

AMENDED SITE SPECIFIC PROJECT PLAN FOR:
Exeter River Geomorphic Assessment and Watershed-based Plan

Operated Under:
Generic QAPP for Stream Morphology Data Collection
RFA# 03285
(6/17/03)

Final SSPP
August 11, 2008

Amended
August 25, 2009

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Project Manager: _____
Signature/Date
Mary Nealon/Bear Creek Environmental, LLC

Technical Project Manager/QA Officer: _____
Signature/Date
Evan Fitzgerald/Fitzgerald Environmental Associates, LLC

NHDES Project Manager: _____
Signature/Date
Sally Soule, NHDES

Program Quality Assurance Coordinator: _____
Signature/Date
Jillian McCarthy, NHDES

NHDES Quality Assurance Manager: _____
Signature/Date
Vincent Perelli, NHDES

2 – Table of Contents

2 – Table of Contents 2
List of Tables 2
List of Figures 2
3- Distribution List..... 3
5-Site Information..... 5
6-Project Rationale..... 5
A. Problem Definition..... 5
B. Historical Data..... 6
7-Project Description and Schedule..... 6
8-Final Products and Reporting 7

List of Tables

Table 1. SSPP Distribution List 3
Table 2. Personnel Responsibilities and Qualifications..... 4

List of Figures

Figure 1. Project Organizational Chart 4

3- Distribution List

Table 1 lists people who will receive copies of the approved Amended Site Specific Project Plan (SSPP) under the *Generic Quality Assurance Project Plan for Stream Morphology Data Collection* dated June 17, 2003.

Table 1. SSPP Distribution List

SSPP Recipient Name	Project Role	Organization	Telephone number and e-mail address
Mary Nealon	Project Manager	Bear Creek Environmental, LLC	802-223-5140 bearcrk@sover.net
Evan Fitzgerald	Technical Project Manager	Fitzgerald Environmental Associates, LLC	802-419-0808 evan@fitzgeraldenviromental.com
Colleen Sullivan	Project Assistant	Bear Creek Environmental, LLC	802-225-8366 bearcrk1@sover.net
Sally Soule	Coastal Watershed Supervisor	NHDES, Watershed Management Bureau	603-559-0032 sally.soule@des.nh.gov
Theresa Walker	Project Partner	Exeter River Local Advisory Committee and Rockingham Planning Commission	603-778-0885 theresawalker@comcast.net
Laura Weit	Project Partner	NH Rivers Management and Protection Program	603-271-8801 laura.weit@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
Sandra Fancieullo	USEPA Project Manager	USEPA New England	617-918-1566 fancieullo.sandra@epa.gov

4- Project Task Organization

This project will be conducted for the benefit of many regional partners (see list below). These partners will provide funding, local expertise, and will ultimately be responsible for implementing restoration and protection actions identified in the watershed-based plan that will be developed as a result of the geomorphic assessment.

Project management will be under Mary Nealon, Principal, Bear Creek Environmental (BCE), Mary will serve as the primary contact with the project sub-contractor, Fitzgerald Environmental Associates (FEA) and with the NHDES Project Manager, Sally Soule. Evan Fitzgerald of FEA will serve as the Technical Project Manager and QA officer. Colleen Sullivan of BCE will serve as the project assistant and will collect and manage field data. BCE and FEA staff will provide technical management assistance including mapping, field logistics, follow-up data management, and development of the watershed-based restoration plan. BCE will take the lead role development of the watershed-based plan. Sally Soule, NHDES Coastal Watershed Supervisor, will provide overall project oversight and will serve as the liaison between the technical staff and local partners.

Data users include the project’s regional partners who will use the information to plan and prioritize bridge maintenance, ecological restoration, conservation planning, flood management, etc. The partners will not serve directly as project personnel, but will be informed of all project activities and will have opportunities to participate in the development of the watershed-based plan. These partners include:

- Exeter River Local Advisory Committee
- Town of Exeter
- Rockingham Planning Commission
- Raymond Water Resources Committee
- NH Coastal Program
- NH Rivers Management and Protection Program
- Interested citizens and riverfront property owners.

Figure 1 outlines the organization structure of the project personnel.

Figure 1. Project Organizational Chart

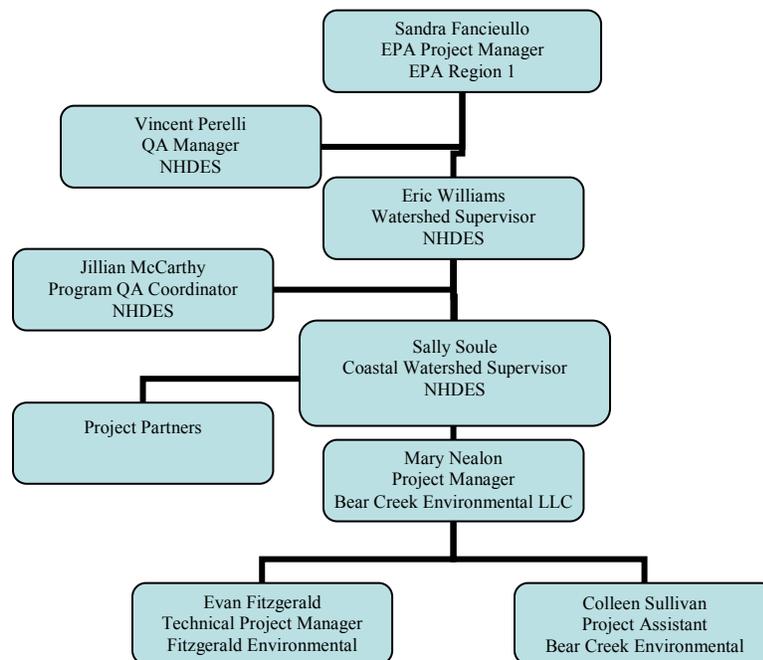


Table 2 identifies the roles and responsibilities of those individuals involved in the project.

Table 2. Personnel Responsibilities and Qualifications

Name and Affiliation	Responsibilities	Qualifications
Mary Nealon, Bear Creek Environmental, LLC	Project Manager	Trained in river assessment and monitoring techniques and river restoration and natural channel design; experienced project manager; responsible for field data collection, oversight of field staff, and field data management. Also responsible for developing reports.
Evan Fitzgerald, Fitzgerald Environmental Associates, LLC (sub-contractor to Bear Creek Environmental, LLC)	Technical Project Manager Project QA/QC Officer	Trained in stream geomorphic assessment methods utilizing Vermont Agency of Natural Resources Protocol and watershed runoff modeling; responsible for field data collection, oversight of field staff, and field data management. Also responsible for developing reports.
Colleen Sullivan, Bear Creek Environmental, LLC	Project Assistant	Trained in stream survey methods; responsible for field data collection and data management.
Jillian McCarthy, NHDES, Watershed Management Bureau	Reviews QAPP preparation and other QA/QC activities	On file at NHDES
Sally Soule, NHDES, Watershed Management Bureau	Reviews and oversees projects funded by DES 319 Restoration Grants in coastal watershed.	On file at NHDES; responsible for overall project oversight.
Vince Perelli, NHDES Planning, Prevention & Assistance Unit	Reviews and approves QAPPs	On file at NHDES
Sandra Fanciullo, US EPA Region I	EPA Project Manager	On file at US EPA

5-Site Information

This project will include the Middle Exeter River subwatershed. As illustrated in Figure 2, the project begins at the confluence of the Little River and the Exeter River mainstem in Brentwood, NH and extends 12 miles through Brentwood and Fremont to Raymond-Fremont town line. .

6-Project Rationale

A. Problem Definition

A previous geomorphic assessment was conducted for several Exeter River subwatersheds in 2008 under the Final SSPP for the Exeter River Geomorphic Assessment and Watershed-based Plan dated July 28, 2008. The 2008 study area included the Lower Exeter, Upper Exeter, Dudley Brook, and Fordway Brook subwatersheds. The 2008 SSPP is being amended to include additional assessment work to be conducted in 2009 for the Middle Exeter River subwatershed. The Middle Exeter River subwatershed was not initially surveyed in 2008 due to funding constraints. Additional funds were secured to conduct the Middle Exeter assessment. Data from the 2009 Middle Exeter River

subwatershed, when combined with data from the 2008 assessment, will result in a geomorphic assessment data set for the entire length of the Exeter River mainstem. . Additionally, several reaches in the Middle Exeter River subwatershed do not meet state standards for aquatic life use based on habitat and biological surveys completed by the NHDES. Stream geomorphic assessment data collection and analysis carried out by the Project Team will: 1) aid NHDES and the Exeter River Local Advisory Council (ERLAC) in the analysis of the fluvial geomorphic and biotic habitat conditions in the watershed; 2) result in preliminary project identification for the protection and restoration of important river reaches, and 3) lead to a watershed restoration plan to address and mitigate the stressors leading to aquatic life impairment in three watersheds.

B. Historical Data

The USGS operates a streamflow gaging station on the Exeter River at the Haigh Road crossing in the town of Brentwood. The channel at the gage has a drainage area of 63.5 square miles. Peak, daily, and monthly streamflow data are available from June, 1996 to present. In addition, one USGS publication titled “Flood of May 2006 in New Hampshire” summarizes a flow-frequency analysis of flooding that occurred in southern New Hampshire, including the Exeter River, during May, 2006. The USGS previously operated a gage on Dudley Brook in Brentwood at the Middle Road crossing. Daily, monthly and annual streamflow data are available for the years 1962 through 1985. Additional flow-frequency data for the Dudley Brook gage are included in the above-mentioned USGS report, as well as another USGS report titled “Comparison of Peak-Flow Estimation Methods for Small Drainage Basins in Maine”.

Historical aerial photographs from 1962 and 1974 for Rockingham County, acquired through the New Hampshire state GIS database (GRANIT), will be used to identify changes in channel position and human land use during the past 45 years in the Exeter River watershed. Channel changes back to 1930 will be assessed using historical topographical maps available on-line at <http://docs.unh.edu/nhtopos/nhtopos.htm>.

The NOAA Coastal Change Analysis Program (C-CAP) recently released land cover datasets from 1996, 2001, and 2006, allowing for assessment of land cover changes (e.g., increased development) over this time period. The GRANIT database also includes three periods of impervious surface mapping (1990, 2000, and 2005) for Coastal New Hampshire that can be used to track increased development within the study area. Additional geospatial data layers associated with Geosyntec’s “Exeter River Watershed Vulnerability Analysis” have been created for the watershed. Data layers quantifying the current extent of urbanization in the watershed, such as the impervious surface mapping developed by Geosyntec, may also be utilized in this study.

7-Project Description and Schedule

Phase 2 Stream geomorphic assessment and bridge and culvert data will be collected on 12 river miles within the Middle Exeter River subwatershed during fall 2009, using the most current Vermont Protocols. 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 and on file with NH DES.

The stream geomorphic data will be reduced and entered into a database or spreadsheet format during early fall 2009. Utilizing the Phase 1 and 2 data, stressor identification and departure maps will be created in early winter 2009 to illustrate the extent to which watershed, floodplain, and channel stressors contribute to the geomorphic condition of the river. In addition to the stressor and departure mapping, a watershed-scale analysis of the fluvial erosion hazard (FEH) corridor within the Phase 2 study area will be developed utilizing the final valley wall data from the Phase 2 assessment. Using the FEH corridor and sensitivity analysis, the Project Team will complete risk assessments of the natural and built capital within the corridor at the reach scale. Following the development of the maps, the step-wise procedure outlined in the Vermont River Corridor Planning Guide will be used to develop a list of preliminary restoration projects at three separate scales: 1) watershed, 2) reach, and 3) site. Using the stressor and departure mapping and the project identification summaries, the Project Team will develop a restoration plan for the Middle Exeter River subwatershed. The final plan will be completed by mid-May and will include narrative summaries of the reach-scale Phase 2 data, a list of prioritized projects developed through the step-wise procedure and the bridge and culvert analyses, and an implementation plan for restoration projects that will protect, sustain, or restore fluvial geomorphic equilibrium conditions and aquatic habitat. The project will culminate in May 2010 with a final presentation of the restoration plan at a public meeting.

For a more detailed description of project tasks, refer to the Project Proposal prepared by Bear Creek Environmental, LLC and Fitzgerald Environmental Associates, LLC dated March 18, 2008 titled *Geomorphic Assessment and Watershed Restoration Plan for the Exeter River Watershed* on file at NHDES.

8-Final Products and Reporting

The final products for this project include the following:

- Phase 2 summary reports (Phase 2 Segment Summary Report, Stream Geometry Report, Rapid Geomorphic Assessment Report, Bridge and Culvert Summary Report);
- ArcView Shapefiles, Photographs and Photologs
- Stressor Identification and Departure Maps;
- Watershed Hydrology Data for Bridges and Culverts;
- FEH Risk Assessment Summary Data and Maps;
- Watershed Restoration Plan (includes watershed-scale, reach-scale, and site-level recommendations);
- Restoration Implementation Schedule;

All products will be submitted by **(Bear Creek Environmental, LLC)**, in both electronic and paper copies, to the NHDES Watershed Assistance Section for review and approval.

The Phase 2 summary reports will follow a similar format as the reports on the Vermont Stream Geomorphic Data Management System. Using the stressor and departure

mapping and project identification summaries, the Project Team will develop a restoration plan for the four study subwatersheds. The plan will include narrative summaries of the reach-scale Phase 2 data, a list of prioritized projects developed through the step-wise procedure and the bridge and culvert analysis, and an implementation schedule for restoration projects that will protect, sustain, or restore fluvial geomorphic conditions and aquatic habitat. The Watershed Restoration Plan will incorporate the Environmental Protection Agency's (EPA) nine elements for watershed restoration plans.