Request for Proposals
Design and Services Supply and Treatment System Upgrades
Rye Water District
60 Sagamore Road, Rye, NH 03870

Proposals are Due on January 17, 2025

The Rye Water District (District) is seeking proposals from consultants to provide design and permitting assistance services for treating wells located at their water supply facilities at 71 Garland Road in Rye, NH. Treatment upgrades will address iron, manganese and PFAS in existing wells.

This project will be funded by a combination of New Hampshire State Revolving Loan funds and State Drinking Water and Groundwater Trust Funds. Therefore, the project design and construction must follow the guidelines of these programs, and the selected consultant must have project experience working directly with them.

Proposals shall be submitted by qualified firms that have a demonstrable background in the aspects of work described in the Scope of Services of this RFP.

There will be a non-mandatory **pre-proposal site walk on December 10, 2024 10:00 am**, at the Garland Well site, off 71 Garland Road in Rye. All proposers will have an opportunity to ask questions at this meeting.

Any additional questions regarding this RFP may be emailed to Brian Goetz, Administrator, at: bfgoetz@ryewaterdistrict.gov. **All questions shall be received by 4:00 pm on January 6, 2025,** and their corresponding responses will be issued as an addendum to this RFP on the District's website by 4:30 pm on January 10, 2025.

Prospective consultants shall be solely responsible for obtaining all questions and answers related to this RFP. Addenda to this RFP, if any, including written answers to questions, will be posted on the District's website. Addenda and updates will NOT be sent directly to proposers, written acknowledgment of the receipt of all addenda must be included in the cover letter of each proposer.

Project Background

In June of 2022, the United States Environmental Protection Agency (EPA) published a proposed Maximum Contaminant Level (MCL) levels for six PFAS compounds, perfluorooctane sulfonate (PFOS) – 4 ppt and perfluorooctanoic acid (PFOA) – 4 ppt. EPA's proposed rule includes the use of a hazard index to consider the combination of four contaminants Perfluorononanoic acid (PFNA), Perfluorohexanesulfonic acid (PFHxS), Perfluorobutanesulfonic acid (PFBS) and GenX. This project will design and construct treatment to filter PFAS from the drinking water to levels that meet the proposed EPA MCLs. Both the District's Bailey Brook and Cedar Run Wells have high levels of Manganese and Iron. The Cedar Run Well has been utilized only as a backup well due to elevated Iron and Manganese that sharply increased in 2017. The District is currently conducting investigations to replace the Cedar Run well and/or develop additional source capacity. Therefore, treatment of the District's wells for this project scope may include only the Garland (sand and gravel) and Bailey (bedrock) wells. Options for future expansion to include the Cedar or other alternative sources may be considered. Per previous studies and recommendations, a new treatment facility would allow for a number of treatment and operating benefits including:

- Treatment of PFAS
- Treatment of iron and manganese in the bedrock well

- pH adjustment of Garland Well and/or blending with bedrock well(s)
- Disinfection of the combined well water
- Centralization of operations for system field staff

The District currently has authorization to fund this project through State Revolving Loan Fund and Drinking Water and Groundwater Trust funds.

Site information

The District's current production wells are all located adjacent to Garland Road. Therefore, a combined treatment facility has been envisioned. However, consultants are encouraged to explore options of the viability of separate treatment at the individual sites if that proves to be more efficient and equitable. The selected consultant will need to work with the District to explore these options with respect to available locations, site conditions, utility services and other associated impacts.

The following water sources are currently permitted and in operation. The Garland Well is a sand and gravel well and is the District's primary source of supply. The Bailey Brook Well is a bedrock well that is the District's secondary supply. Current operational practice by the District involves running these two sources together and blending prior to entering the water distribution system. The following table describes the wells in more detail. **Selected well source water quality information for this RFP will also be posted on the District's website**. Additional Data can also be found on the NHDES Onestop website for the Rye Water District.

Name/ Location	DES Data Base 1141020-	Year Installed	Well Depth (ft)	Currently Estimated Well Capacity (gpm)
Garland	001	1977	49	500
Bailey Brook	006	1984	545	315
Cedar Run	008	2004	437	330
			Total	1,145

The Bailey Brook Well (006) was installed in 1984 and consists of a 545-foot-deep bedrock well, equipped with a 25 HP submersible pump rated for 340 gallons per minute (gpm) at 225 TDH. This well is located at 90 Garland Road.

The Cedar Run Well (008) was installed in 2004 and consists of a 437-foot-deep bedrock well, equipped with a 40 HP submersible pump rated for 340 gpm at 244 TDH. This well is located at 90 Garland Road. The Cedar Run well has experienced increasing iron and manganese concentrations over the last seven years. Therefore, it is only utilized as a backup source of supply. The District has actively been investigating options to replace this well and/or create additional backup supplies for the Garland and Bailey Brook wells. There was also a packer test performed on the well in 2019. **Results from that testing are included on the District's website.** Testing reveals that certain zones of the well, if isolated, may produce water lower in iron and manganese concentrations. This may reduce the production of the well, however, in combination with other sources, this may be an acceptable tradeoff. Additional drilling and testing for a replacement well at the Cedar Run well site was performed in 2020. A Replacement Well Final Report request was prepared but never formally submitted to the NHDES due to potential source water protective area requirements. There still may be options for developing this well site further. **A copy of the report is is available from the District upon request.**

Water from the two bedrock wells is blended with water from the Garland Road Well at the point of entry building on the Garland Well property and then sent to the distribution system. The Bailey Brook and Cedar Run wells each have moderate pH, with iron and manganese present in both wells. Other than disinfection, the water is not treated to reduce the iron and manganese present.

The Bailey Brook and Cedar Run Wells are located near each other and are combined in the Bailey Brook Pump Station. The Bailey Brook Pump Station was constructed in 1984. This pump station was upgraded in 2004 with the installation of the Cedar Run well. Water from both Cedar Run well and Bailiey Brook well are individually metered and combined into a single pipe in this pump station and sent to the Point of Entry Building.

The Garland Road Well (001) was installed in 1977 and consists of a 49-foot-deep gravel-packed well, equipped with a 25 HP vertical turbine pump rated for 500 gpm at 175 TDH. The Garland Well Pump Station is located approximately 1,500 feet from the Bailey Brook Pump Station at 71 Garland Road. This well was last cleaned in 2016. The Garland Well is characterized by low pH and moderate hardness. Potassium hydroxide is added to increase pH for corrosion control purposes.

Water from Garland Road Well is treated at the Garland Well Station as noted below for corrosion control purposes. The Garland Well Station is a masonry block structure with a flat rubber membrane roof originally constructed in 1977 and an expansion was added in 1996 to accommodate treatment chemical storage with similar building construction techniques. In 2019, a permanent emergency generator was installed at the facility replacing the District's mobile generator which was housed onsite. in 2022, RWD completed a renovation project at this facility replacing the pump, motor, electrical and instrumentation systems in the Garland Well building.

In 2023, RWD built a point of entry building on the Garland Well property where water from all three wells is blended prior to chlorination and flow from the wells is monitored.

The District has been performing monthly source water sampling of iron and manganese for the wells for a number of years. The six year average concentrations for the Bailey Brook and Cedar Run wells are as follows:

2019 to 2024	Bailey Brook Well			Cedar Run Well	
ppm	Iron	Mang		Iron	Mang
6 yr average	0.317	0.056		3.437	0.279

The following table details the TOC and pH levels in the three water sources, taken in May 2024:

Parameter	Garland Well	Bailey Well	Cedar Run Well
TOC (mg/L)	0.65	1.6	2.6
pH (SU)	6.6	7.6	7.1

The District has also undertaken two pilot studies for iron and manganese treatment of these bedrock wells. A comprehensive pilot was performed for the District in 2009. A follow-up pilot study was performed in 2011. Following the piloting efforts, the District had a preliminary design assessment performed to develop the concept of treatment for the system. The preliminary design was not advanced to final design, however, we are requesting that the selected consultant for this project review that concept and help the District decide if that technology is still feasible for treatment of the wells, together with the added treatment necessary to remove PFAS. **A copy of that preliminary design effort, site survey, infiltration report, together with follow-up memorandums, can be requested from the District.**

In 2024 the District had a benchtop study performed by Blueleaf, Inc. to further evaluate iron and manganese treatment options. The study made the following assessments:

> The results from the current study "2024 BENCH STUDY" match the results from studies conducted in 2009-2011. All three studies suggest that removal of iron through an adsorptive filter media similar to greensand will be ineffective without the addition of a coagulant. A PCH180 dose near 15 mg/L will be effective at reducing the NOM in the raw water and providing effluent Fe well below the SMCL of 0.30 mg/L. Adsorption by manganese greensand will reduce the Mn concentration to below 0.010 mg/L.
>
> Adding coagulant to a pressure filter can be difficult to operate. Water treatment plants in New Hampton and Jackson NH have attempted to add coagulants to reduce NOM at existing pressure filtration systems and have experienced problems related to pH control, coagulant dose control, short operational times, and filter media suitability. In both cases, coagulant addition has been suspended due to these operational issues.
>
> The use of a coagulant upstream of a pressure filter may be more suited to use at the Rye Water District's Centralized Treatment Facility because (i) the raw water pH is already within the range appropriate for coagulation with polyaluminum chloride, and (ii) a new treatment plant can build in provisions to avoid typical problems (i.e. larger filter vessels to increase filter run times, filtered water storage to allow for less-frequent on/off cycles, better instrumentation to control dose, etc).
>
> Design parameters that are unresolved with this alternative include:
> - Coagulant dosing - The 2009 and 2010 studies showed that 15 mg/L PCH180 was sufficient, but the 2024 study showed that slightly higher doses may be needed.
> - Filter Sizing and Run Times - The 2009 study suggested that run times would be approximately 24 hours if the filters were operated at 4 gpm/sf, but doses and flow rates were changed in the middle of trials and need to be confirmed.
> - Residuals Handling - PCH180 is an aluminum-based coagulant and will create solids containing Fe, Mn, and Al. Rye Water District will need to evaluate options for disposal.
>
> The results from the 2010-2011 Biological Filtration Study suggest that biological filtration may be an alternative treatment process for these wells. Biological treatment has now been used for drinking water treatment of Fe and Mn at 6 sites in New England with good success. To our knowledge none of the sites have significant concentration of

NOM in the water, however, so the long-term impact of NOM is uncertain. Blueleaf believes that a two stage biological filtration process is more flexible than the single stage approach that was piloted in 2010.

Advantages include:

- Lower chemical use - no PCH180 addition, NaOCl addition is slightly lower since Fe and Mn demands are removed prior to chlorination.
- Longer filter run times - earlier biological study showed biological filter runtimes of 150 to 250 hours compared to greensand runtimes that are near 24 hours.
- Lower backwash volumes - biological filters require 57 gallons per SF while greensand filters require 120 gallons per square foot. With the differences in runtimes the greensand backwash volume is 13 times higher than the biological volume.

Disadvantages include:

- A biological pilot study will take a few months to acclimate and determine the operating parameters and the duration of the study may increase the pilot costs.
- There are fewer vendors that offer biological filtration equipment than vendors that offer greensand equipment

An additional on-site piloting effort has recently been proposed by the District's consultants and Blueleaf to look at other potential treatment options. The District is currently holding off this work until the preliminary design effort and alternatives analysis begins. The selected consultant will help the District determine if further piloting is necessary.

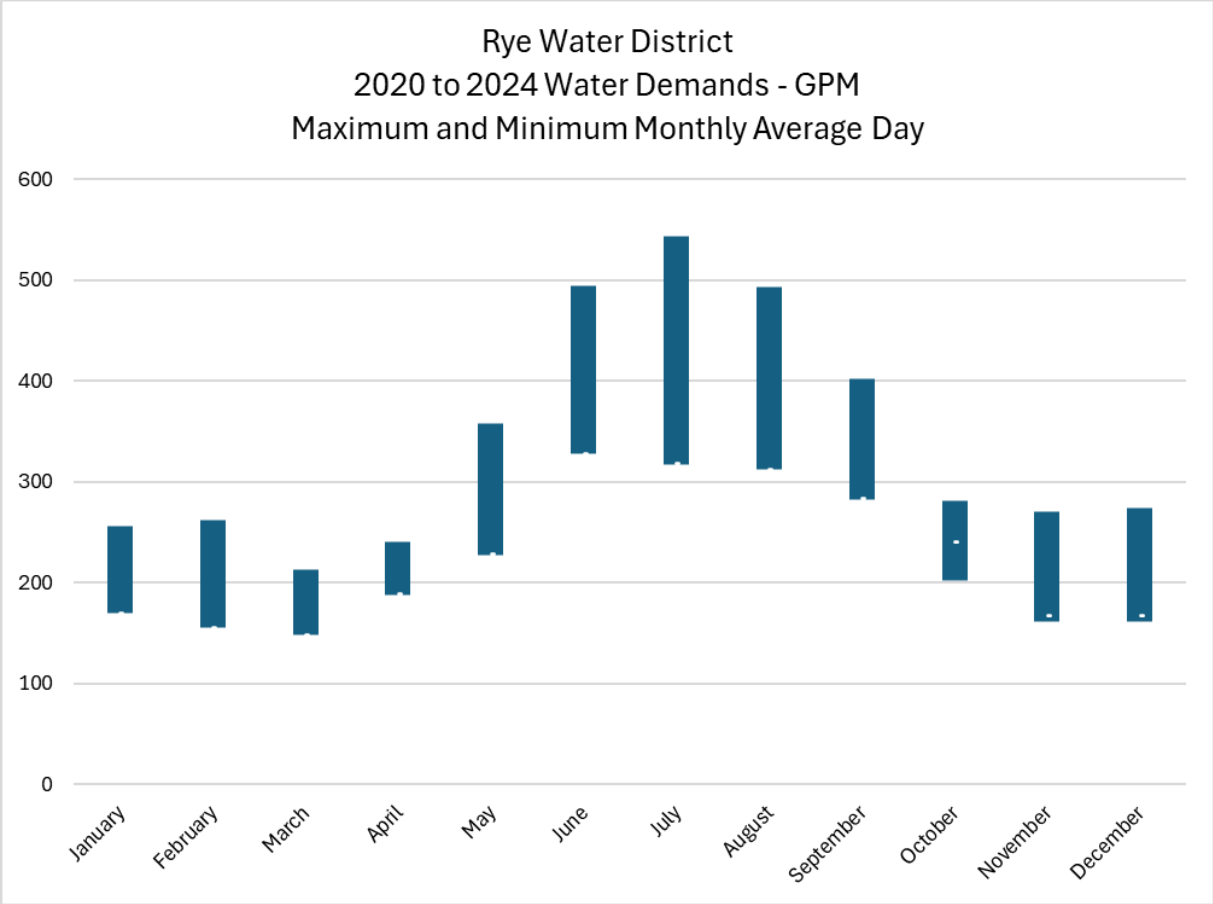
The District has been sampling for PFAS compounds for a number of years. Currently, the Garland Well exceeds the new EPA MCLs for PFOS and PFOA. Both of these compounds have been fluctuating between 6 to 8 parts per trillion. The Bailey Brook and Cedar Run wells have detections that are currently below the MCL, however, treatment of these wells for PFAS must be considered in design of the system. Currently, the District takes distribution samples to provide insight as to the blended water concentrations of the combined water sources. Though not below the new MCL, blending does reduce the overall PFAS level in the system. The District's goal is to provide treated water that meets the MCLs at all times.

The treatment method for PFAS compounds is anticipated to be granular activated carbon, however, given the higher TOC in the source waters, recent analysis has suggested that other technologies, such as ion exchange resins or surfaced-modified clay might prove effective as well. The District is exploring options for installing their own pilot system at the Garland Well site to further investigate these options.

Copies of all three Pilot reports are available from the District on request.

The 1,800 customers of the Water District are predominantly residential. Water demands fluctuate greatly due to high irrigation demands in the summer. The following table and graphic shows the average daily water demand for the District from 2020 to 2024. Design of well upgrades and treatment system should take into account the varying demands that the District encounters, especially related to peak water demands in the summer due to irrigation.

Average Gallons per Minute			
	Average	Max	Min
January	199	256	169
February	197	262	155
March	180	214	148
April	224	241	188
May	311	358	227
June	416	494	328
July	418	544	317
August	411	493	312
Septembe	344	403	283
October	202	281	240
November	161	270	167
December	162	275	167



Other Items to Consider

Treatment of these wells will involve a number of changes to the system's operations. During this design, the District would like the selected consultant to consider:

- Can the project be phased?
- System commissioning and filter conditioning requirements
- What ongoing maintenance will be required?
- Type, amount and handling of backwash materials
- Any future contaminants requiring treatment like radon, arsenic, etc?

- On site laboratory analysis (not certified tests, but tests to provide quality control of treatment system)
- How complex will operations be and what skills system operators will have to acquire?
- What will future staff levels requirements be?

Anticipated Project Schedule

An operations center for operators and field staff (not for office personnel) will be part of this project. The District facilities off of Garland Road were recently expanded to include a 30 by 40 foot three bay garage with storage. It is currently envisioned that this building be expanded with a control room, office space and bathrooms. If feasible, the District may choose to have this facility designed and built prior to the rest of the upgrade. This would allow District operational staff better capability to oversee the construction and coordinate operational changes and commissioning of new equipment while the treatment facility is under construction.

The District desires to have the improvements designed, permitted and constructed in the following timeframes

- April to December 2025 – Preliminary design (additional piloting if necessary)
- January to December 2026 – Final design and permitting of treatment system. Potential construction of operations center. Pre-purchase of critical treatment system components such as filter vessels, filter media, electrical controls, etc.
- December 2026– Advertise for bidding of treatment system
- February 2027 – Bidding
- March 2027 – Contractor selection and potential vote for approval of additional funds (if necessary) during District's annual meeting
- April/May 2027 – Contract with selected contractor
- June 2027 – Construction begins
- Late 2028 or Early 2029 – Project completion

Scope of Services

The Consultant shall:

- Attend a pre-design meeting with District staff to confirm the design scope
- Preliminary design will include:
    - Review source water quality parameters, trends and previous treatment piloting reports
    - Research similar drinking water treatment system design and construction projects in the area. This may include site visits with District staff
    - Coordinate and perform additional piloting if necessary
- If District proceeds earlier with design and construction of the operations center - design, obtain permits and prepare bids for expansion of current garage to include operations center
- Participate in required public meetings with the regulatory bodies such as the Rye Planning Board and/or others associated with permitting
- Perform site assessment to recommend the location of the treatment system(s)
- Prepare site surveys as needed for the proposed design, permitting, and construction
- Perform soil investigations
- Summarize the recommended equipment, specifications, including new piping and electrical controls as necessary, all necessary stormwater facilities, and landscaping as required by the permitting authority
- If necessary, prepare separate specifications and bid documents for any equipment needing pre-purchased
- Attend monthly status meetings with the District during the design to seek input from the District
- Recommend any necessary modifications to existing systems to accommodate the new treatment

- Prepare estimates of updated construction costs
- Prepare a Preliminary Design Report

Preliminary Design Firm Selection Schedule

The anticipated milestones for consultant selection and contracts are:

Proposals for professional services due	January 17, 2025
District Review of Proposals	January 2025
Interviews with highest ranking consultants	February 2025
Negotiate and approve selected consultant's contract	March 2025
Begin preliminary design	April 2025

The District will expedite the internal review, contract negotiations, and contract approval at its discretion based on staff capacity, the number of proposals received, and the efficiency of contract negotiations.

Proposal Requirement

Proposals shall include the following information:

1. **Cover Letter**: Signed by a representative of the consultant firm authorized to enter into contracts and commit the staff and corporate resources to complete the scope of work as expeditiously as possible.
2. **Firm Profile**: Provide a general outline of the firm, including brief history, areas of practice/service, place(s) of business of the firm, and the office from which the services of this proposal will be provided. If the firm is proposing the use of sub-consultants to perform any aspects of the project, similar information on each additional firm shall be included.
3. **Firm's Related Experience**: Provide a description of the experience of the firm and project team, including specific examples of similar projects. Provide other pertinent information that may clearly and effectively identify the prospective consultant as a qualified firm with emphasis on PFAS and Iron and Manganese treatment systems.
4. **Project Team**: Provide names and resumes of key professionals who would be assigned to the project. Each team member's education and experience shall be provided along with their role in the project and billing rate. The Project Manager shall be clearly identified, and a description of his/her relevant previous projects listed. A list of past relevant projects, which the proposed project staff have played a central role in developing, shall also be provided.
5. **Scope of Services**: Describe in narrative form, the firm's approach, and plan for accomplishing the work listed herein. The firm is encouraged to elaborate and improve on the tasks listed in the RFP. The firm shall submit a proposed schedule and level of effort in hours by respective team staff for completing each task identified in the scope of work. Final scope will be negotiated by the District.
6. **Experience managing projects utilizing State Revolving Loan Fund money**
7. **Five (5) references of similar projects in New Hampshire or the region**

Future scope of work for final design services from selected consulting firm will be negotiated at the end of the preliminary design.

One member of the Project Team must be assigned as the Project Manager. All resumes shall be included in an Appendix and be limited to a maximum of two pages per team member.

For information or questions about the project, contact the District's Administrator, Brian Goetz @ bfgoetz@ryewaterdistrict.gov.

Six (6) hard copies and one (1) electronic copy (in .pdf format on USB thumb drive) shall be submitted before **12:00 p.m. on Friday, January 17, 2025**. Submissions will not be accepted via fax or email.

The proposal shall be addressed to:

Rye Water District
Brian Goetz, Administrator
60 Sagamore Road
Rye, NH 03870

Consultant Selection and Evaluation Process

District staff will evaluate the consultants' proposals based on the following criteria:

1. Project understanding, approach, and methodology to perform scope of work in a timely manner.	30%
2. Qualifications of firm and project team members. Particular attention will be given to the experience and demonstrated ability of the project manager and lead project engineer to successfully conduct similar projects	40%
3. Prior collaboration and successful completion of projects/services similar to those requested in the RFP as well as the project team's performance with projects in New Hampshire and New England	30%

All firms submitting proposals will be notified after initial review of proposals concludes, as to their status in the selection process. District staff will work with the most qualified consultant to prepare an Agreement for Consulting Services, including a Scope of Work and an estimated budget for the Project. The selected consultant will be approved by internal staff, Administrator, Superintendent and Commissioners.

The District may waive any informalities or irregularities in the proposal and reserves the right to accept, reject, or negotiate any or all proposals, including the right to award the contract in whole or in part if it is deemed in the District's best interests. The District shall not be liable for any cost incurred by consultants in responding to this RFP.