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The State of New Hampshire

Department of Environmental Services

Robert R. Scott, Commissioner

February 1, 2021

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His Excellency, Governor Christopher T. Sununu
and the Honorable Council
State House
Concord, NH 03301

REQUESTED ACTION

Authorize the Department of Environmental Services to enter into a **SOLE SOURCE** agreement with the University of New Hampshire, Sponsored Programs Administration (VC #315187 B083), Durham, NH, in the amount of $76,037 to assist in developing a Regional Nitrification Monitoring and Control Plan for the Southern New Hampshire Water System, effective upon Governor and Council approval through April 30, 2022. 100% Drinking Water Groundwater Trust Fund.

Funding is available in the account as follows:

	FY 2021
03-44-44-442010-3904-102-500731	$76,037

Dept. Environmental Services, Drinking Water and Groundwater Trust, Contracts for Program Services

EXPLANATION

The purpose of this agreement is to develop a Regional Nitrification Monitoring and Control Plan (Plan) for the Southern New Hampshire Water System (SNHWS) that will meet the needs of all the utility members and consumers of that regional water system and reduce the probability of nitrification events of the magnitude and duration experienced during the summer of 2020. This award is **SOLE SOURCE** because the University of New Hampshire has previously assisted the Department of Environmental Services (NHDES) and SNHWS utility members in responding to that nitrification event, and is therefore able to provide unique knowledge and technical assistance to NHDES and the members in development of the Plan.

Funds will be used to 1) assist NHDES in developing the Plan; 2) perform a detailed literature review, case study evaluation and consultation with water professionals experienced in the use of chloramines across North America that will help answer the key questions raised by NHDES from the data collected during 2020; and 3) perform a detailed review and analysis of the historical water quality monitoring data as well as the data collected during the 2020 nitrification event. This analysis will focus on providing input to the long-term nitrification control plan and uncovering information that will help answer the key questions raised by NHDES.

Total project costs are budgeted at $76,037. A budget breakdown is provided in the Cooperative Project Agreement.

This agreement has been approved by the Office of the Attorney General as to form, content, and execution.

We respectfully request your approval.

Robert R. Scott, Commissioner

Attachments

www.des.nh.gov
29 Hazen Drive • PO Box 95 • Concord, NH 03302-0095
(603) 271-3503 • Fax: 271-2867 • TDD Access: Relay NH 1-800-735-2964

COOPERATIVE PROJECT AGREEMENT
between the
STATE OF NEW HAMPSHIRE, **Department of Environmental Services**
and the
University of New Hampshire of the UNIVERSITY SYSTEM OF NEW HAMPSHIRE

A. This Cooperative Project Agreement (hereinafter "Project Agreement") is entered into by the State of New Hampshire, **Department of Environmental Services**, (hereinafter "State"), and the University System of New Hampshire, acting through **University of New Hampshire**, (hereinafter "Campus"), for the purpose of undertaking a project of mutual interest. This Cooperative Project shall be carried out under the terms and conditions of the Master Agreement for Cooperative Projects between the State of New Hampshire and the University System of New Hampshire dated November 13, 2002, except as may be modified herein.

B. This Project Agreement and all obligations of the parties hereunder shall become effective on the date the Governor and Executive Council of the State of New Hampshire approve this Project Agreement ("Effective date") and shall end on **04/30/22**. If the provision of services by Campus precedes the Effective date, all services performed by Campus shall be performed at the sole risk of Campus and in the event that this Project Agreement does not become effective, State shall be under no obligation to pay Campus for costs incurred or services performed; however, if this Project Agreement becomes effective, all costs incurred prior to the Effective date that would otherwise be allowable shall be paid under the terms of this Project Agreement.

C. The work to be performed under the terms of this Project Agreement is described in the proposal identified below and attached to this document as Exhibit A, the content of which is incorporated herein as a part of this Project Agreement.

Project Title: **Regional Nitrification Monitoring and Control Plan (RNMCP)**

D. The Following Individuals are designated as Project Administrators. These Project Administrators shall be responsible for the business aspects of this Project Agreement and all invoices, payments, project amendments and related correspondence shall be directed to the individuals so designated.

State Project Administrator

Name: Erin Holmes, P.E
Address: Department of Environmental Services
29 Hazen Dr.
Concord NH 03301
Phone: 603-271-7375

Campus Project Administrator

Name: Cheryl Moore
Address: University of New Hampshire
Sponsored Programs Administration
51 College Road
Durham, NH 03824-2620
Phone: 603-862-1992

E. The Following Individuals are designated as Project Directors. These Project Directors shall be responsible for the technical leadership and conduct of the project. All progress reports, completion reports and related correspondence shall be directed to the individuals so designated.

State Project Director

Name: Michael C. Unger, P.E.
Address: Department of Environmental Services
29 Hazen Dr.
Concord, NH 03301
Phone: 603-271-0779

Campus Project Director

Name: Dr. James P. Malley, Jr.
Address: University of New Hampshire
College of Engineering and Physical Sciences
35 Colovos Road, Room 344
Durham, NH 03824
Phone: 603-862-1449

Campus Authorized Official KJ
Date 1/29/21

F. Total State funds in the amount of **$76,037** have been allotted and are available for payment of allowable costs incurred under this Project Agreement. State will not reimburse Campus for costs exceeding the amount specified in this paragraph.

Check if applicable

☐ Campus will cost-share % of total costs during the term of this Project Agreement.

☐ Federal funds paid to Campus under this Project Agreement are from Grant/Contract/Cooperative Agreement No. from under CFDA# . Federal regulations required to be passed through to Campus as part of this Project Agreement, and in accordance with the Master Agreement for Cooperative Projects between the State of New Hampshire and the University System of New Hampshire dated November 13, 2002, are attached to this document as Exhibit B, the content of which is incorporated herein as a part of this Project Agreement.

G. Check if applicable

☐ Article(s) of the Master Agreement for Cooperative Projects between the State of New Hampshire and the University System of New Hampshire dated November 13, 2002 is/are hereby amended to read:

H. ☒ State has chosen **not to take** possession of equipment purchased under this Project Agreement.

☐ State has chosen **to take** possession of equipment purchased under this Project Agreement and will issue instructions for the disposition of such equipment within 90 days of the Project Agreement's end-date. Any expenses incurred by Campus in carrying out State's requested disposition will be fully reimbursed by State.

This Project Agreement and the Master Agreement constitute the entire agreement between State and Campus regarding this Cooperative Project, and supersede and replace any previously existing arrangements, oral or written; all changes herein must be made by written amendment and executed for the parties by their authorized officials.

IN WITNESS WHEREOF, the University System of New Hampshire, acting through the **University of New Hampshire** and the State of New Hampshire, **Department of Environmental Services** have executed this Project Agreement.

By An Authorized Official of:
University of New Hampshire

Name: Karen M. Jensen
Title: Sponsored Programs Administration, Director Pre-award
Signature and Date
Karen Jensen 1/29/21

By An Authorized Official of:
Department of Environmental Services

Name: Robert R. Scott
Title: Commissioner
Signature and Date:
2/4/21

By An Authorized Official of: the New Hampshire Office of the Attorney General

Name: Joshua C. Harrison
Title: Assistant Attorney General
Signature and Date: 2/8/2021

By An Authorized Official of: the New Hampshire Governor & Executive Council

Name:
Title:
Signature and Date:

Campus Authorized Official KJ
Date 1/29/21

EXHIBIT A

A. Project Title: Regional Nitrification Monitoring and Control Plan (RNMCP)

B. Project Period: February 17, 2021 - April 30, 2022

C. Objectives: The overall objectives of this study are:

1. To assist the State in developing a Regional Nitrification Monitoring and Control Plan (RNMCP) for the Southern New Hampshire Water System (SNHWS) that will meet the needs of all the utility members and consumers of that regional water system and reduce the probability of nitrification events of the nature and duration that was experienced in 2020.

2. To perform a detailed literature review, case study evaluation and consultation with water professionals' experience in the use of chloramines across North America that will help answer the key questions raised by the State from the data collected during 2020.

3. To perform a detailed review and analysis of the historical water quality monitoring data as well as the data collected during the 2020 nitrification event. This analysis will focus on providing input to the long-term nitrification control plan and uncovering information that will help answer the key questions raised by the State.

D. Scope of Work: The proposed SNHWS nitrification study will be broken into three phases which will overlap to a large degree and interact as they progress.

Phase 1: Literature Review

Experiences during the SNHWS nitrification event of 2020 gave rise to several key questions that have not been completely answered or explained and will benefit from detailed literature review, case study evaluation and consultation with water professionals' experience in the use of chloramines across North America. Input will be sought to help address the following questions:

A. What has been observed in the professional practice on the rate of total chlorine and monochloramine residual dropping rapidly with time, what factors contribute to that effect, and what steps can be taken to reduce or eliminate this loss.

B. What has been observed in the professional practice to account for the measured gap between total chlorine and monochloramine in water distribution systems, what factors contribute to that gap, and what steps can be taken to reduce or eliminate this gap.

C. What has been observed in the professional practice and what examples can be found and reviewed of RNMCPs for use in developing a plan for the SNHWS.

Phase 2: Detailed Data Analysis

A large amount of analytical data as well as anecdotal comments were collected and partially analyzed during the 2020 nitrification event . These data will be collected with the

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assistance of the State and analyzed in time and space. Efforts will be made to place this data in an organized fashion on a GIS/GPS type platform allowing for ease of trend analysis in time (temporal) and by location (spatial).

Equally important in the detailed data analysis will be obtaining and evaluating as much historical data as feasible relative to nitrification issues that may have occurred prior to 2020.

Specific software and statistical data analysis will be developed in consultation with the Campus Statistical Consulting Center. It is anticipated that emerging database management tools and software will be used.

The data analysis arranged from the highest to the lowest priority will be:

A. Attempt to identify any specific changes in spatial or temporal water quality data that can be used as an early warning signal and incorporated into the RNMCP to prevent or reduce the impact and duration of a nitrification event.

B. Attempt to answer the question, "What should be done, if anything, to reduce free ammonia levels in distribution system waters?"

C. Attempt to answer the question, "Is an additional permanent chloramine booster station(s) recommended, particularly in MWW and/or Derry, at a pump station and/or tank?"

D. Attempt to evaluate the influence of water quality in the regional water at Rail Trail PRV station on downstream nitrification. Would additional treatment at Rail Trail be beneficial?

E. Attempt to answer the question, "When Hampstead Area Water Company (HAWC) is using chloramines, what factors may affect total chlorine and monochloramine residual levels in the system when HAWC is pumping treated water vs. running off its tanks?"

F. Attempt to verify and correlate the decreases in total chlorine and monochloramine residual levels between Rockingham pump station and Northland PRV station and between Northland PRV station and Rail Trail PRV station to potential water quality changes that could lead to such decreases.

G. Attempt to verify and correlate the gap between total chlorine and monochloramine residual levels at several locations, to include Rockingham PRV station, to potential water quality changes that may help explain these data.

Phase 3. Input to SNHWS' RNMCP

This phase will be initiated by obtaining and reviewing all existing nitrification monitoring and control plans (NMCPs) for Manchester Water Works, Salem, and HAWC and the pending NMCPs for Derry and Plaistow. This effort will be combined with pertinent outcomes and findings from Phase 1 and Phase 2 and the result will be recommendations of items to include in the RNMCP being developed by the State and the regional water utilities and/or other key stakeholders.

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E. Deliverables Schedule:

The proposed schedule recognizes the immediate need of the SNHWS and the State to ensure that recommendations are in place by May 2021 to identify, control or eliminate nitrification events during 2021, which might be anticipated as water temperatures and water use patterns return to the spring and summer conditions that may increase the likelihood of nitrification events. Therefore, aspects of Phases 1, 2 and 3 will occur simultaneously to provide practical recommendations by this deadline. The schedule also reflects the need for additional time to fully achieve the objectives of each study phase resulting in an overall project period of one year.

The project will be initiated as soon as an agreement between State and Campus Sponsored Programs Administration (SPA) is reached and a notice to proceed is received from the State. The project can be initiated immediately, and the project end date would be approximately one year from the start date.

Project deliverables will include oral update and report out from the Campus project team at the periodic meetings of the SNHWS-State team. Provision of written summaries (technical memoranda) of project progress bimonthly. A final project report containing all results from Phases 1, 2 and 3 will be provided upon project completion. All data, analyses, outputs from the project will be provided to the State and maintained on the Campus electronic storage systems for a minimum of two years.

F. Budget and Invoicing Instructions:

Campus will submit invoices to State on regular Campus invoice forms no more frequently than monthly and no less frequently than quarterly. Invoices will be based on actual project expenses incurred during the invoicing period, and shall show current and cumulative expenses by major cost categories as shown below. State will pay Campus within 30 days of receipt of each invoice. Campus will submit its final invoice not later than 60 days after the Project Period end date.

Budget Items	State Funding	Cost Sharing(if required)	Total
1. Salaries & Wages	35,973	0	35,973
2. Employee Fringe Benefits	1,258	0	1,258
3. Travel	1,000	0	1,000
4. Supplies and Services	18,270	0	18,270
5. Equipment	0	0	0
6. Facilities & Admin Costs	19,536	0	19,536
Subtotals	76,037	0	76,037
Total Project Costs:			76,037

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Date 1/29/21

EXHIBIT B

This Project Agreement is funded under a Grant/Contract/Cooperative Agreement to State from the Federal sponsor specified in Project Agreement article F. All applicable requirements, regulations, provisions, terms and conditions of this Federal Grant/Contract/Cooperative Agreement are hereby adopted in full force and effect to the relationship between State and Campus, except that wherever such requirements, regulations, provisions and terms and conditions differ for INSTITUTIONS OF HIGHER EDUCATION, the appropriate requirements should be substituted (e.g., OMB Circulars A-21 and A-110, rather than OMB Circulars A-87 and A-102). References to Contractor or Recipient in the Federal language will be taken to mean Campus; references to the Government or Federal Awarding Agency will be taken to mean Government/Federal Awarding Agency or State or both, as appropriate.

Special Federal provisions are listed here ☒ none or **Uniform Guidance issued by the Office of Management and Budget (OMB) in lieu of Circulars listed in paragraph above.**

Campus Authorized Official KJ

Date 1/29/21