

APPENDIX B-1  
Massachusetts Department of Environmental Protection Water Quality Sampling Plan  
dated March 7, 2011



## Department of Environmental Protection

Central Regional Office • 627 Main Street, Worcester MA 01608 • 508-792-7650

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Governor

RICHARD K. SULLIVAN JR.  
Secretary

TIMOTHY P. MURRAY  
Lieutenant Governor

KENNETH L. KIMMELL  
Commissioner

Stephen Hickey  
Essex Power Services, Inc.  
on behalf of West Dudley Hydro, LLC  
55 Union Street, 4th Floor  
Boston, MA 02108

March 7, 2011

Re: Request For Comment  
West Dudley Hydro, FERC #7254

Dear Mr. Hickey,

In pursuit of certification from the Low Impact Hydropower Institute, Essex Power Services has requested the MA Department of Environmental Protection (the Department) to confirm the West Dudley Hydro facility (Project) is not causing or contributing to violations of state water quality standards. Note the Department relies on the MA Division of Fisheries & Wildlife for their opinion of aquatic habitat issues. Please contact Caleb Slater at 508-389-6331 to coordinate.

### Flow

A review of reference documents indicates the area where the Project is located is very affected by instantaneous flow fluctuations, a high degree of embeddedness (which could be one of the consequences from flow fluctuations), low flow durations, low minimum flow levels, channel alteration and floodplain dynamics.<sup>1,2</sup> Downstream of the Project "...program staff consistently noted undercut banks and a highly embedded bottom substrate, reflecting the frequent rapid flow fluctuations known to occur at this location, sometimes associated at an upstream hydropower facility."<sup>3</sup> Results from the USGS gauge (01124000) downstream of the Project appear to be reflective of ongoing operations at the hydropower facility as evidenced by rapid streamflow fluctuations.<sup>2</sup>

The MASSACHUSETTS SURFACE WATER QUALITY STANDARDS, 314 CMR 4.05(5)(b), state: "Bottom Pollutants or Alterations. All surface waters shall be free.....from alterations that adversely affect the physical or chemical nature of the bottom, interfere with the propagation of fish or shellfish, or adversely affect populations of non-mobile or sessile benthic organisms. "

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Parasiewicz, P. 2004, *Ecohydrology of the Quinebaug River* – Final Report to the Project Management Committee and the New England Interstate Water Pollution Control Commission. Presented by the Instream Habitat Program and the NY Cooperative Fish & Wildlife Research Unit, Department of Natural Resources, Cornell University, Ithaca, NY.

<sup>2</sup> MA Department of Environmental Protection, *French & Quinebaug River Watersheds 2001 Water Quality Assessment Report*

<sup>3</sup> MA Department of Environmental Protection, *French & Quinebaug River Watersheds 2004 -2008 Water Quality Assessment Report*



In order to determine if the Project is causing or contributing to violations of state water quality standards, the Department requests documentation to verify compliance with the FERC exemption requirement of an instantaneous minimum flow release of 76 cfs or inflow, whichever is less, and is operated as a run of river facility. The documentation should include a description of all activities/operations that affect flow, a description of how flow is monitored and a FERC compliance history for the last five years. An analysis of how Project operations correlate to USGS flow gauge records should also be included.

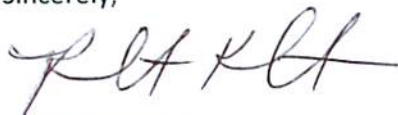
#### Dissolved Oxygen

There is a lack of site specific data available to determine if the Project is causing or contributing to water quality standard violations regarding dissolved oxygen. A sampling program to collect enough information to make that assessment consists of the following:

1. Daily predawn dissolved oxygen and temperature readings collected by stationary meters during the low flow season of July, August and September. Meters would be deployed at the deepest site in the impoundment and immediately below the dam. Meters need to be validated every two weeks in case of fouling.
2. An alternative to the above is to collect manual dissolved oxygen and temperature readings twice a week during July, August and September.
3. Determine a headpond profile every two weeks during the low flow season. The deepest site in the impoundment should have readings for dissolved oxygen and temperature taken at the surface and every meter of depth to the bottom.

If you have any questions, please contact me at 508-767-2854.

Sincerely,



Robert Kubit, P.E.

Cc: Caleb Slater/MADFW  
Melissa Grader/USFWS

