



This project is being funded through the Solicited Research Program's Nutrients Challenge Area (NUTR), which enables WRF to solve broadly relevant subscriber issues and challenges with targeted, sustained research efforts.

The objective of the NUTR challenge is to develop and share credible scientific information about nitrogen and phosphorus in wastewater to help regulators and permittees make informed decisions; and to better understand existing mechanisms of nutrient removal and recovery, best available technologies, and practical limits.

Solicited Research RFP

New approaches for improved nutrient management: Phase 1 (RFP #4974)

Project Objective

The objective of this project is to engage stakeholders from point and non-point source communities, as well as regulators, who are impacted by nutrient loading in water systems. Together, a research roadmap and action items will be developed which could include investigating new, holistic, and practical approaches to nutrient management such as incentives for utilities to adopt innovative technologies for nutrient removal, probabilistic permitting, watershed-based approaches, and data transparency based on sound science.

Budget

Proposals may request WRF funds up to \$100,000. WRF funds requested and total project value will be criteria considered in the proposal selection process.

Background

There is a need to assess new, holistic approaches to nutrient management that allow for innovation and more effectively target source water protection and water quality endpoints. It has been reported that current nutrient effluent permits developed by States may vary significantly in terms of the approach used to develop numeric limits as well as permit structure. Permits can depend on the characteristics of the waterbody and its sensitivity to water quality degradation as well as the variability and quality of the discharge and its location in the watershed. It is estimated that in some cases, such as in certain applications of adaptive management approaches or state variances, higher (less restrictive) limits are issued than would be necessary to meet water quality targets, while in others, limits and permit structures are unnecessarily too restrictive resulting in conservative designs and unnecessary additional infrastructure.

It has been argued by certain stakeholders that current municipal nutrient permitting approaches may result in overly restrictive effluent nutrient limits based on critical conditions that are unlikely to occur, exclusion of information about variability in effluent concentrations and treatment efficiency and reliability, and exclusion of temporal and spatial variability of the receiving water, acceptable risks of exceedance of nutrient criteria, and stressor response relationships. Other advanced permitting approaches to developing water quality-based effluent limits have been proposed as more appropriate for nutrient permit development. These approaches include predictive water quality modeling, probabilistic modeling, and the use of technology performance statistics. It is believed that such

approaches may require significant additional data, modeling capacity, expertise, and resources at the utility, state, and regional regulatory levels and would require more collaboration at various stages of the regulatory process (TMDL, waste load allocation, water quality standards, permitting). At present no procedure exists to assess these advanced permitting approaches in terms of necessary procedures, monitoring methods, and evaluation methods. Nutrient standards are developed differently in different states. This work should assess these permitting process by evaluating different nutrient species (inorganic and organic), summer and winter conditions, storm events, nonpoint sources, and variations in surface water and plant effluent flows and concentrations.

This research should be focused on understanding the watershed as a whole and provide a more holistic look at the issue. With a focus on water quality endpoints and source water protection, this work can better tie into watershed modeling and scenario development exercises that predict the watershed impacts of such approaches. It could also undertake analysis of the barriers to implementing these approaches, including the complex patchwork of state regulations, the diversity of stakeholders, and the complexity of chemical and physical variables. With a more comprehensive view, regulations will be more accepted. There exists an opportunity to move the needle on nutrient reduction specifically with opportunities for water quality trading, watershed-based permits, bubble permits, and seasonal long-term permits.

Research Approach

There is a large body of research available in nutrient management that needs to be synthesized in order to identify relevant research gaps that still need to be addressed. Stakeholders from the agriculture and water quality communities, regulators, and others impacted by nutrient loading in water systems can provide an increased understanding of nutrient management from a real-world perspective. A clear path forward needs to be established taking into account the needs of the water sector, experiences of stakeholders, and the state of the science of nutrient management.

This project is the first of a two-phased initiative to ultimately identify practical implementation methods to nutrient management. The overall desired outcome for Phase 1 is the development of a research roadmap which outlines various approaches to nutrient management. This roadmap will be based on an extensive review of existing information (including gray literature) and outcomes from a facilitated stakeholder workshop (managed by WRF). This roadmap will identify the scope for Phase 2.

Recommended tasks are as follows:

- **Task 1: Initial review of existing information.**
 - Comprehensive review of ongoing and past research, advanced permitting approaches related to nutrient removal regulations, and other approaches to nutrient management.
 - Examples of research to take into consideration include WRF projects NUTR1R06z “Nutrient Management Volume III: Development of Nutrient Permitting Frameworks”, LINK 1T11 “Modeling Guidance for Developing Site-Specific Nutrient Goals”, SIWM-17-17 “Crediting Water Quality Benefits from Stream Restoration: Implementation Case Studies and Potential for Crediting Guidance Application”, and current project NTRY-17-06 (#04826) “Towards Innovation-Stimulating Regulations”.
 - Examples of permitting approaches include nutrient registry (Iowa Program), Statewide Nutrient Reduction Cooperative (IRS 501(c)12) model for managing nutrient reduction programs), and State legislation for Watershed Improvement Fee.

- Examples of other approaches include reports and documents published by the Water Environment Federation, the National Association of Clean Water Agenda, the U.S. Water Alliance, etc.
- Task 2: Facilitation of stakeholder workshop.
 - The Principal Investigator will work closely with the WRF Program Director and the Project Advisory Committee (PAC) on the planning of this workshop, in particular the agenda and invite list.
- Task 3: Development of a research roadmap based on findings from Tasks 1 and 2.
 - Provide details to support Phase 2 scope of work and the required budget, as well as other projects and initiatives that should be done to address effective nutrient management.

Selection Process and Criteria

Selection of proposals is a very competitive process. Proposals will be reviewed by WRF and the Project Advisory Committee (PAC). This external review team may be complemented as needed by subject matter experts. As part of the evaluation process, WRF reserves the right to request interviews, either via conference call or in person, with qualified proposers if necessary.

Proposers are encouraged to develop and submit their intended research plan that meets the research goals of this RFP, provide sufficient details of their budget, as well as schedules and milestones that can successfully deliver on the stated research goals, objectives, and tasks that are proposed.

WRF will evaluate proposals on the following components:

- **Understanding the Problem and Responsiveness to RFP (25%)**

Does the proposal adequately explain the problem? Does it reflect knowledge of the issue and how solving the problem will benefit the water industry? Have the RFP objectives been adequately addressed? If proposed objectives differ from the RFP, do stated objectives address current or future needs of the water industry? Are data quality objectives specified?
- **Technical Approach and Scientific Merit (25%)**

Is the proposal prepared with supportive information and is it self-explanatory and clearly understandable? Is the proposed effort technically defensible? Is the approach practical? Can the project objectives be achieved in the stated time period with the allotted personnel and budget?
- **Management and Communication Plans (15%)**

Are the roles, responsibilities, and assignments clear? Do the supporting organizations on the team have complementary skills? Does the lead organization have adequate resources to provide the appropriate level of management, oversight, and project implementation? Is the Quality Assurance/Quality Plan acceptable? Are schedules and deliverables clearly defined?
- **Budget and Schedule (10%)**

Is the budget within the advertised budget for the project? Has the applicant provided appropriate and significant in-kind contributions to the project (at least 30%)? Is the level of effort allocated to each task logical? Is the Indirect Cost Rate reasonable (35% or less is competitive) and has it been detailed in the proposal? Is the schedule realistic? Do the proposed budget and schedule match funding needs to milestones and demonstrate the value of the research relative to the proposed cost?
- **Qualifications of Organization and Key Personnel (25%)**

Does the lead organization have demonstrated experience and expertise in the issues and objectives discussed in the RFP? Do the key project personnel have experience in the proposed area of research? Have key personnel committed an appropriate amount of time to the

project? Does the project team have strong facilitation skills? Are other organizations and partnerships involved?

Proposal Preparation Instructions

Proposals submitted in response to this RFP must be prepared in accordance with The Water Research Foundation's document *Guidelines for Focus Area Program Proposals*. These Guidelines are applied to the Solicited program as well. The most current version of these guidelines is available at: <http://www.waterrf.org/funding/ProposalDocuments/GuidelinesForFocusAreaProgramProposals.pdf>. The guidelines contain instructions for the technical aspects, financial statements, and administrative requirements that the applicant must follow when preparing a proposal.

Please note that the selection criteria listed here are different from those listed in the Guidelines for Focus Area Program Proposals document. The selection criteria in this RFP will be used to evaluate the proposal.

Eligibility to Submit Proposals

This RFP solicits proposals from all technically qualified applicants, including educational institutions, research organizations, federal or state agencies, municipalities, 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 <http://www.waterrf.org/funding/Pages/policies.aspx>. Researchers who are late on any ongoing WRF-sponsored studies without an approved no-cost extension are not eligible to be a named participant in any proposal. If you have any questions about your eligibility for WRF projects, please contact the WRF research staff listed at the bottom of this RFP.

Administrative, Cost, and Audit Standards

WRF's Solicited Research Program standards for administrative, cost, and audit compliance are based upon, and comply with, Office of Management and Budget Uniform Grants Guidance, 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 the WRF's *Guidelines for Focus Area 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 financial staff should review the detailed instructions included in WRF's annually released *Guidelines for Focus Area Program Proposals*.

Budget and Funding Information

The maximum funding available from WRF for this project is \$100,000. A minimum of 30 percent of the total project value must be contributed by the applicant (i.e., the applicant's minimum contribution must equal one-third of WRF funds requested). 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 30 percent to the project, but the maximum WRF funding available remains fixed at \$100,000. **Proposals that do not meet the minimum match of 30 percent of the total project value will not be accepted.**

Period of Performance

The proposed project schedule should be realistic, allowing ample time for the preparation of final reports and for review of project results. 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 <http://www.waterrf.org/funding/Pages/policies.aspx>.

Utility and Organization Participation

WRF is especially interested in receiving proposals that include both participation and contribution of resources from water utilities and organizations in the research effort. Information on utilities and/or organizations that have indicated an interest in participating in this research project are listed on the last page of this RFP. While WRF makes utility and organization participation volunteers known to applicants, it is the applicant's responsibility to negotiate utility and organization participation in their particular proposal, and the utilities and/or organizations are under no obligation to participate.

Application Procedure and Deadline

Proposals are now being accepted exclusively online in PDF format. Proposals must be submitted before 2:00 PM Mountain Time, Wednesday, February 27, 2019. All the forms and components of the proposal are available online in the "Proposal Component Packet" zip file. A login is required to download this packet and use the proposal website. This information is available at <https://proposals.waterrf.org/Pages/RFPs.aspx>.

The online proposal system allows submission of your documents until the date and time stated in the 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 Request for Proposals and WRF's administrative, cost, and financial requirements may be addressed to the Program Director, Christine Radke, at 571-384-2106 or by e-mail at cradke@waterrf.org.

UTILITY AND ORGANIZATION PARTICIPANTS

To date, no utilities have indicated an interest in participating in this research. As utilities express interest, their information will be added below within 24 business hours of receipt of 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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