i. Proposal number.# 2001-F203

ii. Short proposal title.# Wastewater Treatment for Restoration in Bay-Delta*

APPLICABILITY TO CALFED ERP GOALS AND IMPLEMENTATION PLAN
1a1. Link to ERP Strategic Goals: What Strategic Goal(s) is /are addressed by this proposal? List the letter(s) of all that apply.

A. At-risk species
B. Rehabilitate natural processes
C. Maintain harvested species
D. Protect-restore functional habitats
E. Prevent non-native species and reduce impacts
F. Improve and maintain water quality# A, C, D, F

1a2. Describe the degree to which the proposal will contribute to the relevant goal. Quantify your assessment and identify the contribution to ERP targets, when possible.# ERP Goal A - The proposal contributes somewhat (indirectly) to this goal by developing/testing a technology that could be used in Stockton where salmon migration is hampered by low dissolved oxygen in the SJR. Importantly, the City of Stockton's contribution to the dissolved oxygen problem in the SJR is only a portion of a larger problem. Improved water quality from the City of Stockton would not alone solve the problems.

ERP Goal C - The proposal contributes somewhat (indirectly) to this goal by developing/testing a technology that could be used in Stockton where salmon migration is hampered by low dissolved oxygen in the SJR. Importantly, the City of Stockton's contribution to the dissolved oxygen problem in the SJR is only a portion of a larger problem. Improved water quality from the City of Stockton would not alone solve the problems.

ERP Goal D - The proposal contributes somewhat (indirectly) to this goal. IF the technology is proven effective for the Richmond site then it could be used to improve aquatic habitat in the SJR or other water bodies where low dissolved oxygen and trace metals are stressors to the aquatic ecosystem.

ERP Goal F - The proposal contributes to a moderate and more direct degree for this goal by developing innovative and more cost effective technologies for controlling nitrogen and trace metals in wastewater. Importantly, the City of Stockton's contribution to the dissolved oxygen problem in the SJR is only a portion of a larger problem. Improved water quality from the City of Stockton would not alone solve the problems.

ERPP Target #14 (Reduce fish losses from pollutants in SJR) - The proposal would contribute somewhat and indirectly to this target by developing the technology that could be used in the SJR to reduce the nitrogen load and trace metals from the SJR.*

1b. Objectives: What Strategic Objective(s) is/are addressed by this proposal? List Objective (from the table of 32 objectives) and describe potential contribution to ERP Goals. Quantify your assessment, when

possible.# ERP Goal A, Objective 3 (Enhance/conserve biotic communities in Bay-Delta and watersheds). The proposal could somewhat contribute to this objective for the SJR, if the technology is proven effective for the SJR or other water bodies low dissolved oxygen problems.*

1c. Restoration Actions: Does the proposal address a Restoration Action identified in Section 3.5 of the PSP? Identify the action and describe how well the proposed action relates to the identified Restoration Action.#
The proposal addresses Restoration Action #6 (Contaminants in the Central Valley) Importantly, the City of Stockton's contribution to the dissolved oxygen problem in the SJR is only a portion of a larger problem. Improved water quality from the City of Stockton would not alone solve the problems.*

1d. Stage 1 Actions: Is the proposal linked directly, indirectly or not linked to proposed Stage 1 Actions? If linked, describe how the proposal will contribute to ERP actions during Stage 1.# Ecosystem Restoration Stage 1 Action #8 (Complete targeted research to resolve uncertainties)

The proposal is indirectly and somewhat linked to this target. The proposal contributes towards the general need to develop improved technologies for treating wastewater. Municipal wastewater can discharge oxygen depleting substances into water bodies and can contribute to water quality impairment. Low dissolved oxygen levels, particularly in late summer and fall, in the SJR is a stressor for migration of salmon. Research that contributes to improved wastewater quality is generally supported by CALFED.

Environmental Water Quality

Stage 1 Action #9 (Conduct work on addressing dissolved oxygen problems)

The proposal is directly linked to this target and addresses the need for defining corrective measures and the need for investigating methods to reduce constituents that cause low dissolved oxygen.*

1e. MSCS: Describe how the proposal is linked to the Multi-Species Conservation Strategy and if it's consistent with the MSCS Conservation measures. Identify the species addressed and whether the proposal will "recover", "contribute to recovery" or "maintain" each species.# This proposal would contribute in a very indirect way to the recovery of salmon in the SJR. The contribution is contingent on the success and cost effectiveness of the treatment technology and the City of Stockton's contribution to the dissolved oxygen problem in the SJR is only a portion of a larger problem. Improved water quality from the City of Stockton would not alone solve the problems.*

1f. Information Richness/Adaptive Probing related to the proposal: Describe the degree to which the proposal provides information to resolve one of the 12 scientific uncertainties (Section 3.3 of the PSP), and whether the proposal offers a prudent approach to answer these uncertainties.# Scientific Uncertainty #11 (Contaminants in the Central Valley) - The proposal contributes somewhat to this scientific uncertainty.*

1g. Summarize comments from section 1a through 1f related to applicability to CALFED goals and priorities. Identify the strengths and weaknesses of the proposal, highlighting the applicability of the proposed project to CALFED and CVPIA goals and priorities. Focus on aspects of the proposal that may be important to later stages in the project review and selection process.# Strengths

Clear presentation of objectives, tasks and treatment process.
Due to substantial population growth and recent regulatory efforts (TMDLs) many municipal wastewater treatment facilities will require expansion and upgrades. This technology is innovative and potentially applicable to these facilities, particularly where water bodies are impaired by low dissolved.

Weaknesses

Proposal does not treat the Stockton wastewater stream (demonstration facility is located Richmond). The treatment benefit would not occur in the area that most needs treatment. More specifically, the treatment would occur in an area that does not have a dissolved oxygen problem (no listing under CWA 303 (d) list or as a water quality problem by CALFED). Not clear why facility was not designed in Stockton.

The proposal was weak in the discussion on "Applicability to CALFED Goals".

The proposal does not provide supporting evidence that the aquatic ecosystem is impaired from trace metals in Stockton wastewater e.g., (evidences of WQOs and toxicity). The removal of trace metals may be an added benefit by reducing the overall load to the SJR but a direct application to specific actions and targets is not presented.

The proposal may not be eligible for funding because of existing regulatory mandates; the proposal should be evaluated by CALFED legal staff pursuant to Section 2.2 in the PSP. There are more appropriate sources of funding under Proposition 13 for the upgrade of treatment facilities (administered through the RWQCB/SWRCB).*

APPLICABILITY TO CVPIA PRIORITIES

1i. Describe the expected contribution to natural production of anadromous fish. Specifically identify the species and races of anadromous fish that are expected to benefit from the project, the expected magnitude of the contribution to natural production for each species and race of anadromous fish, the certainty of the expected benefits, and the immediacy and duration of the expected contribution. Provide quantitative support where available (for example, expected increases in population indices, cohort replacement rates, or reductions in mortality rates).# The project could benefit fall run chinook salmon in the San Joaquin basin by potentially
cutting the cost of advanced wastewater treatment (ammonia/trace metal removal) at the City of Stockton's facility and at other municipal or agri-industrial facilities throughout the San Joaquin basin. It could also benefit other salmonid runs in the Central Valley by reducing cost of waste

treatment elsewhere. Reduced cost could lead to more rapid or wide spread adoption of this advanced technology thereby reducing ammonia and trace metal loading to the San Joaquin and eventually other rivers. Reducing ammonia loading from the City of Stockton's facility in particular could help alleviate the dissolved oxygen (DO) barrier that purportedly forms in the ship channel during the fall upmigration season. It could also contribute to elimination of any toxic levels of undissociated ammonia that may occur in the ship channel. Even if the project's null hypotheses are not rejected and the technology is applied by the City of Stockton and elsewhere in the San Joaquin basin, however, the potential DO benefit is uncertain because the DO barrier may be controlled as much or more by loading of oxygen-demanding material from upstream (especially algal biomass produced in the mainstem of the river) as by the City's effluent loading and it is not known if nitrogen limits or could ever be made to limit algal production in the river. Another uncertainty is the degree to which low DO actually does block or delay salmon migration in the San Joaquin.*

1j. List the threatened or endangered species that are expected to benefit from the project. Specifically identify the status of the species and races of anadromous fish that are expected to benefit from the project, any other special-status species that are expected to benefit, and the ecological community or multiple-species benefits that are expected to occur as a result of implementing the project.# Fall run chinook salmon (candidate) and possibly steelhead trout (threatened); reduced trace
metal loading could have system wide benefits to ecological community.*

1k. Identify if and describe how the project protects and restores natural channel and riparian habitat values. Specifically address whether the project protects and restores natural channel and riparian habitat values, whether the project promotes natural processes, and the immediacy and duration of benefits to natural channel and riparian habitat values.# Project would promote natural processes by helping to improve water quality in the Stockton
ship channel and in groundwater basins throughout the Central Valley.*

1l. Identify if and how the project contributes to efforts to modify CVP operations. Identify the effort(s) to modify CVP operations to which the proposed project would contribute, if applicable. Efforts to modify CVP operations include modifications to provide flows of suitable quality, quantity, and timing to protect all life stages of anadromous fish as directed by Section 3406 (b)(1)(B) of the CVPIA, including flows provided through management of water dedicated under Section 3406(b)(2) and water acquired pursuant to Section 3406(b)(3).# Increasing outflow from CVP facilities to reduce hydraulic residence time in the ship channel
is among the options being considered to alleviate the DO problem. This project has the potential to improve DO conditions in the ship channel without modifying CVP operations.*

1m. Identify if and how the project contributes to implementation of the supporting measures in the CVPIA. Identify the supporting measure(s) to which the proposed project would contribute, if applicable. Supporting measures include the Water Acquisition Program, the Comprehensive Assessment and Monitoring Program, the Anadromous Fish Screen Program, and others.# If the technology being tested by this proposed project is successful and widely adopted, it could substantially reduce trace metal loading to rivers. This reduction could benefit wetland-dependent species by reducing their exposure to these potentially toxic elements. The project could thus contribute to the b(1)-other program.*

1n. Summarize comments from section 1i through 1m related to applicability to CVPIA priorities (if applicable, identify the CVPIA program appropriate to consider as the source of CVPIA funding [for example, the Anadromous Fish Restoration Program, Habitat Restoration Program, Water Acquisition Program, Tracy Pumping Plant Mitigation Program, Clear Creek Restoration Program, Comprehensive Assessment and Monitoring Program, and Anadromous Fish Screen Program]). Identify the strengths and weaknesses of the proposal, highlighting the applicability of the proposed project to CALFED and CVPIA goals and priorities. Focus on aspects of the proposal that may be important to later stages in the project review and selection process.# The study could lead to a substantial reduction in the cost of applying advanced wastewater treatment throughout the Central Valley (thus freeing up public and private capital for other ecosystem improvement initiatives) and could help reduce the frequency, duration or severity of hypoxia in the Stockton ship channel thereby removing a potential barrier to upstream salmon migration. This project contributes to a medium priority evaluation need (Evaluation 7) identified in the 1997 Revised Draft Restoration Plan for the Anadromous Fish Restoration Program. Potential benefits of the project would contribute to Department of Interior efforts to double natural production of anadromous fish in the San Joaquin basin and potentially Central Valley wide. Thus, the project qualifies for funding consideration under the Anadromous Fish Restoration Program.*

RELATIONSHIP TO OTHER ECOSYSTEM RESTORATION PROJECTS

2a. Did the applicant explain how the proposed project relates to other past and future ecosystem restoration projects, as required on page 57 in the PSP? Type in yes or no.#yes*

2b. Based on the information presented in the proposal and on other information on restoration projects available to CALFED and CVPIA staff, describe how the proposed project complements other ecosystem restoration projects, including CALFED and CVPIA. Identify projects or types of projects that the proposed project would complement, now or in the future. Identify source of information.#This project is similar in approach and overlaps earlier UCB work on a demonstration-scale Algal Bacterial Selinium Removal Facility (98B14), which also removes 95% of nitrate from agricultural drainage. Related projects include water quality constituent projects in the San Joaquin River (98C08, 98B07, 98B16, 95M06, and 00B05). Information source: Proposal, CALFED tracking table.*

RESULTS AND PROGRESS ON PREVIOUSLY FUNDED CALFED AND CVPIA PROJECTS, INCLUDING REQUESTS FOR NEXT-PHASE FUNDING

3a1. Based on the information presented in the proposal and on project reports and data available to CALFED and CVPIA staff, has the applicant previously received CALFED or CVPIA funding? Type CALFED, CVPIA, both, or none.#CALFED*

3a2. If the answer is yes, list the project number(s), project name(s) and whether CALFED or CVPIA funding. If the answer is none, move on to item 4.#CALFED

98B14 - Bacterial Treatment of Selenium in the Panoche Drainage.

99N08 - Assessment of Pesticide Effects on Fish and their Food Resources in the Sacramento-San Joaquin Delta

99N10 - Assessing Ecological and Economic Impacts of the Chinese Mitten Crab*

3b1. Based on the information presented in the proposal and on project reports available to CALFED and CVPIA staff, did the applicant accurately state the current status of the project(s) and the progress and accomplishments of the project(s) to date? Type yes or no.#yes*

3b2. If the answer is no, identify the inaccuracies:#

3c1. Has the progress to date been satisfactory? Type yes or no.#yes*

3c2. Please provide detailed comments in support of your answer, including source of information (proposal or other source):#Project 98B14 is in the second year of implementation and is progressing satisfactorily. Questions have surfaced regarding efficacy of the project, based on new methods for selenium removal being testing with CALFED funding, and the project will be discussed at an upcoming meeting. New methods under a directed action funded with Drinking Water Quality funds will remove selenium and salt. The Regional Water Quality Control Board may soon propose salinity standards on the SJR, so a process which removes both constituents is more effective. 99 projects were awarded in 2000 and should be under contract soon. Information Source: Progress reports, updated information on new projects, and CALFED tracking table.*

REQUESTS FOR NEXT-PHASE FUNDING

3d1. Is the applicant requesting next-phase funding? Type yes or no.#no*

3d2. If the answer is yes, list previous-phase project number(s) here. If the answer is no, move on to item 4.#*

3e1. Does the proposal contain a 2-page summary, as required on pages 57 and 58 of the PSP? Type yes or no.#*

3e2. Based on the information presented in the summary and on project reports available to CALFED and CVPIA staff, is the project ready for next-phase funding? Type yes or no.#*

3e3. Please provide detailed comments in support of your answers, including source of information (proposal or other source):#*

LOCAL INVOLVEMENT

4a. Does the proposal describe a plan for public outreach, as required on page 61 of the PSP? Type yes or no.# Yes.*

4b. Based on the information in the proposal, highlight outstanding issues related to support or opposition for the project by local entities including watershed groups and local governments, and the expected magnitude of any potential third-party impacts.# Proposed project enjoys broad local and academic community support and would not have any adverse third party impacts. On the contrary, if the proposed project leads to more rapid or widespread application of advanced treatment, the resulting reduction of nitrogen loading to groundwater aquifers would benefit human drinking water supply and facilitate groundwater banking/conjuctive use project development.*

ENVIRONMENTAL COMPLIANCE

4d. List any potential environmental compliance or access issues as identified in the PSP checklists.# If this is a closed system and no new discharge will be created then they will not have compliance issues. They should consult with RWQCB..*

4e. Specifically highlight and comment on any regulatory issues listed above that may prevent the project from meeting the projected timeline.#none*

COST

5a. Does the proposal include a detailed budget for each year of requested support? Type yes or no.# Yes, for 3 years*

5b. Does the proposal include a detailed budget for each task identified? Type yes or no.# Yes*

5c. Is the overhead clearly identified? Type yes or no.# Yes, it is at 10%*

5d. Are project management costs clearly identified? Type yes or no.# Yes, under Task 7. Project management alone requires 30,000 dollars per year excluding overhead*

5e. Please provide detailed comments in support of your answers to questions 5a - 5d.# All information requested has been provided by project proponent in a clear, concise, and understandable format*

COST SHARING

6a. Does the proposal contain cost-sharing? Type yes or no.# Yes*

6b. Are applicants specifically requesting either state or federal cost share dollars? Type state, federal, or doesn't matter.# Doesn't matter*

6c. List cost share given in proposal and note whether listed cost share is identified (in hand) or proposed.

6c1. In-kind:# Professor William Oswald: 41,000 dollars worth of in-kind services per year for 3 years.*

6c2. Matching funds:# n/a*

6c3. Show percentage that cost sharing is of total amount of funding requested along with calculation.# Professor Mary Firestone: 7,000 dollars; Professor William Oswald: 41,000 dollars per year for 3 years. Total: 130,000 or 7.9% of State Funding or 6% of Federal funding*

6d. Please provide detailed comments in support of your answers to questions 6a - 6c3.# The city council of Stockton has not yet considered cost sharing, but it is possible that considerable in-kind contributions could be made*