

*Via Email*

March 31, 2016

**TO: Whitewater Boating Flow Study Working Group****SUBJECT: Bear Swamp Project (FERC Project No. 2669)  
Whitewater Boating Flow Study Survey Forms**

Dear Stakeholder:

Bear Swamp Power Company, LLC is continuing consultation with stakeholders regarding the Bear Swamp Project (FERC No. 2669) (Project) Whitewater Boating Flow Study. The Federal Energy Regulatory Commission's (FERC or Commission) October 30, 2015 Study Plan Determination (SPD) for the Project directed BSPC to consult with stakeholders regarding specific aspects germane to the Whitewater Boating Flow Study. Accordingly, by letter dated January 22, 2016, BSPC invited stakeholders to participate in a study consultation meeting that was held on February 23, 2016. The study consultation meeting offered stakeholders the forum and opportunity to provide input and feedback on five studies, including the Whitewater Boating Flow Study. The meeting presentation (including the proposed schedule milestones) is available under the "Documents" tab on the Project's relicensing website at [www.bearswampproject.com](http://www.bearswampproject.com).

During the February 23, 2016 meeting, American Whitewater (AW), New England FLOW (NE FLOW), and the Appalachian Mountain Club, requested that the Whitewater Boating Flow Study follow a format similar to the whitewater studies conducted in support of relicensing FirstLight's Turners Falls Hydroelectric Project (FERC No. 1899) and TransCanada's Wilder Hydroelectric Project (FERC No. 1892), Vernon Hydroelectric Project (FERC No. 1904), and Bellows Falls Hydroelectric Project (FERC No. 1855) (collectively the "TransCanada Projects") on the Connecticut River. Subsequent to the consultation meeting, NE FLOW provided a copy of the pre-run boater information form developed for the Turners Falls Project, and BSPC reviewed pre-run, post-run and comparative survey forms developed for the Whitewater Boating Flow Assessment of the TransCanada Projects (Louis Berger and Normandeau Associates, Inc. 2016<sup>1</sup>).

BSPC has developed the enclosed draft survey forms for the Bear Swamp Project Whitewater Boating Flow Study, including a Pre-run Boater Information Form, a Post-run Boater Information Form, and a Recreation Flow Comparison Survey Form. These forms were developed consistent with the methodology presented in Whittaker et al. (2005)<sup>2</sup> and the pre-run, post-run, and comparative flow survey forms developed for the Turners Falls Hydroelectric Projects and the TransCanada Projects. These are also consistent with survey forms that have been developed by Brookfield and approved by AW for use in water boating studies at other hydroelectric projects. As requested by FERC in the SPD and in accordance with Whittaker et al., the enclosed survey forms take into account different desired experiences of river users, including whitewater boaters and recreationalists that prefer family-friendly flatwater float trips.

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<sup>1</sup> Louis Berger and Normandeau Associates, Inc. 2016. ILP Study 31, Whitewater Boating Flow Assessment – Bellows Falls and Sumner Falls. Prepared for TransCanada Hydro Northeast, Inc., Concord, NH.

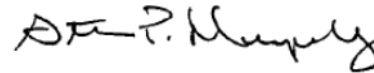
<sup>2</sup> Whittaker, D., B. Shelby, and J. Gangemi. 2005. Flows and Recreation: A Guide to Studies for River Professionals. Confluence Research and Consulting, Anchorage, AK.

Per the schedule outlined during the February 23, 2016 study consultation meeting, BSPC is requesting that the Whitewater Boating Flow Study Working Group provide any written comments on the draft Pre-run Boater Information Form, a Post-run Boater Information Form, and a Recreation Flow Comparison Survey Form on or before April 30, 2016. To facilitate review of these forms and to continue discussions of study planning and logistics, BSPC will be inviting the Whitewater Boating Flow Study Working Group to participate in a conference call in April 2016. BSPC will be providing additional details regarding the call to working group participants by email within the next several days.

I look forward to continued discussions with the Whitewater Boating Flow Study Working Group through study planning and implementation. If you have questions, please contact me at 315-598-6130 or [Stephen.Murphy@brookfieldrenewable.com](mailto:Stephen.Murphy@brookfieldrenewable.com).

Sincerely,

Steven P. Murphy

A handwritten signature in black ink that reads "S.P. Murphy". The signature is written in a cursive style with a large, stylized "M".

Manager, Licensing  
Brookfield Renewable Energy Group

Cc: F. Dunlap (Brookfield)  
J. Baummer (FERC)

**Bear Swamp Project (FERC No. 2669)**  
**Whitewater Boating Flow Study Working Group**

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Mr. Robert Nasdor  
NE Stewardship Director  
American Whitewater  
65 Blueberry Hill Lane  
Sudbury, MA 01776

Mr. Norman Sims, PhD  
Appalachian Mountain Club  
77 Back Ashuelot Road  
Winchester, NH 03470

Mr. Patrick S Moriarty  
Operations Manager  
Bear Swamp Pumped Storage Station  
Brookfield Renewable Energy Group  
PO Box 461  
Rowe, MA 01367

Ms. Andrea Donlon  
MA River Steward  
Connecticut River Watershed Council  
15 Bank Row  
Greenfield, MA 01301

Deerfield River Portage  
617 Hoosac Road  
Conway, MA 01341

Mr. Frank Mooney  
River Manager  
CrabApple Whitewater, Inc.  
PO Box 295  
Charlemont, MA 01339

Hyytinen Hollow Tubes  
7 Tea Street Ext  
Charlemont, MA 01338

Mr. Dominic Capozzi  
Berkshire East Mountain Resort  
66 Thunder Mountain road  
Charlemont, MA 01339

Mr. Tom Christopher  
New England FLOW  
252 Fort Pond Inn Road  
Lancaster, MA 01523

Mr. Bruce Lessels  
Zoar Outdoor  
PO Box 245  
Charlemont, MA 01339

**PRE-RUN BOATER INFORMATION FORM**  
**Bear Swamp Project (FERC No. 2669)**  
**Whitewater Boating Flow Study Below Fife Brook**

**Name:** \_\_\_\_\_ **Affiliation:** \_\_\_\_\_  
**Home Zip Code:** \_\_\_\_\_ **Date:** \_\_\_\_\_  
**E-Mail Address:** \_\_\_\_\_ **Age:** \_\_\_\_\_

**Are you:** Male  Female  Prefer not to answer

1. How would you describe yourself as a boater (what type of boater are you?)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

2. What type of watercraft do you generally use (Please circle one):

Hard shell kayak	2-man closed canoe (C2)
Inflatable kayak	Stand up paddle board (SUP)
1-man open canoe (OC1)	Self-bailing raft (length _____)
2-man open canoe (OC2)	Cataraft
1-man closed canoe (C1)	Inflatable tube

Other (describe): \_\_\_\_\_

3. How many years have you been using this type of watercraft? \_\_\_\_\_ Years

4. How would you rate your skill level with the type of watercraft you generally use? (Please select one – whitewater classifications defined on page 3)

- I prefer flatwater float trips and am not comfortable running whitewater
- Novice (comfortable running Class I whitewater)
- Beginner (comfortable running Class II whitewater)
- Intermediate (comfortable running Class III whitewater)
- Advanced (comfortable running Class IV whitewater)
- Expert (comfortable running Class V whitewater)

5. In general, how many days per year do you spend boating or on float trips? \_\_\_\_\_

6. Have you boated or floated the Deerfield River downstream from Fife Brook dam before? Yes  No

a. If yes, how many times have you boated or floated this reach in the past 12 months? \_\_\_\_\_ times

7. Please respond to each of the following statements about your river-running preferences. (Circle one number for each item).

	Strongly Disagree	Moderately Disagree	Slightly Disagree	No Opinion	Slightly Agree	Moderately Agree	Strongly Agree
<b>I prefer non-technical float trips.</b>	1	2	3	4	5	6	7
<b>I often run rivers with Class II or III rapids.</b>	1	2	3	4	5	6	7
<b>I often run rivers with rapids Class IV-V rapids.</b>	1	2	3	4	5	6	7
<b>Running challenging whitewater is the most important part of my trips.</b>	1	2	3	4	5	6	7
<b>I often boat short river sections (under 4 miles) to take advantage of whitewater play areas or challenging rapids.</b>	1	2	3	4	5	6	7
<b>I often boat or float river segments to experience a unique and interesting place.</b>	1	2	3	4	5	6	7
<b>I select boating or floating opportunities based on length and experience regardless of difficulty.</b>	1	2	3	4	5	6	7
<b>I am willing to tolerate difficult put-ins and portages (boat carries of 1,000 over unimproved paths) in order to run interesting reaches of river.</b>	1	2	3	4	5	6	7
<b>I often boat rivers that feature large waves and powerful hydraulics.</b>	1	2	3	4	5	6	7
<b>I often boat steep technical rivers.</b>	1	2	3	4	5	6	7
<b>I often boat or float flatwater river reaches</b>	1	2	3	4	5	6	7
<b>I enjoy boating or floating both difficult and easy rivers.</b>	1	2	3	4	5	6	7

## ***Whitewater Classifications***

**Class I** - Fast moving water with riffles and small waves. Few obstructions, all obvious and easily missed with little training. Risk to swimmers is slight; self-rescue is easy.

**Class II** - Straightforward rapids with wide, clear channels which are evident without scouting. Occasional maneuvering may be required, but rocks and medium-sized waves are easily missed by trained paddlers. Swimmers are seldom injured and group assistance, while helpful, is seldom needed.

**Class III** - Rapids with moderate, irregular waves which may be difficult to avoid and which can swamp an open canoe. Complex maneuvers in fast current and good boat control in tight passages or around ledges are often required; large waves or strainers may be present but are easily avoided. Strong eddies and powerful current effects can be found, particularly on large-volume rivers. Scouting is advisable for inexperienced parties. Injuries while swimming are rare; self-rescue is usually easy but group assistance may be required to avoid long swims.

**Class IV** - Intense, powerful but predictable rapids requiring precise boat handling in turbulent water. Depending on the character of the river, it may feature large, unavoidable waves and holes or constricted passages demanding fast maneuvers under pressure. A fast, reliable eddy turn may be needed to initiate maneuvers, scout rapids, or rest. Rapids may require "must" moves above dangerous hazards. Scouting may be necessary the first time down. Risk of injury to swimmers is moderate to high, and water conditions may make self-rescue difficult. Group assistance for rescue is often essential but requires practiced skills. A strong eskimo roll is highly recommended.

**Class V** - Extremely obstructed, or very violent rapids which expose a paddler to added risk. Drops may contain large, unavoidable waves and holes or steep, congested chutes with complex demanding routes. Rapids may continue for long distances between pools, demanding a high level of fitness. What eddies exist may be small, turbulent, or difficult to reach. At the high end of the scale, several of these factors may be combined. Scouting is recommended but may be difficult. Swims are dangerous, and rescue is often difficult even for experts. A very reliable eskimo roll, proper equipment, extensive experience, and practiced rescue skills are essential.

**POST-RUN BOATER INFORMATION FORM**  
**Bear Swamp Project (FERC No. 2669)**  
**Whitewater Boating Flow Study Below Fife Brook**

**Name:** \_\_\_\_\_ **Affiliation:** \_\_\_\_\_  
**Home Zip Code:** \_\_\_\_\_ **Date:** \_\_\_\_\_  
**E-Mail Address:** \_\_\_\_\_ **Age:** \_\_\_\_\_

**Are you:** Male  Female  Prefer not to answer

1. What was the flow (cfs) for this run? \_\_\_\_\_ cfs

2. What type of craft did you use for this run? (*Circle one*)

- |                         |                                  |
|-------------------------|----------------------------------|
| Hard shell kayak        | 2-man closed canoe (C2)          |
| Inflatable kayak        | Stand up paddle board (SUP)      |
| 1-man open canoe (OC1)  | Self-bailing raft (length _____) |
| 2-man open canoe (OC2)  | Cataract                         |
| 1-man closed canoe (C1) | Inflatable tube                  |

Other (describe): \_\_\_\_\_

3. Please identify the put-in and take-out locations you used for this run.

Put-in location: _____	Time: _____
Take-out location: _____	Time: _____

4. Please estimate the number of unintended hits, stops, boat drags, and portages you had on this run:

- a. I accidentally hit rocks or other obstacles (but did not stop) about \_\_\_\_\_ times.
- b. I was stopped after hitting rocks or other obstacles about \_\_\_\_\_ times (but did not have to get out of my watercraft to continue downstream).
- c. I had to get out to drag or pull my watercraft off rocks or other obstacles about \_\_\_\_\_ times.
- d. I had to portage around rapids or sections about \_\_\_\_\_ times.

5. If you feel qualified to evaluate the whitewater class difficulty of the run at this flow, please indicate the general range (e.g. Class II – III. (*Please select one – whitewater classifications defined on page 5*))  
Class \_\_\_\_\_ – \_\_\_\_\_

6. Please evaluate the flow on this trip for your craft and skill level for each of the following characteristics. (Circle one number for each item).

	Totally Unacceptable	Unacceptable	Neutral	Acceptable	Totally Acceptable
<b>Navigability</b>	1	2	3	4	5
<b>Depth</b>	1	2	3	4	5
<b>Maneuverability</b>	1	2	3	4	5
<b>Availability of Challenging Technical Rapids</b>	1	2	3	4	5
<b>Availability of Flatwater</b>	1	2	3	4	5
<b>Availability of Powerful Hydraulics</b>	1	2	3	4	5
<b>Availability of Whitewater "Play Areas"</b>	1	2	3	4	5
<b>Exposure of Sand/Gravel Bars</b>	1	2	3	4	5
<b>Size/Difficulty of Rapids</b>	1	2	3	4	5
<b>Overall Challenge</b>	1	2	3	4	5
<b>Safety (Due to Flow Levels)</b>	1	2	3	4	5
<b>Safety (Due to Debris or other In-channel Hazards)</b>	1	2	3	4	5
<b>Length of Run</b>	1	2	3	4	5
<b>Aesthetic Quality</b>	1	2	3	4	5
<b>Overall Rating</b>	1	2	3	4	5

7. What is the minimal skill level necessary to successfully run this reach at this flow level? (Circle one)

- No previous experience necessary
- Novice (comfortable running Class I whitewater)
- Beginner (comfortable running Class II whitewater)
- Intermediate (comfortable running Class III whitewater)
- Advanced (comfortable running Class IV whitewater)
- Expert (comfortable running Class V whitewater)



8. What features or characteristic of this reach, at this flow, contributed to your overall score in Question 6? Please describe the features/characteristics and their locations (if applicable).

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9. List the primary advantages of this flow

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10. List the primary disadvantage of this flow

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11. Are you likely to return for future boat or float trips if this flow were to be provided or available? *(Circle one)*

- a. Definitely no
- b. Possibly
- c. Probably
- d. Definitely yes

12. In general, would you consider the minimum acceptable flow (enough flow for an enjoyable recreation experience) to be higher, lower, or about the same as this flow for the features you like? *(Circle one)*

- a. Much lower
- b. Slightly lower
- c. About the same; this was the minimum flow
- d. Slightly higher
- e. Much higher

13. Was this flow optimal, or would you prefer a flow that was higher or lower than this flow? *(Circle one)*

- a. Much lower
- b. Slightly lower
- c. About the same (this flow was optimal)
- d. Slightly higher
- e. Much higher

14. Did you observe or experience any significant safety issues on your run (e.g., swims, pins, wrapped boats, constructed or natural river features, etc.)? If so, please explain and describe the approximate location.

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***Thank You for Your Participation***

## **Whitewater Classifications**

**Class I** - Fast moving water with riffles and small waves. Few obstructions, all obvious and easily missed with little training. Risk to swimmers is slight; self-rescue is easy.

**Class II** - Straightforward rapids with wide, clear channels which are evident without scouting. Occasional maneuvering may be required, but rocks and medium-sized waves are easily missed by trained paddlers. Swimmers are seldom injured and group assistance, while helpful, is seldom needed.

**Class III** - Rapids with moderate, irregular waves which may be difficult to avoid and which can swamp an open canoe. Complex maneuvers in fast current and good boat control in tight passages or around ledges are often required; large waves or strainers may be present but are easily avoided. Strong eddies and powerful current effects can be found, particularly on large-volume rivers. Scouting is advisable for inexperienced parties. Injuries while swimming are rare; self-rescue is usually easy but group assistance may be required to avoid long swims.

**Class IV** - Intense, powerful but predictable rapids requiring precise boat handling in turbulent water. Depending on the character of the river, it may feature large, unavoidable waves and holes or constricted passages demanding fast maneuvers under pressure. A fast, reliable eddy turn may be needed to initiate maneuvers, scout rapids, or rest. Rapids may require "must" moves above dangerous hazards. Scouting may be necessary the first time down. Risk of injury to swimmers is moderate to high, and water conditions may make self-rescue difficult. Group assistance for rescue is often essential but requires practiced skills. A strong eskimo roll is highly recommended.

**Class V** - Extremely obstructed, or very violent rapids which expose a paddler to added risk. Drops may contain large, unavoidable waves and holes or steep, congested chutes with complex demanding routes. Rapids may continue for long distances between pools, demanding a high level of fitness. What eddies exist may be small, turbulent, or difficult to reach. At the high end of the scale, several of these factors may be combined. Scouting is recommended but may be difficult. Swims are dangerous, and rescue is often difficult even for experts. A very reliable eskimo roll, proper equipment, extensive experience, and practiced rescue skills are essential.

**RECREATION FLOW COMPARISON SURVEY FORM**  
**Bear Swamp Project (FERC No. 2669)**  
**Whitewater Boating Flow Study Below Fife Brook**

**Name:** \_\_\_\_\_ **Affiliation:** \_\_\_\_\_  
**Home Zip Code:** \_\_\_\_\_ **Date:** \_\_\_\_\_  
**E-Mail Address:** \_\_\_\_\_ **Age:** \_\_\_\_\_

**Are you:**    **Male**                       **Female**                       **Prefer not to answer**

1. What type of craft did you use for your runs? (*Circle one*)

Hard shell kayak	2-man closed canoe (C2)
Inflatable kayak	Stand up paddle board (SUP)
1-man open canoe (OC1)	Self-bailing raft (length_____)
2-man open canoe (OC2)	Cataract
1-man closed canoe (C1)	Inflatable tube

Other (describe): \_\_\_\_\_

2. How would you rate your skill level with the type of watercraft you generally use? (*Please select one – whitewater classifications defined on page 4*)

- I prefer flatwater float trips and am not comfortable running whitewater
- Novice (comfortable running Class I whitewater)
- Beginner (comfortable running Class II whitewater)
- Intermediate (comfortable running Class III whitewater)
- Advanced (comfortable running Class IV whitewater)
- Expert (comfortable running Class V whitewater)

3. Which of the following best describes your desired experience for this reach?

- I am interested in **whitewater boating** trips that include elements such as powerful hydraulics, whitewater “play areas,” and challenging rapids
- I am interested in family-friendly, **flatwater float trips** that do not require previous boating experience, specialized equipment, or include challenging rapids

4. Please provide overall evaluations for the following flows based on your craft, skill level, and desired experience. Please consider all the flow-dependent characteristics that contribute to high quality trips (e.g., boatability, challenge, safety, availability of flatwater or whitewater play areas, etc.).

Flow	Totally Unacceptable	Unacceptable	Marginal	Acceptable	Totally Acceptable
700 cfs	1	2	3	4	5
900 cfs	1	2	3	4	5
1100 cfs	1	2	3	4	5
1300 cfs	1	2	3	4	5

5. Compared to other river reaches of similar difficulty, how would you rate the boating opportunity at this location (assume optimal flows). (Circle one number for each; if you are unsure about a comparison, leave that item blank)

Compared to river reaches of similar difficulty...	This reach is...				
	Far Below Average	Below Average	Average	Above Average	Much Better than Average
Other reaches within a 2-hour drive	1	2	3	4	5
Other reaches in New England	1	2	3	4	5

6. Based on your desired experience selected in Question 3, your skill level, and, and craft, please specify the flows that you think would provide the following types of experiences in this river reach. (You may specify flows which you have not observed, but which you think would provide the type of experience specified)
- a. If your desired experience is **whitewater boating**, please specify the flows that you think would provide the following types of experiences:

Experience	Flow in cfs
What is the lowest flow that you consider acceptable for a minimum quality whitewater experience?	
What flow provides the highest quality (i.e., optimal flow) whitewater experience?	
What is the lowest flow that provides a safe run?	
What is the highest flow that provides a safe run?	
What is the highest flow you would consider running?	

- b. If your desired experience is **flatwater float trips**, please specify the flows that you think would provide the following types of experiences:

Experience	Flow in cfs
What is the lowest flow that you consider acceptable for a minimum quality flatwater float trip?	
What flow provides the highest quality (i.e., optimal flow) flatwater float trip?	
What is the lowest flow that provides a safe trip?	
What is the highest flow that provides a safe trip?	
What is the highest flow you would consider for a flatwater float trip?	

7. Please specify your interest in variable flows and the importance of variable flows to your desired experience. *(Circle one)*

	Low		Marginal		High
Interest in variable flows in this reach	1	2	3	4	5
Importance of variable Flows	1	2	3	4	5

***Thank You for Your Participation***

## ***Whitewater Classifications***

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