

Saywatt Hydroelectric, LLC

Mechanicsville Hydroelectric (FERC Project No. 9611)



January 11, 2012

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**BEFORE THE UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION**

**SAYWATT HYDROELECTRIC, LLC
(MECHANICSVILLE HYDROELECTRIC, PROJECT NO. 9611)**

**APPLICATION FOR FLASHBOARD AND TURBINE RELATED AMENDMENT OF
EXEMPTION OF SMALL POWER HYDROELECTRIC PROJECT**

1.0 INTRODUCTORY STATEMENT

1.1 Saywatt Hydroelectric, LLC (herein called SHLLC) applies to the Federal Energy Regulatory Commission for an amendment to its existing exemption for Mechanicsville Hydroelectric, a small hydroelectric power project that is proposed to have an installed capacity of 5 MW or less, from licensing under the Federal Power Act. The project is currently exempt under FERC Project number 9611.

The original applicant initially filed their first application for Exemption on October 31, 1985. A second application was filed on March 25, 1987. On January 27, 1988 the Commission issued and Order Granting Exemption from Licensing (5 MW or less).

On and around November 28, 2011, the Exemptee conducted pre-amendment meetings via telephone and circulated a draft of this amendment application to representatives of the U.S. Fish and Wildlife Service (USFWS), Connecticut Department of Energy and Environmental Protection (CT DEEP) Division of Water Quality, and Inland Fisheries, the Low Impact Hydro Institute (LIHI) and the Connecticut State Historic Preservation Office (SHPO). Their comments are attached or have already been submitted to the FERC.

1.2 The location of the project is:

State or Territory: Connecticut
County: Windham
Township or nearby town: Thompson
Stream or nearby body of water: French River

1.3 The exact name and business address of the applicant(s) is:

Applicant's Name: Saywatt Hydroelectric, LLC
Address: 18 Washington St. PMB# 18
Canton, MA 02021

1.4 The exact name and business address of each person authorized to act as agent for the applicant(s) in this initial consultation document is:

Name of Agent: Rolland Zeleny
Address: Same As Above

1.5 Saywatt Hydroelectric, LLC (SHLLC) is a limited liability corporation, incorporated under the laws of the Commonwealth of Massachusetts, exemption holder for the water power project, designated as Project No. 9611 in the records of the Federal Energy Regulatory Commission, dated January 27, 1988.

1.6 On June 1st of 2010, SHLLC acquired the Project known as Mechanicsville Hydro from Saywatt Hydro Associates (SHA), the former owner. The original application for Exemption from Licensing, dated October 31, 1985, proposed the installation of two vertical turbine units with an installed capacity of 320 kW at net head of 15 feet, maximum flow of 330 CFS and an approximate average annual generation of 1,210,000 kWh. After further study and a failed search for an affordable pair of turbines, SHA submitted a second application. The second application for Exemption from Licensing, dated March 25, 1987 proposed the installation of a new, single 325 kW semi-variable Kaplan turbine with a gross head of 15 feet, design head of 14 feet, maximum hydraulic capacity of 331 CFS and estimated average annual generation of 1,174,000 kWh. The second application also proposed two foot flashboards. On January 27, 1988 the Commission issued Project No. 9611 an Order Granting Exemption from Licensing (5 MW or Less) with a single 325-kilowatt generating unit.

During the construction phase, the original applicant lacked the resources to acquire the new 325 kW unit, authorized in the Exemption. The final configuration included a used 225 kW semi-variable Kaplan turbine with a gross head of 15 feet, net (design) head of 14 feet and hydraulic capacity of 233 cfs. The Project has demonstrated a 10-year average (2001-2010) annual generation of 815,000 kWh.

In a letter dated August 31, 1987, the USFWS added condition 10 to the Exemption stating that flashboards not be used between July 1st and October 31st. In a letter dated August 27, 1987, CT DEP stated, in item (4), that the flashboards should be removed during July, August and September. After completion of a wetland study, dated November 16, 1991, which was recommended by the FERC, it was decided that the flashboards should only be removed by one foot to protect established wetlands and prevent exposure of fish eggs.

SHLLC (the current applicant) recently applied for and received Low Impact Hydroelectric Institute (LIHI) certification for the Project. During the review process, it was uncovered that the USFWS flashboard condition, which was recommended after the wetland study, was not amended in the Project's FERC Exemption. In addition, in order to be certified by LIHI, CT DEEP recommended American Eel passage at the Project. SHLLC agreed to cooperate with the LIHI conditions, which include eel passage. To accommodate eel passage at the Project, CT DEEP requested that one foot of flashboards remain during low flow season so that an upstream passage through the dam can be constructed through the flashboards. Steve Gephard of CT

DEEP also visited the Project and agreed with the USFWS assessment that complete removal of flashboards could be a detriment to the surrounding habitat.

1.7 On and around November 28, 2011, the Exemptee conducted pre-amendment meetings via telephone and circulated a draft of this amendment application to representatives of US Fish and Wildlife Service (USFWS), Connecticut Department of Energy and Environmental Protection (CT DEEP) Division of Water Quality, and Inland Fisheries, the Low Impact Hydro Institute (LIHI) and the Connecticut State Historic Preservation Office (SHPO). The Exemptee has received supportive comments (with conditions and recommendations), which are attached or have already been submitted to the FERC (see Attachment A).

This Application requests Commission authorization for Saywatt Hydroelectric, LLC to make the following three amendments to its current Exemption:

1.7.1 Amended Flashboard Management

The USFWS, in a letter dated August 31, 1987, added condition 10, stating that flashboards not be used between July 1st and October 31st and in a letter dated August 27, 1987, CT DEP, stated in item (4), that the flashboards should be removed during July, August and September.

The USFWS, in accordance with Section 8 of the terms and conditions prescribed by the Service for this project, has modified condition 10 as shown below and in their letter dated August 27, 2011 (letters to be found in Attachment A).

SHLLC is requesting Commission authorization to accept the USFWS amendment to condition 10. The amendment would modify condition 10 of the Exemption to align with recent USFWS and CT DEEP conditions and recommendations on flashboard management.

In a letter dated October 27, 2011, the USFWS modified condition 10 as follows:

“The Exemptee shall remove one foot of flashboards during the period July 1 through September 30, annually (to elevation 302.5 feet Mean Sea level).”

In a letter dated January 11, 2012, the CT DEEP stated:

“Based on this review, the Department supports the amendments provided that:”

The project follow three conditions (See the CT DEEP letter dated January 11, 2012).

1.7.2 Amended Number of Turbines: The current exemption describes the project with one 325 kW turbine. There is currently one 225 kW turbine installed. SHLLC is requesting Commission authorization to install a second turbine to realize the Project's full potential and for improved energy conversion efficiencies. The additional capacity is within the Exemptee's current authorized capacity for the project.

In a letter dated December 29, 2011 from the USFWS, the Service stated (letters to be found in Attachment A): "The Service would support the installation of a second turbine contingent on SHLLC conducting a water quality monitoring survey to verify that the operation of the new unit does not lower dissolved oxygen levels in the bypass reach or tailwater."

The water quality monitoring is to begin during the first low-flow season after the installation of the second turbine. In a letter dated January 11, 2012, the CT DEEP stated: "Based on this review, the Department supports the amendments provided that:"

The project follow three conditions (See the CT DEEP letter dated January 11, 2012).

In a letter dated January 5, 2012 from the CT SHPO the Office stated (See the CT SHPO letter dated January 5, 2012): "SHPO's opinion that the proposed action will have no adverse effect on the integrity of the historic powerhouse and associated dam."

This will be further described in Exhibit A below.

1.7.3 Amended Minimum Starting Flow: The existing 225 kW turbine has a minimum starting capacity of 63 cfs. When combined with the bypass flow requirement of 22 cfs, the startup flow for the project was decided at 86 cfs. SHLLC is requesting Commission authorization to lower the minimum Project start flow from 86 cfs to 60 cfs. The lower start flow is a result of the lower hydraulic capacity of the second proposed turbine, which is 38 cfs.

In a letter dated December 29, 2011 from the USFWS the Service stated (letters to be found in Attachment A):

"The Service has no objection to amending the exemption to specify that the new start flow will be lowered from 86 cfs to 60 cfs. However, if results of the above-mentioned Water Quality Monitoring Survey indicate that operation of the new turbine is impacting dissolved oxygen; additional spillage (and consequently a higher start flow) may be required."

"In accordance with Condition No. 8 of the terms and conditions prescribed by the Service for this project (which reserves the Services' right to modify terms and conditions as needed to protect fish and wildlife resources), we hereby modify Condition No. 4 as follows:"

“4. The Exemptee shall conduct a water quality monitoring survey. The survey protocol shall be developed in consultation with, and require approval by, the U.S. Fish and Wildlife Service. Data shall be collected over a minimum of three (3) years, and shall be initiated the first low-flow season after the new Leffel turbine becomes operational. If results indicate that the project is causing depletion of dissolved oxygen, mitigation measures may be required (e.g., releasing additional flow over the dam for reparation). Upon mutual agreement between the Exemptee, the U.S. Fish and Wildlife Service, and the Connecticut Department of Energy and Environmental Protection, the number of years of monitoring may be reduced.”

In a letter dated January 11, 2012, the CT DEEP stated:

“Based on this review, the Department supports the amendments provided that:”

The project follow three conditions (See the CT DEEP letter dated January 11, 2012).

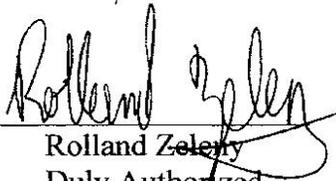
This will be further described in Exhibit A below.

1.8 Pursuant to 18 CFR § 4.201 (1)(c), only exhibits of the original Application for Exemption, filed with the Commission on March 25th, 1987 requiring modification are included in this Application for Amendment. All terms, provisions and exhibits contained within or attached to the original application are incorporated herein by this reference, except as specifically set forth below:

Exhibit A: Revised
Exhibit E (1): Unchanged
Exhibit E (2): Revised
Exhibit F: Revised
Exhibit G: Unchanged

IN WITNESS HEREOF the applicant has caused his name to be hereunto signed by Rolland Zeleny, its Manager hereunto duly authorized this 11 day of January 2012.

Saywatt Hydroelectric, LLC

By 
Rolland Zeleny
Duly Authorized

Notarizing Agent



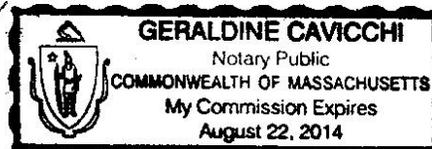


EXHIBIT A

1.0 Project Description

The Project Description from the Order Granting Exemption from Licensing
Dated January 7, 1988

“Existing project features include a dam consisting of a 200-foot-long by 20-foot-high granite block spillway surmounted with the remains of weir boards and a 210-foot-long earthen dike, a 44-acre reservoir at elevation 301.5 feet mean sea level (msl), and an abandoned powerhouse. Proposed new project features would include 2-foot-high flashboards that would create a 48-acre reservoir at elevation 303.5 feet msl, a 325-kilowatt generating unit and a 900-foot-long, 2.3-kilovolt transmission line. The project operates in a run-of-river mode. (Flow in the river below the project would equal instantaneous inflow to the reservoir.)”

Today, the existing Project features include a dam consisting of a 200-foot-long by 20-foot-high granite block spillway surmounted with 2-foot-high flashboards and a 210-foot-long earthen dike, a 48-acre reservoir at elevation 303.5 feet mean sea level (msl), and a powerhouse containing a 225-kilowatt generating unit and a 900-foot-long, 23-kilovolt transmission line. The project operates in a run-of-river mode. (Flow in the river below the project would equal instantaneous inflow to the reservoir.)

Note that there are three differences in the current Project features compared to the existing Project description. The powerhouse is no longer abandoned, the generation unit is 225-kilowatts and not 325-kilowatts and the transmission line is 23-kilovolts and not 2.3-kilovolts. The reason for the smaller generation unit was due to the lack of financial resources by the original developer at the time the project was constructed. The reason for the discrepancy in the transmission voltage was due to a typographical error.

SHLLC is requesting Commission authorization to install a second turbine, which will stay within the original Exemption’s authorization of 325-kilowatts. The modifications to the aforementioned project description would be to add the second generation unit and correct the voltage level of the transmission line. The proposed project description would read:

The project features include (1) a dam consisting of a 200-foot-long by 20-foot-high granite block spillway surmounted with 2-foot-high flashboards and a 210-foot-long earthen dike,(2) a 48-acre reservoir at elevation 303.5 feet mean sea level (msl), (3) and a powerhouse containing (4) a 95-kilowatt generating unit and (5) a 225-kilowatt generating unit with a combined total of 320-kilowatts of nameplate generating capacity and (6) a 900-foot-long, 23-kilovolt transmission line. The project operates in a run-of-river mode. (Flow in the river below the project would equal instantaneous inflow to the reservoir.)

(1) Existing Dam, Impoundment and Project Works [§4.107 (c) (1)]

SHLLC is proposing no changes to the dam, reservoir, forebay, trash racks and tailrace. No cofferdams or water disturbing work is required. All work required to install a second turbine will occur within the powerhouse. As built in 1922, the powerhouse originally contained three flumes and turbines, which generated a total of 750 kW of power. One flume is currently populated with a 225 kW semi-variable Kaplan turbine. A second flume will be utilized to house the proposed 95 kW Francis turbine.

(2) Existing and Proposed Generating Units [§4.107 (c) (2)]

Summary of Proposed Project

Generating Units	Specifications
<i>Unit 1 (Currently Authorized)</i>	
Turbine	HYDROLEC T15 Semi-variable Kaplan
Runner	Single, 4 Blades
Power Control	Variable Pitch Blades
Power (Water-to-Wire @ 14')	225 kW
Maximum Hydraulic Capacity	233 cfs
Minimum Hydraulic Capacity	63 cfs
Generator	Westinghouse AC Induction Motor (600 RPM)
Nameplate Capacity	300 HP / 225 kW
<i>Unit 2 (Proposed For Authorization)</i>	
Turbine	S. Morgan Smith or Leffel Samson
Runner	Single, Vertical Francis (33-36" Diameter)
Power Control	Variable Wicket Gates
Power (Water-to-Wire @ 14')	128 HP / 95 kW
Maximum Hydraulic Capacity	100 cfs
Minimum Hydraulic Capacity	38 cfs
Generator Type	AC Induction Generator (600 RPM)
Generator Total Capacity	150 HP / 112 kW

TABLE 1

(3) Type of Hydraulic Turbines [§4.107 (c) (3)]

Unit 1: Currently Authorized

There is currently one Hydrolec T15 Series semi-variable Kaplan unit (Unit 1), coupled to a 300 HP (225 kW) Westinghouse AC induction generator. At its net (design) head of 14' it has a maximum rated flow of 233 CFS. Table 2 shows the manufactures specifications for the unit:

HYDROLEC T15 SERIES TURBINE

The T15 Turbine Package Includes:

- Tachometer
- Draft Tube
- Turbine
- Brake
- Speed In increaser
- Guide Vane
- Grease Pump
- Shaft (Turbine)
- Generator
- Air Valve



NET HEAD (Feet)	MAX. FLOW (cfs)	MAX. OUTPUT (kW)	OVERALL EFFICIENCY (%)	MIN. FLOW (cfs)	MIN. OUTPUT (kW)	OVERALL EFFICIENCY (%)	MAX. EFF. AT 3/4 MAX. OUTPUT (%)	NUMBER OF Blades	RUNNER SPEED (RPM)
6	170	63	73	56	18	63	74	3	149
7	180	79	74	57	21	63	75	4	142
8	191	97	75	51	22	64	76.5	4	142
9	201	113	76	53	27	65	78	4	148
10	208	136	77	56	31	65	79	4	148
11	219	157	77	59	36	65	79	4	164
12	226	176	77	60	40	66	79	4	178
13	233	200	78	63	46	66	80	4	178
*14	233	215	78	63	49	66	80	5	178
*15	237	235	78	65	54	66	80	5	178
*16	243	260	78	65	59	66	80	5	178

TABLE 2

Unit 2: Proposed For Authorization

The Exemptee is qualifying two candidate turbines for the proposed additional unit. One is a S. Morgan Smith 33" diameter runner and one is a James Leffel Samson 35" diameter runner (Unit 2). Both units have almost identical output power and water usage ratings. The unit will be coupled to an AC induction generator, slightly oversized for the turbine output power, with a nameplate rating of 150 HP. Maximum flow is estimated to be in the 100 cfs range. Actual maximum hydraulic output will be reduced when both turbines are running as the tail water will rise, reducing the net head, and thus water usage. Table 3 shows the manufacturers specifications for these units.

JAMES LEFFEL, SAMSON TURBINE (35" RUNNER)

SIZE	HEAD	30"	4	5	6	7	8	9	10	11	12	13	14	15	16
SAMSON 35	Power. Water. Speed.	12.8 2789 81	19.7 3220 93	27.5 3600 104	36.2 3944 114	45.6 4260 123	55.7 4554 132	66.5 4830 140	77.9 5091 147	89.8 5339 154	102 5577 161	115 5505 168	129 6024 174	143 6236 180	158 6440 186



THE JAMES LEFFEL & CO.

POWER TABLE - VERTICAL STANDARD SAMSON TURBINES.

Size of Turbine	Head ²⁰⁰⁰ Feet	3	4	5	6	7	8	9	10	11	12	13	14
17 E.	Power	1.1	1.7	2.5	3.2	4.1	5.0	6.0	7.0	8.1	9.2	10.4	11.7
	Water Speed	257	291	325	356	384	411	436	460	482	503	524	544
17 D.	Power	1.5	2.3	3.2	4.3	5.4	6.5	7.8	9.2	10.6	12.0	13.6	15.2
	Water Speed	320	379	423	464	502	536	569	601	630	657	683	709
17 C.	Power	2.0	3.0	4.2	5.6	7.1	8.6	10.3	12.1	14.0	15.8	17.8	19.8
	Water Speed	423	489	550	611	669	724	779	831	881	928	973	1017
17 B.	Power	2.4	3.7	5.3	7.0	8.7	10.6	12.7	14.9	17.2	19.5	22.0	24.7
	Water Speed	533	616	699	784	861	931	1000	1067	1131	1193	1253	1311
17 A.	Power	3.2	4.9	6.9	9.1	11.4	13.9	16.6	19.5	22.5	25.5	28.8	32.3
	Water Speed	657	769	880	992	1105	1220	1336	1453	1570	1687	1804	1921
20.	Power	4.2	6.4	9.0	11.9	15.0	18.3	21.8	25.5	29.5	33.8	37.8	42.3
	Water Speed	914	1055	1200	1350	1500	1650	1800	1950	2100	2250	2400	2550
23.	Power	5.5	8.6	11.9	15.7	19.8	24.2	28.8	33.6	38.5	43.4	48.4	53.9
	Water Speed	1209	1391	1581	1770	1960	2150	2340	2530	2720	2910	3100	3290
26.	Power	7.10	10.9	15.2	20.1	25.3	30.8	36.4	42.2	48.0	53.7	59.6	65.5
	Water Speed	1545	1764	1995	2250	2500	2750	3000	3250	3500	3750	4000	4250
30.	Power	9.44	14.5	20.3	27.7	35.6	43.9	52.6	61.5	70.5	79.5	88.5	97.7
	Water Speed	2057	2373	2700	3040	3380	3720	4060	4400	4740	5080	5420	5760
35.	Power	12.8	19.7	27.5	36.2	45.6	55.7	66.5	77.9	89.8	102.0	114.5	127.0
	Water Speed	2789	3220	3650	4080	4510	4940	5370	5800	6230	6660	7090	7520

S. MORGAN SMITH TURBINE (33" & 36" RUNNER)

HEAD IN FEET.

Runner Size	Water Power, Cubic Feet, 1000 ft. per Minute.	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
12	Horse Power	2.3	2.7	3.2	4.0	4.8	5.6	6.3	7.0	7.8	8.6	9.4	10.2	11.0	11.8	12.6
	Cubic Feet	370	441	483	523	570	621	668	720	770	820	870	920	970	1020	1070
	Revolutions	240	273	310	340	367	392	416	439	460	480	500	520	537	554	572
15	Horse Power	2.7	4.2	5.9	7.8	9.6	12.0	14.4	16.8	19.4	22.1	24.8	27.5	30.0	32.4	34.8
	Cubic Feet	488	686	771	858	948	1040	1135	1230	1328	1428	1528	1628	1728	1828	1928
	Revolutions	292	322	348	373	398	423	448	473	498	523	548	573	598	623	648
18	Horse Power	3.9	6.0	8.5	11.1	14.0	17.2	20.5	23.8	27.2	30.6	34.0	37.4	40.8	44.2	47.6
	Cubic Feet	538	980	1111	1269	1407	1565	1703	1861	2019	2177	2335	2493	2651	2809	2967
	Revolutions	368	381	397	412	428	443	458	473	488	503	518	533	548	563	578
21	Horse Power	5.3	8.2	11.5	15.2	19.1	23.3	27.9	32.7	37.5	42.3	47.1	51.9	56.7	61.5	66.3
	Cubic Feet	815	1340	1500	1655	1815	1980	2150	2320	2490	2660	2830	3000	3170	3340	3510
	Revolutions	357	388	417	446	475	504	533	562	591	620	649	678	707	736	765
24	Horse Power	7.0	10.8	15.1	19.8	25.0	30.5	36.2	42.0	47.8	53.6	59.4	65.2	71.0	76.8	82.6
	Cubic Feet	1223	1785	1978	2196	2430	2680	2930	3180	3430	3680	3930	4180	4430	4680	4930
	Revolutions	370	399	428	457	486	515	544	573	602	631	660	689	718	747	776
27	Horse Power	8.9	13.6	19.1	25.2	31.7	38.7	46.2	54.1	62.4	71.1	80.2	89.6	99.4	109.5	119.9
	Cubic Feet	1538	2222	2497	2794	3110	3440	3780	4130	4480	4830	5180	5530	5880	6230	6580
	Revolutions	397	423	449	475	501	527	553	579	605	631	657	683	709	735	761
30	Horse Power	10.9	16.5	22.8	30.3	38.2	46.5	55.2	64.3	73.8	83.7	93.9	104.4	115.2	126.3	137.5
	Cubic Feet	2255	3240	3615	4020	4450	4900	5370	5850	6340	6830	7320	7810	8300	8790	9280
	Revolutions	416	441	466	491	516	541	566	591	616	641	666	691	716	741	766
33	Horse Power	13.2	20.4	28.6	37.8	47.3	57.2	67.5	78.2	89.3	100.8	112.7	124.9	137.4	150.2	163.3
	Cubic Feet	2676	3933	4418	4930	5470	6030	6610	7210	7820	8440	9070	9710	10360	11010	11670
	Revolutions	437	462	487	512	537	562	587	612	637	662	687	712	737	762	787
36	Horse Power	15.8	24.3	33.9	44.8	56.1	67.8	80.0	92.7	105.8	119.3	133.2	147.4	161.9	176.7	191.8
	Cubic Feet	3412	4971	5580	6250	6980	7770	8580	9410	10260	11130	12020	12930	13860	14810	15780
	Revolutions	460	485	510	535	560	585	610	635	660	685	710	735	760	785	810

TABLE 3

(4) Project Operations [§4.107 (c) (4)]

The Mechanicsville Project is semi-automated and operates in a run-of-river mode for the protection of water quality, aquatic resources, and aesthetic values in the French River. The Project operates in a run-of-river mode and at all times maintains discharges from the Project so that the flow in the French River, downstream of the Mechanicsville powerhouse, approximates the instantaneous flow in the French River upstream of the Mechanicsville dam.

SHLLC is seeking Commission authorization for the three following changes to operations:

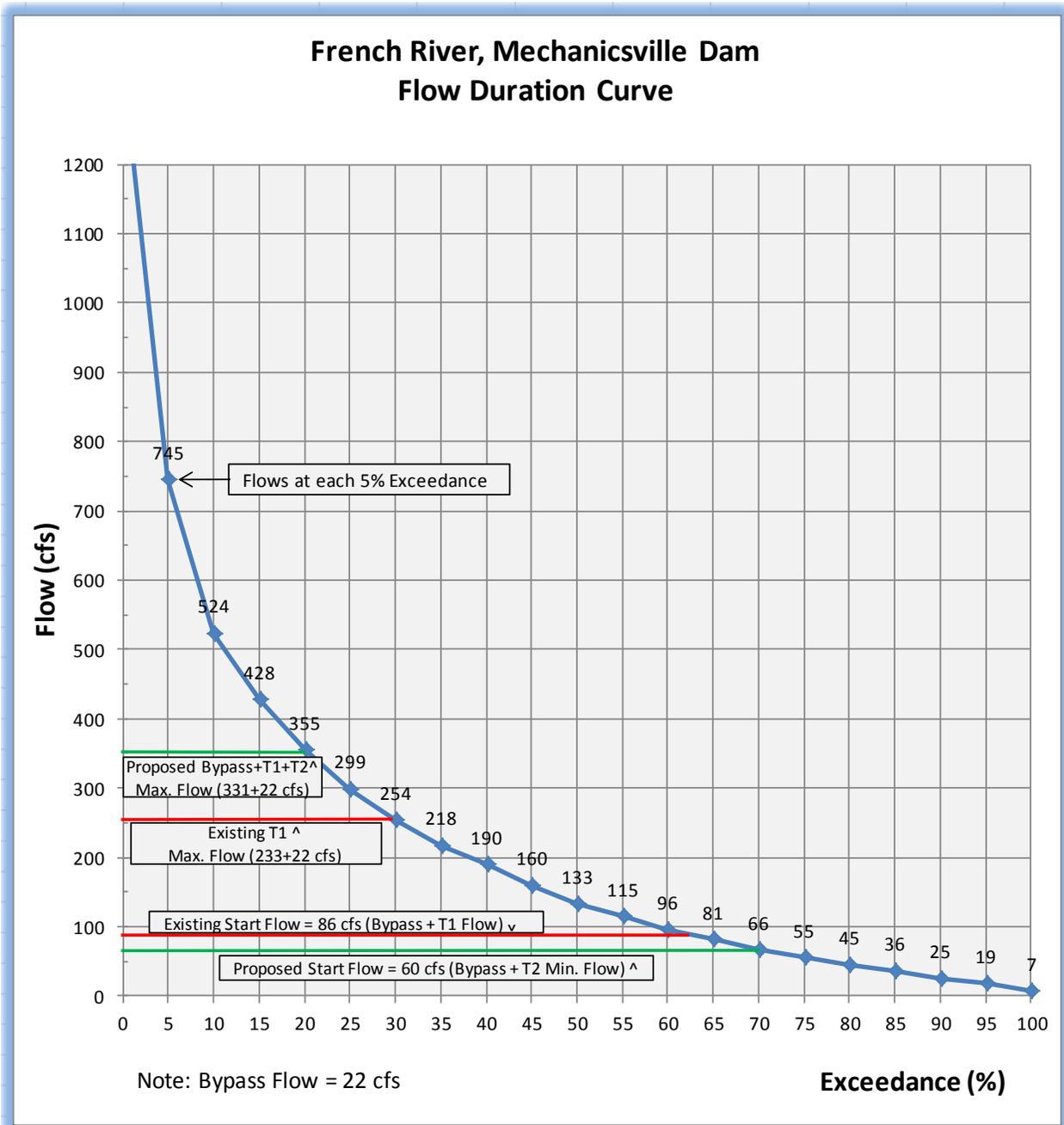
4.1 SHLLC proposes to change from complete flashboard removal to one foot removal during low flows. The current Exemption orders flashboard removal on July 1st through October 31st.

To accommodate the most recent USFWS conditions and CT DEEP recommendations, SHLLC agrees to remove one foot of flashboards from July 1st through September 30th. See section 1.7.1 above and the supportive letters in Attachment A, from the USFWS dated October 27, 2011 and the attached letter from the CT DEEP, dated January 11, 2012 for their conditions and recommendations regarding flashboard management.

4.2 SHLLC proposes the addition of a second, smaller turbine as described in the aforementioned sections. This turbine would generate electrical energy more efficiently than the currently installed larger turbine when flows are below the larger turbine's maximum efficiency point. See section 1.7.2 above and the supportive letters in Attachment A, from the USFWS dated December 29, 2011, the attached letter from CT DEEP dated January 11, 2012 and the attached letter from the CT SHPO dated January 5, 2012 for their conditions and recommendations regarding the addition of a second turbine.

4.3 SHLLC proposes to change the turbine startup flow for the project to 60 cfs from 86 cfs to match the lower hydraulic capacity of the proposed smaller turbine. See section 1.7.3 above and the supportive letters in Attachment A, from the USFWS dated December 29, 2011 and the attached letter from the CT DEEP dated January 11, 2012 for their conditions and recommendations regarding starting flows.

(5) Annual Flow Duration Curve for the Project [§4.107 (c) (5)]



(6) Project Capacities [§4.107 (c) (6)]

SHLLC is requesting Commission authorization to amend the Project startup flows to 60 cfs from 86 cfs based on the lower hydraulic capacity of the proposed turbine. When no turbines are operating, most of the 60 cfs will flow over the dam and a small amount will flow through the dam, through leakage and a 4” diameter sluice. CT DEEP’s Steve Gephard of their Inland Fisheries would like to keep the small 4” sluice open. If flows into the project impoundment are excessively low (< 10 cfs) the project operator will close the sluice to prevent drainage of the impoundment.

(i) The average 10-year (2001-2010) annual generation in kilowatt-hours is 815,000 kWh. The proposed estimated average annual generation in kilowatt-hours/year is 1,079,000 kWh.

(ii) The average and design head of the hydroelectric project is 15’ gross, 14’ average design, and 13.5’ when both units are operating at maximum hydraulic capacity. Note, that due to head lose in the rising tail water, when both units are operating near their maximum capacities, total power output of the project is estimated to be ~ 300 kW.

(iii) The minimum and maximum hydraulic capacity of the hydroelectric project (flow through the hydroelectric project) in cubic feet per second is 38 cfs minimum, 331cfs maximum and 22 cfs over and through the dam. When no turbines are operating, most of the 60 cfs will flow over the dam. A small amount will flow through the dam, through leakage and a 4” diameter sluice.

(iv) The number of surface acres of the man-made or natural impoundment used at its normal maximum surface elevation and its net and gross storage capacities [existing conditions and proposed conditions if reinstalling flashboards]; 48-acres at 303.5 mean sea level (msl) with two foot flashboards and 44-acres at 301.5 msl with no flashboards during low flow periods as currently stated. The proposed impoundment would be 48-acres at 303.5 mean sea level (msl) with two foot flashboards and 46-acres at 302.5 msl with one foot flashboards during low flow periods.

Table 4 below summarizes the power and hydraulic capacities of the two units individually and together. Note that the net design head drops by 6” when both units are operating together at maximum capacity due to a rise in tail water.

Summary of Proposed Capacities

Turbine Name	Max. Power @ 14’ Head	Max. Power @ 13.5’ Head	Max. Flow One Unit Operating	Max. Flow Both Units Operating	Min. Flow
HYDROLEC T15 (Authorized Unit 1)	225 kW	210 kW	233 CFS	233 CFS	63 CFS
S.M.SMITH Or LEFFEL SAMSON (Proposed Unit 2)	95 kW	90 kW	100 CFS	98 CFS	38 CFS
Both Units Operating Max.	N. A.	300 kW	N. A.	331 CFS	N. A.

TABLE 4

(7) Planned Start Date for the installation of the Proposed Second Turbine [§4.107 (c) (7)]

The project start date is planned for May 1st, 2012 and is expected to be complete within 7 months.

(8) Modifications to Dam [§4.107 (c) (8)]

SHLLC proposed no changes to the dam, reservoir, forebay, trash racks and tailrace. No cofferdams or water disturbing work is required. All work required to install the second turbine will occur within the powerhouse.

EXHIBIT E

(1) Description of the Environmental Setting [18 C.F.R. 4.107(e)(1)]

- vegetative cover: No Change
- fish and wildlife resources: No Change
- water quality and quantity:
Amendment to starting flows. See section (6) Project Capacities [§4.107 (c) (6)] above. Approvals from USFWS and CT DEEP with conditions (see letters in Attachment A).
- land and water uses: No Change
- recreational use: No Change
- socio-economic conditions: No Change
- historical and archeological resources:
There will be minimal reinforcements to inside the powerhouse flume. Approval has been received from CT State Historic Preservation Office (see letters in Attachment A).
- visual resources: No Change
- endangered or threatened species, critical habitats: No Change

(2) Expected Environmental Impacts and Benefits from the Proposed Amendment [18 C.F.R. § 107(e)(2)]

As previously described, all construction will take place within the powerhouse so there will be no adverse impact on the surrounding environment. No coffer dams, sediment or water disruptive work will take place outside of the powerhouse.

The only proposed capacity change in the amendment is a result of the lower proposed startup flow. The proposed startup flow of 60 cfs is at the 72% exceedance point of the Project's flow duration, which is well within the typical startup range of hydroelectric projects in the region. The project will not operate 28% of the time, which includes low flow periods.

There are several benefits of the proposed amendment:

2.1 The adherence to USFWS and CT DEEP recommendations regarding flashboard management will improve wetland habitat and American Eel passage at and around the Project dam.

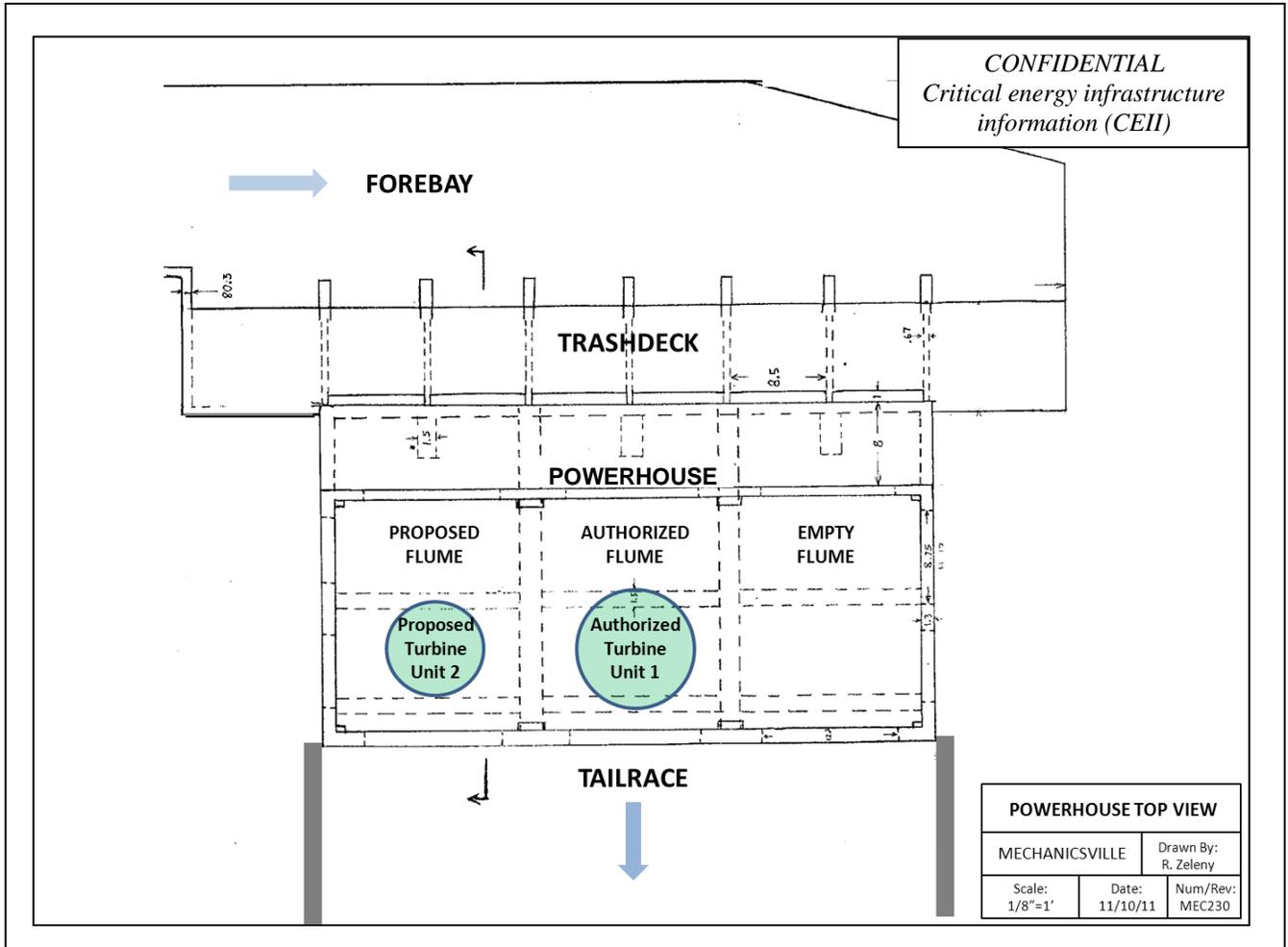
2.2 The installation of a second turbine at the Project would bring to fruition the Project's full potential to generate alternative electrical energy as initially authorized and envisioned, in a responsible manner.

2.3 The installation of a smaller turbine will produce energy more efficiently than the currently installed, larger turbine, when flows are below the larger turbine's maximum efficiency point.

2.4 The installation of a second turbine will produce an additional 264,000 kWh of alternative electrical power per year, which in turn would reduce carbon emissions by approximately 244 metric tons each year.

EXHIBIT F

Exhibit F drawings contain Critical energy infrastructure information (CEII)
and should be kept confidential.





Mechanicsville Hydroelectric, View of Forebay, Intakes and Gates

EXHIBIT F (Continued)

Exhibit F drawings contain Critical energy infrastructure information (CEII)
and should be kept confidential.

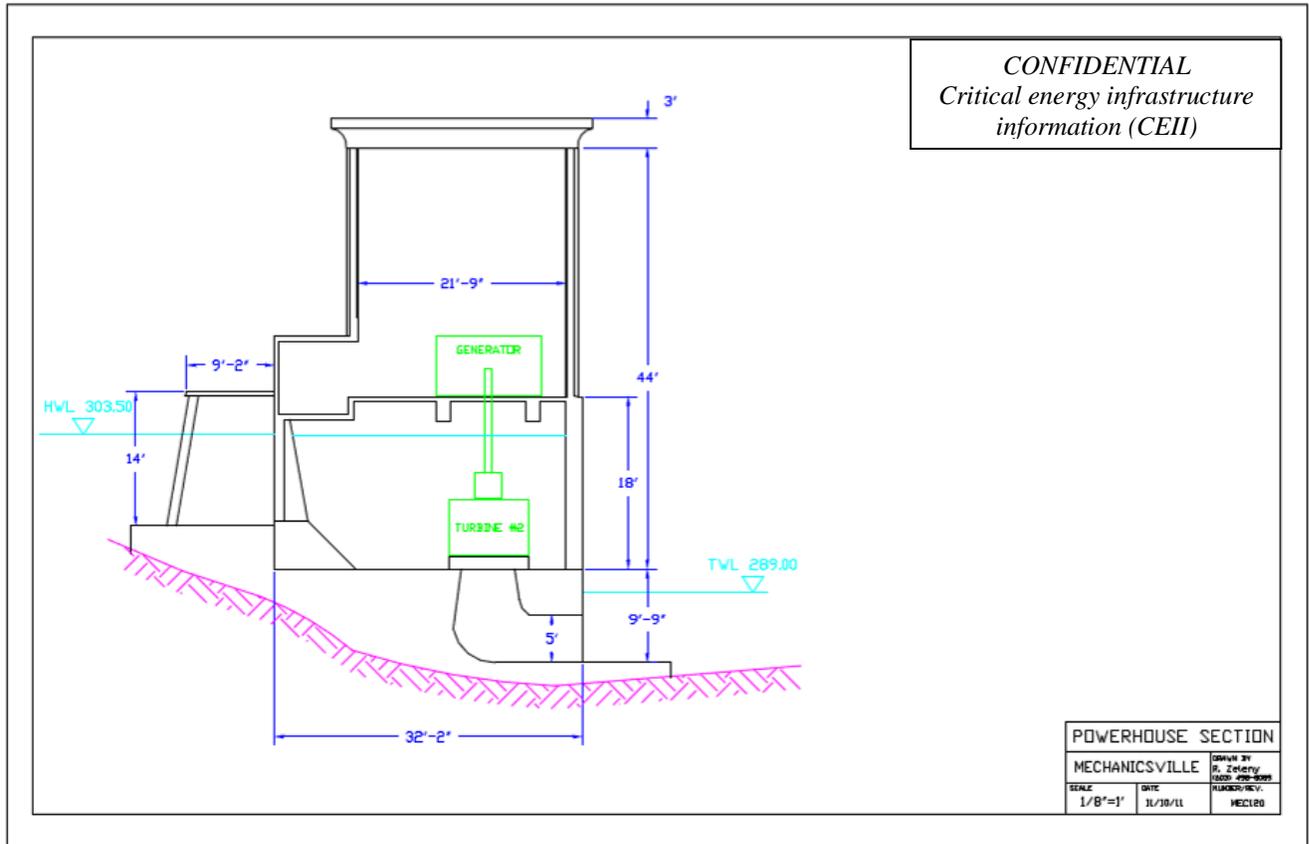


EXHIBIT G

There are no changes to the existing site maps in this amendment.

ATTACHMENT A

USFWS Letter Dated October 27, 2011

USFWS Letter Dated December 29, 2012

CT DEEP Letter Dated January 11, 2012

CT SHPO Letter Dated January 5, 2012



United States Department of the Interior



FISH AND WILDLIFE SERVICE

New England Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5087
<http://www.fws.gov/newengland>

In Reply Refer To: Saywatt Hydroelectric, LLC
Mechanicsville Project; FERC No. 9611
COMMENTS ON FLASHBOARD MANAGEMENT

October 27, 2011

Mr. Rolland Zeleny
Saywatt Hydroelectric, LLC
18 Washington Street, PMB #18
Canton, MA 02021

Dear Mr. Zeleny:

This responds to your electronic message, dated September 28, 2011, regarding flashboard management at the Mechanicsville Project, located on the French River in Thompson, Connecticut.

The Mechanicsville Project was issued an exemption from licensing on January 27, 1988. By letters dated December 18, 1986 and August 31, 1987, the U.S. Fish and Wildlife Service (Service) issued mandatory terms and conditions for the proposed project. Condition No. 10 stipulated that flashboards should not be used during the period July 1 through October 31 to protect wetlands and their water quality functions at the site. In addition, Article 12 of the exemption required Saywatt Hydro Associates (SHA) to assess whether the removal of flashboards during the summer provides sufficient protection for the wetlands around the impoundment. In accordance with Condition No. 8 of our December 18, 1986 letter to SHA, the Service changed its position on flashboards, and denied their use entirely by letter dated May 2, 1988. Condition No. 8 reserves the Service's right to modify terms and conditions as needed to protect fish and wildlife resources. In a September 1, 1988 letter, the Federal Energy Regulatory Commission directed SHA to not erect flashboards until approved by the Service.

In fulfillment of Article 12, SHA developed a Wetlands Monitoring Plan, and undertook both pre- and post-flashboard wetlands monitoring at the project. The results of that study were provided for our review by letter dated November 16, 1991. According to the report, installation of two-foot flashboards resulted in a 2-3 percent decrease in the original wetlands composition, but an increase of approximately 10 percent in emergent wetlands, for an overall net increase in the quantity of wetlands. The report also stated that minor negative impacts of removing the flashboards during the summer were observed (i.e., exposure of fish nests and amphibian egg masses). Based on these results, SHA recommended that two-foot boards be installed from October 1 through June 30, and that one foot of boards be removed during the summer (leaving

Application for Amendments to Exemption (Project No. 9611)

Mr. Rolland Zeleny
October 27, 2011

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one foot of boards on the dam). By letter dated February 11, 1992, the Service provided comments on the Wetland Monitoring report, and concurred with SHA's conclusions and recommendations.

On May 27, 2010, SHA sold the project to Saywatt Hydroelectric, LLC (Saywatt). While consulting with the resource agencies as part of Saywatt's Low Impact Hydropower Institute certification application, the Service came to realize that Condition No. 10 had never been modified to reflect our concurrence with the new flashboard management protocol. This letter is intended to rectify that oversight.

Therefore, in accordance with Condition No. 8 of the terms and conditions prescribed by the Service for this project, we hereby modify Condition No. 10 as follows:

10. The Exemptee shall remove one foot of flashboards during the period July 1 through September 30 annually (to elevation 302.5 feet Mean Sea Level).

Thank you for this opportunity to comment. If you have any questions regarding these comments, please contact Melissa Grader of this office at (413) 548-8002, extension 124.

Sincerely yours,



Thomas R. Chapman
Supervisor
New England Field Office

Mr. Rolland Zeleny
October 27, 2011

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.cc: FERC, Secretary
CT DEEP, Brian Golembiewski
CT DEEP, Pete Aarrestad
CT DEEP, Brian Murphy
Reading File
ES: MGrader:10-27-11:(603)223-2541



United States Department of the Interior



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In Reply Refer To: Saywatt Hydroelectric, LLC
Mechanicsville Project; FERC No. 9611
Comments on Amendment to Exemption Application

December 29, 2011

Mr. Rolland Zeleny
Saywatt Hydroelectric, LLC
18 Washington Street, PMB #18
Canton, MA 02021

Dear Mr. Zeleny:

This responds to your November 30, 2011 electronic message and accompanying draft Amendment to Exemption Application for the Mechanicsville Project, located on the French River in Thompson, Connecticut. In your email, you requested that we review and comment on the proposed changes to the existing exemption for the project.

PROPOSAL

Saywatt Hydroelectric, LLC (SHLLC) proposes to amend the existing exemption in three respects:

1. authorize the use of two-foot flashboards on the spillway from October 1 through June 30, and one-foot flashboards from July 1 through September 30;
2. allow the addition of a second turbine which would bring the total installed capacity up to what was originally authorized; and
3. amend the specified minimum project start flow from 86 cfs to 60 cfs.

COMMENTS

The U.S. Fish and Wildlife Service (Service), through correspondence dated October 27, 2001, provided feedback on the flashboard protocol, including the support of the proposed seasonal utilization of flashboards at the project.

Addition of New Turbine

According to the amendment application, the project was authorized to install a single semi-Kaplan turbine rated at 325 kW, with a maximum hydraulic capacity of 331 cfs. However, the

Mr. Rolland Zeleny
December 29, 2011

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turbine that actually was installed is rated at 225 kW and has an operating range from 63 to 233 cfs. SHLLC would like to add a new James Leffel unit rated at 96 kW that operates at flows from 38 to 100 cfs. The total combined capacity would be 321 kW, which is slightly less than what was originally authorized. However, the new unit would allow the project to operate over a wider range of flows (Table 1).

Table 1. Existing and proposed flows from the Mechanicsville Project.

Existing Unit	New Unit	Total Operating Range
63-233 cfs	38-100 cfs	38-333 cfs

According to the Flow Duration Curve on page 12 of the amendment application, adding the new unit would reduce the amount of time the project would spill (in excess of the continuous 22 cfs bypass flow) by 10 percent on the low flow end of the curve (from approximately 37 percent of the time down to 27 percent), and by another 10 percent on the high flow end of the curve (from 32 percent of the time down to 22 percent).

Currently, flows below 85 cfs or greater than 233 cfs pass over the dam, whereas under the proposed amendment, only flows less than 60 cfs or greater than 333 cfs would spill over the dam. Our concern is that this reduced spillage on the low flow end of the curve could affect water quality downstream of the dam. Therefore, the Service would support the installation of a second turbine contingent on SHLLC conducting a water quality monitoring survey to verify that the operation of the new unit does not lower dissolved oxygen levels in the bypass reach or tailwater.

Modifying the Minimum Start Flow

The Service has no objection to amending the exemption to specify that the new start flow will be lowered from 86 cfs to 60 cfs. However, if results of the above-mentioned Water Quality Monitoring Survey indicate that operation of the new turbine is impacting dissolved oxygen, additional spillage (and consequently a higher start flow) may be required.

In accordance with Condition No. 8 of the terms and conditions prescribed by the Service for this project (which reserves the Service’s right to modify terms and conditions as needed to protect fish and wildlife resources), we hereby modify Condition No. 4 as follows:

4. The Exemptee shall conduct a water quality monitoring survey. The survey protocol shall be developed in consultation with, and require approval by, the U.S. Fish and Wildlife Service. Data shall be collected over a minimum of three (3) years, and shall be initiated the first low-flow season after the new Leffel turbine becomes operational. If results indicate that the project is causing depletion of dissolved oxygen, mitigation measures may be required (e.g., releasing additional flow over the dam for reaeration). Upon mutual agreement between the Exemptee, the U.S.

Application for Amendments to Exemption (Project No. 9611)

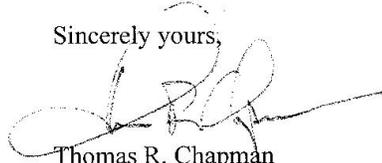
Mr. Rolland Zeleny
December 29, 2011

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Fish and Wildlife Service, and the Connecticut Department of Energy and Environmental Protection, the number of years of monitoring may be reduced.

Thank you for this opportunity to comment. If you have any questions regarding these comments, please contact Melissa Grader of this office at (413) 548-8002, extension 124.

Sincerely yours,



Thomas R. Chapman
Supervisor
New England Field Office

Mr. Rolland Zeleny
December 29, 2011

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cc: FERC, Secretary
CT DEEP, Brian Golembiewski
CT DEEP, Pete Aarrestad
CT DEEP, Brian Murphy
Reading File
ES: MGrader:12-29-11:(603)223-2541



Connecticut Department of
**ENERGY &
ENVIRONMENTAL
PROTECTION**

January 11, 2012

Saywatt Hydroelectric, LLC
c/o Rolland Zeleny
18 Washington Street, PMB# 18
Canton, MA 02021

RE: Proposed Amendment to Exemption
Mechanicsville Hydroelectric Project, FERC Project No. 9611-001

Dear Mr. Zeleny:

Thank you for the opportunity to comment on the above referenced proposal to amend your FERC Exemption. The proposed amendment includes the following operational modifications:

- To lower the spillway flashboards to one foot between July 1st and September 30th each year;
- To permanently close three of the four (4") openings in the dam, leaving the southernmost open;
- To install a second turbine with a capacity of 96 kW to maximize generation at the site; and
- To reduce the start-up flows for the project from 86 CFS to 38 CFS to facilitate use of the new low flow turbine.

The appropriate programs within the Department have reviewed the draft amendment document and attachments submitted with your electronic mail dated 11/28/11 and 12/21/11. Based on this review, the Department supports the proposed amendment provided that:

1. The eel passage plan developed during the LIHI Certification process is fully implemented and maintained for the duration of the FERC Exemption;
2. Subsequent to the operation of the second turbine, water quality surveys be performed (per USFWS guidance in letter dated 12/29/11) to document any significant in the bypass reach or tailwater. Water quality parameters to be monitored should include, but not be limited to dissolved oxygen, *Escherichia coli*, total phosphorus, total nitrogen, chlorophyll-a and secchi disk transparency; and
3. If the surveys demonstrate diminished water quality under the new operating regime, the Department would consider increasing the project start-up flows or the implementation of some other seasonal mitigatory measures.

If I can be of further assistance, please let me know.

Sincerely,

Brian Golembiewski
Environmental Analyst 3

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**State Historic
Preservation Office**



January 5, 2012

Mr. Rolland Zeleny
President
Saywatt Hydroelectric, LLC
18 Washington Street
PMB #18
Canton, MA 02021

Subject: SHPO Comments on Proposed Second Turbine at the Mechanicsville Hydroelectric Facility, Thompson, CT. FERC Project No. 9611

Dear Mr. Zeleny:

The State Historic Preservation Office has reviewed the proposed installation of a secondary turbine and generator within the existing Bay 3 of the historic powerhouse at the referenced property. The project requires licensing approval by the Federal Energy Regulatory Commission as is therefore subject to Section 106 of the National Historic Preservation Act (16 U.S.C 470(f)). The powerhouse was constructed in 1922 and substantially retains its original appearance and historic materials despite major floods in 1936, 1938 and 1955. SHPO believes that the powerhouse is potentially eligible for listing in the National Register of Historic Places under Criterion A for its association with early hydroelectrical generation and rural electrification.

SHPO notes that the proposed work will require only minor alterations of the existing facility. Two basement walls will be reinforced with concrete to accommodate the proposed turbine and generator. The abutting basement walls were reinforced in 1988 when the powerhouse was rehabilitated to accommodate the existing turbine and generator. Based on the information provided to our office, it is SHPO's opinion that the proposed action will have no adverse effect on the integrity of the historic powerhouse and associated dam. The proposed alterations will allow for a continuation of the historic function of the facility and are consistent with the long term preservation of the property. SHPO appreciates the opportunity to have reviewed and commented on these sources. For further information please contact Daniel Forrest, Deputy State Historic Preservation Officer at (860) 256-2761 or daniel.forrest@ct.gov.

Sincerely,

A handwritten signature in blue ink that reads "David Bahlman".

David Bahlman
State Historic Preservation Officer