SFUND RECORDS CTR
46870

American Water Works Association
RESEARCH FOUNDATION

Final (RFP 2530) March 1998

REQUEST FOR PROPOSALS

APPLICATION OF BIOREACTOR SYSTEMS TO LOW-CONCENTRATION PERCHLORATE-CONTAMINATED WATER (RFP 2530)

Objective

1. Evaluate the efficiency of a biological process to reduce perchlorate concentrations of up to 1,000 micrograms per liter to drinking water action levels of 4-18 micrograms per liter,
2. Evaluate the impact of co-contaminants, such as nitrate and volatile organic compounds (VOCs), on process performance, and
3. Characterize process effluents and define post treatment requirements.

Background

A limited number of bioreactor systems have been successfully developed to treat water streams with high concentrations of perchlorate. Examples are the Aerojet process using a GAC/fluidized bed under anoxic conditions and the suspended growth reactor using *W.succinogens* HAP1 developed by Tyndall A.F.B. The ability of a bioreactor to reduce low concentrations of perchlorate, approximately 1,000 micrograms per liter or less, to drinking water action levels of 4-18 micrograms per liter, is an important knowledge gap. Another important knowledge gap is whether bioreactors developed for removal of nitrate (denitrification) can also be applied to removal of perchlorate.

Research Approach

Perchlorate contamination of drinking water is currently impacting at least 12 million consumers. Effective treatment technologies for perchlorate removal or destruction are needed immediately. In order to expedite the research process, this project will be undertaken in two phases with the intent that one of the contractors selected for Phase I will continue as the contractor for Phase II. Phase II continuation of the project will be contingent upon several factors, including: success of Phase I, availability of funding for Phase II, and PAC and AWWARF approval of the detailed scope for Phase II work. The AWWA Research Foundation reserves the right to issue a Request for Proposals (RFP) for Phase II work if this is deemed appropriate.

The researcher should provide a detailed scope of work and proposal for Phase I, as defined below. The researcher should also provide a brief general description of the plan for Phase II and

provide documentation that the research team has the capability and facilities to accomplish the Phase II research as described below. The Crafton-Redlands Plume in the Redlands, California area will be required to be investigated as a pilot-scale study site in Phase II. The AWWARF funding availability for Phase II is estimated at $250,000 for a single award.

Phase I

This project should begin with a brief literature review of potential bioreactor treatment systems potentially applicable to perchlorate contamination. This literature search should include bioreactor systems used for similar contaminants, such as nitrate. Based on this information, bench-scale experiments should be planned and conducted to evaluate several conditions pertinent to drinking water and low concentrations of perchlorate. Example factors to consider are:

1. Reactor type and configuration (fixed-film, continuous-flow).
2. Influent concentration of perchlorate (between 1,000 micrograms per liter and the action level (18 micrograms per liter).
3. Carbon source and nutrient requirements.
4. Identification of reaction mechanism and possible formation of reaction intermediates.
5. Determine reaction rates.
6. Operating conditions (ranges) (e.g., pH, temperature, residence time).
7. Influence of co-contaminants, including nitrate and VOCs such as trichloroethylene (TCE), perchloroethylene (PCE), etc. It is the intent that these tests be conducted on real water matrices that are as representative as possible of those waters known to be impacted by perchlorate.
8. Effect of influent dissolved oxygen on operating performance.
9. Characterization of the effluent concentrations of perchlorate, chloride, total organic carbon, heterotrophic plate count, pathogens and disinfectant byproduct formation potential, as well as establishing mass balances for the treatment process.
10. Identification of post treatment requirements, especially the need for filtration and disinfection.
11. Estimate costs and scale-up issues.

Results of the Phase I work should be summarized in a final report. In addition to documenting Phase I activities and results, this report should also be suitable for use in Phase II activities. The goal of Phase II activities (not directly funded in this RFP) is to further develop design data and operating procedures to accomplish the desired perchlorate removals at pilot-scale. A brief description of currently anticipated Phase II activities is presented below. Additional details concerning Phase II activities will be developed in the course of the Phase I work.

Phase II

Following completion of the bench-scale work, a separate pilot-scale project should be initiated approximately two years from now. The pilot-scale work will further develop the most promising bench-scale biological treatment system. In general, the pilot-scale work should evaluate:

- Systems integration
- Scaling factors

- Process control capital & operating costs
- Operability

Project Advisory Committee

Project Advisory Committees (PACs) are organized by the AWWA Research Foundation (AWWARF) for each funded project to provide guidance, review all reports and significant materials, and generally monitor project performance in behalf of AWWARF and the water utility industry.

Quality Assurance

Each proposal must include a description of the procedures that will be used to ensure the quality of the data for the project. If the project involves laboratory analyses, this description should indicate whether the laboratory performing the analyses is accredited or state certified for the particular analysis. If the laboratory is not certified, and/or nonstandard methods are used, detailed quality assurance/quality control procedures must be submitted with the proposal.

Funds for this research project are provided, in part, by federal funds administered through the United States Environmental Protection Agency. Therefore, a Quality Assurance Narrative statement will be required prior to the commencement of any work on this project. The Quality Assurance Narrative statement must state that the project team including any subcontractors will meet the EPA Quality Assurance objectives and requirements.

Budget and Time Schedule

Two separate awards are anticipated for Phase I activities. The maximum Phase I funding available from AWWARF for these two projects is $550,000. Each project will have a maximum funding level of $275,000. The contractor must contribute a minimum 25 percent of the total project cost. Therefore, the total individual project cost is $367,000 ($275,000 in AWWARF funds and $92,000 in contractor contribution). This contribution can either be direct funding or in-kind matching of such items as personnel costs, analytical and support services, facilities, consulting services, etc. The submitting organization may elect to contribute more than 25 percent to the project but AWWARF's maximum contribution remains fixed at $275,000 per award. Proposals that request less than $275,000 from AWWARF need only contribute 25 percent of the total project cost. Funds for this research are provided, in part, by federal funds administered through the United States Environmental Protection Agency. The funds have been earmarked to East Valley Water District and will be managed by AWWARF. **Award of these Phase I contracts are contingent upon receipt of the Fiscal Year 1998 Congressional appropriation for perchlorate research.**

The project period should be realistic, anticipate possible starting delays, and provide ample time for the writing of final reports and for PAC review of project results. Progress reports will generally be required on a periodic basis (every four months). The final report must be completed in accordance with the AWWA Research Foundation *Format-Style Guide for*

Research Reports and should include a separate chapter on recommendations to utilities. Independent of this contract, AWWARF will fund the PAC described above.

Phase II funding will be addressed upon completion of Phase I activities.

Federal Funding Requirement

Funds for this research project are provided, in part, by federal funds administered through the United States Environmental Protection Agency. Therefore, AWWARF contractors will be required to follow the six affirmative steps stated in 40 CFR 33.240 or 40 CFR 31.36(e), as appropriate.

Equal Opportunity and Minority Contractors

AWWARF has a policy of non-discrimination and abides by all laws, rules, and executive orders governing equal employment opportunity. As employers, AWWARF contractors may not discriminate on the basis of age, sex, race, religion, color, national origin, handicap or veteran status. AWWARF expects its contractors to accept the goal of having a workforce that generally reflects the minority composition of the community in which it is located. It is the policy of AWWARF to encourage proposals from qualified minority owned or directed institutions.

Utility Participation

AWWARF is especially interested in proposals which include both the participation and contribution of resources from utilities in the research effort. Information on utilities that have indicated an interest in participating in this research project is available by calling the RFP desk at 303/347-6117 or 303/347-6211. However these utilities are under no obligation to participate. Their level of participation is solely their decision. If asked to participate by several proposers, the utility may choose to work with any, all, or none of them.

Water Industry Database

AWWA and AWWARF have jointly developed a water industry database containing key utility data. To assist in the completion of their studies contractors are encouraged to obtain summary profile statistics through the AWWARF project manager.

Past Performance

The AWWA Research Foundation's policy on timeliness has been revised for 1998. The policy can be found on the Foundation's website at www.awwarf.com in Research News in the Proposal Guideline section. Timeliness of researcher performance on past AWWARF projects will be a factor in proposal selection. Further, researchers who are late in any ongoing AWWARF sponsored studies without an approved no cost extension will not be eligible to submit proposals for the 1998 funding cycle. Researcher ineligibility includes involvement in a proposed 1998 project as a principal or co-principal investigator. If you have any questions

about your eligibility for 1998 projects, please contact your current AWWARF project manager directly.

Application Procedure and Deadline

The general guidelines for preparing solicited proposals are enclosed. The guidelines contain certain provisions that the submitter should be aware of when preparing a proposal. **An enforceable page limit on the project description has been defined. Proposals exceeding the page limit for the project description will not be considered.** Proposals are to be submitted to the project manager, Frank J. Blaha, Project Manager, and must be postmarked on or before **May 4, 1998**. Questions to clarify the intent of this Request for Proposal may be addressed to the project manager at 303/347-6244 or by e-mail at fblaha@awwarf.com. Eight copies of the proposal should be sent to:

Frank J. Blaha, Project Manager
AWWA Research Foundation
6666 W. Quincy Avenue
Denver, CO 80235

General information on AWWARF is described in our website.

American Water Works Association
RESEARCH FOUNDATION

6666 W. Quincy Ave. • Denver, CO 80235 • (303) 347-6100 • Fax: (303) 730-0851

1998 PROPOSAL GUIDELINES FOR SOLICITED PROPOSALS

The focus of the solicited proposal process is to promote basic and applied research topics, as conceived and developed by AWWARF's Research Advisory Council, for the purpose of preparing the water community to meet the current and future needs of its subscribers.

Table of Contents

Page No.

The AWWA Research Foundation 2
AWWARF Guidelines for Preparation of Solicited Proposals 4
Instructions for Budget Preparation 8
Attachments:
- Proposal Cover Worksheet 9
- Budget Form 10
- In-Kind Contributions Form 11
- Solicited Proposal Rating Sheet 12

NEW IN 1998:

- **Proposal Cover Worksheet must be submitted with proposal (page 9).**
- **Page length requirement for the Project Description section of proposals will be enforced (page 6).**
- **8 copies of proposal must be submitted (page 5).**

New in 1997:

- In-kind contributions worksheet is added (page 11).
- In-kind dollar values must be included in letters or participants providing in-kind must sign proposal (pages 7 and 8).
- Researchers' role in publication process is identified, and researchers are reminded to allocate resources for the publication process and for periodic reporting (page 5).
- Evaluation criteria identification added to the proposal requirements (page 6, Project Description).
- Foundation's copyrighted logo should not be displayed on proposals (page 6).

THE AWWA RESEARCH FOUNDATION

The mission of the American Water Works Association Research Foundation (AWWARF) is to *advance the science of water to improve the quality of life*. This is achieved through technology transfer of research advances that allow utilities to meet current and future needs of the drinking water community. AWWARF's research embraces the many diverse areas required to provide consumers a safe and desirable drinking water:

- Development and maintenance of water resources
- Monitoring and analysis
- Storage and distribution system operations
- Utility planning and management
- Treatment technologies
- Health effects issues
- Environmental concerns

The American Water Works Association Research Foundation (AWWARF) serves as a centralized, nonprofit research organization for the drinking water community. It is governed by a nineteen member Board of Trustees (BOT) that consists primarily of utility representatives. More than 1,000 subscribing utilities, consulting firms, manufacturers and hundreds of volunteers support the research efforts of AWWARF. AWWARF is funded primarily by a voluntary subscription program through which water utilities contribute an annual subscription fee based on water production.

Solicited Research Program

The BOT appoints and is technically supported by the Research Advisory Council (RAC). The twenty-three member RAC is responsible for developing solicited research recommendations, which the BOT uses as a basis for final research funding decisions. AWWARF annually reserves approximately 70 percent of its research funds for solicited research, including applications and collaborative research. Research topics that originate with the RAC typically address both applied and innovative research ideas. The solicited areas are derived from the issues within the following six goal areas of the Strategic Research Plan.

- Protect the drinking water consumer from microbial risk.
- Protect the drinking water consumer from adverse health effects due to chemicals.
- Improve utility management to obtain optimum water quality and system reliability.
- Improve utility infrastructure for the reliable delivery of high quality water to the customer tap.
- Provide science and technology to the drinking water community to improve public and customer relations.
- Ensure access to and wise use of water resources and protection of the environment.

Technology Transfer

AWWARF's mission is not complete until research results are put to work in the drinking water community. To this end, the Research Foundation produces reports, periodicals, conferences, and videotapes to spread the word of completed projects and their applications. Most AWWARF projects result in the publication of a final report that is distributed to AWWARF subscribers and marketed worldwide to water utility professionals.

AWWARF GUIDELINES FOR PREPARATION OF SOLICITED RESEARCH PROPOSALS

These guidelines outline the requirements for submitting a solicited proposal and explain the process used to review, rank and fund these research proposals. Additional, specific instructions are included in the RFPs. AWWARF is able to fund only one proposal for each Request For Proposals (RFP), unless otherwise specified. Please note: the AWWARF dollar amount specified in the RFP is the maximum amount AWWARF will provide toward achieving the goals specified in the RFP.

As indicated in the RFP, the researcher must obtain or contribute in-kind services, cash, or a combination of the two amounting to at least 25 percent of the total cost of the proposed project. Although in-kind contributions can come from a variety of sources, the primary objective of in-kind services is to encourage water utility participation in the project. Since AWWARF is primarily funded by the drinking water utility community, water utility involvement is strongly encouraged. In-kind services can include labor, materials, or other similar services.

Solicited Proposal Process

The review of the proposals and the selection of the successful submission is performed by an independent project advisory committee (PAC). PACs are composed of volunteer professionals with expertise in the RFP topic area. All proposals, reports and reviews shall be privileged communications and available only to AWWARF staff, Board of Trustees, and PAC members. The general criteria used for proposal evaluation are detailed on the rating sheet and proposal evaluation form on pages 12 and 13.

AWWARF expects projects to be completed within the project period and proposers should be aware that the timeliness of their past performance on AWWARF projects will be considered during proposal selection. Further details on the AWWARF policy regarding timeliness can be found on the Foundation's website at http://www.awwarf.com in the Proposal Guidelines section under Research News.

GENERAL AWWARF REQUIREMENTS

Standard Agreement Conditions: The Foundation includes special contract provisions as a condition of research awards. Acceptance of these contract conditions is a requirement of AWWARF funding. Researchers should determine, before submission of a proposal, that such conditions are likely to be acceptable to the submitting organizations and its subcontractors. Please note: our standard funding agreement reflects AWWARF's intention to solely own and publish a final report. A copy of AWWARF's standard agreement is available upon request.

Inventions: If the research is likely to produce inventions, new products or processes (or improvements thereof), include a statement defining the relationship between the proposed research and any pre-existing patents or patent applications owned or controlled by the applying

organization, participants, or any subcontractor. Identify the patents or patent applications and attach copies. If a patent application could result from the proposed project, include a statement as to the proposed ownership of any resultant patent. **NOTE: AWWARF does not endorse or product-test commercial products or processes.**

Equipment Purchase: In general, AWWARF will not pay for the purchase of major equipment for research tasks. Researchers submitting proposals should already possess, be willing to purchase or lease, or have access to the appropriate equipment and instruments to complete the proposed research tasks.

Publication: The Foundation plans to publish a final edited report for all solicited projects. The final edited report will be published as a camera-ready document. Researchers should allocate adequate resources and personnel for developing a final report that is technically sound and adheres to the Foundation's "Format Style Guide for Preparing Research Reports." Researchers should also be prepared to respond to an editor's review of the final report and to make changes where necessary.

Equal Opportunity/Affirmative Action: AWWARF has a policy of non-discrimination and abides by all laws, rules, and executive orders governing equal employment opportunity. AWWARF contractors will be required to agree not to discriminate on the basis of age, sex, race, religion, color, national origin, handicap or veteran status. AWWARF expects its contractors to be equal opportunity employers who accept the goal of having a work-force that generally reflects the minority composition of the community in which it is located. It is the policy of AWWARF to encourage proposals from qualified minority owned or directed institutions.

AWWARF may advertise RFPs for selected projects during various times of the year. **8 copies** of the proposal are to be submitted (**postmarked**) by the date indicated in the specific RFP. Proposals should be sent to:

Project Manager (as named in the RFP)
AWWA Research Foundation
6666 West Quincy Avenue
Denver, CO 80235

Proposals **postmarked** after the deadline will not be considered.

If you have any questions about the solicited proposal process, contact the Project Manager listed in the RFP, or Debbie Brink at 303/347-6109, by FAX at 303/730-0851, or by e-mail at dbrink@awwarf.com.

WHAT SHOULD THE PROPOSAL INCLUDE?

(Note: The Foundation's logo is copyrighted and should not be displayed on proposals.)

Proposals must include the following components with maximum page lengths shown in parentheses. **Length of the Project Description section can under no circumstance exceed the maximum indicated. Proposals exceeding the maximum page length in this section will not be considered.** Text should be on letter-sized paper and single-spaced with minimum margins of one inch on the sides, top, and bottom. Font size of text should be no smaller than the equivalent of 12 point.

The enforced page limit for the Project Description section has been instituted in response to numerous requests by the research community. The purpose of the limit is to ensure a fair and level playing field for all submitters.

A. Proposal Cover Worksheet -- Use attached form (page 9).

B. Project Abstract (one page) -- Prepare an abstract summarizing research objectives, technical approach, anticipated results, name of submitting organization, participating water utilities, researcher names, budget amount requested from AWWARF and the total of in-kind contributions.

C. Table of Contents (one page) -- Pages should be numbered.

D. Background (two pages) -- Provide a summary of the topic background including the current state of knowledge, regulatory perspective where applicable, and significance to water utilities.

E. Project Description (twenty pages) -- Provide a clear and concise detailed scope of work which includes the objective of the research, the methods that will be followed, as well as the nature and extent of the anticipated results. This section should also include a discussion of specific criteria that can be used to evaluate the development and success of each project objective.

F. Applications Potential (one page) -- Define the practical benefits of the proposed project to the water industry. What will be the products of the research (e.g., knowledge, protocol, instrument, software package, etc.)? How can they be used, and what level of sophistication will be required? Define the steps taken in the project to ensure practical application (e.g. utility involvement). Where possible, estimate additional efforts following project completion that will be needed prior to implementation.

G. Quality Assurance/Quality Control (QA/QC) (as required) --A detailed description of the procedures that will be used to ensure the quality of project data e.g., statistical basis for number of analyses, statistical methods to be used in data evaluations, sample duplicates, blanks, blind samples must be included. If the project involves laboratory analyses, this description should

indicate whether the laboratory performing the analyses is accredited or state certified for the analytes of concern. If the laboratory is not certified, and/or nonstandard methods are used, detailed quality assurance/quality control procedures must be submitted with the proposal.

H. Schedule (two pages) -- Estimate the duration of the project's research phase and the time to prepare the draft final report. In general, the project start date should be at least 3 months following submission of the proposal. Periodic progress reports (4 month intervals) for technical review by the Project Advisory Committee (PAC) are required throughout the research phase of the project. Submission of the draft final report will be required three months after the last periodic report, and the revised draft final report must be submitted five months later.

I. Statement of Qualifications (ten pages) -- Identify the individuals who will significantly contribute to the project, including the percentage of time to be committed by each. Include a short description or abbreviated resume for each individual. If necessary, a separate list of relevant publications may be attached.

J. Budget (one page) -- Using the attached Budget Estimate Form (page 10), provide a realistic budget, showing separate cost estimates for salaries and wages, fringe benefits, expendable supplies, services, travel, subcontracts, other direct costs, and overhead. Instructions for budget preparation are provided on the following page. **Please note:** researchers will be responsible for preparing a five to twenty page periodic report at four month intervals, responding to a PAC's review of periodic reports and a final report, responding to an editor's comments on the final report, and preparing a two to three page project profile. AWWARF or in-kind funding should be allocated for these tasks.

For all participating utilities and other participants, letters of commitment, which confirm the type and dollar value of indicated contributions, must be included in the proposal and listed on the In-Kind Contributions Worksheet on page 11. (See Instructions for Preparation of the Budget on page 8). Only those in-kind contributions confirmed by letters of commitment will be considered by the selection committee. Furthermore, the scope of work must be based only upon the requested AWWARF funds and those in-kind contributions for which the dollar value is confirmed. Participating utilities or organizations are not required to provide separate letters of commitment if a qualified representative signs the proposal. Proposals requesting funds from AWWARF greater than those indicated in the RFP will not be considered.

INSTRUCTIONS FOR BUDGET PREPARATION

Your proposed budget will be one component considered in the selection process and it should be specific and complete in every detail. Supporting schedules (as described below) which provide the basis for the project's costs must be provided. A cost breakdown summary including in-kind contributions using the AWWARF Budget Form (see page 10) must be included with the proposal and include the total estimated cost for each cost element on a per year basis. The In-Kind Contributions Worksheet (see page 11) must also be included with the proposal. The type (e.g., labor, materials, etc.) and dollar value of all in-kind contributions must be confirmed by letters of commitment. Participating utilities or organizations are not required to provide separate letters of commitment if a qualified representative signs the proposal. **In-kind contributions will not be considered in the proposal selection process unless a letter of commitment with the dollar value is included or a representative for the contributing organization signs the proposal.** Furthermore, the scope of work must be based only upon the requested AWWARF funds and those in-kind contributions for which the dollar value is confirmed. Proposals requesting funds from AWWARF greater that those indicated in the RFP will not be considered.

1. **Direct Labor.** Identify the name and title of each project participant and the number of hours to be spent on the project and the total cost (including overhead).
2. **Subcontracted Effort.** The estimated subcontract cost elements must be supported in a manner similar to the required detail for the primary contractor.
3. **Travel Expense.** AWWARF will accept as a direct charge only that travel required to perform the project scope of work and one conference presentation per year to present project results. Attach a schedule indicating the need for the proposed travel, the estimated number of trips required, destinations, mode and cost of transportation, and number of days subsistence per trip for each destination.
4. **Equipment Rental.** For each proposed item with a rental cost of more than $1,000, provide a description of the item and the rental cost.
5. **Purchased Special Equipment.** Capability to perform work with existing facilities and equipment is assumed. It is AWWARF's policy not to purchase equipment. If some special purpose items are needed solely for this contract and are not available by other means (contractor assets, lease, etc.) provide the following information for each item of required equipment: vendor; model number; quantity; unit cost and source of cost/price (i.e., quote, catalog); description of the use or application.
6. **Other Direct Material.** For line items in excess of $1500, provide information necessary to understand what is being obtained.

PROPOSAL COVER WORKSHEET

RFP # ____

Title: _____

Personnel:

Principal Investigator: _____
Organization: _____
Address: _____
_____
Phone/Fax #, e-mail: _____

Co-Principal Investigator: _____
Organization: _____
Address: _____
_____
Phone/Fax #, e-mail: _____

Other personnel: _____
Organization: _____
Address: _____
_____
Phone/Fax #, e-mail: _____

Participating Utilities:

_____
_____
_____

Project Period: _____

AWWARF Funds Requested: $_____

In-Kind Contributions: $_____

Total Project Budget: $ _____

Person responsible for contract or administrative matters:
Name: _____
Address: _____
_____
Phone/Fax #, e-mail: _____

Budget Form				
		AWWARF Funds	**In-Kind Contributions**	**Total**
Direct Cost				
Personnel+ (Name, # of Hours, Hourly Rate, Total) _____ _____ _____ _____ _____ _____ _____	% Time Allocated to Project* _____ _____ _____ _____ _____ _____ _____			
Subtotal Direct Labor				
Fringe Benefits at _____% of Direct Labor				
Travel**				
Materials and Rented Equipment				
Computer/Phone/Postage				
[Other appropriate line items] _____ _____ _____ _____				
Total Direct Cost				
Indirect Cost (at _____% of direct costs)				
In-kind Contributor and Amount				
_____ _____ _____ _____				
Total				

DO NOT COMPLETE SHADED AREAS

+Principal Investigator, graduate research assistants, secretary, etc. Subcontractor(s) and consultants should also be indicated.

* Percent of total time (consider all projects and commitments) allocated to project on an annual basis.

**Attach separate page with travel expense details per Instructions for Budget Preparation.

In-kind Support Worksheet for Participating Utilities and Other Participating Organizations

Name of Organization	Name of Contact	Letter of Support (yes/no)	Amount Specified in letter (US$)
		*Total In-kind ($)	

*Please note: The scope of work must be based only on this amount plus the AWWARF funding and any in-kind contributions provided by the organization(s) submitting and signing this proposal

SOLICITED PROPOSAL RATING SHEET

REVIEWER _____

PROJECT MANAGER_____ PRINCIPAL INVESTIGATOR

PROPOSAL # _____ SUBMITTED BY _____

RFP BUDGET: TOTAL _____ RF _____ IN-KIND _____

PROPOSAL BUDGET: TOTAL _____ RF _____ IN-KIND _____

PROJECT PERIOD: FROM _____ TO _____

PARTICIPATING UTILITIES/SUBSCRIBERS (Subscriber identified with *)

_____

_____

_____

_____

COMMENTS

Strengths:_____

_____

_____

_____

_____

_____

_____

_____

Weaknesses:_____

_____

_____

PROPOSAL EVALUATION

A. Technical Merit (maximum **30** points) Score ____

Is the proposed approach technically defensible? Is the approach practical, and can the project be performed within the time period and with the proposed effort? Is the proposal itself well prepared with supportive information, self-explanatory and understandable? Is there a good probability that all the project objectives will be achieved? Has the researcher provided an adequate explanation of QA/QC procedures to be used in the project?

B. Responsiveness to RFP (maximum **30** points) Score ____

Are all the RFP objectives adequately addressed? Were some objectives eliminated or modified and did the applicant justify the reason(s) for the deviation from the RFP? Does the proposal exceed the RFP requirements with additional beneficial results for the water supply industry?

C. Qualifications (maximum **15** points) Score ____

Do the principal investigator and key project personnel have experience in the proposed research area? Will all key project personnel contribute a significant time commitment to the project? Has the principal investigator completed similar research projects, within budget, and in a timely manner?

D. Originality/Applicability (maximum **10** points) Score ____

Does the proposal reflect imagination or other special qualities that lend weight to its attractiveness and potential usefulness? Has the applicant displayed an innovative approach? Has the research team addressed the practical applications of the research? Will the project yield a product that is beneficial to the drinking water community? Does the scope of work support an applicable research project?

E. Budget (maximum **10** points) Score ____

Is the budget reasonable for the amount and type of work proposed? Will the principal investigator contribute an appropriate percentage of time to this project. Are overhead, indirect costs, cost of laboratory analysis, etc., reasonable? Is the level of effort allocated to each task reasonable? Are travel funds justifiable? Has the in-kind contribution been satisfactorily documented?

F. Subscribing Utility Participation (**5** points yes, **0** points no) Score ____

Has the researcher solicited the involvement of subscribing utilities in the research effort?

TOTAL SCORE:

Consultant Subscriber Participation (Yes/No)

Utility Participation (Yes/No)