

Table 1. Phase I - Salinity Management Strategy: Proposed Tasks

Task	Description	Range of Costs	Level of Effort (days)
Stakeholder Coordination			
1	Stakeholder Meetings. Input from CV-SALTS stakeholders through facilitated meetings. (Consultant costs; stakeholder participation would be considered in-kind contributions). Costs range from monthly to quarterly meetings for 10 years.	\$616K – \$1.8M	360 – 1080
2	Sustainable Groundwater Management Act (SGMA) Groundwater Sustainability Agencies (GSA) Meetings. Coordination with GSAs: assume one meeting per quarter for all of the GSAs in each hydrologic region. For example, representatives from GSAs in the San Joaquin River Hydrologic Region will convene with CV-SALTS stakeholders once per quarter. The same assumption is made for the Tulare Lake Hydrologic Region. Fewer meetings are anticipated for the Sacramento River Hydrologic Region. It is critical that the Groundwater Sustainability Plans (GSPs) developed for each groundwater basin and the Salinity and Nitrate Management strategies be coordinated, both technically and institutionally.	\$424K – \$954K	240 – 540
Strategic Planning			
3	Regulatory and Policy Evaluations. This task serves a number of purposes: (a) Phase I strategic planning/management activities to ensure all work completed under Phase I is consistent with the needs and purpose of the Prioritization & Optimization Study (P&O Study); (b) evaluation of existing water management and state policies and requirements that could make implementation of a long-term salinity management strategy more difficult or challenging.	\$317K – \$634K	180 – 360
4	Phase II Planning. Based on the findings of other Phase I activities, (a) review the Central Valley Basin Plans to identify amendments required to continue implementation of the Salinity Management Strategy in Phase II; (b) determine the need to update the interim permitting strategy; (c) complete preliminary assessment of environmental permitting requirements that will need to be completed.	\$211K – \$422K	120 – 240
Governance			
5	Governance Plan - Formation and Structure. Develop the Governance Plan which will define the structure and roles and responsibilities of the key stakeholders. The Governance Plan will include the project objectives and a detailed plan describing how the salinity management strategy will be implemented over time. The structure of governance will be defined, including development of appropriate agreements, <i>e.g.</i> , memorandum of understanding, charter, joint powers authority, etc. The governance plan will also account for coordination with the GSAs formed under SGMA.	\$211K – \$528K	120 – 300
6	Implementation and Refinement of the Governance Plan. The agreed upon Governance Plan will be legally adopted and then implemented. As needed, additional stakeholders will join the governance structure during implementation. The administration of regional components of long-term salinity management projects conceptually developed during Phase I (<i>e.g.</i> , the Central Valley regulated brine line) will be refined during implementation of the Governance Plan. Memoranda of understanding with agencies that are not part of the original Governance Plan (<i>e.g.</i> , EBMUD for long-term agreements on brine disposal) would be written, negotiated, and executed. Refinement of the Governance Plan will continue as needed during Phases II and III of the Salinity Management Strategy.	\$211 – \$528K	120 - 300

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Funding			
7	Funding Plan and Financing Strategy. Development of a Funding Plan will include a preparation of a financial strategy to determine potential sources of funding: including federal, state, local agencies, water purveyors, agricultural communities, grants, bonds, and low-interest loans and other strategies to support the development and implementation of salinity management facilities. The Funding Plan will include strategies for the equitable management and funding of long-term salinity management projects (e.g., the Central Valley regulated brine line). Resources will be allocated where salt management needs are the greatest; different strategies may be developed for different Hydrologic Regions of the Central Valley.	\$317K – \$528K	180 – 300
8	Implementation of the Funding and Financing Strategy. This task includes the execution of the Funding Plan and the acquisition and administration of the funding dollars. In this task, it is anticipated that an independent, third-party audit firm will conduct a program-specific audit to ensure that the funds are administered in accordance with state and federal laws, regulations, using generally accepted auditing principles and government auditing standards, and other audit guides relative to the source of funding.	\$317K – \$528K	180 – 300
Salt Management Studies			
Prioritization and Salinity Management Analyses			
9	Prioritization of Groundwater Basins and Subbasins. This task involves reviewing and potentially revising groundwater basin and subbasins priorities that were developed for the SNMP, based on new information and on the stakeholder meetings.	\$70K – \$141K	40 - 80
10	Prioritization within Groundwater Basins and Subbasins and Groundwater Modeling. The Prioritization and Optimization Study will evaluate criteria to develop a master plan for prioritization and phasing of locations for extraction wells and treatment facilities. This task will include reviewing hydrogeologic information and water quality data for each basin and subbasin. Current and projected land use and cropping patterns will be accounted for. The CV-SALTS groundwater model will be refined to estimate optimal areas to located extraction wells and to build a regional/subregional treatment facility (salinity and/or nitrate). Groundwater modeling must include current groundwater pumping for irrigation and potable supply, as well as planned pumping based on GSPs being developed under SGMA. Cost sharing with GSAs should be considered. Costs borne principally by stakeholders within each groundwater basin, subbasin or management zone.	\$1.5M – \$2.3M	880 – 1320
11	Salt Management/Storage Areas. Delineate areas where salt can be stored and managed in a sustainable manner. These localized salinity control measures will bridge to the point in time when the Central Valley Brine Line (CVBL) is operational. Involves hydrogeological investigation, land use and future land use studies, and the de-designation of the groundwater basin/subbasin from MUN and AGR beneficial uses. Salt management/storage areas will be strategically located in each Hydrologic Region. Segments of the CVBL can be constructed to transport brine to the interim or permanent salt management/storage areas.	\$211K – \$422K	120 – 240
12	Interim Truck or Rail Transport of Brine to a Regulated Wastewater Treatment Plant (WWTP), e.g., East Bay Municipal Utilities District (EBMUD). This task will involve a series of meetings with EBMUD, a detailed estimate of trucking and rail costs and a study to re-operationalize the existing rail spur to EBMUD.	\$141K – \$352K	80 - 200

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Task	Description	Range of Costs	Level of Effort (days)
<i>Central Valley Brine Line Project Development</i>			
13	CVBL Pipeline Alignment – Fatal Flaw Analysis. A fatal flaw analysis will be conducted on the concept pipeline alignment that was described in SSALTS Phase 2 report (CDM Smith, 2014).	\$211K – \$422K	120 – 240
14	Alternative CVBL Pipeline Alignments Alternate CVBL alignments will be considered. For example, there is a natural gas easement from Naval Air Station (NAS) Lemoore to Estero Bay or other identified in the development of the project. Additional environmental permitting would be required. Permitting costs are not included in this estimate.	\$211K – \$422K	120 – 240
15	Concept Design for the Central Valley Regulated Brine Line. Development of the Concept Design for a regulated brine line would include elements of a concept study, a feasibility study, design requirements, and a preliminary design	\$282K – \$422K	160 – 240
<i>Special Studies</i>			
16	Groundwater Quality Characterization of Groundwater Basins and Subbasins for Trace Constituents. CV-SALTS will conduct a study to characterize trace elements, contaminants of emerging concern (CECs), and low-concentration agricultural chemicals. This information will be used in coordination with the WWTPs and for permitting. This work will be coordinated (perhaps incorporated into the Surveillance and Monitoring Program [SAMP]) to minimize duplication of effort.	\$522K - \$945K	240 - 480
17	Emerging Technologies. A review of maturing and emerging technologies for salinity management and nitrate treatment will be completed in the tenth year of the 10-year P&O Study. The review of technologies will, however, be conducted over the course of the P&O Study.	\$106K – \$211K	60 – 120
18	Recycled Water Imports. This task will evaluate the efficacy and economics of importation of recycled water into the Valley through a pipeline in the same easement as the CVBL and the recycled water will be used directly or recharged through a series of Indirect Potable Reuse (IPR) projects.	\$141K – \$211K	80 – 120
19	Stormwater Recharge Master Plan. Develop a comprehensive assessment of stormwater recharge – current, planned and additionally needed – in order to enhance recharge of high quality stormwater and snowmelt to the extent possible. Plan will evaluate existing and planned efforts and account for water rights and environmental impacts.	\$282K – \$563K	160 – 320
Totals		\$6.3M – \$12.4M	3,560 – 7,020