August 18, 2015

VIA ELECTRONIC FILING

Ms. Kimberly D. Bose
Secretary
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, DC 20426

Re: Turners Falls Hydroelectric Project (FERC No. 1889) and Northfield Mountain Pumped Storage Project (FERC No. 2485)
Study No. 3.1.2 *Northfield Mountain/Turners Falls Operations Impact on Existing Erosion and Potential Bank Instability* Progress Report

Dear Secretary Bose,

On December 15, 2014, pursuant to the regulations of the Federal Energy Regulatory Commission (FERC), Title 18 Code of Federal Regulations (18 C.F.R), §5.15 (c)(5), FirstLight Hydro Generating Company (FirstLight), filed the response to comments on the Initial Study Report (ISR) and ISR meeting summary for the relicensing of the Turners Falls Hydroelectric Project (FERC No. 1889) and Northfield Mountain Pumped Storage Project (FERC No. 2485)(collectively, the Project). On January 22, 2015, FERC issued their *Determination on Requests for Study Modifications and New Studies – Turners Falls Hydroelectric Project and Northfield Mountain Pumped Storage Project*.

Included in FERC's determination was discussion pertaining to relicensing Study No. 3.1.2 *Northfield Mountain/Turners Falls Operations Impacts on Existing Erosion and Potential Bank Instability* (Study No. 3.1.2). As part of this discussion, FERC recommended that FirstLight file a progress report after completion of each of the seven tasks included in the approved study plan. The progress reports are to describe the activities that occurred during completion of the task, including any variances that were necessary to complete the task. FERC further noted that the progress reports would not need to include preliminary study conclusions or raw datasets but should include documentation of any ongoing consultation with stakeholders, including copies of comments and recommendations from consulted entities. As noted by FERC, the intent of the progress reports is to update the stakeholders on the status of the study and identify variances from the approved study plan. Enclosed please find FirstLight's first progress report for Study No. 3.1.2.

The approved study plan for Study No. 3.1.2 identities seven tasks to be completed prior to the filing of the final study report. These tasks include:

- Task 1: Data Gathering and Literature Review;

John S. Howard
Director FERC Compliance, Hydro

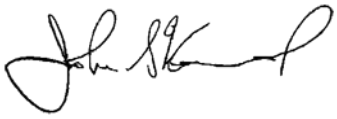
FirstLight Power Resources, Inc.
99 Millers Falls Road
Northfield, MA 01360
Tel. (413) 659-4489/ Fax (413) 422-5900/
E-mail: john.howard@gdfsuezna.com

- Task 2: Geomorphic Understanding of the Connecticut River;
- Task 3: Causes of Erosion;
- Task 4: Field Studies and Data Collection;
- Task 5: Data Analyses;
- Task 6: Evaluation of the Causes of Erosion; and
- Task 7: Report and Deliverables

To date, FirstLight has completed Task 1 and substantially completed Tasks 2 and 3. For Task 1, a full list of existing data and literature sources previously gathered was provided to Stakeholders and filed with FERC on December 15, 2014 as part of FirstLight's *Response to Stakeholder Comments on the Initial Study Report and Meeting Summary*. Since that filing, additional resources have been identified by FirstLight which are included in the enclosed table. Task 2 is substantially complete, however, review and analysis of historic aerial imagery for context when discussing the historic geomorphology of the Connecticut River is on-going. In regard to Task 3, the identification of the potential and potential primary causes of erosion has been completed, however, the relative importance of each of those primary potential causes of erosion will not be assessed until completion of Tasks 4, 5, and 6. Tasks 4, 5, 6, and 7 are on-going. A high level status update regarding each task will be discussed in FirstLight's Updated Study Report (to be filed with FERC on September 14, 2015) and at the Updated Study Report Meeting (to be held September 29-30, 2015).

Upon review of the enclosed progress report, if you have any questions please feel free to contact me at (413) 659-4489 or via email at john.howard@gdfsuezna.com.

Sincerely,



John Howard

Attachment: Study No. 3.1.2 *Northfield Mountain/Turners Falls Operations Impact on Existing Erosion and Potential Bank Instability* – Progress Report

Study No. 3.1.2 *Northfield Mountain/Turners Falls Operations Impact on Existing Erosion and Potential Bank Instability* –
Progress Report No. 1

Task	Status	Variance	Consultation	Description of Activities Completed
Task 1: Data Gathering and Literature Review	Completed	No	Yes	• Task has been completed. • Consultation: A full list of the existing data and literature sources gathered as part of this task was provided to the Stakeholders and filed with FERC on December 15, 2014 as part of FirstLight's *Response to Stakeholder Comments on the Initial Study Report and Meeting Summary*. Boat wave and groundwater data as well as Turners Falls Impoundment water level and flow data were provided to the Stakeholders on May 26, 2015 • Additional data or literature sources identified since that filing include: Hydraulic data (near shore depths and velocities 1997-2011 collected periodically) Suspended sediment samples (collected periodically from 1997-2011) Bed and bank material samples (collected periodically from 1997-2008) *Analysis of Ice Formation on the Platte River* (Simons & Associates, 1990) *Physical Process Computer Model of Channel Width and Woodland Changes on the North Platte, South Platte, and Platte Rivers* (Simons & Associates, 1990) *Calibration of SEDVEG Model Based on Specific Events from Demography Data* (Simons & Associates, 2002) Flood Insurance Study, Town of Montague, Massachusetts, Franklin County by FEMA, 1982 U.S. Department of the Army, Corps of Engineers, New England Division, Technical Report, Flood Plain Information, Miller River, Orange-Athol, Massachusetts, June 1965 Johnstone, Don and W.P. Cross, Elements of Applied Hydrology, New York: Ronald Press Co., 1949 Water Resources, Wantastiquet Region River Subcommittee of the Connecticut River Joint Commissions, Adopted December 12, 2007. Updated August 2009 HEC-RAS model of the Turners Falls Impoundment, developed by Gomez and Sullivan Engineers, DPC, 2014 River2D model of the Turners Falls Impoundment, developed by Gomez and Sullivan Engineers, DPC, 2015 Abernethy, B., and Rutherfurd, I.D., 2001. The distribution and strength of riparian tree roots in relation to riverbank reinforcement. Hydrological Processes, 15(1), 63-79. Gray, D.H., and Sotir, R.B., 1996. Biotechnical and Soil Bioengineering Slope Stabilization: A Practical Guide for Erosion Control. John Wiley & Sons, Inc.: New York, NY. Fredlund, D.G., Morgenstern, N.R., and Widger, R.A., 1978. The shear strength of unsaturated soils. Canadian Geotechnical Journal. 15, 313-321. Micheli, E.R., and Kirchner, W., 2002. Effects of wet meadow riparian vegetation on streambank erosion. 2. Measurements of vegetated bank strength and consequences for failure mechanics. *Earth Surface Processes and Landforms*, 27: 687-697. Morgenstern, N. R. & Price, V. E. 1965. The analysis of the stability of general slip surfaces. Ge´otechnique 15, No. 1, 79–93. Pollen, N., 2007. Temporal and spatial variability in root reinforcement of streambanks: Accounting for soil shear strength and moisture. Catena, 69(3), 197-205. Pollen, N., Simon, A., and Collision, A.J.C. 2004. Advances in Assessing the Mechanical and Hydrologic Effects of Riparian Vegetation on Streambank Stability, In: S. Bennett and A. Simon, eds. Riparian Vegetation and Fluvial Geomorphology, Water Science and Applications 8, AGU: 125-139. Simon A., Curini A. 1998. Pore pressure and bank stability: The influence of matric suction. *In* Water Resources Engineering '98, *ed.* Abt S.R., 358-363. New York: American Society of Civil Engineers. Simon A, Curini A, Darby S.E, Langendoen E.J., 2000. Bank and near-bank processes in an incised channel, *Geomorphology* 35: 183-217.

Task	Status	Variance	Consultation	Description of Activities Completed
				Simon, A., and Collison, A.J.C. 2002. Quantifying the mechanical and hydrologic effects of riparian vegetation on stream-bank stability, *Earth Surface Processes and Landforms* **27**(5): 527-546. Simon, A., Thomas, R.E., and Klimetz, L., 2010. Comparison and experiences with field techniques to measure critical shear stress and erodibility of cohesive deposits. Federal Interagency Sedimentation Conference, Las Vegas, NV, 2010, 11 p. (on CD). Simon A, Curini A, Darby S.E, Langendoen E.J., 2000. Bank and near-bank processes in an incised channel, *Geomorphology* 35: 183-217. Thorne, C.R., 1990. Effects of vegetation on riverbank erosion and stability, In: J.B. Thornes, (ed.), Vegetation and Erosion. John Wiley & Sons Ltd.: Chichester, UK; pp.125-144. Thorne, C.R., and Tovey, N.K., 1981. Stability of composite river banks. Earth Surface Processes and Landforms, 6, 469-484. Waldron, L.J. and Dakessian, S. 1981. Soil Reinforcement by Roots: Calculation of increased soil shear resistance from root properties, Soil Science 132: 427-435. Wu, T.H., McKinnell III, W.P., and Swanston, D.N., 1979. Strength of tree roots and landslides on Prince of Wales Island, Alaska. Canadian Geotechnical Journal, 16(1), 19-33. ASTM, 1995. Annual Book of ASTM Standards: Section 4, Construction, v. 04-09. American Society for Testing and Materials: West Conshohocken, PA. Hanson, G.J., 1990, Surface erodibility of earthen channels at high stress, Part II - Developing an in situ testing device, Transactions of the American Society of Agricultural Engineers, 33(1), 132-137. Hanson, G.J., and Simon, A., 2001. Erodibility of cohesive streambeds in the loess area of the midwestern USA, Hydrological Processes, 15(1), 23-38. Little, W.C., Thorne, C.R., and Murphy, J.B., 1982. Mass bank failure analysis of selected Yazoo Basin streams. Transactions of the American Society of Agricultural Engineers, 25, 1321-1328. Lohnes, R. A. and Handy, R. L., 1968. Slope Angles in Friable Loess. Journal of Geology. Volume 76(3), 247-258 p. Lutenegger, J. A. and Hallberg, B. R., 1981. Borehole Shear Test in Geotechnical Investigations. ASTM Special Publications 740, 566-578 p. Thorne, C. R., Murphey, J. B. and Little, W. C., 1981. Stream Channel Stability, Appendix D, Bank Stability and Bank Material Properties in the Bluffline Streams of Northwest Mississippi. U.S. Department of Agriculture, Agricultural Research Service, National Sedimentation Laboratory. Oxford, MS. 227 p. Thorne, C.R., 1982. Processes and Mechanisms of River Bank Erosion. In, Hey, R.D., Bathurst, J.C. and Thorne, C.R., (Eds.). Gravel-Bed Rivers, John Wiley and Sons, Chichester, England. 227-271 p. Sorensen, R. M., and Weggel, J. R. (1984). Development of ship wave design information. Proceedings of the 19th Conference on Coastal Engineering, Houston, TX, 3-7 September 1984. Billy L. Edge, ed., American Society of Civil Engineers, New York, III, 3227-43. Kriebel, D. L., and Seelig, W. N. (2005). “An empirical model for ship- generated waves.” Proc., 5th Int. Symp. on Ocean Wave Measurement and Analysis (CD-ROM), Madrid, Spain Bhowmik, N. G., Soong, T. W., Reichelt, W. F., and Seddik, N. M. L. (1991). A Waves generated by recreational traffic on the Upper Mississippi River system, @ Research Report 117, Department of Energy and Natural Resources, Illinois State Water Survey, Champaign, IL. Blaauw, H. G., de Groot, M. T., Knaap, F. C. M., and Pilarczyk, K. W. (1984). A Design of bank protection of inland navigation fairways. @ Proceedings of the Conference on Flexible Armoured Revetments Incorporating Geotextiles, London, 29-30 March 1984. Thomas Telford, 239-66.

Task	Status	Variance	Consultation	Description of Activities Completed

Task 2: Geomorphic Understanding of the Connecticut River	Substantially Completed	No	No	• Task is substantially complete.
				• Geomorphic assessment focused on several areas including:
				  ○ Recent Geomorphic History of the Connecticut River
				  ○ Modern Geomorphology
				  ○ Natural Riverine Geomorphology
				  ○ Hydrology, Channel Geometry, Hydraulics, and Bank Material of the Turners Falls Impoundment
				  ○ Historic Comparison of the Turners Falls Impoundment Riverbank and Channel
				  ○ Erosion Comparison of the Turners Falls Impoundment and Connecticut River
				• Analysis of historic aerial imagery for context when discussing the historic geomorphology of the Connecticut River is on-going (last outstanding sub-task).
				• Relevant report sections are starting to be drafted.

Task 3: Causes of Erosion	Identification of Causes of Erosion (Completed)
	
	Report sections (Not Complete)
		No	Yes	• FirstLight has identified the potential and potential primary causes of erosion but have not yet assessed the relative importance of each of those potential primary causes pending completion of Tasks 4, 5, and 6.
				• Consultation: FirstLight informed the Stakeholders at the Initial Study Report Meeting on September 30 – October 1, 2014 that the potential causes of erosion and potential primary causes of erosion identified in the Revised Study Plan (RSP) were reviewed and have not changed. The potential causes of erosion examined as part of this study include:
				  ○ Hydraulic shear stress due to flowing water;
				  ○ Water level fluctuations due to hydropower operations;
				  ○ Boat waves
				  ○ Land management practices and anthropogenic influences to the riparian zone;
				  ○ Animals
				  ○ Seepage and piping
				  ○ Freeze-thaw; and
				  ○ Ice or Debris
				• Potential primary causes of erosion examined in greater detail include:
				  ○ Hydraulic shear stress due to flowing water;
				  ○ Water level fluctuations due to hydropower operations;
				  ○ Boat waves
				  ○ Land management practices and anthropogenic influences to the riparian zone;
				  ○ Ice
				• Relevant report sections are starting to be drafted.

Task	Status	Variance	Consultation	Description of Activities Completed
Task 4: Field Studies and Data Collection	On-going	Yes	Yes	• This task is on-going. • The majority of field work was completed in 2014. Supplemental field work has occurred throughout 2015 and will continue into 2016. • Consultation: FirstLight consulted with Stakeholders in selecting the location of the detailed study sites found throughout the Turners Falls Impoundment. The final set of detailed study sites were presented in FirstLight's *Selection of Detailed Study Sites* report which was filed with FERC as Appendix B of the Study No. 3.1.2 *Initial Study Report Summary*. A high level status update for this task will be provided in the Updated Study Report and at the Updated Study Report meeting. • Variance: Supplemental boat wake data collection.
Task 5: Data Analyses	On-going	Yes	Yes	• This task is on-going. • Consultation: FirstLight provided Stakeholders with additional information regarding the modeling process in the *Response to Stakeholder Comments on the Initial Study Report and Meeting Summary* filed with FERC on December 15, 2014. A high level status update for this task will be provided in the Updated Study Report and at the Updated Study Report meeting. • Variance: Analysis of supplemental boat wake data.
Task 6: Evaluation of the Causes of Erosion	On-going	No	No	• Some minor, preliminary analyses have been conducted, however, the bulk of this task will not be started until Task 5 has been completed.
Task 7: Report and Deliverables	On-going	No	No	• Report organization and drafting has begun and will continue into 2016. Report sections for tasks that have already been completed, or are substantially complete, are starting to be drafted. • The final report and deliverables will be filed in the second quarter of 2016.