

SITE SPECIFIC PROJECT PLAN FOR:

Pemigewasset River Restoration Project- *Woodstock, NH*

**Operated Under:
Generic QAPP for Stream Morphology Data Collection
RFA# 03285
(August 5, 2008)**

8-19-2009

Prepared by:
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Project Director:

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NHDES Project Manager:

Signature/Date
Steve Landry, NHDES

Program Quality Assurance Coordinator:

Signature/Date
Jillian McCarthy, NHDES

NHDES Quality Assurance Manager:

Signature/Date
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3- Distribution List

Table 1 lists people who will receive copies of the approved Site Specific Project Plan (SSPP) under the *Generic Quality Assurance Project Plan for Stream Morphology Data Collection* dated August 5, 2008.

Table 1. SSPP Distribution List

SSPP Recipient Name	Project Role	Organization	Telephone number and e-mail address
Todd Baldwin	Project Director	Pemigewasset Chapter of Trout Unlimited	603-726-7429 toddbal@roadrunner.com
Tyler Phillips	Project Manager, QA	Horizons Engineering, LLC	603-444-4111 tphillips@horizonsengineering.com
Sean Sweeney	Project Engineer	Headwaters Hydrology, PLLC	603-444-2544 sean@headwatershydrology.com
Steve Landry	Merrimack Watershed Supervisor	NHDES, Watershed Management Bureau	603-271-2969 steven.landry@des.nh.gov
Jillian McCarthy	Program QA Coordinator	NHDES, Watershed Management Bureau	603-271-8475 jillian.mccarthy@des.nh.gov
Vince Perelli	NHDES QA Manager	NHDES, Planning, Prevention, & Assistance Unit	603-271-8989 vincent.perelli@des.nh.gov

4- Project Task Organization

The collection of cross-sectional survey data will be used by the project manager to review changes that have occurred prior to project implementation and changes that can be attributed to the project itself. It will aid in the development of the final report in terms of assessing project success and gaining insight that can be shared with other future project proponents.

It is anticipated that the project manager will collect much of the data with a survey partner and will confer with the project engineer regarding supplemental data collection needs that may come to light as trends are observed. As much of the data collection involves repeated survey measurements along the same cross-sections by the same parties, the opportunity for repeated error and need for corrective action is likely low. If in post processing data anomalies are observed, the cross-section will be re-surveyed to determine where the error occurred and whether it was a systemic problem (for example, a consistent vertical error due to incorrect instrument set up height) or whether it was an isolated error where one data point was captured incorrectly due to fast river currents. During a re-survey effort, conditions that can introduce error (for example, high water) will be eliminated, and once the condition causing the error is determined, it will be used by the project manager in making decisions about future data collection efforts.

Figure 1 outlines the organization structure of the project personnel.

Figure 1. Project Organizational Chart

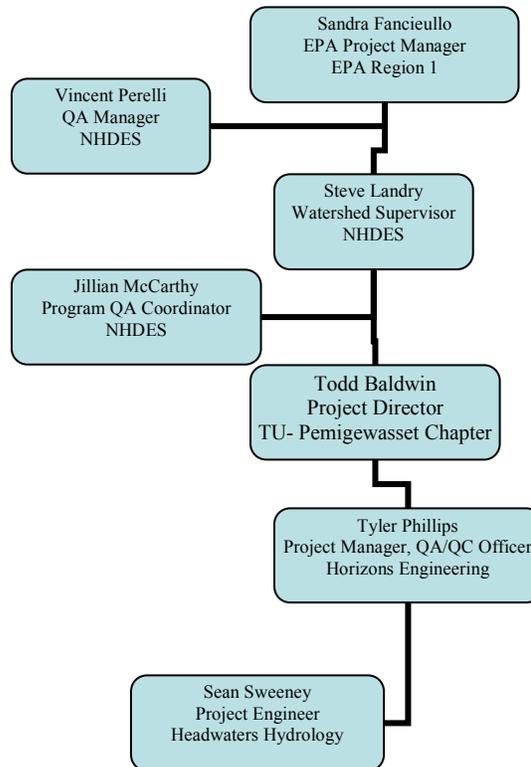


Table 2 identifies the roles and responsibilities of those individuals involved in the project.

Table 2. Personnel Responsibilities and Qualifications

Name and Affiliation	Responsibilities	Qualifications
Todd Baldwin- Pemigewasset Chapter of Trout Unlimited	Project Director	Organizer
Tyler Phillips, Horizons Engineering, LLC	Project Manager Project QA/QC Officer	Chief Scientist, CPESC
Sean Sweeney- Headwaters Hydrology, PLLC	Project Engineer	P.E. CWS
Jillian McCarthy, NHDES, Watershed Management Bureau	Reviews QAPP preparation and other QA/QC activities	On file at NHDES
Steve Landry, NHDES, Watershed Management Bureau	Reviews and oversees projects funded by DES 319 Restoration Grants in Merrimack basin.	On file at NHDES
Vince Perelli, NHDES Planning, Prevention & Assistance Unit	Reviews and approves QAPPs	On file at NHDES
Sandra Fancieullo, US EPA Region I	EPA Project Manager	On file at US EPA

5-Site Information

This project will be undertaken on the Pemigewasset River in Woodstock, NH. The project will take place on approximately 37 acres of jurisdictional wetlands. Previous data collection (done consistent with the *Generic QAPP for Stream Morphology Data Collection, 6/7/2003*) and modeling efforts indicate that the river channel within the project reach is aggrading due to a loss of sediment transport competency brought about by the river’s perennial flow through an adjacent former gravel pit/pond. Flow through the pond has occurred for over a decade since the river initially breached a berm that had protected the pond and had detrimentally cut off a large portion of the floodplain. Analysis of aerial photography indicates that acres of land loss have occurred in the intervening period.

Much of this history is recounted in a previous planning study entitled *Pemigewasset River Restoration Plan- October, 2004* that compared various fluvialgeomorphic metrics within the project reach to those that exist in nearby stable channel reaches. The 2004 study included a recommended plan to remove accumulated material that lies in the channel, lower the width-to-depth ratio and decrease cross-sectional area by restoring the floodplain at the entrance to the pond, and to install rock vanes and rock cross vanes to serve as “training” structures that will provide fish habitat and provide stable bank conditions in which riparian vegetation and trees can become re-established. Subsequent US Army Corps of Engineers Hydrologic Engineering Centers River Analysis System (HEC RAS) modeling indicates that this proposed work will provide the necessary shear force to allow for appropriate sediment transport competency indicative of channel equilibrium conditions. This SSPP is intended to cover the data collection and monitoring that will occur before and after the project has been constructed in accordance with the *Generic QAPP for Stream Morphology Data Collection, 6/7/2003*.

6-Project Rationale

A. Problem Definition

The purpose of this monitoring phase of the project is to determine if the proposed work will result in a stable self-maintaining channel that neither aggrades nor degrades. Once established, these conditions should lead to: 1) less bank erosion due to the establishment of vegetation with improved root access to the phreatic zone and adjustments in shear stress; and 2) improved macroinvertebrate and fisheries habitat by providing a more stable substrate in which these organisms can live, as well as reduction in development and persistence of anchor ice due to an anticipated decrease in radiational cooling that can result from a lowering of the width-to-depth ratio of the channel within the project reach.

The repeated measurement at cross-sections within and downstream of the project that were measured as part of the previous planning study (*Pemigewasset River Restoration Plan*- October, 2004) will be used to determine if the channel is aggrading or degrading. While some minor channel adjustments are anticipated to occur after construction of the proposed improvements, repeated measurement of the existing cross sections should provide insight into the channel dynamics that occur after construction.

B. Historical Data

Previous longitudinal profile and cross section data collected for the *Pemigewasset River Restoration Plan*- October, 2004 will be used as baseline data for project monitoring. The 2003 surveys used in that report were completed following the procedures outlined in the *Generic Quality Assurance Project Plan for Stream Morphology Data Collection* dated June 17, 2003, which was updated August 5, 2008. Any new surveys conducted will also follow the same procedures as those conducted in 2003. Pre and post-project photodocumentation will also be used as another means of comparing changes that may occur in the areas that do not lie along a cross-section. Lastly, vegetation transplant survival and success will be observed and captured in pre and post-construction surveys and photographs.

7-Project Description and Schedule

The success of the restoration will be determined by comparing the results of monitoring the site over a multi-year period following implementation. Five cross sections will be surveyed immediately prior to construction and will provide insight into channel adjustments that have occurred since 2003 data was collected. Two cross sections within the area of proposed improvements will be surveyed at the site immediately following project construction. A series of post construction surveys of various cross sections will be performed and compared with cross sections taken in the same locations during the 2003 assessment, 2009 pre-construction surveys, and 2009 post construction surveys. All cross sections were monumented in 2003 at both ends with half-inch diameter rebar and plotted on aerial photographs to ease re-location of the same sites. Cross-sections will

be surveyed following the same procedures outlined in the *Generic Quality Assurance Project Plan for Stream Morphology Data Collection* dated June 17, 2003 (Updated August 5, 2008) and on file with NHDES.

In total, 5 separate cross-sectional surveys will be have been undertaken by the completion of the project:

- Summer and fall of 2003: cross sections 10, 11, 12, 13, 14, 15 (*previously completed*)
- September 2009 pre-construction: cross sections 11, 12, 13, 14, 15
- October 2009 post-construction: cross sections 14, 15
- After first bankfull event (timing TBD): cross sections 13, 14, 15
- 2 years after construction (October 2011): cross sections 11, 12, 13, 14, 15

This will provide information on channel dimensions before and after project implementation, as well as provide insight into some of the changes that have occurred in channel in the 6 years preceding project implementation.

Ground photographs will also be taken to provide visual documentation of the project and changes that occur for a two year period after its completion. The photographs will follow the DES SOP for *Photodocumentation Procedure for Documenting Success of Restoration Projects and Best Management Practices*, 2002.

8-Final Products and Reporting

The final products for this project include the following:

- Survey data of morphological conditions from 2003- 2011 on the Pemigewasset River; and
- Photographic documentation of project area before and after construction; and
- An assessment of the establishment of riparian vegetation; and
- A final report indicating whether project goals have been met (based upon a quantitative and qualitative evaluation of data and river response), lessons learned, a summary of QA/QC conducted, assessments, corrective actions, and discussion of limitations on the use of data, and any recommendations that can assist those proposing other river restoration projects.

All products will be submitted by **Horizons Engineering, LLC**, in both electronic and paper copies, to Steve Landry of the NHDES Watershed Assistance Section for review and approval.