



## REQUEST FOR PROPOSALS (RFP)

### *Quantifying the Performance of Source Water Protection Measures to Improve Utilities' Decision Making (5246)*

#### **Date Posted**

Monday, September 11, 2023

#### **Due Date**

Proposals must be received by 3:00 pm Mountain Time on Tuesday, November 14, 2023.

#### **WRF Project Contact**

Harry Zhang, PhD, PE, [hzhang@waterrf.org](mailto:hzhang@waterrf.org)

#### **Project Sponsors**

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

#### **Project Objectives**

- To advance source water protection and watershed-level point and non-point source pollution prevention, interception, and remediation strategies and to quantify the costs and benefits by focusing on high-priority situations.
- To identify and prioritize performance measures for both point and non-point source pollution that need to be applied to different protection activities to assess the economic value, return on investment, value of ecosystem services, as well as operational, water quality and quantity, and ecological outcomes.
- To develop a framework for measurement of these performance metrics at local, regional, and watershed scales.
- To provide clear and robust guidance to help utilities (a) identify targeted areas for source water protection that are relevant to their core business, (b) implement meaningful strategies and options based on current understanding of performance, and (c) prioritize meaningful performance measurement of interventions at the watershed scale.

#### **Budget**

Applicants may request up to \$200,000 in WRF funds for this project.

#### **Background and Project Rationale**

Source water protection (SWP) provides the first critical barrier against contamination of water that is used as a potable source. Key SWP activities, such as conservation of sensitive riverine

areas and direct intervention to control the generation of contaminants, form an integral part of a catchment-to-consumer protection strategy for assuring drinking water safety in a holistic fashion. As an example, according to AWWA's 2021 report, "Source Water Evaluation Guide for PFAS," understanding and controlling exposure to PFAS in drinking water begins with source water protection. SWP is a strategy that provides a utility or a water resource manager with an opportunity to avoid or reduce treatments that require chemical, energy, and human resources, by minimizing or eliminating contaminants to the source water to maintain a higher quality of water that can be treated and used to provide potable water. These strategies can provide long-term protection of source water to promote and maintain sustainable and resilient water supplies for utilities and municipalities.

As outlined in AWWA's 2021 report, "Source Water Protection Performance Metrics," it is crucial to implement robust and quantitative "performance-based monitoring and evaluation" (P-M&E) to determine whether SWP protection measures have met their established objectives (e.g., a specific SWP activity to demobilize PFAS has significantly reduced PFAS concentrations at a raw water intake). Of equal importance, effective P-M&E is needed to measure "return on investment," and demonstrate to decision makers, regulators, and customers when SWP programs provide value to the utility, customers, and the environment. This includes the evaluation of protective measures for both point and non-point source pollution from site to region, and to the whole of the watershed. Nevertheless, even very well-funded utilities and water resource management agencies may not have all the required professional and/or financial resources to design and undertake effective SWP programs at the required spatial scale (e.g., watershed) or temporal scale (e.g., decade), especially considering watersheds cross city, county, and state boundaries, which complicates implementation of SWP activities. Therefore, there is a strong need to build from the current state-of-the-practice and develop an enhanced approach for incorporating effectiveness metrics of P-M&E into source water protection measures (on an individual measure and integrated basis) that can directly link to water utility operational needs, improved overall utility performance, and increase accountability in spending funds on SWP programs by utilities and municipalities.

This research will (1) advance source water protection and watershed-level point and non-point source pollution prevention, interception, and remediation strategies, and quantify the costs and benefits of each; (2) develop a robust approach for integrating P-M&E metrics with cost-benefit analysis, life-cycle assessment, triple-bottom-line framework, and other relevant approaches to quantify the value of SWP strategies to reduce or prevent source water contamination (e.g., PFAS and nutrients). This includes perspectives from diverse utilities (e.g., based on land uses, weather patterns, geography, source of raw water such as riverine, lake/reservoir, and/or groundwater, and other criteria); (3) prioritize meaningful performance measurements such as water quality improvement data, environmental/ecological service value, and overall utility operational performance.

### **Research Approach**

The proposed research approach should include the following items.

#### (1) Literature Review.

The research team will conduct a comprehensive literature review of SWP performance measurements, including results from North America and beyond. This includes WRF's research efforts to date and studies by other organizations (e.g., AWWA, ASDWA, AMWA, and WEF). Please refer to the selected examples in the "References and Resources" section of this RFP. One of a number of pollutant groups of interest in this study is PFAS, although other contaminants of concern should also be considered. Based on all available published literature, the research team will synthesize the information (e.g., data, metrics, frameworks, and modeling tools) on measuring and quantifying performance of SWP practices, to (a) advance source water protection and watershed-level point and non-point source pollution prevention, interception, and remediation strategies, and quantify the costs and benefits of each by focusing on high-priority situations; (b) identify and prioritize performance measures for both point and non-point source pollution that need to be applied to different protection activities to assess the economic value, return on investment, value of ecosystem services, as well as operational, water quality and quantity, and ecological outcomes.

#### (2) Data Collection and Synthesis.

The research team will conduct a survey and targeted interviews with selected utilities and municipalities, with a goal of synthesizing real-world practices and case studies across a variety of geographic regions, sizes of utilities, and watershed land use compositions. The research team will synthesize case studies for measuring performance of SWP activities at the watershed scale (including scaling up from the site to the whole watershed through the use of modeling tools) for different climatic zones, hydrology, land uses, utility sizes, and performance measurement methods. This effort will support developing a framework for measurement of SWP performance metrics at local, regional, and watershed scales.

#### (3) Utility-facing SWP Guidance Document.

The research team will develop a utility-facing "state-of-the-practice" guidance document to guide utilities as they set overarching goals for a source water protection program, and identify on-the-ground SWP measures to track progress towards reaching the established goals (e.g., improvement of water quality at the water intake as relates to the deployment of an SWP measure). Technical details such as pros and cons of different methods/frameworks, expertise and data required, and challenges in setting targets related to those measurements should be included. Because one of the pollutant groups of interest in this study is PFAS, the guidance document should include one chapter on PFAS issues from an SWP perspective for easy reference by utilities. The document will also include a synthesis of case studies across different geographic regions, utility sizes, and utility governance structures in North America. A separate chapter in the guidance document will be included to summarize the knowledge gaps, research needs, and preliminary project concepts for recommended future research projects.

#### (4) Virtual Workshop.

A utility-focused invitation-only virtual workshop will be held with multiple utilities and municipalities across geographic regions that are facing similar challenges. The virtual workshop participants will also include the Project Advisory Committee (PAC) members (the technical

review committee managed by WRF), representatives from participating utilities, WRF's collaborators and partners, and other invitees recommended by WRF.

#### (5) Broader Outreach.

The research team will conduct one webcast hosted by WRF and collaborating organizations on the overall findings of this project. The research team is encouraged to submit one open access peer-reviewed journal paper, after the completion of the project. The research team should consider additional outreach activities, such as presenting project findings at conferences.

### **Expected Deliverables**

- A stand-alone comprehensive literature synthesis document, including annotations for the list of publications and resources used.
- A user-friendly utility-facing guidance document that includes:
  - SWP performance quantification methodologies and a synthesis of utility case studies across different geographic regions and utility sizes in North America.
  - A chapter on PFAS issues from a utility SWP perspective.
  - A chapter and supporting technical appendix that summarizes the knowledge gaps, research needs, and preliminary project concepts for recommended future research projects, including recommended means to address those remaining gaps.
- A utility-focused invitation-only virtual workshop for peer-to-peer information exchange and identification of future research needs, along with workshop planning and all supporting materials (e.g., agenda, presentations, meeting notes, and workshop summary).
- Broader outreach:
  - Webcast.
  - One submitted open access peer-reviewed journal paper.
  - Additional outreach products as applicable (such as conference presentations).

### **Communication Plan**

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

### **Project Duration**

The anticipated period of performance for this project is 24 months from the contract start date. The submission of one open access peer-reviewed journal paper can go beyond the project end 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.

AWWA (American Water Works Association). 2021a. Source Water Evaluation Guide for PFAS. Denver, CO: American Water Works Association. (<https://news.awwa.org/PFASGuide>)

AWWA (American Water Works Association). 2021b. Source Water Protection Performance Metrics. Denver, CO: American Water Works Association. (<https://www.awwa.org/Resources-Tools/Resource-Topics/Source-Water-Protection>)

Clary, J., J. Jones, M. Leisenring, P. Hobson, and E. Strecker. 2020. *International Stormwater BMP Database: 2020 Summary Statistics*. Project 4968. Denver, CO: The Water Research Foundation. (<https://www.waterrf.org/research/projects/annual-update-international-stormwater-bmp-database-and-expanding-communication>)

Clements, J., J. Henderson, and A. Flemming. 2021. *Economic Framework and Tools for Quantifying and Monetizing the Triple Bottom Line Benefits of Green Stormwater Infrastructure*. Project 4852. Denver, CO: The Water Research Foundation. (<https://www.waterrf.org/research/projects/economic-framework-and-tools-quantifying-and-monetizing-triple-bottom-line>)

Raucher R. et. al. 2020. *A Risk Management Framework for Managing Source Water Risks in the United States*. Project 4748A. Denver, CO: The Water Research Foundation. (<https://www.waterrf.org/research/projects/evaluation-risk-management-frameworks-and-tools-and-their-application-managing>)

Sham, C. H. et. al. 2015. *Preliminary Framework for Evaluating Source Water Protection Programs*. Project 4528. Denver, CO: The Water Research Foundation. (<https://www.waterrf.org/research/projects/workshop-establish-framework-evaluate-source-water-protection-programs>)

Sklenar, K. S. and L. J. Blake. 2010. *Drinking Water Source Protection Through Effective Use of TMDL Processes*. Project 4007. Denver, CO: The Water Research Foundation. (<https://www.waterrf.org/research/projects/drinking-water-source-protection-through-effective-use-tmdl-processes>)

Sklenar, K. S., C. H. Sham, and R. W. Gullick. 2012. *Developing a Roadmap and Vision for Source Water Protection for U.S. Drinking Water Utilities*. Project 4176A. Denver, CO: The Water Research Foundation. (<https://www.waterrf.org/research/projects/developing-roadmap-and-vision-source-water-protection-us-drinking-water-utilities>)

USEPA (United States Environmental Protection Agency). 2023. Green Infrastructure Modeling Toolkit. Updated May 16, 2023. (<https://www.epa.gov/water-research/green-infrastructure-modeling-toolkit>).

WRF (The Water Research Foundation). 2021. *Community-enabled Lifecycle Analysis of Stormwater Infrastructure Costs (CLASIC)*. (<https://www.waterrf.org/clasic>)

### **Proposal Evaluation Criteria**

The following criteria will be used to evaluate proposals:

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

## **PROPOSAL PREPARATION INSTRUCTIONS**

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

Proposals that include the production of web- or software-based tools, such as websites, Excel spreadsheets, Access databases, etc., must follow the criteria outlined for web tools presented in the *Web Tool Criteria and Feasibility Study for The Water Research Foundation Project Deliverables* at <https://www.waterrf.org/project-report-guidelines#webtool-criteria>.

### **Eligibility to Submit Proposals**

Proposals will be accepted from both U.S.-based and non-U.S.-based 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 \$200,000. The applicant must contribute additional resources equivalent to at least 33% 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% to the project, but the maximum WRF funding available remains fixed at \$200,000. Proposals that do not meet the minimum 33% of the project award will not be accepted. Consult the *Instructions for Budget Preparation* available at <https://www.waterrf.org/proposal-guidelines#RPP-instr-budget-prep> 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 3:00 pm Mountain Time on Tuesday, November 14, 2023.

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. Submit your proposal at <https://forms.waterrf.org/cbruck/rfp-5246>.

Questions to clarify the intent of this RFP and WRF's administrative, cost, and financial requirements may be addressed to the WRF project contact, Harry Zhang, PhD, PE; 571.384.2098 or [h Zhang@waterrf.org](mailto:h Zhang@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](mailto:cbruck@waterrf.org).



## ***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 on your settings, you may need to click refresh on your browser to load the latest file.)**

### **Anna Schroeder**

Engineering Supervisor  
South Platte Renew  
2900 S. Platte River Dr  
Englewood, CO 80110  
(303) 783-6884  
[Aschroeder@englewoodco.gov](mailto:Aschroeder@englewoodco.gov)

### **Robert McConnell**

Source Water Assessment Manager  
Tampa Bay Water  
2575 Enterprise Road  
Clearwater, FL 33763  
(727) 791-2376  
[rmcconnell@tampabaywater.org](mailto:rmcconnell@tampabaywater.org)