



## REQUEST FOR PROPOSALS (RFP)

### Guidance for Algaecide Application in Source Waters (5259)

**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:** Sydney Samples, [ssamples@waterrf.org](mailto:ssamples@waterrf.org)

**Project Sponsors**

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

**Project Objectives**

The objective of the project is to develop a guidance document that will help utilities optimize their algaecide application and develop monitoring protocols.

**Budget**

Applicants may request up to \$150,000 in WRF funds for this project. In-kind support is encouraged, though not required.

**Background and Project Rationale**

While cyanobacteria are a normal component of the natural biota in freshwater systems, they are widely recognized as sources of cyanotoxins and unpleasant taste and odor. The rising number of cyanobacterial blooms that watersheds are experiencing negatively impacts local communities, draws the attention of water suppliers, and requires actions. Climate change exacerbates this problem; toxin-producing cyanobacteria blooms are increasing in more temperate regions, and droughts and heatwaves are causing areas prone to cyanobacterial blooms with increased frequencies.

To combat the problem, algaecides are commonly used in reservoirs to control cyanobacterial growth, consequently reducing the cyanotoxins and taste and odor compounds in source waters. Algaecides provide effective short-term algae control. The most commonly used

algaecide is copper sulfate, largely due to its effectiveness, cost efficiency, and general safety to humans and aquatic life.

Algaecide application is not a simple science. There are a number of physical, chemical, and biological factors that impact its effectiveness. For example, the distribution of the algaecide within the reservoir can impact dosing success. Stratification and mixing processes that occur in a water body can reduce the cyanobacteria concentration at the reservoir's surface, which can make knowing when and where to dose algaecide for maximum effectiveness a difficult endeavor. Despite its common use in reservoirs to control algae, there is no industry-wide guidance for algaecide application nor appropriate protocols to measure the effectiveness of the algaecide application. This research will fill a very needed industry gap and provide guidance that utilities can use to optimize their algaecide application and monitoring protocols.

### **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 listed objectives. The following approach is intended as a starting point.

The overall project objective is to develop a guidance document that will help utilities optimize their algaecide application and develop monitoring protocols to determine the success of the application.

At a minimum, the research team must:

- Conduct a comprehensive literature review
- Survey utilities to catalogue and evaluate their current algaecide practices
- Host workshop(s) or conduct interviews with utilities
- Analyze the results and develop a guidance document

The final guidance document should provide clear guidance and details on factors such as: reservoir depths and surface area, flow through characteristics, detention times, stratification issues, temperature gradients and wind effects, water chemistry characteristics that may affect dosage rates and/or type of algaecide to use, algaecide application rates and contact time  $T_{10}$  requirements, points of application (surface spreading, influent pipeline and/or submerged injection, etc.), mixing effects, ancillary environmental impacts and concerns of the algaecide, potential subsequent impacts of the algaecide to the treatment process (i.e. change in pH, alkalinity, cell lysing with subsequent taste and odors), permitting requirements, etc.

### **Expected Deliverables**

- Literature review
- Guidance manual
- Workshop or interview writeup

Other optional deliverables may include, but are not limited to:

- Peer-reviewed journal article

- Case studies
- Webcast
- Conference presentation(s)

### **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 18-24 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.

- Wert, E. C., F. A. Kibuye, A. Zamyadi, V. Gaget, C. Owen, R. Hofmann, and H. Almuhtaram. 2023. *Technical Report: Developing Guidance for Assessment and Evaluation of Harmful Algal Blooms, and Implementation of Control Strategies in Source Water*. Project 4912. Denver, CO: The Water Research Foundation.
  - Cornwell, D. A., C. Seidel, B. Stanford, and C. Adams. 2018. *Technical Report: Cyanobacterial Blooms and Cyanotoxins: Research Priorities for Drinking Water Protection*. Project 4657. Denver, CO: The Water Research Foundation.
  - Sklenar, K., J. Westrick, and D. Szlag. 2016. *Technical Report: Managing Cyanotoxins in Drinking Water: A Technical Guidance Manual for Drinking Water Professionals*. Project 4548. Denver, CO: The Water Research Foundation and American Water Works Association.
  - Hobson, P., S. Dickson, M. Burch, O. Thorne, L. Tsymbal, J. House, J. Brookes, D. Chang, S. -C. Kao, T. -F. Lin, K. Bierlein, and J. Little. 2012. *Technical Report: Alternative and Innovative Methods for Source Water Management for Algae and Cyanobacteria*. Project 4094. Denver, CO: Water Research Foundation.
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### **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

The Emerging Opportunities Program has unique proposal requirements. Please follow the submission instructions below. Proposals not adhering to the guidelines below will not be accepted.

The entire proposal, **excluding** the proposal cover worksheet, resumes, budget form, budget narrative, co-funding support form (when applicable), schedule, and references, should **not exceed ten pages in length**. Proposals must include the following components.

- **Proposal Cover Worksheet:** The *Proposal Cover Worksheet* is available at <https://www.waterrf.org/proposal-guidelines#RPP-proposal-coversheet>
- **Background and Statement of Need:** Provide a brief summary of the current state of knowledge for the issue that the proposed research will help address, and the drivers for the proposed research.
- **Objectives:** The proposed research objectives should be clearly identified in one or two sentences.
- **Technical Approach:** Describe how the proposed research will be conducted and the tasks necessary to accomplish the objectives.
- **Benefit to WRF Subscribers:** Identify the practical benefits of the proposed research to water utilities and the water community.
- **Research Team and Other Participants:** Identify the key members of the research team and provide brief statements of their qualifications to conduct the proposed research. Identify any other organizations that have committed to collaborate on the proposed research. Curriculum vitae or resumes for research team members are required.
- **Budget:** A detailed budget is required. The proposal should identify the amount of WRF funds requested and any other cost-share, in-kind, or cash support for the proposed research. Cost-share, in-kind, and cash support are encouraged but not required for submission. The following items will need to be included with the budget. *Instructions for Budget Preparation* are available at <https://www.waterrf.org/proposal-guidelines#RPP-instr-budget-prep>.
  - Proposal Budget Form: The *Proposal Budget Form* can be found at <https://www.waterrf.org/sites/default/files/file/2022-09/BudgetForm.xlsx>.
  - Budget Narrative (see *Instructions for Budget Preparation*)
  - *Emerging Opportunities Co-Funding Support Form* (when applicable): Each co-funding organization providing cash to the project payable directly to WRF must complete a separate *Emerging Opportunities Co-Funding Support Form* and include it with the proposal package. The form is available at <https://www.waterrf.org/proposal-guidelines#RPP-co-fund-support-form>.
- **Schedule:** A detailed schedule is required.
- **References** (optional): Detailed citations are not required in the proposal but may be provided at the discretion of the researcher.

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 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.

### **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-5259>.

Questions to clarify the intent of this RFP and WRF's administrative, cost, and financial requirements may be addressed to the WRF project contact, Sydney Samples, [ssamples@waterrf.org](mailto:ssamples@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.)**

N/A