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On June 10, 2010 the Executive Committee of CV-SALTS and Board of Directors of the Central Valley Salinity Coalition (CVSC) approved the submission of this proposal in response to the Luce Fellowship Request for Proposals.

1. Descriptive title

Central Valley Salinity Alternative for Long Term Sustainability (CV-SALTS) Salinity Management Alternative Results Study

2. Name and contact information (email, phone number) of the proposer(s)

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3. Proposed Project

CV-SALTS proposes the LUCE Teams consider this project as a significant opportunity participate in the important study needed for the future sustainability of California communities and agriculture.

a. Problem Statement. What is the context for this work?

Salinity buildup due to irrigation, wastewater treatment, urban users, water import and other users in the San Joaquin and Tulare basins of the Central Valley has been increasing, and unless properly managed will impact larger and larger areas of the Central Valley. In these areas the soil and water impacts will reduce crops and economic productivity result in higher cost for urban users. The Central Valley Salinity Alternative for Long Term Sustainability (CV-SALTS) is a collaborative group formed by the SWRCB, the RWQCB and various stakeholders to create a comprehensive salinity management plan in the CV. The CV-SALTS initiative is intended to address management alternatives, including treatment and regulatory schemes which will stabilize or lessen the impact of salts. CV-SALTS has active committees which are ongoing, to carry out research and to plan and implement solutions in the CV.

Some of the most advanced treatment methodology and management alternatives have been developed and are operating in California. Despite this, salinity management in will have to expand and become more efficient in order to accommodate the more stringent regulation and impacts to crop yields. The need for evaluation of technology and management alternatives is critical to the future sustainability.

b. Project Objectives. What questions will be answered by this project?

Objective 1 for the Luce Team is to identify, understand and evaluate how salinity is being managed now by communities and industry in certain identified salt critical areas.

Objective 2 to identify the most effective methods to manage salinity for long term sustainability

Objective 3 to present the work in the prior objectives so CV-SALTS committees can integrate this work into the critical CV-SALTS program and Regional Salt and Nutrient Management Planning for the Central Valley.

c. Project Significance. Why is this work important? Who is the target audience or client?

The CV is California's most productive growing region, and in fact supplies 95 % of the world's processing tomatoes, 80% of the world's almond crop, more than 50 % of the fresh fruits and vegetables feeding the nation and fertile soils and clean water are essential to its continued viability. The growing population of California also relies on clean water for its use. Managing salinity in agricultural and urban regions is critical in many areas, and these plans and studies will be essential for communities, further academic study, legislative interests, industry and agriculture.

d. Background information. In general, how did the problem evolve? What work, if any, has been done to date in an effort to solve the problem?

Salinity buildup is not new. It is a result of the use of water by people, which changes the natural flow of a basin. Some salinity management efforts have taken place in Australia, and other areas, however, each watershed is unique and solutions for each must be individualized. The Central Valley is a large and varied area, which will offer several different challenges to salinity management, all of which will be useful for solutions in other areas. Thus far, salinity management has been addressed on a critical occurrence, and primarily with individual permitting processes, rather than regional plans and alternatives. There are some exceptions to this, but further research and implementation is necessary. The SWRCB and the RWQCB, together with stakeholders, have formed this strategic initiative to cooperatively plan and implement alternatives. Programs being discussed and considered include, regional salt storage or conveyance systems, treatment facilities, real time management, water or salt trading, or other actions that m beyond the scope of a regulatory program. The group plans to study what others have done that has been effective, look for other alternatives, and incorporate the best strategies into a regional plan. Committees and stakeholders can provide data and information that will facilitate these studies.

To develop approaches that will manage salinity on sustainable basis multidisciplinary stakeholder process are required. This provides an excellent opportunity for academic research into the methods and technology and its efficiency and implementability.

CV-SALTS is a strategic initiative to address salinity, including nitrates, throughout the region in a comprehensive, consistent and sustainable manner. The CV-SALTS initiative was formed by the State Water Resources Control Board (SWRCB), the Central Valley Regional Water Quality Control Board (CVRWQCB) and the Central Valley Salinity Coalition (CVSC) to support, facilitate and manage the policy and science required to develop a management plan for the regulatory and non-regulatory management of salt and nitrate. The stakeholders who are impacted by salt and nitrates have come together to fund and manage the initiative through CVSC.

CV-SALTS has active Technical, Economic and Policy Committees to work with researchers and support the work and review. These committees and the outreach efforts of the organization will make identifying additional data, if needed easier.

e. Stakeholders, other than the client. What other people or groups would benefit from the results of this project?

CV-SALTS is truly a stakeholder driven program. The Stakeholder list includes hundreds of businesses and communities throughout the Central Valley and improvements to water quality benefit Central Valley water users Statewide due to water exported to coastal and Southern California. Major Stakeholder list is shown in the References.

f. Possible approaches and available data. Available data sets should be identified here.

Many approaches are possible for evaluating data to reach the objectives. While CV-SALTS would welcome other approaches recommendations for several levels of engagement are shown on Page 3:

1. Consolidate and tabulate data provided to the CVRWQCB in monitoring reports to determine effectiveness of a number of different approaches to salinity management and identify those that have broad applicability and implementability.
2. From a combination of the data in 1. above and facility data determine the economically efficient management alternatives and document those which have the best applicability and implementability.
3. Based on the data from approach 1. and 2. Above compare efficiencies to other methods used around the world and document potential methods which are more efficient and could be implemented in the Basin Plan.

Data Availability

Ample existing data on treatment from existing permitted programs and facilities are available from the Regional Water Quality Control Board and the implementing organizations. Best management practices and studies of salt issues are available from CV-SALTS and from industry associations. This data is augmenting with recent salt and nitrate source pilot study (in references). This existing data with would support the approaches listed above providing the existing management alternatives. Augmenting this information with facility data on cost and effectiveness would provide an extremely strong data set for analysis.

g. Deliverables. What types of recommendations are expected as an outcome of the project?

A final written report containing the data, references, analysis and comparative efficiencies of salt management methods and report conclusion with an oral presentation to the CV-SALTS Technical and Executive are appropriate.

h. References

CV-SALTS has compiled a list of references and significant prior work efforts for support and review. These references are also shown as Attachment 1 on page 4

4. Client, including name and email

Central Valley Salinity Coalition, Daniel Cozad, dcozad@cvsalinity.org

5. Data and Usage Commitment

The Central Valley Salinity Coalition, the Central Valley Regional Water Quality Control Board and the State Water Resources Control Board are committed to the CV-SALTS Initiative via an MOA listed in the references. We have committed to for a technical subcommittee to provide direct liaison with CV-SALTS and to provide and develop data and information to support the proposed Luce Project without restrictions or limitations on it use or publication.

6. Anticipated financial needs and sources of support

CV-SALTS expects the support provided will be sufficient for the work needed to support the possible approaches discussed above in 3. f. This work can be done from any location via electronic communication methods and is adaptable to available collaboration tools. Draft and final reports can be submitted electronically. The final presentation will be in Sacramento and some costs should be reserved for that effort. Should the team's approach need additional funding the CV-SALTS program may make additional funding available if approved by the Executive Committee and Central Valley Salinity Coalition Board of Directors.

CVSC and CV-SALTS appreciate the Luce Fellowship consideration of this proposal.

Sincerely,



Daniel B. Cozad

Executive Director

Central Valley Salinity Coalition Inc.

Attachment 1 References

CV-SALTS References for Salinity and Nitrate Works and Data Sources in the Central Valley

- CV-SALTS [Workplan Outline](#) provides a brief overview of work needs and [Cost and Schedule](#) estimates indicate resources and timeline while [the Approach](#) summarizes the steps
- CV-SALTS [Salt and Nitrate source Pilot study](#) work plan, methodology and pilot tests the plan that will be modified and implemented throughout the region.
- [CV-SALTS MOA](#) between the SWRCB, CVRWQCB and CVSC for cooperation and governance
- **Hilmar Supplemental Environmental Project Study** <http://www.hilmarsep.com>
- **Rainbow Report** <http://www.owue.water.ca.gov/docs/03-ahccfinalrpt.pdf>
- Economic Impact Report for CV-SALTS 2008 - Richard Howitt
http://www.swrcb.ca.gov/rwqcb5/water_issues/salinity/programs_policies_reports/econ_rpt_final.pdf
- Metadata Guide for Salinity Data Sources for the Central Valley of California – 2008 by the California Water Institute
- **Surface Water Ambient Monitoring Program (SWAMP)**
http://www.waterboards.ca.gov/water_issues/programs/swamp/
- Technical Analysis to Support Development of Drinking Water Policy for the Central Valley Basin Plan
http://www.waterboards.ca.gov/centralvalley/water_issues/drinking_water_policy/
- Chapter 5, CALFED Water Quality Program Stage 1 Final Assessment:
http://www.calwater.ca.gov/content/Documents/Draft_Final.pdf
- **Staff Report for the San Joaquin River at Vernalis Salt and Boron TMDL and Basin Plan Amendment**
- **DO TMDL Monitoring Report - Stringfellow** <http://www.sjrdotmdl.org/studies.html>
- **Nitrate in Drinking Water Report to the Legislature – 1988 by State Water Board**
<http://www.swrcb.ca.gov/legislative/docs/1999prior/8811wq1988.pdf>
- Technical Committee Report "Regulation of Agricultural Drainage to the San Joaquin River", State Water Board Order No. WQ 85-1 1987
- Shallow Groundwater Quality on Dairy Farms with Irrigated Forage Crops, UC Davis in Journal of Contaminant Hydrology, 2002.
- **GAMA Data Series Reports -** <http://ca.water.usgs.gov/gama/publications.htm>.
- DWR has lists of groups that have received public money for GW studies in recent years:
<http://www.grantsloans.water.ca.gov/grants/assistance.cfm> these lists may include work that is not included in GAMA or any of the more accessible datasets.
- Water Quality Survey of Tile Drainage Discharges in the San Joaquin River Basin – 1988 by CV Regional Water Quality Control Board
- SWRCB Order No. WQ 85-1 Technical Committee Report "Regulation of Agricultural Drainage to the San Joaquin River", August 1987
- San Joaquin Valley Drainage Implementation Program's "Status Report on Drainage Management in the San Joaquin Valley", 1998
- San Joaquin Valley Drainage Implementation Program's "Evaluation of the Rainbow Report", 2000
- San Joaquin Valley Drainage Implementation Program's "Drainage Management Strategy", 2000
- San Joaquin Valley Drainage Implementation Program's "Agricultural Drainage in the San Joaquin Valley - A Gap Analysis, 2002.

Additional Reference may be located at www.cvsalinity.org or www.waterboards.ca.gov/centralvalley/water_issues/salinity