



The State of New Hampshire
Department of Environmental Services



Robert R. Scott, Commissioner

June 28, 2021

Via email to: lcarney@underwoodengineers.com

Ms. Lynnette Carney, PE
 Underwood Engineers
 VIA EMAIL ONLY

**Subject: PWS #1951010 – Portsmouth Water Works
 NHDES Design Review #5976 – Madbury Wells #2, #3, #4 and #5 Upgrade**

Dear Ms. Carney:

The New Hampshire Department of Environmental Services (NHDES) Drinking Water and Groundwater Bureau (DWGB) has reviewed the following design documents for the subject project.

- Project Manual dated June 14, 2021
- Construction Drawings dated June 14, 2021

DWGB hereby approves the above documents subject to incorporation of the following comments. The proposed improvements to the Madbury Wells include:

- HVAC and electrical service upgrades to Well #1 building (chemical feed building).
- Standby Generator power for Wells #1, #2 and #3 buildings (Add Alt #1).
- A new building for Wells #4R and #5 for metering, monitoring and chemical feed.
- Installation of pumps, connecting water mains/electrical to connect Wells #4R and #5 to the system.
- Pump removal and abandonment of Well #4.

Water Source(s) & Design Flow	Source NHDES ID		Pump/Plant Design Flow (gpm)	
	011 MADBURY GPW 4R		482 gpm*	
	013 MADBURY GPW 5		500 gpm*	
* Total permitted production volume for entire well field = 1,500,000 gpd (1,042 gpm average).				
Chemical Treatment Description	Chemical Name	Bulk Storage	Day Storage	Feed Pump Design Flow Rate
	Polyorthophosphate (Well #4R/#5 Building)	55-gal. drums	70 gal.	0.50 gph
Existing polyorthophosphate feed for Wells #2 and #3 plus chlorine disinfection and fluoride feed for all Wells #2, #3, #4R and #5 to continue at Chemical Feed (aka Well #1) Building.				
Process Pumping Equipment	Well Pumps: <ul style="list-style-type: none"> • Wells #2, #3 and #5 existing to remain • Well #4R: 40 hp, 482 gpm @ 208' TDH 			

Online Analytical Equipment	Existing to remain at Chemical Feed (aka Well #1) Building.
Onsite Storage	No onsite storage.
Waste Disposal	Floor drains and sample sink to infiltration basins groundwater discharge registration previously approved.
Sampling Requirements	Bacteria, nitrate, and performance testing required prior to initiation of operation per Section 01800 of the Specifications and conditions below. Reset lead and copper monitoring to Round 1 semi-annual due to new sources.
Emergency Power	New 150 kW propane emergency standby generator for Wells #2 and #3 and Chemical Feed (aka Well #1) Building (Add. Alt.).

This approval is subject to the following conditions:

1. NHDES recommends Owners and their engineers consult with their utility companies about opportunities to optimize design and operations for **energy efficiency** and possible **energy efficiency rebates**. Often these programs require pre-approval prior to installation.
2. Comply with all construction requirements per Env-Dw 404 *Design Standards for Large Public Water Systems*.
3. **Notify NHDES prior** to initiation of operation of Wells #4R and #5.
4. Submit an updated **Water System Emergency Plan** per Env-Dw 503.21 *Emergency Plans for Community Water Systems*.
5. Submit electronic copies (PDF) of final **Record Drawings** to this department, and maintain copies on file with the water system owner.
6. Prepare a final **O&M Manual** and maintain a copy on file with the water system owner. Water system copies of the O&M manual and Record Drawings shall be available for review during NHDES site inspections, when requested.
7. Standard operating procedures (SOPs) should be established for many operations including, but not limited to, chemical deliveries.

This approval is for drinking water design review only in accordance with Env-Dw 404 *Design Standards for Large Public Water Systems* and does not relieve the applicant from applying for and obtaining other required local, state, and/or federal permits or approvals.

This project is not anticipated to be funded with State or Federal funding at this time. Should State or Federal funding be used for part or all of this project in the future, additional conditions may apply.

Please contact me at (603) 271-0779 or michael.unger@des.nh.gov for any questions regarding this letter.

Ms. Lynnette Carney

June 28, 2021

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Sincerely,

A handwritten signature in black ink, appearing to read "M. Unger". The signature is fluid and cursive, with a long horizontal stroke at the end.

Michael C. Unger, PE

Drinking Water & Groundwater Bureau

cc. Al Pratt, City of Portsmouth
Drew Koff, NHDES