



Date Posted: August 14, 2020

REQUEST FOR PROPOSALS (RFP)

Water Reuse and Beyond – Water Quality Monitoring Methods, Data, and Interpretation (RFP 5079)

Due Date: Proposals must be received by 2:00 pm Mountain Time on **Thursday, October 29, 2020**

WRF Project Contact: Erin Partlan, epartlan@waterrf.org

Project Sponsors

This project is funded by The Water Research Foundation (WRF) as part of WRF's Research Priority Program.

Project Objective

This project will deploy a utility survey and other information collection strategies to evaluate the critical needs, tools, gaps, and opportunities for water quality monitoring at potable reuse facilities. The needs, tools, gaps, and opportunities can be framed as the following key questions:

1. What are the most critical water quality and treatment performance monitoring needs in potable reuse?
2. What are the most common tools (i.e., technologies, methods, and/or approaches) being used at any treatment stage in existing facilities?
3. What are the gaps in knowledge or tools required to meet the needs identified?
4. What are the opportunities for innovation or optimization regarding monitoring tools in potable reuse?

Budget

Applicants may request up to **\$125,000** in WRF funds for this project. WRF funds requested and total project value are evaluation criteria considered in the proposal selection process.

Background and Project Rationale

Water quality at potable reuse facilities may be monitored through any or a combination of individual, surrogate, and/or bulk parameters. Many new monitoring tools with increased sensitivity are in use or being developed to assess water quality in potable reuse schemes. Vendors routinely pitch their new technologies to utility managers, and university research on new methods is ongoing. When mature, these tools may enable utilities to improve operations and detect compounds/potential hazards with improved sensitivity and/or in a timelier manner than currently possible with existing methods. This would enable utilities to reduce response times to treatment upsets and have a better understanding of their water quality and process performance.

WRF project 4508 evaluated monitoring techniques for usefulness, data quality, implementability, and cost, and identified DOC, UVA, Total Fluorescence (TF), and Excitation Emission Matrix (EEM) as promising techniques for use in potable water reuse monitoring. Another project, WRF 4771, aimed for practical monitoring approaches and eschewed total fluorescence among other techniques in favor of online TOC monitoring. New and improving technologies are powerful and have potential, but many of them require refinement and validation in demonstration and/or full-scale facilities before they can be used by most utilities. From a practical standpoint, unless the benefits are plainly evident to utility managers, utilities may not elect to make the investment (initial capital plus ongoing maintenance and data management). A careful assessment of current and upcoming needs, tools, gaps, and opportunities for water quality measurement/monitoring is required to systematically advance industry practice.

The project will have multiple benefits including the following:

- Better assess water quality for potable reuse to ensure and demonstrate that these projects are protective of public health, even as new pathogens and chemicals emerge.
- Support the implementation of direct potable reuse (DPR) by providing new monitoring approaches to enable the use of new treatment technologies and address the need to respond quickly (due to reduced retention time).
- Support the practical operations of potable reuse facilities, including treatment performance assessment and compliance.
- Provide leadership for EPA's Water Reuse Action Plan (WRAP) Action 2.5.2 Identify monitoring best practices for various sources of water and reuse applications.
- Integration into Leaders Innovation Forum for Technology (LIFT), a WEF/WRF initiative, and research and benefits to both.

Research Approach

This RFP is intentionally flexible in the research approach to encourage creativity and originality from proposers. Proposers should describe how they will conduct the research to meet the Objectives listed above. The following approach is intended as a starting point.

Task 1: Needs Assessment/ Survey

- Reference LIFT Link (<https://liftlink.werf.org>) to learn about relevant existing technologies. Review the LIFT Tech Trends tool (<https://www.waterrf.org/tech-trends>) to find which utilities have already installed the technologies, or are planning to do so soon. Conduct a survey/interview of potable reuse facilities to assess current physical, chemical, and microbiological monitoring practices and understand what is considered needed by the utility in terms of monitoring process performance (including critical control points (CCPs)) and water quality – for both reverse osmosis (RO) and non-RO trains.
- Include novel sensors, tools, strategies, and/or configurations, as well as candidates for optimization and reason for use. Include both chemicals and pathogens, and online and benchtop tools.
- Survey regulators on compliance needs, particularly for DPR projects.
- Consider including vendors (those featured in LIFT Link and others) in the survey – new methods for water quality assessment are continuously under development or are being adapted from other industries to market to the water sector; however, vendors often don't fully understand a water utility's needs, which would enable better products.

Task 2: Develop Inventory of Monitoring Tools

- Develop inventory of existing and new/novel monitoring tools, technologies, and strategies that enhance monitoring of potable reuse applications based on survey, and include the approach's purpose (regulatory, process upset or optimization, outreach, etc.).
- From industry review, encourage the technologies absent from LIFT Link to go through the LIFT Technology Scan (<https://www.waterrf.org/technology-scans>) process, in order to build the existing technology library.

Task 3: Analysis to Identify Knowledge and Monitoring Gaps

- Based on the needs/inventory of tools, identify new knowledge needed to advance the potable reuse industry's approach to water quality assessment.
- Based on needs/inventory of tools, consider new monitoring tools that utilities need, and which tools could be refined or optimized. Include where in the treatment process they should be applied.
- Identify any critical needs or missed opportunities that have not been sufficiently researched and developed.
- Determine gaps that could be addressed by an existing water quality technology (if that technology was better understood or more recognized).
- Consider if different monitoring tools are needed for each treatment process/barrier (e.g., CCPs) to properly support the multi-barrier approach.

Task 4: Opportunities for Innovation

- Identify the biggest monitoring challenges, and the improvements that can be made.
- Consider if existing tools could be applied by utilities in novel or more useful ways: Which tools could be optimized to be more useful? Which tools are the best candidates to go to "the next level"? Can tool developers improve or adapt existing tools to better suit the need?
- Determine where there is room for new monitoring tools/approaches, and how/where should they be applied.
- More broadly, identify how we use the information/innovation that has been generated to drive the industry forward.
- Identify the innovations that will better or more effectively/efficiently ensure that product water meets all regulations and is protective of public health
- Determine applied research needs, which will advance industry practice with respect to water quality measurement/monitoring in potable reuse facilities.
- Determine where innovation in water quality measurement is needed most, and how it could benefit each of the following categories:
 - o Compliance/regulatory requirements
 - o Operations
 - o Water quality verification
 - o Public perception (e.g., voluntary CECs monitoring)
 - o Data pipeline management
 - o Cloud-based implementations

Expected Deliverables

- Guidance tool for conducting technology scans (from Task 2) – separate report possible.
- Final Report with technology assessments/scans (plus integration into LIFT).

Communications Plan

Please review WRF's *Project Deliverable Guidelines* for information on preparing a communications plan. The guidelines are available at <https://www.waterrf.org/proposal-guidelines>. Conference presentations, webcasts, peer review publication submissions, and other forms of project information dissemination are typically encouraged.

Project Duration

The anticipated period of performance for this project is 12 months from the contract start date.

References and Resources

The following list includes examples of research reports, tools, and other resources that may be helpful to proposers. It is not intended to be comprehensive, nor is it a required list for consideration.

- The Water Research Foundation. [Assessment of Techniques to Evaluate Water Quality from Direct and Indirect Potable Reuse Facilities](#) (4508).
 - The Water Research Foundation. [Characterizing and Controlling Organics in Direct Potable Reuse Projects](#) (4771).
 - The Water Research Foundation. [Monitoring for Reliability and Process Control of Potable Reuse Applications](#) (1688).
 - [LIFT Link](#) Subscribers have access through WRF credentials. For temporary access, contact [David Morroni](#).
 - [LIFT Tech Trends Tool](#).
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Proposal Evaluation Criteria

The following criteria will be used to evaluate proposals on a 100-point scale:

- Understanding the Problem and Responsiveness to RFP (maximum 20 points)
- Technical and Scientific Merit (maximum 30 points)
- Qualifications, Capabilities, and Management (maximum 20 points)
- Communication Plan, Deliverables, and Applicability (maximum 15 points)
- Budget and Schedule (maximum 15 points)

Proposal Preparation Instructions

Proposals submitted in response to this RFP must be prepared in accordance with the WRF document *Guidelines for Research Priority Program Proposals*. The current version of these guidelines is available at <https://www.waterrf.org/proposal-guidelines>, along with *Instructions for Budget Preparation*. The guidelines contain instructions for the technical aspects, financial statements, indirect costs, and administrative requirements that the applicant must follow when preparing a proposal.

Eligibility to Submit Proposals

Proposals will be accepted from domestic or international entities, including educational institutions, research organizations, governmental agencies, and consultants or other for-profit entities.

WRF's Board of Directors has established a Timeliness Policy that addresses researcher adherence to the project schedule. The policy can be reviewed at <https://www.waterrf.org/policies>. Researchers who are late on any ongoing WRF-sponsored studies without approved no-cost extensions are not eligible to be named participants in any proposals. Direct any questions about eligibility to the WRF project contact listed at the top of this RFP.

Administrative, Cost, and Audit Standards

WRF's research program standards for administrative, cost, and audit compliance are based upon, and comply with, Office of Management and Budget (OMB) Uniform Grants Guidance (UGG), 2 CFR Part 200 Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards, and 48 CFR 31.2 Contracts with Commercial Organizations. These standards are referenced in WRF's *Guidelines for Research Priority Program Proposals*, and include specific guidelines outlining the requirements for indirect cost negotiation agreements, financial statements, and the Statement of Direct Labor, Fringe Benefits, and General Overhead. Inclusion of indirect costs must be substantiated by a negotiated agreement or appropriate Statement of Direct Labor, Fringe Benefits, and General Overhead. Well in advance of preparing the proposal, your research and financial staff should review the detailed instructions included in WRF's *Guidelines for Research Priority Program Proposals* and consult the *Instructions for Budget Preparation*, both available at <https://www.waterrf.org/proposal-guidelines>.

Budget and Funding Information

The maximum funding available from WRF for this project is \$125,000. The applicant must contribute additional resources equivalent to at least 33 percent of the project award. For example, if an applicant requests \$100,000 from WRF, an additional \$33,000 or more must be contributed by the applicant. Acceptable forms of applicant contribution include cost-share, applicant in-kind, or third-party in-kind that comply with 2 CFR Part 200.306 cost sharing or matching. The applicant may elect to contribute more than 33 percent to the project, but the maximum WRF funding available remains fixed at \$125,000. **Proposals that do not meet the minimum 33 percent of the project award will not be accepted.** Consult the *Instructions for Budget Preparation* available at <https://www.waterrf.org/proposal-guidelines> for more information and definitions of terms.

Period of Performance

It is WRF's policy to negotiate a reasonable schedule for each research project. Once this schedule is established, WRF and its sub-recipients have a contractual obligation to adhere to the agreed-upon schedule. Under WRF's No-Cost Extension Policy, a project schedule cannot be extended more than nine months beyond the original contracted schedule, regardless of the number of extensions granted. The policy can be reviewed at <https://www.waterrf.org/policies>.

Utility and Organization Participation

WRF encourages participation from water utilities and other organizations in WRF research. Participation can occur in a variety of ways, including direct participation, in-kind contributions, or in-kind services. To facilitate their participation, WRF has provided contact information, on the last page of this RFP, of utilities and other organizations that have indicated an interest in this research. Proposers are responsible for negotiating utility and organization participation in their particular proposals. The listed utilities and organizations are under no obligation to participate, and the proposer is not obligated to include them in their particular proposal.

Application Procedure and Deadline

Proposals are accepted exclusively online in PDF format, and they must be fully submitted before 2:00 pm Mountain Time on Thursday, October 29, 2020. All proposal documents must be compiled into two (2) PDF files consisting of your technical review documents and your financial review documents. All forms and components of the proposal are available in the *Proposal Component Packet* zip file on the proposal website at <https://proposals.waterrf.org/Pages/RFPs.aspx>. An FAQ and a tutorial are also available. A login is required to access the proposal website and download the packet. Proposers are encouraged to create logins and verify the validity and compatibility of the system well in advance in order to avoid last-minute errors or delays.

The online proposal system allows submission of your documents until the date and time stated in this RFP. To avoid the risk of the system closing before you press the submit button, do not wait until the last minute to complete your submission.

Questions to clarify the intent of this RFP and WRF's administrative, cost, and financial requirements may be addressed to the WRF project contact, Erin Partlan at (571) 384-2095 or epartlan@waterrf.org. Questions related to proposal submittal through the online system may be addressed to Caroline Bruck at (303) 347-6118 or cbruck@waterrf.org.

5079 Utility and Organization Participants

The following utilities have indicated interest in possible participation in this research. This information is updated within 24 business hours after a utility or an interested organization submits a volunteer form, and this RFP will be re-posted with the new information. **(Depending upon your settings, you may need to click refresh on your browser to load the latest file.)**

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