of the drawdown, respectively.

b. For a drawdown that lowers the water level by 2 feet while releasing 300 cfs, the maximum rate that the water level would change would be approximately 0.7 inches per hour (or approximately 16 inches per day) over 1.5 days. This calculation assumes no inflow so it is an over-estimate of the typical rate of water level drawdown. For a drawdown that lowers the water level by 2 feet while releasing 300 cfs, and assuming an inflow of 100 cfs, the maximum rate that the water level would change would be approximately 0.5 inches per hour (or

approximately 11 inches per day) over 2.2 days.

c. The drawdown study also modeled how long it would typically take to refill Powder Mill Pond after a drawdown. For the range of daily average flows in September and October, the pond would refill within 1.3 to 6.4 days from a 2-foot drawdown, assuming the minimum flow of 70 cfs continued to be released. The rate of water level change during the refill for this scenario would be between 0.1 and 0.7 inches per hour.

d. The NHFGD (personal communication with Carol Henderson in December 2013) recommends a maximum drawdown rate of 6 inches per day to allow adequate time for aquatic organisms, such as mussels, to move and stay sufficiently submerged as the water level gradually recedes. This could improve the health and density of the mussel population, especially in the top 2 feet of Powder Mill Pond (elevation 675.44 to 677.44 NGVD) that is most prone to fluctuations. According to the 2010 mussel survey (see Finding D-10), mussel densities were lower in the top 2 feet as compared to deeper waters. For a drawdown that lowers the water level by 2 feet at a rate of 6 inches per day, and assuming no inflow (which is conservative) the maximum release is estimated to be approximately 110 cfs which still exceeds the minimum flow needed to generate power and maintain minimum bypass flows at the Monadnock (78 cfs) and Pierce (68 cfs) facilities. With increasing inflow, the ability to generate power will also increase.

   The Applicant has expressed concern that although they can strive to achieve gradual drawdown rates, flexibility is needed as it could prolong the time the pond is drawn down below normal pool which may be a concern to abuttors and anglers.

e. After flashboard replacement, dam maintenance or emergency drawdown, USFWS recommends the project be operated such that 50 percent of the inflow is passed downstream and refilling of the impoundments with the remaining 50 percent of inflow. USFWS notes that this deviates from the standard agency ratio of 90/10 (pass 90 percent of inflow and refill on the remaining 10 percent) but is warranted in this case due to the wetland resources in Powder Mill Pond. They further recommend that if more than one headpond is drawn down at the same time, the 50/50 protocol should be adjusted on prior consultation with the resource agencies. As stated in Finding D-4.f, the Applicant has historically refilled the impoundments for the Project by maintaining minimum flow requirements and retaining the remainder of inflow.

f. Subsequent to filing the FERC license application, the Applicant advised DES that they propose to operate Powder Mill Pond in a year-round run-of-river mode (with the exception of maintenance activities or emergency conditions) by maintaining Powder Mill Pond at normal full pool (top of flashboards). Lowering the pond below normal pool would only be done on an infrequent basis for scheduled maintenance or emergencies. This

operation minimizes pond fluctuations below normal pool which could potentially benefit aquatic life in Powder Mill Pond.

g. Based on the information presented above, the Applicant should strive, where practicable, to limit the ramping rate during maintenance drawdowns to a gradual rate of no more than approximately 6 inches per day. Further to balance the refilling of the impoundments as quickly as possible with downstream flow, refilling of the impoundments after dam maintenance or emergency drawdown should be conducted such that when inflow equals or exceeds twice the minimum required flow downstream of the Paper Mill tailrace and bypass channel (minimum required flow), a flow at least equal to the minimum required flow should be released and the remainder should be used for refill. When inflow is less than twice the minimum required flow downstream of the Paper Mill development, 50% of the inflow should be passed downstream and 50% should be used for refill. If more than one headpond is drawn down at the same time, the 50/50 protocol should be adjusted after consultation with the resource agencies.

D-15. Wetlands, Noxious Weeds, and Rare, Threatened and Endangered (RTE) Species. The Applicant completed a study of wetlands, noxious weeds, and RTE species to address concerns raised by DES and other resource agencies during the pre-filing consultation period. The study was completed in 2010 and consisted of field surveys and delineation of jurisdictional wetlands.

a. Wetlands and submerged aquatic vegetation beds are prevalent throughout the Project, especially within Powder Mill Pond. Powder Mill Pond can be characterized as a typical freshwater pond that provides suitable habitat for a variety of common wildlife species and aquatic wetland plants. Specifically, the most significant wetlands in terms of their habitat value occurred in the sheltered backwater coves along the pond especially those associated with Moose Brook. The surrounding uplands and wetlands in the study area are forested and largely undisturbed, thus invasive plant species were not prevalent.

b. Variable leaf milfoil was the dominant invasive submerged aquatic vegetation in the study area. Milfoil was concentrated and prevalent in Powder Mill Pond, occurring in dense mats almost uninterrupted along the shoreline. Public boating access to Powder Mill Pond has likely contributed to the introduction and spread of variable leaf milfoil throughout the pond.

c. There were no direct observations of RTE plants or wildlife in the study area during the 2010 surveys. However, suitable habitat for some RTE wildlife species such as bald eagle and Blanding's turtle was documented in the study area. Some RTE species are known to occur in the study area.

d. Based on the diversity of aquatic habitats and prevalence of wetlands found at Powder Mill Pond, seasonal drawdowns (less than 2 feet 98% of

the time) do not appear to have a significant adverse effect on existing wetlands and aquatic habitats.

e. In a letter to FERC dated March 14, 2013, the USFWS recommended that the Applicant be required to develop an invasive species plan. Absent sufficient monitoring and control, it is likely that noxious weeds (such as Variable Leaf Milfoil) will become more abundant in Powder Mill Pond. Given the abundance and diversity of native wetlands within the project area, long-term monitoring and control of invasive species should be a high priority.

f. Relative to potential Project operational requirements, the Applicant has agreed to cooperate with DES and others in the development of the Long Term Management Plan (LTMP) to control invasive species in Powder Mill Pond and will operate the Powder Mill Pond dam to temporarily control flow and /or water level in the pond in a manner not inconsistent with the LTMP when the state is conducting remediation efforts provided it does not conflict with the conditions of this Certification or FERC license. Further, the Applicant will not be required to pay for or conduct remediation.

g. Based on the information presented above, DES believes that invasive species such as variable leaf milfoil present a significant threat to native habitats and wildlife in Powder Mill Pond and that monitoring should be conducted to track the spread of invasive species and that the Activity should be operated in a manner consistent with control efforts.

D-16. Diadromous Fish. The four dams in the Project do not have fishways for upstream fish passage currently. USFWS and NHFGD manage American shad and other diadromous fish in rivers of New Hampshire. There are currently no diadromous fish within the project area, nor are there currently any plans to restore diadromous fish to portions of the Contoocook River upstream of Paper Mill Dam. In a letter on March 14, 2013, the USFWS made the following fishways recommendation under Section 18 of the Federal Power Act: "Authority is hereby reserved to the Federal Energy Regulatory Commission to require the licensee to construct, operate, and maintain such fishways as may be prescribed during the term of this license by the Secretary of the Interior pursuant to Section 18 of the Federal Power Act."

E. WATER QUALITY CERTIFICATION CONDITIONS

Unless otherwise authorized by DES, the following conditions shall apply:

E-1. **Compliance with Certification Conditions.** The Applicant shall operate and maintain the Activity to comply with the conditions of this Certification.

E-2. **Compliance with Water Quality Standards.** The Activity shall not cause or contribute to a violation of New Hampshire surface water quality standards. Should DES determine that the Activity is causing or contributing to violations of surface water quality standards, DES may modify this Certification in

accordance with condition E-4 of this Certification. Any modifications shall be subject to notice and opportunity for a hearing.

E-3. **Approval of Project Changes.** The Applicant shall consult with and receive prior written approval from DES regarding any proposed modifications to the Activity that could have a significant or material effect on the conditions of this Certification, including any changes to project operation or approved plans required by this Certification.

E-4. **Modification of Certification.** The conditions of this Certification may be amended and additional terms and conditions added as necessary to ensure compliance with New Hampshire surface water quality standards, when authorized by law, and after notice and opportunity for hearing pursuant to RSA 21-O:14.

E-5. **Reopening FERC License**. DES may, at any time, request that FERC reopen the license for the Activity to consider modifications to the license if necessary to ensure compliance with New Hampshire surface water quality standards.

E-6. **Compliance Inspections**. The Applicant shall allow DES to inspect the Activity and its impacts on affected surface waters as allowed by law to monitor compliance with the conditions of this Certification.

E-7. **Posting of Certification and Operation and Compliance Monitoring Plan.** A copy of this Certification and the approved Operation and Compliance Monitoring Plan (condition E-10) shall be posted within each of the Project powerhouses within seven days of receiving written approval of the Operations and Compliance Monitoring Plan from DES.

E-8. **Transfer of Certification.** Within 15 days after filing an application with FERC for transfer of ownership of the FERC license, the Applicant shall provide a copy of the application to DES. Within 15 days following a transfer of ownership for the FERC license and/or this Certification, the Applicant shall notify DES in writing of the date of the transfer and provide contact information (legal name, mailing address, email (if available) and phone number) for the new owner.

E-9. **Project Operation:** Unless otherwise allowed in the DES approved Operations and Compliance Monitoring Plan[7] (OCMP - see condition E-10 below), the Project shall be operated as follows:

a. The Project shall be operated in a year-round run-of-river mode.

b. When inflow is equal to or greater than the minimum flow specified in condition E-9.i, the Powder Mill Pond water surface elevation shall be maintained at least 2.52 inches above the top of flashboards (i.e. 677.65 feet NGVD) when flashboards are in place (i.e., the normal full pool) and at least 3.0 inches above the dam crest (i.e. 675.69 feet NGVD) when flashboards have been temporarily removed due to failure or other reasons. At all other times all inflow shall be passed over the spillway (with or without flashboards). From January through February and May

[7] The OCMP will be used for determining compliance with the Project Operation criteria specified in condition E-9 of this Certification and allows for exceptions to these criteria for reasons including, but not limited to, scheduled maintenance, actions taken to prevent or respond to emergencies (such as flashboard failure, flood control, etc.), and the accuracy and response time of systems designed to maintain run-of-river conditions.

through August, fluctuations in the water surface elevation of Powder Mill Pond shall be minimized in accordance with condition E-9.f.

c. When inflow is equal to or greater than the minimum flow specified in condition E-9.j, the Monadnock impoundment water surface elevation shall be maintained at or above the top of the flashboards that have a 10 foot wide by 0.58 foot (7 inch) high notch (i.e. 665.80 feet NGVD) when flashboards are in place (i.e., the normal full pool) or at least 1.08 inches above the dam crest (i.e. 663.89 feet NGVD) when the flashboards have been temporarily removed due to failure or other reasons. At all other times all inflow shall be passed over the spillway (with or without flashboards). .
d. When inflow is equal to or greater than the minimum flow specified in condition E-9.j, the Pierce impoundment water surface elevation shall be maintained at or above the top of the flashboards that have a 10 foot wide by 0.58 foot (7-inch) high notch (653.40 feet NGVD) when flashboards are in place (i.e., the normal full pool) or at least 0.84 inches above the dam crest (651.47 feet NGVD) when the flashboards have been temporarily removed due to failure or other reasons. At all other times all inflow shall be passed over the spillway (with or without flashboards).
e. When inflow is equal to or greater than the minimum flow specified in condition E-9.j, and with a 20-inch by 20-inch cutout in the wastegate open, the water surface elevation in the Paper Mill impoundment shall be maintained at or above the crest of the dam (i.e., the normal full pool) as there are currently no flashboards at this development (i.e. 627.64 feet NGVD). By November 1, 2016, the Applicant shall construct (and operate) the 20-inch- high by 20-inch-wde cutout in the wastegate. Prior to constructing the cutout, the Applicant shall submit calculations to DES demonstrating how the minimum flows specified in condition E-9.j will be maintained in the interim. If, after consultation with DES, NHFGD and USFWS, and if approved by DES, the Applicant elects to install flashboards at the Paper Mill impoundment, the 20-inch by 20-inch cutout shall remain open and the water surface elevation shall be maintained at or above the top of the flashboards (i.e. 629.64 feet NGVD) when flashboards are in place. At all other times, inflow shall be passed through the 20-inch by 20-inch cutout.
f. From January through February and May through August in Powder Mill Pond, and when power is generated at the Monadnock, Pierce and and/or Paper Mill facilities, the Applicant shall strive to minimize the fluctuations in the water surface elevation in each of the four impoundments to the extent practicable. The Applicant shall not operate any of the four facilities in a store and release mode to generate power. To minimize fluctuations, the Automated Pond Level Control Systems (APLCS) at each facility shall be operated. Fluctuations shall not exceed one foot prior to testing of the APLCS as described below. Once the APLCS system is installed and operable at the Powder Mill Pond development, the Applicant shall evaluate the ability of the Activity, including unit start up and shutdown, to reduce fluctuations to no more than 0.25 feet (3 inches) from January through February and May through August in

Powder Mill Pond. Unless otherwise approved by DES, the evaluation shall be completed by December 31, 2016. Prior to conducting the evaluation, the Applicant shall consult with and obtain DES approval of the scope of work for the evaluation. The Applicant shall then implement the approved scope of work. A report containing the results of the evaluation shall be submitted to DES by April 1, 2017. DES, after consultation with Applicant, NHFGD and USFWS, may then require corresponding adjustments to the allowable fluctuation band of surface water levels in the OCMP that are no less than 0.25 feet (3 inches). If DES requires adjustments, the Applicant shall then submit a revised OCMP to DES for approval within 90 days of receiving notification that revisions are necessary. The Applicant shall then implement the revised OCMP.[8]

g. When drawing the water level down more than one foot in any of the four impoundments, the Applicant shall strive to achieve, to the extent practicable, a gradual drawdown of approximately one foot or less per day, with the understanding that there may be times when such gradual drawdowns are not practicable.
h. Flashboards shall be reinstalled as soon as reasonably practicable after failure or temporary removal for other reasons.
i. The Applicant shall provide a year-round continuous minimum flow of 70 cfs, or inflow (whichever is less), immediately downstream of the Powder Mill Pond development and downstream of the confluence of the tailrace and bypass reach at the Monadnock, Pierce and Paper Mill developments.
j. The Applicant shall provide the following year-round, continuous minimum flow to the Monadnock, Pierce and Paper Mill bypass reaches:
    1. 13 cfs, or inflow (whichever is less), at the Monadnock development;
    2. 13 cfs, or inflow (whichever is less), at the Pierce development; and
    3. 13 cfs, or inflow (whichever is less), at the Paper Mill development
k. The Applicant shall construct a new spillgate by October 1, 2016 at the Pierce development to provide the minimum flow specified in condition E-9.j when the water level in the impoundment is no higher than 650.40 feet NGVD (i.e., one foot below the concrete crest elevation of the dam). Flow calculations supporting the design shall be submitted to and approved by DES prior to construction.
l. If requested by DES before December 31, 2020, the Applicant shall assist DES with a low-flow dissolved oxygen study to confirm that dissolved

[8] It is understood and recognized that there may be occasional situations where the Applicant will need to maintain water surface elevations that are different than those specified in conditions E-9.b through E-9.e to ensure that minimum flows are met. For example, when flashboards are partially damaged or destroyed, the pond elevation necessary to maintain minimum flows will vary depending on how many flashboards remain in place. A description of how minimum flows will be maintained for situations such as this, as well as other situations, will be provided by the Applicant in the Operations and Compliance Monitoring Plan (see Condition E-10).

oxygen standards (Env-Wq 1703.07) are attained in the Pierce and/or Paper Mill bypass reaches at the minimum flows indicated above. The role of the Applicant will be to regulate flow in the bypass reach during the study, to the extent practicable, to facilitate collection of 10 days (or less as determined by DES) of valid[9], continuously collected[10], dissolved oxygen and temperature data in the bypass reaches.[11] The Applicant will not be required to manipulate minimum flows in the bypass reaches if the project is not generating electricity (i.e. during low river flow periods) or to pass water through the turbines when inflow is below the operational range of the turbines. Data will be assessed for compliance in accordance with the current version of the DES Consolidated and Assessment Listing Methodology[12]. If dissolved oxygen standards are determined to be in noncompliance as described above, and operation of the Activity is determined to cause or contribute to the noncompliance, the Applicant shall submit a plan to the DES for review and approval by DES within 120 days of the determination that standards are not being met. The plan shall describe how dissolved oxygen standards in the affected bypass reaches will be attained and confirmed; the Applicant will also develop a schedule for attainment. The Applicant shall then implement the DES approved plan. Once it is confirmed that compliance with dissolved oxygen standards are met in the bypass channel(s), the Applicant shall make appropriate revisions to the OCMP and submit it to DES for approval and the Applicant shall then implement the DES approved OCMP. If it is necessary to revise the minimum bypass flows to meet the dissolved oxygen standards, DES will modify the Certification in accordance with condition E-4.

m. The Applicant shall notify DES and the Director's office of the NHFGD in writing (which includes email) at least 60 days in advance of drawing any of the four impoundments down for regular maintenance[13] more than one foot below the normal full pool elevation as defined in Conditions E-9.b through E-9.e above. The Applicant shall obtain prior approval from DES if minimum flows are not anticipated to be met. If DES does not

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[9] "Valid" means the data meets the quality assurance / quality control objectives and criteria for the sampling effort.

[10] "Continuously collected" means readings that are taken regularly (typically every 15 minutes). For dissolved oxygen and temperature, continuous read dataloggers are typically deployed to collect the data.

[11] Should sufficient valid data not be collected in the first attempt, the Applicant shall assist DES with an additional study (or studies if needed) until such time that sufficient valid data is collected. The inability of DES to collect sufficient valid data will not be considered a violation of this Certification condition provided the Applicant has regulated flows in the bypass reach during the study to the extent practicable.

[12] The 2012 Consolidated Assessment and Listing Methodology is the most recent version available at the time this Certification was prepared (see http://des.nh.gov/organization/divisions/water/wmb/swqa/2012/documents/2012-calm.pdf)

[13] Regular Maintenance means: "any activities that are necessary to inspect and repair the developments, including, but not limited to: replacement of flashboards, removal of debris, gate repair, concrete repair, and any other structural repair."

respond within 30 days of being notified, the Applicant may proceed with the proposed maintenance drawdown. The Applicant shall also obtain prior approval from the NHFGD if any of the four impoundments are proposed to be drawn down for regular maintenance during the critical fishery period (i.e., from January through February and May through August). If NHFGD does not respond within 30 days of being notified, the Applicant may proceed with the proposed maintenance drawdown. Whenever the water level in Powder Mill Pond drops more than one foot below the normal full pool elevation defined in Condition E-9.b., the Applicant shall notify the NHFGD within 48 hours of when the Applicant became aware that the pond level had dropped. The notification shall identify the level of drawdown necessary, timing and duration, method for ensuring minimum flow requirements are met during drawdown, and the opportunity for agencies to respond to notification. See Condition E-9.n for additional notification requirements if more than one impoundment is proposed to be refilled at a time.

n. During refilling of the impoundments the Applicant shall operate the Project such that when inflow equals twice the minimum required flow downstream of the Paper Mill development as specified in Condition E-9.i (i.e., the minimum required flow), the minimum required flow shall be released and the remainder shall be used for refill. When inflow is less than twice the minimum required flow, 50% of the inflow shall be passed downstream and 50% shall be used for refill. If the Applicant anticipates refilling more than one impoundment at a time, prior consultation with the DES, NHFGD, and USFWS shall be required so that an appropriate refill regime may be developed. This refill protocol may be modified on a case-by-case basis after consulting with DES, NHFGD, and USFWS and after receiving written approval from DES.

E-10. **Operation and Compliance Monitoring Plan:**

a. By April 1, 2016, the Applicant shall consult with DES, NHFGD and USFWS, and submit an Operation and Compliance Monitoring Plan (OCMP) to DES for approval. The Applicant shall then operate the Activity in accordance with the approved OCMP. The OCMP shall include a detailed description of the following:
    1. How the Activity will be operated and maintained to comply with run-of-river, minimum flow and impoundment fluctuation requirements of this Certification (Condition E-9);
    2. Procedures that will be implemented to comply with the conditions of this Certification as quickly as possible should it be found that the Activity is temporarily out of compliance, including notification of appropriate regulatory authorities;
    3. Methods for monitoring, recording and reporting impoundment water surface elevations, inflows, bypass flows, turbine flows and when power is generated, with monitoring and recording of data automated and collected continuously to the extent feasible;[14]

[14] Inflow shall include estimates based on prorating USGS measured river flow at the

4. A description of the mechanisms and structures that will be used, including equipment accuracy, frequency of measurement, the level of automation and any periodic maintenance and/or calibration necessary to ensure the devices work properly;
5. How data will be recorded to verify proper operations and how these data will be maintained for inspection by DES and other resource agencies; and
6. A schedule for when the plan will be implemented.

The Applicant shall consult with DES, NHFGD and USFWS and receive DES approval of any proposed modifications to the OCMP. Any DES approved modifications to the OCMP shall be considered a part of this Certification. Proposed modifications shall not be implemented until approved by DES. Exceptions to the approved OCMP may be granted by DES on a case-by-case basis after consultation with the NHFGD and USFWS.

b. The Applicant shall notify DES not more than five days after any deviations[15] from the OCMP. The notification shall include, to the extent known, an explanation as to why the deviations occurred, a description of corrective actions taken, and how long it will take until the operations will comply with the OCMP. The Applicant shall maintain a log of deviations and shall submit an annual summary of the deviations to DES for each calendar year by January 31 of the following year (i.e., the 2014 annual summary would be due by January 31, 2015). The annual summary shall also include a summary of the of maintenance and emergency drawdowns in each impoundment for the year including the dates, duration, depth, and reason for each drawdown.

E-11. **Invasive Species**:

a. By April 1, 2016, the Applicant shall consult with DES, NHFGD and USFWS, and submit an Invasive Species Monitoring Plan (ISMP) to DES for approval to monitor invasive species such as variable leaf milfoil (*Myriophyllum heterophyllum*), yellow iris (*Iris pseudacorus*), and purple loosestrife (*Lythrum salicaria*), at the project. The Applicant shall then implement the approved ISMP. The ISMP shall include: (1) a description of the monitoring method; (2) frequency of monitoring; (3) a schedule

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Peterborough USGS gage (# 01082000) by drainage area and of flow based on pond elevation/discharge relationships at the dams. Bypass flows shall be based on pond elevation/discharge relationships at each dam. The Applicant will not be required to provide continuous data regarding turbine flows and power generation. The Applicant shall, however, provide dates and times that water is flowing through the turbines, and when power is generated. The Applicant shall also provide gate dimensions, invert elevations and formulas used to calculate elevation/discharge at all gates that may impact pond levels. The OCMP shall provide sufficient information for dam operators to readily determine appropriate dam settings under different conditions to meet the requirements of this certification. Details regarding the above will be provided in the OCMP.

[15] A "Deviation" is defined as: "non-conformance with the requirements for monitoring (*see* E-10.a.3.), minimum flows (*see* E-9.i.–j.), and pond elevation (*see* E-9.b.–g. and.k.)."

for filing monitoring reports with DES, NHFGD, USFWS, and FERC; and (4) a description of and implementation schedule for providing public information about species.

b. The Applicant will cooperate with DES and others in the development a Long Term Management Plan (LTMP) to control invasive species in Powder Mill Pond and shall, after consultation with the DES and NHFGD, operate the Powder Mill Pond dam to temporarily control flow and /or water level in the pond in a manner not inconsistent with the LTMP when the state is conducting remediation efforts provided it does not conflict with the conditions of the Water Quality Certification or FERC license. The Applicant will not be required to pay for or conduct remediation.

E-12. **Fish Passage.** Should the Secretary of the Interior pursuant to Section 18 of the Federal Power Act require the Applicant to construct, operate and maintain any fish passage facilities for the Project, those requirements shall become a condition of this Certification.

F. APPEAL

Any person aggrieved by this decision may appeal to the N.H. Water Council ("Council") by filing an appeal that meets the requirements specified in RSA 21-O:14 and the rules adopted by the Council, Env-WC 100-200. The appeal must be filed directly with the Council within 30 days of the date of this decision and must set forth fully every ground upon which it is claimed that the decision complained of is unlawful or unreasonable. Only those grounds set forth in the notice of appeal can be considered by the Council.

Information about the Council, including a link to the Council's rules, is available at http://nhec.nh.gov/ (or more directly at http://nhec.nh.gov/water/index.htm). Copies of the rules also are available from the DES Public Information Center at (603) 271-2975.

If you have questions regarding this Certification, please contact Owen David at (603) 271-0699.

Eugene Forbes

Eugene J. Forbes, P.E.
Director, DES Water Division

cc:

John Baummer, FERC
Denise P. French, Administrator, Town of Bennington
Rodney Bartlett, Administrator, Town of Peterborough
Aaron Patt, Administrator, Town of Greenfield
Diane Kendall, Administrator, Town of Hancock
Melissa Grader, US Fish and Wildlife Service
Carol Henderson, NH Fish and Game Department

156 FERC ¶ 62,103
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Monadnock Paper Mills, Inc. Project No. 6597-019

ORDER INCORPORATING NEW WATER QUALITY CERTIFICATE, AMENDING LICENSE, AND APPROVING PLANS

(Issued August 4, 2016)

1. On March 24, 2016, Monadnock Paper Mills, Inc. (licensee) filed a request to delete the Water Quality Certificate (WQC), dated January 31, 2014 from its license for the Monadnock Project[1] and replace it with the new WQC issued by the State of New Hampshire Department of Environmental Services (New Hampshire DES) on March 11, 2016. The project is located on the Contoocook River in Hillsborough County, New Hampshire. The project does not occupy any federal lands.

Background

2. On February 28, 2014, the licensee appealed the original WQC issued on January 31, 2014 for the project. Since the appeal the licensee and the New Hampshire DES have resolved their issues and have agreed to the conditions in the new WQC. Appendix A of the project license contains the original WQC Conditions, which were incorporated into the project license by ordering paragraph (D). Adding the new WQC requires modification of several license articles and conditions, as well as, some minor modifications of the project facilities as described in ordering paragraph (B)(2).

3. The new WQC requires the licensee to file an Operation and Compliance Monitoring Plan (Section E-10) and an Invasive Species Monitoring Plan (Section E-11). Article 401 of the project license requires these plans to be approved by New Hampshire DES prior to filing with the Commission for approval. These two plans were filed with the amendment application.

[1] *Monadnock Paper Mills, Inc.* 147 FERC ¶ 62,156 (2014).

Project Descriptions

4. In its filing the licensee updated some of the project descriptions included in ordering paragraph (B)(2). For the Powder Mill Development the licensee modified the description of the 21-foot-long, 4-foot diameter outlet pipe. The minimum flow notch for the Pierce Development was updated to read that it would be 7 inches high. The Paper Mill Development's 8-foot-high timber waste gate changes from a 6-foot-wide, 6-foot high minimum flow cut-out to an 8-foot-high timber waste gate with a 20-inch-wide, 20-inch-high minimum flow cut-out. The revised project descriptions are included in paragraph (B).

Operation and Compliance Monitoring Plan

5. Section E-10 of the new WQC requires the licensee to develop an Operation and Compliance Monitoring Plan to describe how project activities would be conducted in such a way to comply with run-of-river, minimum flow, and impoundment fluctuation requirements of the WQC. The plan is required to include monitoring methods, recording measures, and a schedule for implementation.

6. The plan describes how each of the project dams would be operated to achieve the requirements of the WQC during normal operations, maintenance operations, flood control operations, and emergency operations. The plan also provides pond level and minimum flow monitoring at each of the developments, a schedule for installation of automated pond level control systems, a maintenance schedule, and a description of how and where records would be maintained. The licensee would notify the New Hampshire DES not more than five days after any deviations from the Operation and Compliance Monitoring Plan and file a deviation report with the New Hampshire DES within 30 days. The licensee would submit an annual summary of the deviations to the New Hampshire DES for each calendar year by January 31 of the following year.

7. The plan was prepared in consultation with the New Hampshire DES, New Hampshire Fish and Game Department, and the U.S. Fish and Wildlife Service (FWS). The plan was approved by the New Hampshire DES by letter dated March 11, 1016.

8. The Operations and Compliance Monitoring Plan does not provide any provisions for notifying the Commission of any deviations from this plan. Therefore, we are requiring that the licensee notify the Commission prior to any planned deviations, if possible, and in an emergency no later than 10 days after such incident. The licensee should also file a copy of its annual summary of deviations with the Commission concurrently with its report to the New Hampshire DES.

9. The Operations and Compliance Monitoring Plan should ensure that the project is operated in a manner that is consistent with the terms of the Water Quality Certificate, while providing protective measures for maintenance and emergency actions beyond the control of the licensee. This plan should be approved as modified above.

Invasive Species Plan

10. Section E-11 of the new WQC requires the licensee to file an Invasive Species Plan to monitor for variable leaf milfoil, yellow iris, and purple loosestrife. The licensee proposes to coordinate annual monitoring for invasive plants with the Contoocook and North Branch Rivers Local Advisory Committee through the New Hampshire Rivers Council's River Runners Program (River Runners), or equivalent. If the River Runners Program is discontinued, the licensee would develop an alternative monitoring plan and schedule with New Hampshire DES. The licensee would provide a summary of the survey results to the New Hampshire DES, FWS, and the Commission by December 31, each calendar year.

11. The licensee currently posts invasive species information at some of its information kiosks. If requested by New Hampshire DES, the licensee would install educational signage at the other boat access points managed by the licensee. The licensee would also cooperate with New Hampshire DES in the development of the Long Term Management Plan to control invasive species in Powder Mill Pond.

12. This plan was prepared in consultation with the New Hampshire DES and FWS. The plan was approved by the New Hampshire DES by letter dated March 11, 1016.

13. The Invasive Species Plan should document the presence of invasive species at the project, while also minimizing the introduction of new species and the spread of existing populations. This plan should be approved.

Article 401

14. Article 401 of the project license identifies those items in the WQC that require Commission approval, notification, and the filing of reports and amendments. Because the WQC was revised and the Operation and Compliance Monitoring Plan and the Invasive Species Monitoring Plan were filed and are being approved in this order, most of the requirements in Article 401 have been satisfied or are no longer relevant.

15. Section (a) of Article 401 requires the licensee to file, for Commission approval, in addition to the above plans an Impoundment Level and Flow Monitoring Plan and a Water Quality Sampling and Analysis Plan. These two plans are no longer required by the new WQC.

16. Section (b) requires the licensee to file reports required by the WQC with the Commission. The only report that is still required to be filed is the annual operation deviation report and that has been addressed in the Operation and Compliance Monitoring Plan and is required pursuant to paragraph (D) of this order. The requirements of Section (c) are also satisfied by the approved Operation and Compliance Monitoring Plan.

17. Section (d) requires the licensee to file amendment applications when conditions within the WQC result in changes to project operations or facilities. This portion of Article 401 is still a necessary portion of the project license. Therefore this order will amend Article 401 to delete sections (a), (b), and (c) while retaining the requirements of Section (d).

Discussion

18. The purpose of this order is to replace the WQC included in Appendix A of the license issued on May 23, 2014 for the Monadnock Paper Mills Project and approve as modified the Operations and Compliance Monitoring Plan and the Invasive Species Monitoring Plan. This Order also makes the necessary modifications to the project description and amends Article 401.

The Director orders:

(A) This license is subject to the conditions submitted by New Hampshire Department of Environmental Services filed on March 24, 2016 under section 401(a)(1) of the Clean Water Act, 33 U.S.C. §1341(a)(1) (2012), as those conditions are set forth in Appendix A to this order. These conditions replace the water quality certification conditions that were issued on January 31, 2014.

(B) The following project development descriptions are revised to read:

Powder Mill Development

The Powder Mill Development consists of: (1) a 366-foot-long, 18.6-foot-high dam with a 228-foot-long gated, concrete gravity spillway section with a crest elevation of 675.44 feet National Geodetic Vertical Datum of 1929 (NGVD) plus 2-foot-high flashboards, a 91-foot-long earth embankment section with a concrete core wall, and a 47-foot-long earth embankment with section a concrete core wall; (2) a 4-foot-wide, 4-foot-high gated trash sluiceway; (3) a 435-acre impoundment with a storage capacity of 1,940 acre-feet and a normal maximum water surface elevation of 677.44 feet NGVD; (4) a 15-foot-wide, 35-foot-long regulating gatehouse structure with four 2.5-foot-wide, 2.5-foot-high wooden vertical slide gates, and a trashrack with 1-inch clear bar spacing

connected to an approximately 21-foot-long, 4-foot diameter outlet pipe at the base of the dam; and (5) appurtenant facilities.

Pierce Development

The Pierce Development consists of: (1) a 420-foot-long, 28-foot-high dam that includes a 290-foot-long concrete spillway with a crest elevation of 651.4 feet NGVD, 2-foot-high flashboards, and a 10.0-foot-wide, 7-inch-high minimum flow notch; (2) a 7-acre impoundment with a storage capacity of 51-acre-feet and a normal maximum water surface elevation of 653.4 feet NGVD; (3) a 32-foot-wide, 21-foot-high intake structure equipped with three 9-foot-wide, 12-foot-high wooden slide gates and a trashrack with 0.5- to 1.0-inch clear bar spacing; (4) a 25-foot-long, 35-foot-wide powerhouse containing one 500-kW turbine-generating unit and one 220-kW turbine-generating unit for a total installed capacity of 720 kW; (5) two 2.3-kV generator leads, one 15 feet long and one 25 feet long, that connect the powerhouse to Monadnock Paper's 2,190-foot-long, 2.3-kV transmission line; (6) a 600-foot-long tailrace; and (7) appurtenant facilities.

Paper Mill Development

The Paper Mill Development consists of: (1) a 280-foot-long, 19-foot-high dam that includes a 142-foot-long concrete gravity spillway with a crest elevation of 627.6 feet NGVD; (2) a 6-foot-wide, 8-foot-high timber waste gate with a 20-inch-wide, 20-inch-high minimum flow cut-out; (3) a 5-acre impoundment with a storage capacity of 25 acre-feet and a normal maximum water surface elevation of 627.6 feet NGVD; (4) a 300-foot-long, 24-foot-wide power canal and headgate structure with three 6-foot-wide, 8-foot-high wooden slide gates and a 24-foot-wide, 10-foot-long forebay; (5) a 30.0-foot-wide, 7.5-foot-high intake structure with a trashrack with 0.5- to 1.0-inch clear bar spacing and a 10-foot-diameter, 200-foot-long steel penstock; (6) a 22-foot-wide, 27-foot-long generating room (powerhouse) located on the lower level of Monadnock Paper's production facility containing a 746-kW turbine generating unit; (7) a 150-foot-long, 2.3-kV generator lead that connects the powerhouse to Monadnock Paper's 2,190-foot-long, 2.3-kV transmission line; (8) a 186-foot-long tailrace; and (9) appurtenant facilities.

(C) The Operations and Compliance Monitoring Plan filed March 24, 2016, pursuant to Condition E-10 of the Water Quality Certificate, as modified by ordering paragraphs (D) and (E) is approved.

(D) The licensee shall file, with the Commission its annual operation deviation report by January 31 each year.

(E) The approved Operations Compliance Monitoring Plan allows the licensee to temporarily modify project operations under certain conditions. The Commission shall be notified prior to implementing such modifications, if possible, or in the event of an emergency, as soon as possible, but no later than 10 days after each such incident. The licensee shall also file a deviation report within 30 days after each incident.

(F) The Invasive Species Monitoring Plan, filed March 24, 2016, pursuant to Condition E-11 of the Water Quality Certificate, is approved.

(G) Article 401 of the license, issued May 23, 2014, for the Monadnock Paper Mills Project is amended to read:

Article 401. *Amendments.* Some of the conditions in Appendix A contemplate the New Hampshire Department of Environmental Service ordering unspecified, long-term changes to project operation or facilities based on new information or results of studies or monitoring required by the certification, but do not appear to require Commission approval for such changes (e.g., operational changes to mitigate for effects on water quality, and construction and operation of upstream and downstream fish passage facilities). Such changes may not be implemented without prior Commission authorization granted after the filing of an application to amend the license.

(H) This order constitutes final agency action. Any party may file a request for rehearing of this order within 30 days from the date of its issuance, as provided in section 313(a) of the Federal Power Act, 16 U.S.C. § 825*l* (2012), and the Commission's regulations at 18 C.F.R. § 385.713 (2015). The filing of a request for rehearing does not operate as a stay of the effective date of this order, or of any other date specified in this order. The licensee's failure to file a request for rehearing shall constitute acceptance of this order.

/for/ Steve Hocking, Chief
Environmental and Project Review Branch
Division of Hydropower Administration
and Compliance

APPENDIX A

New Hampshire Department of Environmental Services (DES)
Water Quality Certification Conditions
Filed March 24, 2016

E-1. Compliance with Certification Conditions. The Applicant shall operate and maintain the Activity to comply with the conditions of this Certification.

E-2. Compliance with Water Quality Standards. The Activity shall not cause or contribute to a violation of New Hampshire surface water quality standards. Should DES determine that the Activity is causing or contributing to violations of surface water quality standards, DES may modify this Certification in accordance with condition E-4 of this Certification. Any modifications shall be subject to notice and opportunity for a hearing.

E-3. Approval of Project Changes. The Applicant shall consult with and receive prior written approval from DES regarding any proposed modifications to the Activity that could have a significant or material effect on the conditions of this Certification, including any changes to project operation or approved plans required by this Certification.

E-4. Modification of Certification. The conditions of this Certification may be amended and additional terms and conditions added as necessary to ensure compliance with New Hampshire surface water quality standards, when authorized by law, and after notice and opportunity for hearing pursuant to RSA 21-O:14.

E-5. Reopening FERC License. DES may, at any time, request that FERC reopen the license for the Activity to consider modifications to the license if necessary to ensure compliance with New Hampshire surface water quality standards.

E-6. Compliance Inspections. The Applicant shall allow DES to inspect the Activity and its impacts on affected surface waters as allowed by law to monitor compliance with the conditions of this Certification.

E-7. Posting of Certification and Operation and Compliance Monitoring Plan. A copy of this Certification and the approved Operation and Compliance Monitoring Plan (condition E-10) shall be posted within each of the Project powerhouses within seven days of receiving written approval of the Operations and Compliance Monitoring Plan from DES.

E-8. Transfer of Certification. Within 15 days after filing an application with FERC for transfer of ownership of the FERC license, the Applicant shall provide a copy of the application to DES. Within 15 days following a transfer of ownership for the FERC license and/or this Certification, the Applicant shall notify DES in writing of the date of the transfer and provide contact information (legal name, mailing address, email (if available) and phone number) for the new owner.

E-9. Project Operation: Unless otherwise allowed in the DES approved Operations and Compliance Monitoring Plan[1] (OCMP - see condition E-10 below), the Project shall be operated as follows:

a. The Project shall be operated in a year-round run-of-river mode.

b. When inflow is equal to or greater than the minimum flow specified in condition E-9.i, the Powder Mill Pond water surface elevation shall be maintained at least 2.52 inches above the top of flashboards (i.e. 677.65 feet NGVD) when flashboards are in place (i.e., the normal full pool) and at least 3.0 inches above the dam crest (i.e. 675.69 feet NGVD) when flashboards have been temporarily removed due to failure or other reasons. At all other times all inflow shall be passed over the spillway (with or without flashboards). From January through February and May through August, fluctuations in the water surface elevation of Powder Mill Pond shall be minimized in accordance with condition E-9.f.

c. When inflow is equal to or greater than the minimum flow specified in condition E-9.j, the Monadnock impoundment water surface elevation shall be maintained at or above the top of the flashboards that have a 10 foot wide by 0.58 foot (7 inch) high notch (i.e. 665.80 feet NGVD) when flashboards are in place (i.e., the normal full pool) or at least 1.08 inches above the dam crest (i.e. 663.89 feet NGVD) when the flashboards have been temporarily removed due to failure or other reasons. At all other

[1] The OCMP will be used for determining compliance with the Project Operation criteria specified in condition E-9 of this Certification and allows for exceptions to these criteria for reasons including, but not limited to, scheduled maintenance, actions taken to prevent or respond to emergencies (such as flashboard failure, flood control, etc.), and the accuracy and response time of systems designed to maintain run-of-river conditions.

times all inflow shall be passed over the spillway (with or without flashboards).

d. When inflow is equal to or greater than the minimum flow specified in condition E-9.j, the Pierce impoundment water surface elevation shall be maintained at or above the top of the flashboards that have a 10 foot wide by 0.58 foot (7-inch) high notch (653.40 feet NGVD) when flashboards are in place (i.e., the normal full pool) or at least 0.84 inches above the dam crest (651.47 feet NGVD) when the flashboards have been temporarily removed due to failure or other reasons. At all other times all inflow shall be passed over the spillway (with or without flashboards).

e. When inflow is equal to or greater than the minimum flow specified in condition E-9.j, and with a 20-inch by 20-inch cutout in the wastegate open, the water surface elevation in the Paper Mill impoundment shall be maintained at or above the crest of the dam (i.e., the normal full pool) as there are currently no flashboards at this development (i.e. 627.64 feet NGVD). By November 1, 2016, the Applicant shall construct (and operate) the 20-inch- high by 20-inch-wde cutout in the wastegate. Prior to constructing the cutout, the Applicant shall submit calculations to DES demonstrating how the minimum flows specified in condition E-9.j will be maintained in the interim. If, after consultation with DES, NHFGD and USFWS, and if approved by DES, the Applicant elects to install flashboards at the Paper Mill impoundment, the 20-inch by 20-inch cutout shall remain open and the water surface elevation shall be maintained at or above the top of the flashboards (i.e. 629.64 feet NGVD) when flashboards are in place. At all other times, inflow shall be passed through the 20-inch by 20-inch cutout.

f. From January through February and May through August in Powder Mill Pond, and when power is generated at the Monadnock, Pierce and and/or Paper Mill facilities, the Applicant shall strive to minimize the fluctuations in the water surface elevation in each of the four impoundments to the extent practicable. The Applicant shall not operate any of the four facilities in a store and release mode to generate power. To minimize fluctuations, the Automated Pond Level Control Systems (APLCS) at each facility shall be operated. Fluctuations shall not exceed one foot prior to testing of the APLCS as described below. Once the APLCS system is installed and operable at the Powder Mill Pond development, the Applicant shall evaluate the ability of the Activity, including unit start up and shutdown, to reduce fluctuations to no more than 0.25 feet (3 inches) from January through February and May through August in Powder Mill Pond. Unless otherwise approved by DES, the evaluation shall be completed by December 31, 2016. Prior to conducting the evaluation, the Applicant shall

consult with and obtain DES approval of the scope of work for the evaluation. The Applicant shall then implement the approved scope of work. A report containing the results of the evaluation shall be submitted to DES by April 1, 2017. DES, after consultation with Applicant, NHFGD and USFWS, may then require corresponding adjustments to the allowable fluctuation band of surface water levels in the OCMP that are no less than 0.25 feet (3 inches). If DES requires adjustments, the Applicant shall then submit a revised OCMP to DES for approval within 90 days of receiving notification that revisions are necessary. The Applicant shall then implement the revised OCMP.[2]

g. When drawing the water level down more than one foot in any of the four impoundments, the Applicant shall strive to achieve, to the extent practicable, a gradual drawdown of approximately one foot or less per day, with the understanding that there may be times when such gradual drawdowns are not practicable.

h. Flashboards shall be reinstalled as soon as reasonably practicable after failure or temporary removal for other reasons.

i. The Applicant shall provide a year-round continuous minimum flow of 70 cfs, or inflow (whichever is less), immediately downstream of the Powder Mill Pond development and downstream of the confluence of the tailrace and bypass reach at the Monadnock, Pierce and Paper Mill developments.

j. The Applicant shall provide the following year-round, continuous minimum flow to the Monadnock, Pierce and Paper Mill bypass reaches:
   1. 13 cfs, or inflow (whichever is less), at the Monadnock development;
   2. 13 cfs, or inflow (whichever is less), at the Pierce development; and
   3. 13 cfs, or inflow (whichever is less), at the Paper Mill development

k. The Applicant shall construct a new spillgate by October 1, 2016 at the Pierce development to provide the minimum flow specified in condition E-9.j when the water level in the impoundment is no higher than 650.40 feet NGVD (i.e., one foot below the concrete crest elevation of the dam). Flow

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[2] It is understood and recognized that there may be occasional situations where the Applicant will need to maintain water surface elevations that are different than those specified in conditions E-9.b through E-9.e to ensure that minimum flows are met. For example, when flashboards are partially damaged or destroyed, the pond elevation necessary to maintain minimum flows will vary depending on how many flashboards remain in place. A description of how minimum flows will be maintained for situations such as this, as well as other situations, will be provided by the Applicant in the Operations and Compliance Monitoring Plan (see Condition E-10).

calculations supporting the design shall be submitted to and approved by DES prior to construction.

l. If requested by DES before December 31, 2020, the Applicant shall assist DES with a low-flow dissolved oxygen study to confirm that dissolved oxygen standards (Env-Wq 1703.07) are attained in the Pierce and/or Paper Mill bypass reaches at the minimum flows indicated above. The role of the Applicant will be to regulate flow in the bypass reach during the study, to the extent practicable, to facilitate collection of 10 days (or less as determined by DES) of valid,[3] continuously collected,[4] dissolved oxygen and temperature data in the bypass reaches.[5] The Applicant will not be required to manipulate minimum flows in the bypass reaches if the project is not generating electricity (i.e. during low river flow periods) or to pass water through the turbines when inflow is below the operational range of the turbines. Data will be assessed for compliance in accordance with the current version of the DES Consolidated and Assessment Listing Methodology.[6] If dissolved oxygen standards are determined to be in noncompliance as described above, and operation of the Activity is determined to cause or contribute to the noncompliance, the Applicant shall submit a plan to the DES for review and approval by DES within 120 days of the determination that standards are not being met. The plan shall describe how dissolved oxygen standards in the affected bypass reaches will be attained and confirmed; the Applicant will also develop a schedule for attainment. The Applicant shall then implement the DES approved plan. Once it is confirmed that compliance with dissolved oxygen standards are met in the bypass channel(s), the Applicant shall make appropriate

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[3] "Valid" means the data meets the quality assurance / quality control objectives and criteria for the sampling effort.

[4] "Continuously collected" means readings that are taken regularly (typically every 15 minutes). For dissolved oxygen and temperature, continuous read dataloggers are typically deployed to collect the data.

[5] Should sufficient valid data not be collected in the first attempt, the Applicant shall assist DES with an additional study (or studies if needed) until such time that sufficient valid data is collected. The inability of DES to collect sufficient valid data will not be considered a violation of this Certification condition provided the Applicant has regulated flows in the bypass reach during the study to the extent practicable.

[6] The 2012 Consolidated Assessment and Listing Methodology is the most recent version available at the time this Certification was prepared (see http://des.nh.gov/organization/divisions/water/wmb/swqa/2012/documents/2012-calm.pdf).

revisions to the OCMP and submit it to DES for approval and the Applicant shall then implement the DES approved OCMP. If it is necessary to revise the minimum bypass flows to meet the dissolved oxygen standards, DES will modify the Certification in accordance with condition E-4.

m. The Applicant shall notify DES and the Director's office of the NHFGD in writing (which includes email) at least 60 days in advance of drawing any of the four impoundments down for regular maintenance[7] more than one foot below the normal full pool elevation as defined in Conditions E-9.b through E-9.e above. The Applicant shall obtain prior approval from DES if minimum flows are not anticipated to be met. If DES does not respond within 30 days of being notified, the Applicant may proceed with the proposed maintenance drawdown. The Applicant shall also obtain prior approval from the NHFGD if any of the four impoundments are proposed to be drawn down for regular maintenance during the critical fishery period (i.e., from January through February and May through August). If NHFGD does not respond within 30 days of being notified, the Applicant may proceed with the proposed maintenance drawdown. Whenever the water level in Powder Mill Pond drops more than one foot below the normal full pool elevation defined in Condition E-9.b., the Applicant shall notify the NHFGD within 48 hours of when the Applicant became aware that the pond level had dropped. The notification shall identify the level of drawdown necessary, timing and duration, method for ensuring minimum flow requirements are met during drawdown, and the opportunity for agencies to respond to notification. See Condition E-9.n for additional notification requirements if more than one impoundment is proposed to be refilled at a time.

n. During refilling of the impoundments the Applicant shall operate the Project such that when inflow equals twice the minimum required flow downstream of the Paper Mill development as specified in Condition E-9.i (i.e., the minimum required flow), the minimum required flow shall be released and the remainder shall be used for refill. When inflow is less than twice the minimum required flow, 50% of the inflow shall be passed downstream and 50% shall be used for refill. If the Applicant anticipates refilling more than one impoundment at a time, prior consultation with the DES, NHFGD, and USFWS shall be required so that an appropriate refill regime may be developed. This refill protocol may be modified on a case-

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[7] Regular Maintenance means: "any activities that are necessary to inspect and repair the developments, including, but not limited to: replacement of flashboards, removal of debris, gate repair, concrete repair, and any other structural repair."

by-case basis after consulting with DES, NHFGD, and USFWS and after receiving written approval from DES.

E-10. Operation and Compliance Monitoring Plan:

a. By April 1, 2016, the Applicant shall consult with DES, NHFGD and USFWS, and submit an Operation and Compliance Monitoring Plan (OCMP) to DES for approval. The Applicant shall then operate the Activity in accordance with the approved OCMP. The OCMP shall include a detailed description of the following:

1. How the Activity will be operated and maintained to comply with run-of-river, minimum flow and impoundment fluctuation requirements of this Certification (Condition E-9);
2. Procedures that will be implemented to comply with the conditions of this Certification as quickly as possible should it be found that the Activity is temporarily out of compliance, including notification of appropriate regulatory authorities;
3. Methods for monitoring, recording and reporting impoundment water surface elevations, inflows, bypass flows, turbine flows and when power is generated, with monitoring and recording of data automated and collected continuously to the extent feasible; [8]
4. A description of the mechanisms and structures that will be used, including equipment accuracy, frequency of measurement, the level of automation and any periodic maintenance and/or calibration necessary to ensure the devices work properly;
5. How data will be recorded to verify proper operations and how these data will be maintained for inspection by DES and other resource agencies; and
6. A schedule for when the plan will be implemented.

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[8] Inflow shall include estimates based on prorating USGS measured river flow at the Peterborough USGS gage (# 01082000) by drainage area and of flow based on pond elevation/discharge relationships at the dams. Bypass flows shall be based on pond elevation/discharge relationships at each dam. The Applicant will not be required to provide continuous data regarding turbine flows and power generation. The Applicant shall, however, provide dates and times that water is flowing through the turbines, and when power is generated. The Applicant shall also provide gate dimensions, invert elevations and formulas used to calculate elevation/discharge at all gates that may impact pond levels. The OCMP shall provide sufficient information for dam operators to readily determine appropriate dam settings under different conditions to meet the requirements of this certification. Details regarding the above will be provided in the OCMP.

The Applicant shall consult with DES, NHFGD and USFWS and receive DES approval of any proposed modifications to the OCMP. Any DES approved modifications to the OCMP shall be considered a part of this Certification. Proposed modifications shall not be implemented until approved by DES. Exceptions to the approved OCMP may be granted by DES on a case-by-case basis after consultation with the NHFGD and USFWS.

b. The Applicant shall notify DES not more than five days after any deviations[9] from the OCMP. The notification shall include, to the extent known, an explanation as to why the deviations occurred, a description of corrective actions taken, and how long it will take until the operations will comply with the OCMP. The Applicant shall maintain a log of deviations and shall submit an annual summary of the deviations to DES for each calendar year by January 31 of the following year (i.e., the 2014 annual summary would be due by January 31, 2015). The annual summary shall also include a summary of the of maintenance and emergency drawdowns in each impoundment for the year including the dates, duration, depth, and reason for each drawdown.

E-11. Invasive Species:

a. By April 1, 2016, the Applicant shall consult with DES, NHFGD and USFWS, and submit an Invasive Species Monitoring Plan (ISMP) to DES for approval to monitor invasive species such as variable leaf milfoil (Myriophyllum heterophyllum), yellow iris (Iris pseudacorus), and purple loosestrife (Lythrum salicaria), at the project. The Applicant shall then implement the approved ISMP. The ISMP shall include: (1) a description of the monitoring method; (2) frequency of monitoring; (3) a schedule for filing monitoring reports with DES, NHFGD, USFWS, and FERC; and (4) a description of and implementation schedule for providing public information about species.

b. The Applicant will cooperate with DES and others in the development a Long Term Management Plan (LTMP) to control invasive species in Powder Mill Pond and shall, after consultation with the DES and NHFGD, operate the Powder Mill Pond dam to temporarily control flow and /or water level in the pond in a manner not inconsistent with the LTMP when the state is conducting remediation efforts provided it does not conflict with

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[9] A "Deviation" is defined as: "non-conformance with the requirements for monitoring (*see* E-10.a.3.), minimum flows (*see* E-9.i.–j.), and pond elevation (*see* E-9.b.–g. and.)."

the conditions of the Water Quality Certification or FERC license. The Applicant will not be required to pay for or conduct remediation.

E-12. Fish Passage. Should the Secretary of the Interior pursuant to Section 18 of the Federal Power Act require the Applicant to construct, operate and maintain any fish passage facilities for the Project, those requirements shall become a condition of this Certification.

Attachment 15

Maine Class II RPS Certification

NON39971: UNDER 1 MW – PIERCE DAM

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Generator Information

NEPOOL Generator:	No
GIS Unit ID:	39971
Plant Name:	UNDER 1MW
Unit Name: *	PIERCE DAM
Status:	Approved
Name Plate Capacity: *	0.770 (MW)
Location of generating unit: *	New England (ISO New England Control Area)
City: *	BENNINGTON
State: *	NEW HAMPSHIRE

Labor Characteristics

Majority of employees operating at generation plant are employed under collective bargaining agreement:	☐ (check for yes)
If generating plant experienced a labor dispute in the most recent calendar year, replacement workers were used:	☐ (check for yes)

Vintage

Vintage (month and year of commercial operation): *	06/1975 (format: MM/YYYY)
Repowering/derate date:	(format: MM/YYYY)
Capacity addition/subtraction:	(MW)
Refurbishment date:	(format: MM/YYYY) (Relevant to Maine RPS)
Date Operation Recommended after at Least Two Years of Not Operating:	(format: MM/YYYY) (Relevant to Maine RPS)
Date recognized by System Operators as capacity resource after not being recognized as a	(format: MM/YYYY) (Relevant to Maine RPS)

capacity resource for at least two years:

FERC hydroelectric license relicensing date: (format: MM/YYYY)

Emissions Reporting

CEM Reporting: ☐ (check for yes)

Ability to Cogenerate Electricity and Steam: ☐ (check for yes)

ORIS PL: (1 - 6 numeric characters)

Emissions Unit ID(s): (1 - 6 alphanumeric characters, separate multiple ids with semicolons)

Peer unit name and address (if not reporting actual generator emissions):

Fuel Type: *

Single Fuel ◉ Multi Fuel

Hydroelectric/Hydropower

* Required Field

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Generator Information

Fuel Type Attributes:
(select all that apply)

Hydroelectric/Hydropower

- Hydro - run-of-the-river hydropower facility that has a nameplate generating capacity of not more than five megawatts, does not cause an appreciable change in the river flow, and began operation prior to July 1, 2003

Connecticut

Class I Renewable Energy Source: ☐ (check for yes) -- If yes Reveal Output to Regulators must be checked

Class I low emission eligible energy source ("LREC"): ☐ (check for yes) -- If yes Reveal Output to Regulators must be checked

Class II Renewable Energy Source: ☐ (check for yes) -- If yes Reveal Output to Regulators must be checked

Class III Portfolio Standard: No -- If yes Reveal Output to Regulators must be checked

State Certification Number:

Date of Eligibility: (format: MM/YYYY)

CT CEO Eligible: ☑ (check for yes)

R-O-R Hydro: Percentage Qualifying as Class I:

Massachusetts

RPS Class I Renewable Generation Unit: ☐ (check for yes)

Percentage of Generation Qualifying as RPS Class I: **

Solar Carve-Out Unit: ☐ (check for yes)

RPS Class II Renewable Generation Unit: ☐ (check for yes)

Percentage of Generation Qualifying as RPS Class II: **

RPS Class II Waste Energy Generation Unit: ☐ (check for yes)

APS Alternative Generation Unit: ☐ (check for yes)

Generation level per year or Energy imported per year above which qualifies as RPS New Renewable Resource: (MWh)

RPS Statement Of Qualification Number: (format: AB1234YY)

Eligible MA Renewable for NOx allowances claims from Public Benefit set-a-side: ☐ (check for yes)

MA Renewable NOx State Certification Number:

Maine

Class I New Renewable Energy Resource Qualification: ☐ (check for yes)

Class II Eligible Resource: ☑ (check for yes)

Community Based Renewable Energy: ☐ (check for yes)

Eligible for C02 Netting: ☐ (check for yes)

State Certification Number:

Date of Eligibility: (format: MM/YYYY)

Rhode Island - Existing Renewable Energy Resource

Existing Renewable Energy Resource: ☐ (check for yes)
Requires an Independent Verifier for Non-Nepool Generator if checked

Generation level per year above which qualifies as an Existing Renewable Energy Resource:

State Certification Number:

Date of Eligibility: (format: MM/YYYY)

Percentage of average annual production meeting the requirements for eligibility as an Existing Renewable Energy Resource: **

Rhode Island - New Renewable Energy Resource

New Renewable Energy Resource: ☐ (check for yes)
Requires an Independent Verifier for Non-Nepool Generator if checked

Generation level per year above which qualifies as a New Renewable Energy Resource:

State Certification Number:

Date of Eligibility: (format: MM/YYYY)

Percentage of average annual

production attributable to the efficiency improvements of additions of capacity placed in service after Dec 31, 1997: **

New Hampshire

Class I Source: (check for yes)

Average annual electric production (in MWh) from a facility other than hydroelectric from 2004 through 2006, or for the first 36 months after commercial operation if that date is after December 31, 2001: (MWh)

Average annual production (in MWh) of a hydroelectric facility from the later of January 1, 1986 or the date of first commercial operation through December 31, 2005 (if such a facility was upgraded or expanded during this baseline period, actual generation should be adjusted to estimate the average annual production that would have occurred had the upgrade or expansion been in place for this entire period): (MWh)

Class I Useful Thermal Energy: (check for yes)

Class II Source: (check for yes)

Class III Source: (check for yes)

Class IV Source: (check for yes)

State Certification Number:

Date of Eligibility: (format: MM/YYYY)

Meter

Independent Verifier: Bill Short

Green-E Certification

Green-E Eligible: (check for yes)

Green-E Fuel Type:

Low Impact Hydro Institute Certification

Low Impact Hydro Institute Eligible: (check for yes)

Reveal Output to Regulators: (check for yes)

* Required Field ** For Existing Renewable Energy Resource + New Renewable Energy Resource, then total percenatge must = 100% or leave both blank

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Attachment 17

Mark Lombardi, Monadnock Paper Mills Inc., Affidavit

I, Mark Lombardi, being duly sworn on my oath depose and state that I am the Vice President of Manufacturing for Monadnock Paper Mills, Inc; that I have read the original application as well as all supplemental information provided with regard to that application and am familiar with the contents thereof and have examined the attachments thereto; that the facts contained therein are true and correct to the best of my information, knowledge and belief

Mark Lombardi
Facilities Production Manager
Monadnock Paper Mills Inc.

Sworn to me this:

18th day of November, 2016

Notary Public

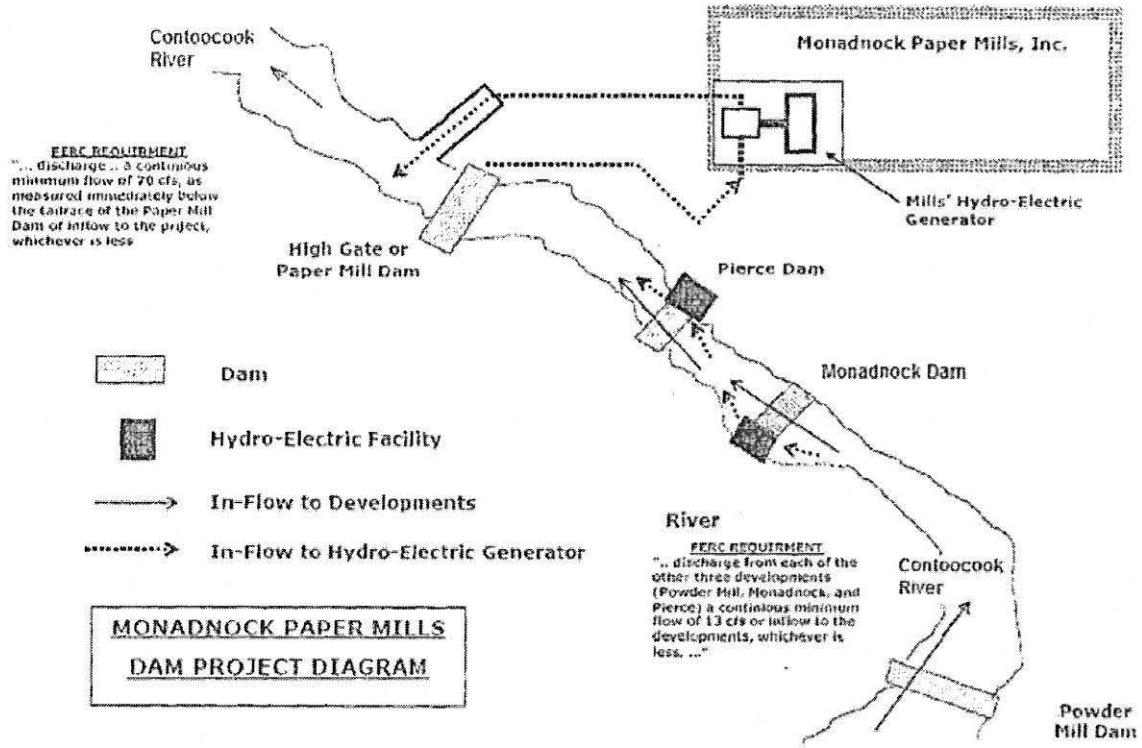
TAMMIE J. BLANCHETTE, Notary Public
My Commission Expires August 24, 2021

Attachment 18

Project Description

&

Description of Facility Upgrades (Incremental Class I Production)



Pierce Dam Power Station – Generation Increases from Upgrades to Facility

APLCS have been installed and operating at Pierce Dam Station since November 2014. We have completed calculations internally (using a 10 month comparison, year to year) in an attempt to quantify incremental hydro generation realized at Pierce Station during 2015 as a result of operating with APLCS. Our calculated result is an estimated increase of 27.3%. This amounts to approximately 576,476 kWh of additional annual renewable energy production which is eligible for Class I RECs. This number represents 27.3% of the historic generation baseline for Pierce Dam Station which is 2,111,634 kWh annually (see Attachment 6).

Our evaluation is based on the assumption that if we are generating at one of the three hydro stations (i.e. enough river flow to generate), we are generating at all of the stations (which is most always the case). We calculated a ratio for the amount of power generated at Pierce Station compared to the power generated at the Mill Wheel, per period, first in 2014 (before APLCS at Pierce Station) and then in 2015 (with ALPCS at Pierce Station). The Mill Wheel Station was used as a reference standard since its impoundment did not have APLCS installed in either year. We averaged the ratios calculated for the first 11 periods of each year, and calculated the theoretical increase in generation at Pierce Dam Station using the average ratio increase of 27.3%.

Monadnock Paper Mills, Inc

REC Application – Project Description

The Monadnock Project is located on the Contoocook River, in the communities of Peterborough, Greenfield, Hancock and Bennington in Hillsborough County, the southern central region of New Hampshire. The Project is located approximately 30 miles west of Manchester, New Hampshire and approximately 37 miles southwest of Concord, New Hampshire.

Existing Project Facilities

The Project consists of four developments, three of which have generating facilities. Each of the four developments, beginning upstream and progressing downstream, consists of the Powder Mill Pond Development, Monadnock Development, Pierce Development and Paper Mill Development. The Project Boundary includes all of the lands, waters and facilities necessary to safely operate the Project including the dams, powerhouses (as appropriate), tailraces, recreational facilities and transmission lines. Specifically, the project boundary follows the normal full pond elevation around each of the project impoundments. The upstream extent of the project boundary extends approximately 3.6 miles upstream of the Powder Mill Pond headquarters, along the Conctoocook River, while the Antrim Road Bridge downstream of the Paper Mill Dam serves as the downstream extent of the project boundary. The project boundary also includes lands on which the Monadnock Paper Mill and appurtenant facilities are located on the eastern shore of the river, adjacent to the Paper Mill Dam.

Facility Upgrades

Automated Pond Level Control Systems (ALPCS) were installed at all four dam impoundments as of December 31, 2015, with the goal of increasing power generation at each of the three generating facilities. At Mill Wheel Station, a pond level sensor was installed close to the dam where there was no power or communication back to the mill. Due to the fact that run-of-river hydro power plants have little to no water storage capacity, an adequate control strategy is required to keep the water level constant in the pond and increase the efficiency of energy generation throughout the year when flows can vary significantly.

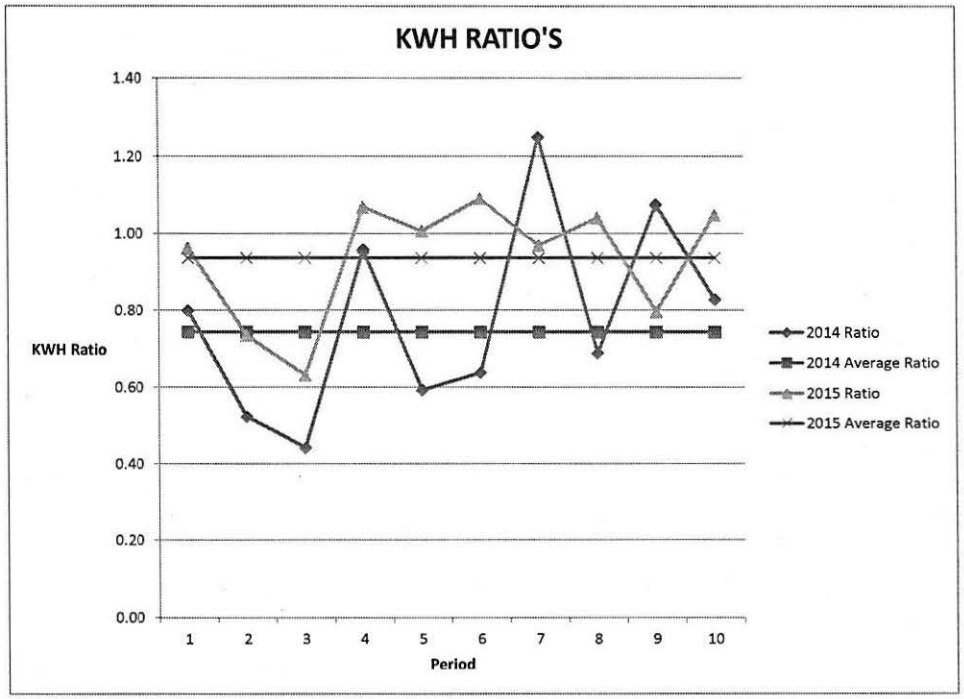
Power Generation Evaluation - Pierce Station to Paper Mill Wheel
(assume both would operate during same periods)

2014

Period	Pierce Station	Mill Wheel		2014 Ratio	2014 Average Ratio
1	282100	353100		0.80	**0.74**
2	85500	163500		0.52	**0.74**
3	109100	246700		0.44	**0.74**
4	335500	350900		0.96	**0.74**
5	203800	344100		0.59	**0.74**
6	165800	260000		0.64	**0.74**
7	176100	141000	*	1.25	**0.74**
8	134500	195500		0.69	**0.74**
9	69900	65100		1.07	**0.74**
11	128000	154600		0.83	**0.74**
Total	**1690300**	**2274500**		**0.74**	

2015

Period	Pierce Station	Mill Wheel	2015 Ratio	2015 Average Ratio
1	296800	308600	0.96	**0.94**
2	127500	173500	0.73	**0.94**
3	96100	152300	0.63	**0.94**
4	381700	357500	1.07	**0.94**
5	219000	217700	1.01	**0.94**
6	85200	78200	1.09	**0.94**
7	155600	160700	0.97	**0.94**
8	18400	17700	1.04	**0.94**
9	60300	75800	0.80	**0.94**
10	26300	25100	1.05	**0.94**
Total	**1466900**	**1567100**	**0.94**	



* 2014 - Mill Wheel - period 7 missing information for wk of 6/30
Period 10 - 2014 had no generation at either location - maintenance
Period 11 - 2015 no generation at mill wheel for maintenance

Pierce would have made 1,152,254 KWh this year, using the 2014 ratio (0.74), therefore it actually generated 314,616 KWh additional in 2015, **or 27.3% more with ALPCS.

Power Flow From Project