CDHS PROPOSITION 50 FUNDING PROGRAM

FUNDING APPLICATION
TECHNICAL REPORT GUIDELINES
FOR CHAPTERS 4a.2 AND 6b PROJECTS

NOTE: These guidelines are **draft**, and the applicant should contact CDHS or check the CDHS Prop 50 website http://www.dhs.ca.gov/prop50 before proceeding to ensure that the latest version of these guidelines and forms are used.

The Prop 50 funding application must be accompanied by a technical report that will allow CDHS determine the eligible project components and associated costs. These guidelines will provide guidance to the applicant in preparing a technical report.

Where possible, CDHS has incorporated technical elements required for the environmental review into the technical report outline to minimize the submittal requirements for the applicant.

The technical report must be prepared by a qualified, experienced professional. The level of expertise required of the preparer, and the level of detail required in the report, depends upon the type of study. For a bench-scale study, the report may be prepared by a professional with experience in the proposed treatment technology. For a pilot-scale or demonstration study, the report should be prepared by a professional engineer experienced in water treatment design. Use of professionals with the appropriate level of expertise will speed up the processing of the application.

The technical report is the central part of the application and should contain most of the critical technical information needed to process the application. In some cases, some of the technical report components may have already been described in a previous document such as an engineering report or feasibility study. If so, simply refer to that document in the application, and attach a copy.

Any information intended to be submitted in confidence should be clearly marked "Confidential".

1. Project Location, Description and Map

Describe the project location. This should include the county(ies), a general description of the vicinity, the street address, and the Township, Range, and Section (TRS). The TRS is used for recording environmental documentation. The TRS can be determined from a USGS topographic map, or the applicant may find this information on the Internet. Also describe the zoning designation at the project site.

Include a map or drawing that shows the location of key facilities of the existing system that are pertinent to the proposed project (e.g. sources, treatment units, reservoirs, storage tanks, and primary distribution mains) and the proposed location of new facilities.

In addition, a topographic map of the project area is required for environmental review. The site plan could be shown on a topographic map and one map can fulfill both requirements.

2. Problem Description

Describe the chemicals to be addressed by the project in sufficient detail that will allow CDHS to fully understand and evaluate its nature. Identify the drinking water standard and regulation to be addressed by project. Questions to address, if applicable, are as follows:

a. What is the contaminant(s), or contaminant category (ies) to be addressed?

b. What is the source of water to be studied and why was this source selected for study?

c. What contaminant concentration levels will the study address?

d. For contaminants to be addressed by study, provide the following information to characterize the existing water quality: number of samples collected, frequency of sampling, range of detected concentrations, and average of detected concentrations (a table may be useful for presenting this information).

e. Identify the treatment technologies to be studied to remediate the chemical contaminant(s) and provide a brief description how these processes function to remove the contaminant of interest. If applicable, describe the existing water treatment technology at the project site. Discuss the treatment effectiveness and concerns with the existing treatment process that triggered this study proposal.

Only the contaminant(s) for which the project was ranked on the priority list and will address should be described. Do not include project components that are not directly related to the contaminants being addressed.

To be considered eligible for funding, all elements or components of the proposed project must be directly related to the primary problem.

3. Description of the Proposed Project

Provide an introductory description of the proposed project and how it addresses the contaminant(s) described in Section 2. Describe the current status of the project and indicate the duration and type of project proposed (i.e., demonstration project, pilot study, or bench-scale study). State the goals and objectives of the proposed project. Describe how the proposed project is relevant and consistent with the objectives of the Prop 50 funding program:

a. For Chapter 4a.2 Projects – For bench studies, pilot studies, and demonstration projects that develop and demonstrate new treatment and related facilities for water contaminant removal and treatment.

b. For Chapter 6b Projects – For pilot and demonstration projects for treatment or removal technology for the following categories of contaminants:

   1) Petroleum products, such as MTBE (methyl-*tert*-butyl ether) and BTEX (benzene, toluene, ethyl benzene, xylene).
   2) N-Nitrosodimethylamine (NDMA)
   3) Perchlorate
   4) Radionuclides, such as radon, uranium, and radium.
   5) Pesticides and herbicides
   6) Heavy metals, such as arsenic, mercury, and chromium
   7) Pharmaceuticals and endocrine disrupters

4. Project Design Elements

Provide a detailed description of the proposed project. The description must include the following project elements and how they will be addressed during the study.

a. Qualifications of Applicant and/or Project Investigator(s)

   Provide the name, affiliation, and qualifications of the project primary investigator(s) to undertake the study. Provide the name, affiliation, experience and qualifications of the professional who is preparing the technical report (application). Describe the roles and responsibilities of the participants for all proposed tasks. Describe how the applicant will maintain accountability for the parties involved in the project. Describe the applicant's time commitment to the project and how the project will be

kept on schedule. Include a concise organization chart showing the relationships and the lines of communication among the project participants.

b. Proposed Treatment Technology

Describe the current state of knowledge on treatment technologies for the contaminant(s) of interest. Demonstrate by literature and communication citations the similarities and dissimilarities of the proposed project to completed or on-going work on the same topic. Identify the gaps that the project is intended to fill. Identify the limiting or critical design variables for each treatment technology to be studied and explain and how these variables will studied. How will scaling factors be evaluated? How will the variables critical to design be identified?

Describe the proposed treatment technology to be used in the proposed project. Describe or list each unit process or major component, as well as related equipment, including the quantity, function, size, relationship to other project components. Include a conceptual or preliminary project design. For treatment facilities, this would include identification of the unit processes to be used and a project layout of the treatment process showing the location of the facilities and a flow diagram. The report must explain the basis for and the justification for selecting specific unit processes. Also explain the basis for the placement of specific unit processes with respect to existing unit processes at a treatment facility if applicable. Explain rationale for sequential order of treatment processes. Describe critical or controlling design and operational details. Indicate the anticipated size or design capacity of each unit or major piece of equipment. Describe any assumptions, design criteria, flow rates, etc. used to size the facilities. Any reasonable methods may be used to estimate flows, water demand, or unit capacities, including existing records, comparison with similar water systems, or American Water Works Association (AWWA), Ten-State, or other standards. Chapter 4a.2 projects should not involve a treatment technology that has already been accepted by CDHS for the identified contaminant(s). Describe how the proposed treatment technology will ensure further compliance with drinking water standards.

c. Data Collection and Study Protocol

Describe methods, procedures, and approach that will be used to satisfy the project objectives. The protocol and data collection must be based on generally accepted scientific and statistical principles, and should address measurement systems design and implementation, ensuring that the appropriate methods for sampling, analysis, data handing, and quality control are employed and documented. This is necessary to ensure that the data is useful for its intended purpose. The applicant must provide sufficient detail to permit evaluation of technical adequacy. The content and level of detail will vary depending on the nature of the project. Specific areas to address include, but are not limited to, the following:

1) Criteria for determining the acceptability of data quality in terms of precision, accuracy, representativeness (error or uncertainty analysis), and completeness (confidence level).

2) Raw water characteristics or water quality parameters that have a potential impact on the performance of the treatment technology; desired quality of treated water.

3) Constituent(s) monitored, sample type and location requirements, and statistical basis for numbers of samples.

4) Procedures for the handling and custody of samples, including sample identification, preservation, transportation, and storage.

5) Procedures that will be used in the calibration and performance evaluation of the sampling and analytical methods used during the project. If the project involves laboratory analyses of CDHS regulated constituents, this description should include the name of the ELAP-certified laboratory and identify the USEPA-approved drinking water methods to be used. If the project involves

constituents that are not currently regulated by CDHS, detailed quality assurance/quality control procedures must be appended to the technical report.

6) Procedures for data reduction and reporting, including a description of statistical analyses to be used.

7) Quantitative and/or qualitative procedures that will be used to evaluate the success of the project, including any plans for peer or other reviews of the study design or analytical methods prior to data collection.

8) Discuss potential difficulties and limitations of proposed procedures, and suggest alternative approaches to achieve stated objectives.

9) Discuss safety procedures as appropriate.

d. Ongoing Operation and Maintenance Issues

Discuss operational and maintenance requirements, reliability features provided, and staffing of treatment facility during the course of the study. Discuss O&M issues affecting the performance of the treatment technology that will be evaluated.

e. Public Purpose That is of Statewide Interest and Concern

State why the proposed project is important and necessary. Provide a summary of regulatory perspective where applicable. Define the practical benefits of the proposed project to the drinking water community (water systems, consultants, manufacturers, regulators, and other water professionals). Specify the type of information that is to be gained (e.g., knowledge, protocol, instrument, etc.), how it will be used, and who will use them. Where possible, identify additional efforts following project completion that will be needed prior to the application of the research results.

Specific benefits to the applicant (Section 6) are to be addressed later in the technical report.

f. Peer Review Component

Provide the names and affiliations of the technical advisory committee (TAC) members and their areas of expertise, and letters of commitment and/or statements indicating agreement to participate in the TAC. The purpose of the TAC is to provide an independent technical review, assistance, and/or expertise to the applicant regarding all project reports and other work products (e.g., review plans and procedures, progress reports, and final report). A water system representative from another water system must be a member of the TAC.

g. Plan for Public Dissemination of the Results and Report Submittal

Describe the plan for disseminating information on the results of the project. The plan should define the subject matter and the problems to be addressed, identify the target audience (general public and drinking water community), and indicate the strategies to be employed (e.g., local informational workshops, national/local water-related conferences, peer review journal publications, etc.).

Discuss plans for distributing project deliverables: quarterly progress reports, draft final report, and final report to CDHS and DWR. Progress reports are necessary to (1) enable CDHS/DWR to evaluate the applicant's progress and performance on the project and (2) provide a mechanism for ongoing review of technical findings by CDHS/DWR and the TAC. Include in the final project report all relevant materials and methodology, results, innovations, inventions, conclusions, and recommendations. Submit the final report to CDHS (for Chapters 4a.2 and 6b projects) and DWR (for Chapter 6b projects) within one year of project completion.

h. Affordability and Level of Operational Expertise Required to Operate the Treatment Facility.

Provide an engineering estimate of capital, operation, and maintenance costs, present value, and unit costs (i.e. $/million gallons) for the treatment technology. Compare unit costs to existing treatment technology costs, current water rates, and AWWA and USEPA literature on affordability. Discuss economical and/or operational advantages/disadvantages of the treatment technology. Discuss degree to which unattended and/or automated operations are feasible for the treatment technology.

Discuss technical skill required of operator to operate treatment technology. Compare skill level required to that needed for existing treatment technologies. Provide a staffing estimate for typical water treatment plants sized for use by small and large public water systems. Include number of water treatment operators..

i. Handling and Disposal of Residuals

Discuss type and volume of waste generated from the treatment process, if any are present or will be created. Discuss provision for on-site storage, prior to off-site disposal (or regeneration), and disposal schedule, if applicable. Discuss waste minimization efforts and disposal methods, expected contaminant and co-contaminant concentration(s) in waste. Perform analytical analysis to characterize waste and other testing required to comply with waste disposal regulations. Discuss disposal of treated water produced during the study.

j. Operations and Maintenance Manual (*For Demonstration Projects Only)*

An operations and maintenance manual must be part of the final project deliverables. The O&M manual must include a description of the treatment plant performance monitoring program; unit process equipment maintenance program (including type and frequency); replacement schedules for critical components with limited useful life; operating personnel, including numbers of staff and responsibilities; how and when each unit process is operated; laboratory procedures; procedures used to determine chemical dose rates; waste handling and disposal; records; response to treatment plant emergencies; and reliability features. O&M manual must also include process and instrumentation diagrams and unit process schematics as applicable.

k. List of previous studies related to this project.

Present literature citations as author and date, with full references given. Identify for each citation whether the work was based on a bench-, pilot-, or full-scale study or a demonstration project.

5. Evaluation of Alternative/Cost Effectiveness

The proposed project must be cost effective. Therefore, it is essential that the current state of knowledge and completed/on-going work similar to the project be adequately identified (Section 4, Project Element b) to ensure that the project does not duplicate previous works.

Estimate and compare the costs and relative effectiveness (including reliability) of the alternatives. Need to show that this study will be one that is comparable or less than existing accepted treatment technologies so that there is a likelihood that this technology will be used by others.

Provide a brief explanation for the various costs included in the proposed project budget. Provide information about the amount of cost sharing for each element.

6. Anticipated Benefits of Proposed Project

Describe how the project would solve the primary problem and the results that would be expected. Results may include: feasibility of conducting a pilot-scale study or demonstration project; construction of

a full-scale treatment facility; an improvement in water quality; maintaining water quality; reduction in treatment or operational costs; reduction in monitoring costs; potential public health benefits; etc.

Describe the potential benefits and information to be gained from the project (including effectiveness and reliability). Compare the potential benefits and anticipated information to be gained to the anticipated costs.

7. Ineligible Project Components

Describe any elements of the proposed project that will be included but are ineligible for funding using the Prop 50 eligibility criteria. The project can include ineligible components, however, the applicant will need to identify a funding source other than Prop 50 funds to pay for the ineligible portion. Matching funds, if required, must be spent on eligible components.

Ineligible components include: operation and maintenance of the facility after the study; land acquisition; motor vehicles used for employee or material transportation; decorative items; extended warranties for equipment; insurance cost; and all other items not included in the project costs. Landscaping is only eligible if it is specifically required as mitigation under CEQA.

8. Detailed Cost Breakdown

In most cases, the initial cost estimate included in the pre-application was a rough estimate. It is expected that the full application will refine those estimates. Applicants are <u>not</u> limited to project costs stated in the pre-application. In developing the cost estimates for the project, the applicant must break down the total cost estimate into various project elements. This cost breakdown is typically more detailed than the table shown in the Financial section of the application. As a minimum, the technical report should show the anticipated costs of the following items if they will be included in the funding requested and discuss the basis for the amounts.

a. Planning, preliminary design and engineering, and application preparation

b. Design, study preparation and engineering costs

c. Labor/personnel costs:

    1) Principal Investigator(s)/Key personnel
    2) Other personnel

d. Study costs broken down by:

    1) Major project components
    2) Equipment and materials
    3) Sampling and analysis
    4) Eligible versus ineligible items

e. Project management and contingencies

f. Environmental

g. Legal and administrative costs

h. Other (describe)

<u>NOTE:</u>

- If the project contains ineligible project items, the percentage of indirect costs (planning, administrative, design, etc.) that apply to the eligible portion should be estimated. This can be

based on a straight pro-ration, which will be the method used by the CDHS Prop 50 program unless some other means is indicated.

- Expenses incurred prior to October 28, 2003 are not eligible for reimbursement and can not be counted towards matching funds.

9. Useful Life of Key Project Components

For demonstration projects and pilot testing facilities, estimate the useful life of the key system components of the proposed project. All key components must last for the life of the study.

10. Proposed Project Schedule

Include a proposed schedule for project completion, showing a detailed breakdown of project tasks, deliverable items, and timeframes. The schedule should allow time needed for:

a. design, construction, and execution of the study (e.g., preparation and submission of plans and specifications and preparation of construction bids after approval of plans and specifications);

b. completion of financing and the CEQA environmental review process;

c. acquisition of land or right-of-way easements;

d. securing any additional permits or approvals from federal, state, or local agencies that may be needed for the project;

e. preparation and submission of other plans affected by the project (e.g., Labor Compliance Plan); and

f. preparation and submittal of quarterly progress reports, draft final report, and final report.

Timeframes should generally be expressed as months needed from the time of the funding offer, rather than specific dates, since the timing of any funding offer is unknown. The CDHS Prop 50 program will use these estimates as a basis for preparation of an overall project schedule. The schedule will be used for the purpose of project monitoring, evaluation, and to document and mark progress.

11. Environmental Information

Include any other project description required for environmental documentation here or it may be submitted separately on the CDHS Prop 50 Environmental Information Form.

12. Other

Include any other technical information that is pertinent to this particular project that may not be included elsewhere in the report.