



Request for Qualifications

The North Conway Water Precinct (NCWP) is seeking submissions from qualified consultants for modeling, assessing, and proposing solutions for an approximate 3.4-mile +/- section of the Saco River in North Conway, New Hampshire. The study will focus on potential impacts to the NCWP wastewater treatment plant (WWTP) property and facilities located adjacent to the Saco River. As such, the study shall include a fluvial geomorphology assessment in addition to hydraulic modeling. Qualifications must be received by NCWP by 3:00 PM on Friday June 4, 2021. Submissions shall be hand delivered or mailed to:

North Conway Water Precinct
"Saco River Erosion Study"
PO Box 630
North Conway, NH 03860

The submission shall be in a sealed envelope clearly marked:

RFQ Submission
Saco River Erosion Study

Each consultant will submit one (1) hard copy of all documents and one (1) PDF version on a USB storage device. No faxed, emailed, or other electronic submissions will be accepted. Questions shall be directed to Jason Gagnon, Superintendent at jgagnon@ncwph.org or (603) 356-5382.

North Conway Water Precinct and New Hampshire Department of Environmental Services representatives will review and rank submissions based on qualifications. Top-ranked candidate firms will then be interviewed to discuss relevant experience and project approach. Interviews will be scheduled between June 25th and July 9th. The most qualified firm based upon combined qualification package and interview scores will be selected and invited to develop a scope of services, fee schedule, and to negotiate a contract.

PROJECT BACKGROUND

The North Conway Water Precinct wastewater treatment plant (WWTP) is located in close proximity to the east bank of the Saco River in North Conway, NH as shown in Figure 1. The river has a history of large flood events which cause significant riverbank erosion and lateral channel migration. Of particular concern, is the meander bend upstream of the WWTP which is actively migrating towards the Rapid Infiltration Basins (RIBs).

Given the proximity of the river to the WWTP, channel migration trends, and the potential for increased frequency of significant storm events due to climate change, the Precinct plans to conduct a preliminary risk analysis of the erosion conditions and evaluate potential alternatives to protect the WWTP from the continued erosion hazards along this reach of the Saco River.

This project is funded by a Clean Water SRF Wastewater and Stormwater Planning Loan and is subject to the terms of that program. The CWSRF Wastewater and Stormwater Planning Guidance Document is attached to this RFQ for reference.



Figure 1: NCWP WWTP located adjacent to the Saco River

This institution is an equal opportunity provider and employer.

PROJECT APPROACH

In order to identify the causes of erosion and develop recommendations for reducing these hazards, the Precinct proposes to complete a study of approximately 3.4 miles of the Saco River in the vicinity of the WWTP. As shown in Figure 2, the study area would begin just below the confluence with Moat Brook approximately 1.7 river miles downstream from the WWTP and run to a point about 1.7 river miles upstream from the WWTP.

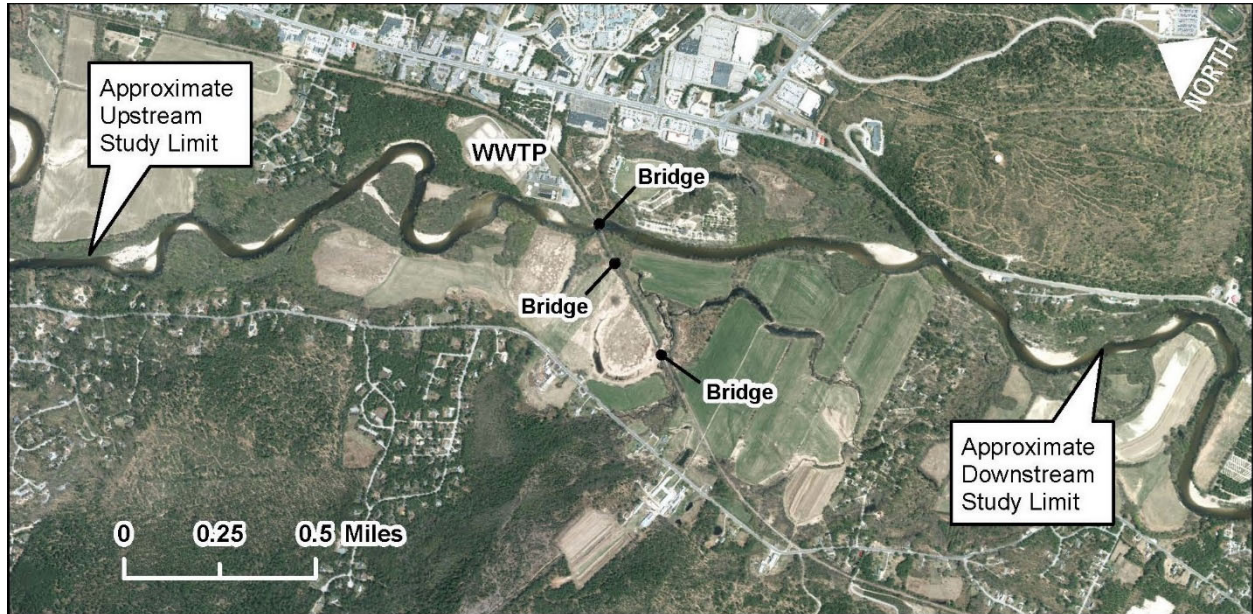


Figure 2 – Approximate Study Area

The length of the study reach is intended to:

- capture a range of channel cross-section and meander geometries for determining and documenting 'reference' (i.e. stable) and unstable channel conditions; and
- facilitate the creation of a two-dimensional hydraulic model which accurately simulates hydraulic conditions in the study area, including the effects of the nearby railroad crossing along the reach adjacent to the WWTP.

At a minimum, and as further described below, the study is expected to include:

- review and analysis of existing pertinent data including, but not limited to, previous geotechnical reports, and historical imagery;
- geotechnical investigations, as needed to supplement previous geotechnical efforts including the RIB study by Weston, 1993;
- survey of river bathymetry and the three existing bridges along the railroad embankment;
- project study area mapping, terrain development, and historic imagery overlay and graphic river migration timeline;

This institution is an equal opportunity provider and employer.

- hydrologic analyses to estimate flow hydrographs in the study area for the Tropical Storm Irene flood (TS Irene), the largest measured discharge at the Saco River USGS streamflow gage in Conway, and the bankfull event;
- a two-dimensional hydraulic model simulating the TS Irene flood and bankfull event under existing conditions;
- an assessment of existing river morphology and lateral and vertical channel stability;
- recommended river stabilization/treatment options (3 minimum), matrix ranked and prioritized;
- a presentation of the preliminary study results and recommendations at a meeting with the Precinct;
- conceptual consultation meeting with the NHDES and the Saco-Swift Rivers Local River Advisory Committee (LAC);
- a final summary report documenting the study methods, results, and recommendations for reducing erosion hazards; and
- a conceptual river stabilization plan of the preferred solution.

Presentation of the final study report and concept plan at a public meeting in North Conway.

ANTICIPATED SCOPE OF WORK

The following is the anticipated scope of work for this project. This scope may be modified during discussions with the selected firm.

Task 1 – Existing Data Collection and Review

Collect and review existing information to be used in the study including, but not limited to, available GIS and LiDAR data, current and historic aerial photography, streamflow records from USGS Gage #01064500 (Saco River near Conway, NH), and the May 1993 RIB Design Report by Weston & Sampson.

Task 2 – Geotechnical Investigations

Evaluate existing WWTP soil boring data and conduct additional soil borings as required to assist in evaluating the erodibility of the native riverbank materials

Task 3 – Field Surveys

Perform field surveys as needed to supplement LiDAR data. Survey will include below-water riverbed topography (i.e. bathymetry), geometry of the three railroad bridges within the study reach, and important geomorphic features (e.g. bankfull stage indicators). Survey data will be collected relative to NH State Plane coordinates and NAVD88 vertical datum.

Areas of active bank erosion and channel aggradation, existing bank revetments, berms, and other anthropogenic features affecting channel stability will be located in the field. Bedload sediment data will be collected for use in bedload sediment entrainment calculations.

This institution is an equal opportunity provider and employer.

Task 4 – Terrain Model, Base Mapping, and Graphical Timeline

A single comprehensive terrain model is to be compiled from current available LiDAR and collected survey data to create a working base plan of the study area.

Prepare a graphical timeline of the progression of the river's migration within the study area using current and historic imagery.

Task 5 – Hydrologic Analyses

Hydrologic analyses will be performed to estimate flow hydrographs in the study area for the Tropical Storm Irene flood and the bankfull event using data collected at USGS gage #01064500 and spatially adjusted as appropriate.

Task 6 – Hydraulic Modeling

Develop a two-dimensional (2D) or coupled one- and two-dimensional (1D/2D) unsteady flow hydraulic model of the study area river channel and floodplain using the U.S. Army Corps of Engineers HEC-RAS computer program.

Two flood events must be modeled at a minimum: the TS Irene flood and bankfull event, as estimated under Task 5. The development of the model should include sensitivity iterations to identify appropriate model parameters including calculation time step and 2D grid cell size.

At a minimum, the model results will include the extent of flooding, inundation depths, flow velocity, and other hydraulic characteristics under existing conditions and will be used to identify areas of excessive or deficient flow velocity, depth, and shear stress which would indicate the potential for sediment transport impairment and channel instability.

Task 7 – Assessment of River Morphology and Stability

Using the field measurements collected under Task 3, LiDAR data and other remote sensing information, results of the existing conditions hydraulic modeling, and geotechnical investigations, assess river morphology and stability. This will include:

- river cross-sections which identify bankfull channel geometry and pertinent channel stability indices including width-to-depth ratio, bank height ratio, and degree of channel incision;
- a longitudinal channel profile which includes the channel thalweg, water surface at time of survey, bankfull stage, and top of lowest bank;
- sediment particle size sampling and analyses;;
- bedload sediment entrainment calculations;
- channel planform analysis;
- assessing subsurface geologic conditions along the riverbanks at the WWTP;
- characterization of channel morphology in both stable and unstable river segments;
- assessment of lateral and vertical channel stability;

This institution is an equal opportunity provider and employer.

- identification of areas of excessive or deficient flow velocity, depth, and shear stress which would indicate channel instability; and
- preparation of a map identifying areas of active bank erosion and channel aggradation, existing bank revetments, berms, and other anthropogenic features affecting channel stability in the study area.

Task 8 – Identification of Erosion Hazard Reduction Options

Develop conceptual erosion hazard reduction options for further detailed study. The recommended solutions will be compiled into a matrix, ranked, and prioritized for presentation to and consideration by the Precinct.

Task 9 – Hydraulic Modeling of Erosion Hazard Reduction Options

If the options identified under Task 8 involve changes to channel geometry, planform, or modification of the railroad crossings, the hydraulic model completed under Task 6 will be modified to evaluate the effects of these improvement options on hydraulic conditions.

Task 10 – Conceptual Presentation to the Precinct

Prepare an informal presentation to the Precinct to review the findings of the analyses and recommendations matrix. This meeting is expected to result in the Precinct selecting a preferred solution to discuss with NHDES and present at a public meeting.

Task 11 – Consult with NHDES and LAC

Based on the Precinct's solution selection, attend a consult meeting with the NHDES and LAC (expected to be one meeting) to discuss the potential solution and obtain technical and regulatory feedback.

Task 12 – Study Report

Prepare a final report documenting the study methods, results, and recommendations. The report will include a narrative description, exhibits, and documentation and calculations in support of findings and recommendations.

Task 13 – Conceptual River Stabilization Plan

Prepare a conceptual river stabilization site plan of the Precinct's selected solution.

Task 14 – Public Presentation

Prepare PowerPoint slides and present an overview of the study and the conceptual plan at a North Conway public meeting.

Project Administration

Contractor shall prepare all disbursement requests for submission to NHDES and assist NCWP in preparation of the Loan Application.

This institution is an equal opportunity provider and employer.

CWSRF Planning Loan Requirements

In addition to the above tasks, the following must also be included in the scope of work:

- Vision statement or summary of project goals. This should include the vision of the planning project and the overarching project/goal that will result in tangible water quality benefits that are measurable.
- Breakdown of tasks with clearly defined roles.
- Three meetings that include NHDES attendance: kick-off, mid-level and wrap-up.
- Draft reports and documents will be provided to NHDES for review and comment.
- Final documents will be provided to NHDES in electronic form.

PROJECT SCHEDULE

The project may begin as soon as final approval is received from NHDES, anticipated to be early-to mid-summer 2021.

SUBMISSION REQUIREMENTS

Submission Contents:

Submissions should include:

- a qualification statement for the firm or team to be participating in the project;
- identification of the individuals responsible for managing the project and conducting specific project tasks, as well as the expected level of participation in the project tasks and in the overall project for team members. An organization chart showing lines of communication and decision-making hierarchy will be included in the proposal;
- description of similar river assessment projects;
- a scope of services elaboration on the scope outline provided above;
- a proposed schedule.

Selection Criteria and Required Qualifications:

It is the intent of the NCWP to award the Contract to the most qualified firm as determined by the NCWP. To be considered qualified, the responding firms shall meet all qualification requirements as identified below:

- demonstrated familiarity working on similar projects;
- knowledge of and expertise in the scope as described herein;
- experience with geomorphology-based assessments and investigations in the State of NH;
- Experience in 2D hydraulic modeling using HEC-RAS;
- experience with geotechnical investigations and riverbank erosion mitigation;
- Professionally licensed in the State of NH; and
- references from at least three (3) similar projects.

This institution is an equal opportunity provider and employer.

SUBMISSION INFORMATION

Submissions must comply with the following:

1. Address and Deadline

Sealed submissions shall be marked on the outside of the envelope:

**RFQ Submission
Saco River Erosion Study**

and addressed to:

North Conway Water Precinct
PO Box 630
North Conway, NH 03860

Submissions will be accepted until 3:00 pm on June 4, 2021. Faxed or emailed submissions will not be accepted.

2. Questions

Questions may be submitted via email to Jason Gagnon at jgagnon@ncwpmh.org until Friday May 28th at 12 PM. Questions and answers will be aggregated and available upon request by interested firms. An updated response to questions may also be obtained by emailing your request to Jason Gagnon at jgagnon@ncwpmh.org.

3. Authorization

The submission must be signed in ink by an authorized signer, or by an agent of the submitter legally qualified and acceptable to the proposer, and contain the printed names, titles, and business and post office address of both parties, if applicable.

4. Withdrawal of Submissions

A submitter will be permitted to withdraw their submission unopened after it has been deposited if such request is received in writing prior to the specified time it is to be received.

5. Reservation of Rights

The NCWP reserves the right to reject any or all submissions, to waive technical or legal deficiencies, and to accept any submission that it deems to be in the best interest of the NCWP. The submitter is solely responsible for the contents of their response to this request for qualifications.

END OF RFQ

This institution is an equal opportunity provider and employer.