CV-SALTS Executive Committee Meeting
Friday, February 10, 2012 - 10:00 AM to 12:00 PM
TELECONFERENCE ONLY

Teleconference (218) 339-4600 Code: 927571#
Posted 02-01-12 – Revised 02.07.12

Meeting Objectives:
1. Program Development to mirror the policy development meetings
2. Execute business actions for CV-SALTS

AGENDA
1) Welcome and Introductions Chair
   a) Review/Approve January 17, 2012 notes – 2 min
   b) Committee Roll Call and Membership Roster

2) 2011 CV-SALTS Progress Milestones Status Updated – Daniel Cozad - 5 min
   Action: Review and discuss

3) Conceptual Model and 5 Year Workplan approval – Daniel Cozad- 15 min
   Action: Review changes and approve

4) IPM Program Management and Facilitation Year 2 Budget – Daniel Cozad – 10 min
   Action: Review changes and approve

5) Animal Drinking Water Quality Criteria – Daniel Cozad -10 min
   Action: Determine/direct Committee Assignment and staffing

6) Groundwater Quality Protection Strategy Workplan update - Pam Buford -10 min
   Action: Update Status (Central Valley Region document link below)

7) Mgt. Practice Subcomm - Effective Management Practice Evaluation- Parry Klassen – 10 min
   Action: Review/approve changes to document and review by Technical Committee

8) Groundwater Resources Assoc/CV-SALTS Co-Sponsored Conference June 13-14 – Jeanne Chillcott - 10 min
   Action: Discuss and confirm CV-SALTS participants for June 12-13-14

9) Subgroup evaluating MUN Archetypes and CV Work plan – Jeanne Chilcott – 10 min
   Action: Update and Discuss

10) Set next meeting objectives/date – March 9th Admin Call, February 16th Policy Session
    Review Schedule of Policy Discussions and other meetings - 10 min

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AGENDA
1) Welcome and Introductions Chair
   ➢ The meeting was brought to order by Vice Chair, Jeff Willett. Chair, Parry Klassen, took over upon arrival on the call.
   ➢ a. David Cory moved to approve, and Linda Dorn seconded, and by general acclamation the December 12, 2011 meeting action notes were approved.
   b. Roll call was completed.

2) 2011 CV-SALTS Progress Milestones Status Updated
   ➢ Daniel Cozad reviewed current status of individual milestones. Elements in work during January-February time frame:
     • 5-Year Work Plan and Critical Path items to be covered in detail in agenda item #8.
     • July-December semi annual report to be covered in agenda item #3.
     • Contracts for completing 5-year workplan tasks show a January-February target but could be pushed into March.
     • In response to a request from Jeanne Chilcott, Daniel will include “Date Completed” for all tasks in future Milestone updates.

3) 2011 July-December 6 Month Progress Report
   ➢ Daniel Cozad presented an overview of the 6 Month Progress Report.
     • After review committee members made the following requests for revision to the final document:
       o Linda Dorn requested that the total expenditures to date from the Cleanup and Abatement funds be included in the report.
       o Jeanne Chilcott requested that a summary of specific accomplishments during July-December be included in the introductory section of the report.
     • Tim Johnson moved, and Nigel Quinn seconded, and by general acclamation the “CV-SALTS 2011 Accomplishments July-December” was accepted, including the requested revisions as noted above.

4) Mgt. Practice Subcomm – Effective Management Practice Evaluation
   ➢ Parry Klassen reviewed the status of the BMP Subcommittee’s progress on development of a standard management practice template and reference toolbox.
   ➢ Parry also covered the USDA’s Specialty Crop Research Initiative, and indicated they had submitted a grant proposal to the program at the end of November.
   ➢ Additionally, Daniel Cozad and Parry met with State management at NRCS in late November and obtained agreement from NRCS to work with CV-SALTS in various aspects of the implementation phase. NRCS has two staff members who specialize in salt and nutrient management.

5) Technical Project Management: Work Action Recommendation
   ➢ Daniel Cozad reviewed the status of technical tasks completed through the end of November. At that time the San Joaquin Valley Drainage Authority and the Program Manager elected to temporarily suspend activities on technical projects until finalization of the current basin planning activities.
David Cory moved, and Nigel Quinn seconded, and by general acclamation the committee agreed to hold off on any more technical work until there is specific direction on what that technical work is determined, ratifying staff and Authority actions.

6) **Subgroup evaluating MUN Archetypes and CV Work plan**

- Jeanne Chilcott reviewed the subgroup’s activities since the last Administrative call.
  - The group met with representatives from EPA and the State Board on January 10th. Representatives from those groups will be included in future meetings.
  - The next small group meeting will be mid-February.
  - Tim Johnson advised that Roberta Firoved would be the contact at the Rice Commission for this subgroup.
  - The subgroup would like to have Richard Meyerhoff review their draft when completed. After the next meeting the subgroup will present the work to the Technical Advisory Committee for concurrence on focus and direction for the project.

7) **Groundwater Resources Assoc/CV-SALTS Co-sponsored Conference June 13-14 2012**

- Daniel Cozad reviewed the proposed schedule for this conference to be held in Fresno. The tentative dates are June 13-14.
- June 13th will be more oriented towards nitrates/nutrients. June 14th will focus on salt and nutrient management programs and proven salinity management solutions.
- There will also be a workshop on CV-SALTS for the Regional Board members on the afternoon of June 12th.
- Daniel advised committee members that they should anticipate several members being asked to make presentations on the 13th and/or participate on the 12th.
- Nigel Quinn also suggested another outreach opportunity for CV-SALTS might be the California Water and Environmental Modeling Forum (CWEMF). The conference will be in Folsom in the April-May time frame. Nigel advised the committee that he would be happy to work with anyone interested in putting a presentation together. If there is enough interest CV-SALTS can have a dedicated session.

8) **Five Year Work Plan & Strategy Framework Introduction**

- Daniel Cozad introduced the initial drafts of these documents. The documents are to be covered in more depth at the January 19th Policy Session.
- J.P. Cativiela inquired about the inclusion of monies spent on groundwater monitoring during 2011 as a stakeholder contribution. Daniel will forward the Stakeholder Contribution Form developed last fall, on which the contribution can be submitted and reviewed.
- Daniel indicated that the Strategy Framework draft had been included in the package primarily to encourage members to review it. David Cory indicated that he had read through it and felt that it synthesized the process down very succinctly, and encouraged others to read it.

9) **Set next meeting objectives and date – February 14th Admin Call, February 16th Policy Session**

- The next Administrative Call will be February 10th at 10:00 AM.

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### CV-SALTS Committee Rosters

<table>
<thead>
<tr>
<th>Executive Committee Membership</th>
<th>CV-SALTS Executive Committee Meetings During 2012</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Leadership Partners</strong></td>
<td><strong>Past Participants:</strong></td>
</tr>
<tr>
<td>1 Central Valley Water Board</td>
<td>Tom Griffith, Envirotech</td>
</tr>
<tr>
<td>Alt Central Valley Water Board</td>
<td>Stephen McCord, LWA</td>
</tr>
<tr>
<td>2 State Water Resources Control Bd.</td>
<td>John Herrick, EI</td>
</tr>
<tr>
<td>3 Department of Water Resources</td>
<td>Katy Walsh, IWU</td>
</tr>
<tr>
<td>Alt Department of Water Resources</td>
<td>Mark Gowdy, SWRCB, Water Rights</td>
</tr>
<tr>
<td>4 US Bureau of Reclamation</td>
<td>Betty Yee, RWQCB</td>
</tr>
<tr>
<td>5 Environmental Justice</td>
<td>Rik Reamsnor, SWRCB</td>
</tr>
<tr>
<td>6 Environmental Water Quality</td>
<td>Marlin Steiger, City of Vacaville</td>
</tr>
<tr>
<td>CV Salinity Coalition</td>
<td>Past Participants:</td>
</tr>
<tr>
<td>1 CASA</td>
<td>Tom Buford, CVWQCB</td>
</tr>
<tr>
<td>2 County of San Joaquin</td>
<td>Jim Strandberg, EKI</td>
</tr>
<tr>
<td>Alt County of San Joaquin</td>
<td>Karen Ashby, LWA</td>
</tr>
</tbody>
</table>
| 3 SWRCB                       |单职业者：
| 4 City of Fresno              | Merritt Rasmussen, SWRCB                          |
| 5 CA Leaque of Food Processors| Katy Walsh, IWU                                   |
| Alt CA Leaque of Food Processors| Mark Gowdy, SWRCB, Water Rights                  |
| 6 Wine Institute              | Mark Gowdy, SWRCB, Water Rights                  |
| Alt Wine Institute            | Mel Lytle, LWA                                    |
| 7 City of Tracy               | Randi Johnson, SWRCB                             |
| 8 Sacramento Regional CSD     | Jim Johnson, EKI                                  |
| 9 San Joaquin River Group     | Jim Strandberg, EKI                               |
| 10 City of Modesto            | Jay Simi, CVWQCB                                 |
| 11 California Rice Commission| Mark Gowdy, SWRCB, Water Rights                  |
| 12 County of Mariposa         | Mark Gowdy, SWRCB, Water Rights                  |
| 13 Tulare Lake Drainage/Storage District | Betty Yee, RWQCB                               |
| Alt Tulare Lake Drainage/Storage District | Rik Reamsnor, SWRCB                           |
| 14 Stockton East Water District | Betty Yee, RWQCB                                 |
| 15 Western Plant Health Association | Rik Reamsnor, SWRCB                           |
| 16 City of Vacaville          | Past Participants:                               |
| Comm. Chairs/Co-Chairs        | Past Participants:                               |
| 1 Chair Executive Committee  | Tom Buford, CVWQCB                                |
| 2 Vice Chair Executive Committee| Jim Strandberg, EKI                             |
| 3 Technical Advisory Committee| Betty Yee, RWQCB                                  |
| 4 Public Education and Outreach| Rik Reamsnor, SWRCB                             |
| 5 Economic and Social Cost Committee| Betty Yee, RWQCB                                 |
| **Participants also identified for 01/19:** | Past Participants:                               |
| Tom Buford, CVWQCB            | Tom Buford, CVWQCB                                |
| Jim Strandberg, EKI           | Jim Strandberg, EKI                               |
| Kevin Ashley, LWA             | Katy Walsh, IWU                                   |
| Jean-Pierre, J.P., Calfièro, Dairy | Katy Walsh, IWU                               |
| Andy Safford, EKI             | Mark Gowdy, SWRCB, Water Rights                  |
| Karl Langeley, CSU/Fresno     | Mark Gowdy, SWRCB, Water Rights                  |
| Farm Wilson, City of Vacaville| Betty Yee, RWQCB                                  |
| Tim Durham, Somersch          | Betty Yee, RWQCB                                  |
| Tim Moreau, Risk-Sciences     | Rik Reamsnor, SWRCB                               |
| Jim Martin, CVWQCB            | Rik Reamsnor, SWRCB                               |
| Dave Houshmand, NCSWA/Sac Valley WQCD | Rik Reamsnor, SWRCB                           |
| Gary Carlson, Kennedy Jenkins | Rik Reamsnor, SWRCB                               |

*Already votes as Leadership or Coalition member*
<table>
<thead>
<tr>
<th>Month</th>
<th>Activity</th>
<th>Status/Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>February</td>
<td>Program Manager in place to conduct overall management, facilitation and administrative activities for the effort</td>
<td>Completed 2/1/11</td>
</tr>
<tr>
<td>February</td>
<td>Leadership meeting to obtain feedback on overall direction and goals of CV-SALTS</td>
<td>Completed 2/24/11</td>
</tr>
<tr>
<td>April</td>
<td>Framework developed for salt/nitrate identification studies (Assess the validity of the salt source survey pilot studies. If the approaches need modification, identify the adjustments that will be made to make the approach useful in the rest of the region.) [from Knowledge Gained Subcommittee]</td>
<td>Completed - April and July Final January 2012</td>
</tr>
<tr>
<td>May</td>
<td>Technical Project Manager Team in place to insure technical tasks needed to complete effort accomplished on time and on budget – scope in March, Procurement April, Award in May</td>
<td>Completed October</td>
</tr>
<tr>
<td>June</td>
<td>Develop interim recommended review process for identifying Best Practical Treatment or Control for salinity and nitrate (screening tool) [from the Management Practice Subcommittee]</td>
<td>Completed October, with updates in 2012</td>
</tr>
<tr>
<td>July</td>
<td>FINAL updated strategy including policy and framework</td>
<td>Policy/Framework Draft January Final February</td>
</tr>
<tr>
<td>August</td>
<td>FINAL updated workplan containing the following elements</td>
<td>Presented in January for Approval in February</td>
</tr>
<tr>
<td></td>
<td>✓ Five Year Critical Path:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Work to be performed, timelines, deliverables and budget by task number based on confirmed project funding leading to Salinity-Nitrate Management Plan and Basin Plan Amendment language</td>
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<tr>
<td></td>
<td>o Unfunded work (with estimated cost) that would improve the final product</td>
<td></td>
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<tr>
<td></td>
<td>o Milestones to insure timely progress</td>
<td></td>
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<tr>
<td></td>
<td>o Five-year funding plan</td>
<td></td>
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<tr>
<td></td>
<td>✓ Identify needs for long term implementation</td>
<td></td>
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<tr>
<td></td>
<td>o Activities</td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Continuous funding mechanism</td>
<td></td>
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<tr>
<td></td>
<td>o Integrated monitoring system</td>
<td></td>
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<tr>
<td>September</td>
<td>Develop a process for coordinating with RWMG planning and implementation projects with a nexus with salt or nutrient management, and other ongoing efforts on salinity management</td>
<td>Outreach Letter and Project Call in December 2011</td>
</tr>
<tr>
<td>September</td>
<td>Identify administrative and technical program needs that could be met through in-kind services rather than financial contributions</td>
<td>Solicit contribution to identified project items in February 2012</td>
</tr>
<tr>
<td>June and December</td>
<td>Prepare semiannual (June and December) status reports on funding and progress toward completing work plan tasks</td>
<td>June Completed July, December completed January</td>
</tr>
<tr>
<td>December</td>
<td>Contracts for completing tasks included in the 5-year workplan have been awarded or are developed and pending approval.</td>
<td>SOQ Completed scope approval in February/March</td>
</tr>
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</table>
CV-SALTS Conceptual Model
Summary Description

A Conceptual Model for Understanding Salts and Nitrates in the Central Valley

1. Introduction and Context
The proposed Conceptual Model is intended to provide the technical basis to unify data and modeled information from across the Central Valley into a Geographic Information System (GIS) model framework for both understanding salt and nitrate and assisting with planning and Salt and Nutrient Management Planning (SNMP) preparation. Additionally, many critical tasks needed within CV-SALTS will be accomplished through this system. The Initial Phase will utilize basin wide data available in existing data sources. The following phases are the basis to build and expand tools needed for SNMP preparation.

Phase 2 will add additional information and analysis tools to support the SNMP. The phases and elements of the Conceptual Model\(^1\) are integrated into the 5-Year Work plan and support policy development with high level summarized information. The SNMP development will benefit from the ability to test assumptions and add more detailed information as it becomes available from local areas. This approach provides a common toolset to achieve the critical tasks for the Central Valley to comply with the appropriate requirements for Salt and Nutrient Management Plans from the State Water Resources Control Board Recycled Water Policy.

The utility of a common Conceptual Model for CV-SALTS is to have a uniform basis for determining salinity source areas and discriminating between those areas in salt balance, those areas that may be accumulating salt and those area that are net exporters of salt. Salinity management practices will need to be tailored to the circumstances in each of these areas. Conceptual models can be simple mass balances of complex numerical simulation models – each model employs key assumptions that help to quantify the important hydrologic processes that drive salinity fluxes in the watersheds. A good conceptual model is one that is technically sound, easy to explain and understand and that can be applied to the variety of land uses in the basin i.e. the conceptual model should be able to deal with dryland farming, irrigated agriculture, and managed wetlands, rural and urban land uses.

This document with the Methodology Addendum will be used to develop the Scope of work for the Initial Phase Conceptual Model (CM).

\(^1\) Conceptual Model, as used here is intended to be a GIS based decision support tool used to summarize and illustrate the salt and nitrate status and assist in understanding of the water and salt sources in large areas of the Central Valley. Similar to a physical model of a building in design by an architect it represents the structure and appearance (data based information) but is simplified to an appropriate level for discussion and decisions.
2. Summary of the CV-SALTS Conceptual Model

This conceptual model would use existing GIS data layers, model outputs, and existing salt and nitrate source information. The concept is to summarize and aggregate water, salt, nutrients and other relevant information to a very high level through GIS to allow a common level of representation and integration.

By doing this in phases the Model would serve to drive discussion and decisions at an appropriately high level. **Concept or Initial level**, shown by the largest puzzle pieces in Figure 1, would be used for Central Valley wide discussions and decisions and policy issues. When a high level is completed it is expected that additional detail will be needed for the **SNMP or Analysis and Planning Level** which may be developed and summarized to fit this more detailed level, shown by the smaller puzzle pieces in Figure 1. This summary will provide appropriate information for each audience and level of decisions as shown below:

- Drive simple large scale understanding at high level - Large puzzle pieces (35Kft)
- Provide clear understanding for SNMP at more detailed level - smaller puzzle pieces (10Kft)
- Integrate available data and be defendable at lowest level (ground floor)

The final phase for this process can incorporate current and future Local planning efforts at the **Local SNMP level and support implementation** and future monitoring results.

Overall this approach achieves the following goals:

- Uses credible water balance
- Uses best existing available data
- Answers questions (shown in Attachment 2) at the appropriate level for assessment, planning and documentation
- Facilitates cooperating groups to provide better information
- Works with existing data sets and accommodates future boundaries
- Allows assessment of impacts to local future users and downstream uses.

This approach is also consistent with work being done by many other studies including those on the West Side of the San Joaquin by the Bureau of Reclamation, CV-SALTS Pilot Study, and work being done for the Drinking Water Policy and Irrigated Lands efforts. The Model should clearly state what is capable of providing at each level of detail and what is not to be provided.
3. Technical Committee Considerations and Recommendations

The Technical Committee at a meeting held on December 16, 2011, reviewed the concept and discussed it in the detail described herein. Several suggestions and recommendations were made that improve the concept toward implementation. These consensus recommendations are incorporated throughout this description and outlined in the sections below.

**Utilize CVHM**\(^2\) for water balance/equilibrium in the Central Valley, this existing geodatabase has been peer reviewed and validated flow and used 8500 drillers logs to develop subsurface characteristics for most of CV. An excellent summary of the model is shown in Attachment 3 and with additional information at the link in the footnote. Datasets from this model will soon be published on the Reclamation Website, and is commonly used in CV.

**Use Land Use Based Estimation** for primary salt sources as was done in the pilot studies, and is done in most other models for source information. DWR and others provide information that can augment existing datasets and used for verification.

**Utilize Existing Region Wide Databases** especially GIS databases for water quality and other data; some of the data that may be used includes, but is not limited to the following sources identified by the Technical Advisory Committee:

**Drinking Water Policy Technical Working Group** – Groundwater and water supply data from models developed for or performed under the direction of this group.

**DWR Applied Water Data for Irrigated Agriculture** – DWR applied water values are available and have been demonstrated to represent irrigation water usage for agriculture compared estimates based on climatic data and specific irrigation practice assumptions. This data may also be used for validation of the models.

**SB X2 1 Nitrate Project** – Study directed by Thomas Harter recently published reports on water quality modeled in the Tulare Lake Basin which are more detailed in areas of the Tulare Lake Basin. Included in this work, for example, are estimates of applied nitrogen by crop and locale, as well as newly available references helpful in developing such estimates.

**Pilot Study Data Sources** – Use the constituent data and appropriate model output from the West Side Reclamation Study and the CV-SALTS Salt and Nutrient Source Pilot Study Areas. Several of the pilot study input data themes have been updated and expanded to the entire Central Valley as part of modeling done for the Drinking Water Policy Technical Working Group. This dataset also includes assumptions and some limitations determined by the Knowledge Gained committee.

\(^2\) Central Valley Hydrologic Model developed by the USGS [http://pubs.usgs.gov/fs/2009/3057/](http://pubs.usgs.gov/fs/2009/3057/) provides hydrologic water balance for surface and groundwater waters for the Central Valley; additional information is available in Attachment 3. CV2SIM is an alternative model with differing assumptions and therefor differing water balance.
Dairy General Order Representative Groundwater Monitoring Results Report - This information includes data developed in response to the Regional Board Dairy General Order for dairy monitoring of groundwater. This dataset covers the entire Central Valley and contains GIS layer information for several relevant needs. While these data were developed to determine priority groundwater monitoring areas, its water quality data and other physical parameters may be used for CV-SALTS. Layers include average depth to groundwater, average recharge, average soil permeability and water quality data from 1960 to 2000 for nitrate and chloride. Additional information on this dataset is available in Attachment 4.

Validate Salt and Nitrate Sources Data – Data on several major sources of salt can be used to augment or validate the information in the land use models, such as, but not limited to the following:

- Irrigation and drainage district records
- Pesticide use records from State databases to validate land and crop information
- Sales records of fertilizers and amendments from CDFA
- Animal herd size values from County Ag Commissioners
- Dairy and other significant permitted sources from the Regional Water Board
- Wastewater treatment and permitted treatment plants from Regional Water Board
- Monitoring results from the Irrigated Lands Program coalitions

Initial Methodology Considerations will be discussed by the Technical Advisory Committee. These will be documented an addendum to this document as developed. This initial methodology will assist those preparing the workplan for the studies. The final methodology will be proposed review and approved in the workplan. Additionally handling of temporal issues will be documented in the methodology addendum. These will be based on data which is available and the ability of the data sources to provide models an adequate understanding to project future conditions.

Stated Assumptions and Default Values – Where information is lacking or data gaps exist, utilize predetermined default values to determine salt and nitrate loads. Data gaps may not be addressed if reasonable default values cannot be established. Default values, the basis for these values and the data gaps not covered by the default values should be clearly stated. Data gaps not address by default values will also be identified. Evaluate of additional work will be needed to supplant the default values will be completed.

Stakeholders Coordination is Key – A component of the program will be an integrated effort with stakeholders representing important areas of the CV. Engaging and having a working process to support stakeholders who have salt data and management capability is critical. This conceptual model would help encourage participants who may want to provide data in the initial or after the initial work to provide additional or separate information. It must engage them and allow them to get something in return. Additionally, entities who have critically needed data for CV-SALTS but are not participants in CV-SALTS can contribute data on for their areas through a CWC §13267 report as requested by the Regional or State Board.

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3 Dairy General Order Representative Groundwater Monitoring Results Report was developed for the Dairy General Order monitoring program and provides data in GIS format for the assessment of monitoring groundwater for Dairy CARES. Additional information is available in Attachment 4.
4. Development Process and Questions
This description was developed with members of the Technical Committee over and Some questions discussed in the development of the Conceptual Model were resolved by information provided by the Committee and are summarized below:

- The CM approach can accommodate the level of spatial and temporal aggregation/disaggregation needed for CV-SNMP
- The GIS database can be used to overlay likely data sources together when aggregated
- The CM can be compatible with the data level needed for local SNMP/project assessment
- Site Specific Objective or other levels of entry can be integrated into the CM
- The CM is compatible with implementation alternatives or archetype/prototype evaluation

5. Questions Matrix for Conceptual Model Phases
To provide a concise review of the questions to be answered at each phase of the CM a matrix of questions was developed as is shown in Attachment 4. The questions were reviewed by the Technical and Executive Committees and should drive the information and tools needed to complete the plan at these levels. This matrix will become part of the specification for procurement of these services.

6. Methodology Addendum
A Methodology Addendum will be prepared by the Technical Committee documenting consensus methodological and Technical issues and assumptions to be used by those performing this work. Any issues not resolved by the committee in the addendum will be addressed and proposed in the workplan by the contractor.

- Critical elements of methodology for aggregating water quality in surface and groundwater
  - Water Balance
  - Salt and Nitrate equilibrium/balance
  - Nitrogen Loss issues
  - Integration/aggregation of conflicting data
  - Minimum data quality restrictions
- Assumptions where data does not exist or for future scenarios/projections
- What level of quality is expected from each phase of the model, how will it be assessed?
- How will salt and nutrient balances be calculated from loading information?

The addendum may also consider recommendations to the Executive Committee, such as:

- Are there additional information needed for policy level regulatory decisions
- When should the Technical Committee or Executive Committee review progress and results?
- Are there other efforts the contractor should be aware of as they do this work?

This addendum when completed will be shown as part of this document in Attachment 5.
7. Additional Development and Work Planning
The Methodology Addendum will provide specific consensus approach methodology and other technical specifics will be developed. Additionally, the documents developed by the Knowledge Gained Committee and Pilot Implementation Study should be reviewed.

Some areas the work plan should cover include:

- How should areas where there is little data be handled or displayed?
- What are the areas of significant assumptions in the data and models?
- What are the most likely data gaps that have a long lead time to completion?
- What limitations are likely other than data?
- What process for outreach should be taken for the initial CM level? For the SNMP steps?

8. Scoping and Procurement Steps
The schedules and budgets shown below correlate to CV-SALTS Workplan and policy process goals. At this time, detailed scoping and work planning that would provide more reliable schedules and budgets to complete the desired work have not been developed. It is recognized that adequate time and resources for the work will be essential to completion of quality work products to meet program needs.

This Conceptual Plan Description review by the Technical Committee will be presented to the Executive Committee for concurrence. If acceptable a performance based scope of work should be prepared for procurement of the initial phase. While future phases will likely be in separate procurements, they are included here to ensure the future phases will build upon and augment the initial phase CM.

Initial Concept Phase
- Develop Work Plan, assumptions, methodology, and data sources for Conceptual Model
- Upon approval, implement work plan and construct model geodatabase consistent with existing BUOS Phase I
- Select and develop tools to calculate salt and nutrient balances in conjunction with databases and other modeling tools and other efforts needed to answer matrix questions
- Data acquisition, formatting and GIS development to provide Conceptual Model
- Provide information, briefings and outreach for understanding
- Develop needs for SNMP Data level beyond initial Conceptual Model
- Schedule 6-8 months
- Budget $200,000

Phase 2 – CV-SNMP- Masterplan
- Develop Work Plan, modifications and additional data sources for second level of detail
- Upon approval, implement work plan, aggregate and analyze additional data and develop additional model components such as temporal capacity forecasting etc.
- Data acquisition, formatting and GIS development to provide SNMP Level Model and efforts needed to answer matrix questions for Phase 2
- Provide information, briefings and outreach for understanding
- Develop needs for SNMP Data beyond existing SNMP Level Conceptual Model, testing implementation etc.
• Schedule 12-18 months
• Budget $400,000

**Final Phase -Documentation**

• Assessment and support for the SNMP, Implementation Plan and Documentation
• Incorporating Data from Regional SNMP
• Other Tasks
• Schedule 9 months
• Budget $100,000

**9. Acknowledgements**

This document includes significant contributions from the consultants working for and with CVSC Members and others participating with CV-SALTS as well as work from EKI as Technical Project Manager. Assistance and feedback from the Regional Board Staff and from the Committee Chair, Nigel Quinn provided significant clarifications and additions to the work to develop the concept.
Attachment 1 - Figure 1 - Conceptual Model Diagram
### CV-SALTS Conceptual Model - Questions to be Answered Matrix

The conceptual model will answer the following basin planning/SNMP questions:

<table>
<thead>
<tr>
<th>#</th>
<th>Conceptual Model Question</th>
<th>Initial/Planning</th>
<th>CV-SNMP/Master Plan</th>
<th>Local SNMP/Implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Identify areas/regions/subareas achieving water, salt, and/or nitrate balances?</td>
<td>Yes by color/magnitude</td>
<td>Detailed at the SNMP Level</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Clearly show high priority areas? And impaired areas or Hotspots</td>
<td>Yes with Ex. Committee direction</td>
<td>Yes, in greater detail</td>
<td>Yes</td>
</tr>
<tr>
<td>3</td>
<td>Identify areas/regions/subareas are accumulating or depleting water, salt, and/or nitrate?</td>
<td>Visible at the Initial with magnitude</td>
<td>Detailed at the SNMP Level</td>
<td>Yes, if local data exists</td>
</tr>
<tr>
<td>4</td>
<td>Identify water, salt, and nitrate transport within and to/from Central Valley and rate</td>
<td>Yes, water based</td>
<td>Yes, water and other transport based</td>
<td>Higher level detail of available locally</td>
</tr>
<tr>
<td>5</td>
<td>Identify rate of accumulation?</td>
<td>At a high level summary</td>
<td>Estimate depending on the available data</td>
<td>Dependent on local modeling</td>
</tr>
<tr>
<td>6</td>
<td>Forecast future accumulation or depletion?</td>
<td>No</td>
<td>Estimate depending on the available data</td>
<td>Dependent on local modeling</td>
</tr>
<tr>
<td>7</td>
<td>What are the sources of water, salt, and nitrate into the Central Valley?</td>
<td>Yes, major sources</td>
<td>in higher level of detail</td>
<td>Dependent on local data</td>
</tr>
<tr>
<td>8</td>
<td>Where and at what rate salt sources enter the Central Valley?</td>
<td>yes, major sources</td>
<td>in higher level of detail</td>
<td>Dependent on local data</td>
</tr>
<tr>
<td>9</td>
<td>Forecast future magnitude of sources</td>
<td>No</td>
<td>Limited, dependent on modeling</td>
<td>Dependent on local data and models</td>
</tr>
<tr>
<td>10</td>
<td>Integrate additional studies by others</td>
<td>No</td>
<td>Yes if completed</td>
<td>Yes as completed</td>
</tr>
<tr>
<td>11</td>
<td>Identify major data gaps?</td>
<td>Area data gaps shown</td>
<td>Areal and constituent gaps shown</td>
<td>Areal, temporal and constituent gaps shown</td>
</tr>
<tr>
<td>12</td>
<td>Illustrates the primary drivers of salts?</td>
<td>Yes, as related to water and land use</td>
<td>Yes, in greater detail where needed</td>
<td>Local information</td>
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<tr>
<td>13</td>
<td>Show how primary drivers result different management practices?</td>
<td>No</td>
<td>No, detail level not likely adequate</td>
<td>Possible with better data/local knowledge</td>
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<td>14</td>
<td>Is temporal variability included?</td>
<td>No</td>
<td>Yes, level needed TBD</td>
<td>Yes</td>
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<td>15</td>
<td>Are future scenarios included?</td>
<td>No</td>
<td>Yes, the level and number needed TBD</td>
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<td>16</td>
<td>Integrates archetype and prototype efforts?</td>
<td>No</td>
<td>Yes</td>
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<td>Conceptual Model Question</td>
<td>Initial/Planning</td>
<td>CV-SNMP/Master Plan</td>
<td>Local SNMP/Implementation</td>
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<td>17</td>
<td>Supports assimilative capacity assessment and planning</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
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<td>18</td>
<td>Supports required elements of the SNMP</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
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<td>19</td>
<td>Support for management practice assessment?</td>
<td>No, not separately</td>
<td>Yes, after baseline set, review various practices</td>
<td>Yes depending on local implementation</td>
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<td>20</td>
<td>Support SSALTS, initial development /refinement /impact of implementation plans?</td>
<td>No</td>
<td>Yes, after baseline set, assess and plan implementation</td>
<td>Yes depending on local implementation</td>
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<td>21</td>
<td>Supports offsets, credits, trading related assessment?</td>
<td>No</td>
<td>Yes, but limited, further development needed</td>
<td>Yes if appropriate</td>
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<td>22</td>
<td>Identify Rate of change for concentrations in groundwater and vadose zone?</td>
<td>Preliminary Indication</td>
<td>General direction and rate where data support assessment</td>
<td>Yes, depending on local modeling</td>
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<td>23</td>
<td>Incorporate changes to Beneficial Uses and Objectives or other standards</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
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<td>Indicate high level Regulatory Management Areas</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<td>25</td>
<td>Indicate Regulatory Management areas which may be appropriate</td>
<td>Preliminary Indication</td>
<td>Yes</td>
<td>Refinement</td>
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<td>Support BPA, CEQA, Economic, Antideg, etc.</td>
<td>No</td>
<td>Yes</td>
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<td>Supports Tier 1 efforts RE Waterbodies</td>
<td>Yes</td>
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<td>Supports Tier 2 efforts RE Standards</td>
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<td>Supports Tier 3 efforts RE Assessment</td>
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<td>Supports Tier 4 efforts Re Implementation</td>
<td>No</td>
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<td>31</td>
<td>Supports Monitoring planning and periodic reassessment</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
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Attachment 3 - Summary of the CVHM Model

The USGS Central Valley Hydrologic Model (CVHM; Faunt et al., 2009) builds on previous investigations, such as the USGS Central Valley Regional Aquifer System and Analysis (CV-RASA) project and several other groundwater studies in the Valley completed by federal, state and local agencies at different scales. The development of the CVHM comprised four major elements: (1) a comprehensive Geographic Information System (GIS) to compile, analyze and visualize data; (2) a texture model to characterize the aquifer system; (3) estimates of water budget components by numerically modeling the surface water and groundwater flow across the entire Central Valley system, including irrigated agriculture water demands and processes; and (4) simulations to assess and quantify hydrologic conditions. The CVHM professional paper is posted online; all model input and output files are also available online for use by water managers and other agencies at http://pubs.usgs.gov/pp/1766/.

The CVHM simulates the complex hydrologic system of the Central Valley using a number of advanced components of the USGS’s numerical modeling code MODFLOW-2000 (MF2K), including the Farm Process (FMP). The FMP dynamically allocates groundwater recharge and groundwater pumpage on the basis of crop water demand, surface-water deliveries, and depth to the water table. This approach is particularly useful in the Central Valley where private groundwater pumping for irrigation is not metered. Irrigation water requirements are calculated from consumptive use, effective precipitation, groundwater uptake by plants, and on-farm efficiency. The FMP links with other MF2K Packages, including the Streamflow Routing Package (SFR1) to facilitate the simulated conveyance of surface-water deliveries. If surface-water deliveries are insufficient to meet irrigation requirements, the FMP invokes simulated groundwater pumping. The FMP uses specified irrigation efficiencies to calculate irrigation return flow.

The CVHM simulates groundwater and surface water flow, irrigated agriculture, land subsidence, and other key processes in the Central Valley between October 1961 and September 2003 on a monthly basis. This model is discretized horizontally into 20,000 model cells of 1-mi² areal extent, and vertically into 10 layers ranging in thickness from 50 to 1,800 ft. The texture model was used to estimate hydraulic conductivity for every cell in the model. Land subsidence, an important consequence of intense groundwater pumpage in susceptible aquifer systems, especially in the San Joaquin Valley, is simulated using the SUB Package. Intra-borehole flow, an important mechanism for vertical flow within and between hydrogeologic units in parts of the valley, is simulated using the Multi Node Well (MNW) package.

Attachment 4 – Description of Dairy Cares Datasets

Technical Approach Used to Identify Hydrogeologically Sensitive Regions along with Salt and Nitrate Impacts to Shallow Groundwater in the Central Valley

On May 3, 2007, the Central Valley Regional Water Quality Control Board (CVRWQCB) adopted *Waste Discharge Requirements General Order No. R5-2007-0035 for Existing Milk Cow Dairies* (General Order). The General Order regulates waste discharges to land at the majority of 1,429 existing dairies of all sizes and imposes significantly more stringent requirements than in the past. The CVRWQCB has proceeded with implementation of the General Order by issuing directives, under California Water Code Section 13267, to individual dairies that require the installation of groundwater monitoring wells. In October 2009, and parallel to these activities, Dairy Cares submitted a proposal to the CVRWQCB Executive Officer for the development of a collaborative plan that would allow representative groundwater monitoring networks to satisfy the alternative groundwater monitoring method recognized by the General Order.

An integral part of implementing the representative groundwater monitoring program was the development and implementation of a technical approach to identify a high priority, hydrogeologically sensitive geographic region in the Central Valley within which to initiate the representative groundwater monitoring approach. The method incorporates analysis of existing groundwater quality data to identify 1) where high groundwater nitrogen and salt concentrations occurred historically, 2) where increasing salt and nitrate concentrations are indicated, and 3) the hydrogeologic areas where changes in groundwater quality are most likely to be quickly detected in response to modified (improved) management practices.\(^4\)

The cooperating members of the dairy industry (particularly Dairy Cares) who funded this technical work have agreed to share the results of their analysis with the Central Valley Salinity Coalition.

**TECHNICAL APPROACH**

The technical approach employed to identify hydrogeologically sensitive regions in the Central Valley included the use and organization of readily available pertinent data, utilization of spatial analyses which use a Geographic Information System (GIS) database and mapping tool, and also application of non-spatial analyses. The methodology was developed with the recognition that existing groundwater quality conditions are the result of historical processes. The methodology incorporates parameters that are either widespread (e.g., groundwater quality data, whole farm nitrogen balance) or were derived via extensive data collection, analysis, and scaled averaging by others (e.g., recharge to groundwater, depth to groundwater, soil survey information). Therefore, the methodology places little significance on any individual data point. Instead, it places emphasis on regional comparisons.

\(^4\) The method described in the *Report of Results* (LSCE, 2010) also utilized dairy farm locations and herd densities to help identify areas of high groundwater nitrogen and salt concentrations thought to be substantially attributable to dairy operations and where changes in water quality are most likely to be detected quickly due to the recent adoption of improved dairy waste management practices. However, the existing groundwater quality data spanning the period from the 1960s through the late 2000s makes the groundwater quality observations in the Central Valley relevant to other salt and nutrient sources as well.
**Data Components**

Seven data components were considered for purposes of identifying high priority areas relative to dairy land use and waste management effects, including:

- Dairy locations and population densities of dairy cows
- Non-dairy land use information
- Depth to groundwater
- Recharge to groundwater
- Soil survey information
- Shallow groundwater nitrate and salt concentrations
- Whole farm nitrogen balance

These data components included the compilation and analysis of data for the entire Central Valley. Those data components relative to the broader interest for salt and nutrient management planning and prioritization of areas of interest (i.e., data components 2 through 6) are further described below. The technical approach and additional discussion of the individual data components, including the benefits and limitations of each data type, is provided in the *Report of Results* (LSCE, 2010).

**Non-Dairy Land Use Information**

**Rationale**

Human activities associated with certain land uses unrelated to dairies have been identified as potentially contributing to nutrient and salinity increases in groundwater, including non-dairy agriculture, ranches, and other livestock operations. Consideration of non-dairy land use types is useful in the evaluation of the proportional non-dairy contribution to existing groundwater conditions.

**Sources**

- USGS’s CVHM
- DWR
- USDA National Agricultural Statistics Service (NASS)

**Data Description**

The U.S. Geological Survey’s (USGS) Central Valley Hydrologic Model (CVHM) (Faunt, 2009) includes model input files with extensive land use information. In addition, the California Department of Water Resources (DWR) gathers and compiles land use information on a county-wide basis. This information is available for some counties but inter-county differences exist between land use categorization, scales and mapping accuracy, and the times of the mapping efforts. USDA NASS maintains annual records by county on livestock herd sizes.

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6 CVHM’s land use input files are a comprehensive source of information as they were compiled from many different sources such as California Department of Water Resources (DWR), USGS Geographic Information Retrieval and Analysis System (GIRAS), and USGS North American Land Class Data.
**Depth to Groundwater**

*Rationale*

The depth to first encountered groundwater gives an indication of the thickness of the unsaturated zone. The thickness of the unsaturated zone can give an indication of the comparative sensitivity of groundwater to surface water percolation. For example, a thin unsaturated zone may be expected to provide less protection for groundwater resources than a thick unsaturated zone, which provides greater opportunity for natural attenuation to occur (other variables constant). The thickness of the unsaturated zone can also provide an indication of the relative travel time of vertical unsaturated flow to reach groundwater. Therefore, the depth to groundwater is an important component within the framework of the proposed methodology. Areas of higher priority would include areas where the depth to groundwater is relatively shallow and groundwater is more sensitive to surface activities.

**Sources**

- USGS’s CVHM
- DWR

**Data Description**

Hydraulic head output files from CVHM and DWR’s mapped contours of equal depth to first encountered groundwater (identified as the unconfined aquifer).

**Recharge to Groundwater**

*Rationale*

The rate of recharge represents the link between surface water, irrigation/applied water, precipitation, and groundwater and gives an indication of aquifer vulnerability to surface percolation. Under certain assumptions and a given constituent concentration, the rate of recharge determines the constituent’s mass loading rate to groundwater. For example, an area of low groundwater recharge is expected to be less vulnerable to contamination from surface water percolation than an area of high recharge (other variables constant). Therefore, knowledge of the vertical flux to groundwater is a useful component within the framework of the proposed methodology.

**Source**

- USGS’s CVHM

**Data Description**

Vertical flux output files from CVHM⁷. These data were manipulated to achieve a database of DWR-defined subregional areas and their average rate of recharge per year on a decadal basis (1960s to 2000).

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⁷ In hydrologic wet years, recharge of excess applied irrigation water is estimated to be approximately 2 times greater than stream losses. In hydrologic dry years, this ratio is amplified to approximately 6:1 (Faunt, 2009). The proportional magnitude of recharge from irrigation to groundwater demonstrates the enormous influence of irrigated agriculture on groundwater resources in the Central Valley.
Soil Survey Information

Rationale

Soil survey information includes soil textural data that can be related to the soil’s permeability. Farming practices may vary according to soil type, and soil permeability plays a key role affecting irrigation practices and efficiencies, the potential for leaching, and the availability of oxygen in shallow groundwater, which affects the fate of nitrogen components. Therefore, soil survey information was used to complement recharge rates simulated with CVHM.

Source

- Natural Resources Conservation Service’s (NRCS) Soil Survey Geographic Database (SSURGO)\(^8\)

Data Description

Compilation of extensive, detailed soil descriptions, which were generally to a maximum depth of 6 feet. 512 soil textural classes were organized according to their relative permeability and abundance in the vertical soil profile into 3 permeability categories.

Shallow Groundwater Nitrate and Salt Concentrations

Rationale

Information on shallow groundwater nitrate and salt concentrations gives an indication of existing groundwater conditions at a moment in time. The evaluation of existing conditions is a key component of the proposed methodology because it provides a relative measure of potential groundwater quality impacts associated with historical land uses and management practices.

Sources

- USGS National Water Information System (NWIS) including its Groundwater Ambient Monitoring and Assessment (GAMA) Priority Basins Project (implemented by the California State Water Resources Control Board [SWRCB]).
- SWRCB GeoTracker, including the newly available GeoTracker GAMA (Beta version) groundwater quality download option to spreadsheet.
- CVRWQCB

Data Description

USGS groundwater quality data are provided on-line and can be searched, for example, by region, date, constituent (e.g., nitrate and total dissolved solids), and total well depth.

SWRCB GeoTracker GAMA (Beta version) contains groundwater monitoring records from SWRCB/RWQCB, the GAMA domestic well program, USGS GAMA, Lawrence Livermore National Laboratory (LLNL) GAMA, California Department of Pesticide Regulation (DPR), DWR, and Electronic Data

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File (EDF) submittals from regulated facilities. These data were recently made available on-line. Data can be searched, for example, by region, date, and constituent (e.g., nitrate and total dissolved solids). The Report of Results (LSCE, 2010) includes maps showing decadal nitrate and chloride results spanning the time frame from the 1960s to the 2000s.

CVRWQCB data are composed of maximum nitrate concentration analytical results reported for non-barn domestic wells and on-site production wells (2007 and 2008) that were submitted by individual dairies to the CVRWQCB (Fresno and Sacramento offices) in response to the General Order.

**High Priority Area Selection for RMP Phase 1**

Based on the above criteria, the *Report of Results* (LSCE, 2010) recommended that the representative groundwater monitoring be initiated in Stanislaus and Merced Counties (i.e., from the Stanislaus River in the north and the Chowchilla River in the south) between the San Joaquin River and Highway 99. This area is referred to as the high priority area, and is characterized by predominantly coarse-grained, highly permeable soils, and shallow depths to groundwater.

Following approval of the RMP Workplan (LSCE, 2011), the first phase of the RMP is now underway with administration by the nonprofit organization, the Central Valley Dairy Representative Monitoring Program (CVDRMP), formed in 2010 to conduct and manage the RMP and comprised of approximately 1200 member dairies. The CVDRMP is presently in the process of creating a comprehensive sustainable dairy farming plan (SDFP). Components of the SDFP provide for rigorous peer review of RMP data collection, analyses, and interpretations, by two technical advisory committees, stakeholder input, and ongoing identification of research, extension and consulting needs, and funding sources necessary to support those needs.

**REFERENCES**


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9 The RMP Workplan (Monitoring and Reporting Workplan and Monitoring Well Installation and Sampling Plan; LSCE, 2011).
Attachment 5 – Committee Methodology Addendum
To be attached when completed
CV-SALTS Program Work Plan

Goals
This work plan attempts to document efforts to achieve the following goals:

1. Develop a stakeholder driven Salt and Nutrient Management Plan for a sustainable Central Valley
2. Prepare a Basin Plan Amendment that contains the policy changes needed to facilitate sustainable SNMP and provide opportunities for economic and environmental improvements
3. Identify feasible plans for funding and implementing the practices, projects, and follow-up needed to demonstrate success.

Many milestones, tasks and efforts are embodied in these goals which are grouped into the major elements shown below.

Major Program Elements
The goals above are to be achieved with the following program elements which are color coded for use throughout the document according to the following key:

1. Policy Development, Planning, Outreach, Funding and Program Management
2. Technical Studies/Conceptual Model
3. Related and Integrated Efforts
4. Implementation Planning
5. Documentation for Approval
6. Initial Implementation
7. Monitoring and Reporting

Element Development
With a program as large and diverse as CV-SALTS most participants struggle to understand the entirety of the program. Additional complications in achieving a unified vision are that all participants have differing priorities and that plans as well as participants change over its development. To date several useful elements of the program have been developed. With the development of the phased Conceptual Model and the Strategy Framework it is easier to integrate the parts to complete the CV-SALTS vision.

Integration of Elements
Program Development, Management and Planning and Policy Development have been ongoing and will continue to support the process and CV-SALTS decision making.

Information gathering will restart after pilot activities with the Initial Phase of the Conceptual Model GIS tool and continues in refinement through Phase 2 and final phases to develop and illustrate the story of how salt and nitrate work in the Central Valley. It also serves as the tool used to develop the management strategies for the Central Valley Salt and Nutrient Management Plan (SNMP) and implementation of changes. In the final phases this tool provides alternative evaluation and supports the preparation of documentation for CEQA Documents, Basin Plan Amendment (BPA) and economics

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1 Conceptual Model additional description is being developed with the Technical Committee the most recent version is located here http://www.cvsalinity.org/index.php/documents/doc_download/862-conceptual-model-description-v-4-1-30-12
evaluations. Implementation Planning is coordinated and occurs at the same time as the Conceptual Model initiated with Strategic Salt Accumulation and Land Transportation Storage (SSALTS\(^2\)) and followed up with more refined studies developing implementation plans and tested through the Conceptual Model tools. The Major Elements and their constituent parts are shown below and as Attachment 1. Major elements are also in the Parallel Archetype/Prototype Table in Attachment 2.

### CV-SALTS PROGRAM ELEMENT INTEGRATION

**Policy Development, Planning, Outreach and Program Management**

**Initial Conceptual Model**
- Initial Assessment & Focus
- Policy Decision Support

**CV-SNMP Model**
- Detailed SNMP Analysis
- Management Evaluation
- Ag Zoning/ISWP BOIS II
- Policy Decision Support

**Final Phase Local SNMP Model**
- Documentation Support

**Technical Studies**
- Archetype SNMP Template Development

**Implementation Planning**
- SSALTS
- Initial Mgmt. Alternatives
- Refined Mgmt. Alternatives/Projects

**Related and Integrated Efforts**
- Management Practices
- Lower San Joaquin River
- Local Planning SNMPs

**Documentation for Approval**
- SNMP Documentation
- Economics Evaluation
- CEQA Docs
- BPA Docs

**Initial Implementation**

**Monitoring and Reporting**

**Phase II SNMP**

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**Schedule, Scope and Cost**

The program timeline is shown for the highest level major elements on the following page and in Attachment 3. This top level summary schedule depicts the timeline of the elements which have been approved or which have been discussed but not yet approved by the CV-SALTS Executive Committee. CV-SALTS is constrained by the SNMP deadline of May 2014, so the schedule is critical. This schedule is predicated on parallel efforts and many tasks will be needed following the SNMP for the BPA and SNMP implementation. The project timeline and budget estimated have been extended to 2017 to include continued implementation projects and programs. Attachment 4 shows a more detailed critical path schedule for the elements, phases and tasks identified for the program.

The scopes of work for the CV-SALTS program tasks range from detailed documented descriptions to conceptual outlines of the work needed. The further detail is dependent on decisions made by the Executive Committee and details provided or reviewed by the CV-SALTS Committees, contractors and staff. Attachment 5 provides an outline of all tasks identified and the level of detail available for each task. This attachment identifies critical tasks and enhancement tasks.

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2 SSALTS Strategic SALT Accumulation Land and Transportation Storage Concept Description initially reviewed by Executive Committee, complete as an initial concept scope only.
which may be completed if funding, timing and cooperation is available. Attachment 6 provides a more detailed estimate of costs by element and task.

**ATTACHMENT 2 Summary Program Timeline**

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**Cost Estimates, Funding and Contracting**

The five year cost estimate, excluding major project implementation, ranges from $8.7M to $16.4M with the likely point estimated cost $13.3M. The graph at right illustrates these costs at the single point likely estimated costs.

Implementation funding represents the largest funding need in the program. Most of this funding will be needed after the CV-SNMP and BMP are completed. Preliminary estimates will be made of potential funding needed for implementation for 2016; however these estimates will require significant additional information and planning to be refined. These costs do not include Monitoring and Reporting or future salt and nutrient management planning.

Core funding for CV-SALTS is provided by State Water Resources Control Board Cleanup and Abatement Account (CAA) and Central Valley Salinity Coalition and its members. The State Water Resources Control
Board has contracted with the San Joaquin Valley Drainage Authority for support of CV-SALTS. Current contracts total $3.2 Million under two agreements. An additional $1.8 million is dedicated by the State Water Resources Control Board to be contracted in 2012, if adequate progress is documented. The Salinity Coalition and its members have contributed over $1 million in cash and contracted with various firms to provide studies and support for CV-SALTS. The Salinity Coalition has committed to continue to support CV-SALTS efforts with funding and in-kind services. Additional funding will be needed especially for implementation elements that may require additional stakeholder or grant funding. This funding may come from CV-SALTS partner agencies, Salinity Coalition members, regions and other stakeholders involved with studies as shown below.

These costs are allocated by the element funded and breakdown to approximately $4.8M from the CAA, $250K from State and Regional Board in-kind support and $1.52M from CVSC and its members with $5.8M from participating stakeholders. The graph to the right shows this breakout visually.

Additional contract capacity is needed to perform and expend these funds to achieve the schedule indicated.

**Attachments**

1. Program Element Integration – Attached
2. Multilevel Entry Parallel Archetype/Prototype Approach Table – Attached
3. Summary Program Timeline – Attached
4. Critical Path Schedule – Attached
5. Compiled Summary Scopes – Forthcoming
6. Summary of Element Scope and Cost Ranges – Attached
CV-SALTS PROGRAM ELEMENT INTEGRATION

Policy Development, Planning, Outreach and Program Management

Initial Conceptual Model
- Initial Assessment & Focus
- Policy Decision Support
- Archetype SNMP Template Development

Phase 2 CV-SNMP Model
- Detailed SNMP Analysis
- Management Evaluation
- Ag Zoning/ISWP BUOS II
- Policy Decision Support

Final Phase Local SNMP Model
- Alternative Evaluation
- Documentation Support

Technical Studies

Implementation Planning
- SSALTS
- Initial Mgt. Alternatives
- Refined Mgt. Alternatives/Projects

Related and Integrated Efforts
- Management Practices
- Lower San Joaquin River
- Local Planning SNMPs

Documentation for Approval
- SNMP Documentation
- Economics Evaluation
- CEQA EQ Docs
- BPA Docs

Initial Implementation

Monitoring and Reporting

Phase II SNMP
## CV-SALTS Multi Level Entry Parallel Archetype/Prototype Approach

<table>
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<tr>
<th>Tier</th>
<th>Description</th>
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<td>GIS Maps</td>
<td>Identify Aquifers</td>
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<td>Map Characteristics</td>
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<td>Map Effluent Discharges</td>
<td>Define Subcategories</td>
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<td>quantify EC Impacts</td>
<td>Define EC Thresholds</td>
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<td>Define Most Sensitive Use</td>
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<td>ASSESSMENT</td>
<td>Attainment Metrics</td>
<td>Assess Available Data</td>
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**Color Key**

- Program Mgt/Policy
- Conceptual Model/Technical Studies
- Related/Integrated Efforts
- Implementation Planning
- Documentation for Approval
- Initial Implementation
- Monitoring and Reporting
# ATTACHMENT 3 Summary Program Timeline

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<td>Conduct meetings, oversee financial administration, and manage project tasks</td>
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<td>Maintain meeting minutes, CV-SALTS website, etc.</td>
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<td>Conduct computer groundwater model simulations, if needed</td>
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<td>Establish guidance on determining most sensitive crop to be protected in area</td>
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<td>$370,000</td>
<td>$540,000</td>
<td>$1,830,000</td>
<td>$3,660,000</td>
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**POLICY DISCUSSIONS ON BENEFICIAL USES AND WQOs**

- Examine "Incidental" MUN beneficial uses and WQOs for such uses
- Incorporate information and data into georeferenced database for stakeholder review
- Review default Assumptions and parameters (e.g., leaching fractions) for salinity models etc.
- Establish guidance on determining most sensitive crop to be protected in area
- Incorporate Regional SNMP Information assessment and updates
- Revise and Prepare SNMP Document

**Technical Studies**

- Conduct computer groundwater model simulations, if needed
- Inland Surface Waters Validation
- Ag Water Quality Zoning Mapping
- Water Quality Data Validation
- Incorporate water quality data into georeferenced database
- Summarize initial salt and nitrate loads into georeferenced database
- Prepare scope of work and retain consultant
- Gutter existing data and develop model
- Establish approach to developing conceptual model with CV-SALTS TAC
- Stakeholders Outreach Coordination to study Areas
- Refine conceptual model and salt and nitrate loads
- Assemble sustainable salt and nitrate balances
- Identify potential large-scale management practices and projects for analysis
- Incorporates changes to Beneficial uses and WQOs based on updates
- Propose Central Valley SNMP Assessment
- Prepare scope of work and retain consultant
- Review and Prepare SNMP Document
- Incorporate Regional SNMP Information assessment and updated Conceptual plan
- Conduct economic analysis of proposed implementation alternatives and benefits
- Propose agriculture policy analysis including Water Code §§13241 factors
- Propose scope of work and retain consultant
- Ag Water Quality Zoning Reporting
- Regional Surface Waters Validation
- Incorporate information and data into georeferenced database
- Review and Prepare SNMP Document

**Total**

$230,000  $400,000  $370,000  $370,000  $540,000  $1,830,000  $3,660,000
### Related and Integrated Efforts

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<th>Task Description</th>
<th>2012</th>
<th>2013</th>
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<th>2015</th>
<th>2016</th>
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<td>Update LSJR workplan sources of salt and elements in introduction chapter</td>
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<td>to $10,000</td>
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<td>Develop strategy study to relate to WQOs for aquatic life beneficial use</td>
<td>$50,000</td>
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<td>Costs based on RFP</td>
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<td>Perform technical study related to WQOs for stockpiling beneficial use</td>
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<td>to $40,000</td>
<td>$20,000</td>
<td>to $40,000</td>
<td>$20,000</td>
<td>to $40,000</td>
<td>Costs based on Request for Proposal (RFP) and LSJR Plan, prepared by EKI, dated 28 April 2011</td>
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<td>Conduct salt and boron data for LSJR and estimate salt loads</td>
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<td>$5,000</td>
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<td>Determine locations that can act as appropriate salt storage areas</td>
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<td>$15,000</td>
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<td>Identify existing beneficial uses</td>
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<td>to $60,000</td>
<td>$30,000</td>
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<td>$30,000</td>
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<td>Develop program of implementation</td>
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<td>Prepare CCA equivalent documentation</td>
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<td>Refine Management Alternatives</td>
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<td>Conduct Use Attainability Analysis, if needed</td>
<td>$60,000</td>
<td>to $120,000</td>
<td>$60,000</td>
<td>to $120,000</td>
<td>$60,000</td>
<td>to $120,000</td>
<td>Costs based on CVSC members approval, internal studies and assistance.</td>
</tr>
<tr>
<td>Obtain necessary approvals of Basin Plan amendments</td>
<td>$30,000</td>
<td>to $60,000</td>
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<td>$30,000</td>
<td>to $60,000</td>
<td>Costs based on CVSC members approval, internal studies and assistance.</td>
</tr>
<tr>
<td>Prepare information for CEQA documentation</td>
<td>$25,000</td>
<td>to $50,000</td>
<td>$25,000</td>
<td>to $50,000</td>
<td>$25,000</td>
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<td>Based on Draft LSJR Workplan dated 19 Oct 2013</td>
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### Implementation Planning

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<tr>
<th>Task Description</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>5-Year Total</th>
<th>Cost Assumption</th>
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<tbody>
<tr>
<td>Conduct planning activities for LSJR</td>
<td>$10,000</td>
<td>to $20,000</td>
<td>$10,000</td>
<td>to $20,000</td>
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<td>Costs based on Request for Proposal (RFP) and LSJR Plan, prepared by EKI, dated 28 April 2011</td>
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<td>Develop strategy study to relate to WQOs for aquatic life beneficial use</td>
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<td>to $100,000</td>
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<td>Costs based on Request for Proposal (RFP) and LSJR Plan, prepared by EKI, dated 28 April 2011</td>
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<td>Develop Initial Management Alternatives</td>
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<td>to $250,000</td>
<td>Costs based on LSJR Workplan dated 6 October 2011</td>
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<tr>
<td>Screen management practices for inclusion in &quot;baseline&quot; and assess Valley Wide impacts</td>
<td>$10,000</td>
<td>to $20,000</td>
<td>$10,000</td>
<td>to $20,000</td>
<td>$10,000</td>
<td>to $20,000</td>
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<tr>
<td>Conduct Use Attainability Analysis, if needed</td>
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<td>to $120,000</td>
<td>$60,000</td>
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<td>Conduct management activities with limited assistance.</td>
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<td>Costs based on LSJR Workplan dated 6 October 2011</td>
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<tr>
<td>Conduct planning activities for management practices evaluation</td>
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<td>$5,000</td>
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<td>$5,000</td>
<td>to $10,000</td>
<td>Costs based on LSJR Workplan dated 6 October 2011</td>
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<tr>
<td>Conduct additional studies to assess new or developing management practices</td>
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<td>to $100,000</td>
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<td>$50,000</td>
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<td>Screen management practices for inclusion in &quot;baseline&quot; and assess Valley Wide impacts</td>
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<td>Conduct planning activities to assist environmentally sensitive communities</td>
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<td>Costs based on LSJR Workplan dated 6 October 2011</td>
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<td>Private technical expertise to facilitate project design and implementation</td>
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<td>Assess regulatory incentives and impediments for possible project improvements</td>
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### FUNDSOURCES AND POINT COST ESTIMATES

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<tr>
<th>Task Description</th>
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<tr>
<td>Hold CEQA scoping sessions</td>
<td>$15,000</td>
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<tr>
<td>Incorporate CEQA economic analysis</td>
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<tr>
<td>Hold public meetings and workshops</td>
<td>$15,000</td>
<td>$30,000</td>
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<tr>
<td>Prepare Subsequent Environmental analysis</td>
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<tr>
<td>Documentation of all CV-SALTS Elements</td>
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<td>$10,000</td>
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<td><strong>AMENDMENTS AND DOCUMENTATION</strong></td>
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<tr>
<td>Prepare Regional Board staff report describing proposed Basin Plan amendments</td>
<td>$50,000</td>
<td>$150,000</td>
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<tr>
<td>Conduct peer review of staff report and proposed Basin Plan amendments</td>
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**Notes:**

(a) Costs in contracts are from the State Board SJVDA Contract

**Color Key**

- Funding Sources undecided
- Regional Board Staff and Internal Costs

### CV-SALTS 5-YEAR WORKPLAN MAJOR TASK COST ESTIMATE RANGES

<table>
<thead>
<tr>
<th>Task Description</th>
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February 10, 2012

San Joaquin Valley Drainage Authority
C/O Joseph C. McGahan
Summers Engineering
887 N. Irwin St.
Hanford, CA 93232

RE: IPM Program Management and Facilitation Review and Contract Modification

Mr. McGahan:

On February 10, 2012 the Executive Committee at its meeting approved the following changes to the IPM contract for Year 2. This action changes task budgets as requested for the budget period beginning February 1, 2012. This action utilizes the $55,000 savings from Year 1 budget ending January 31, 2012. All changes are within the current Contract total for the 2 year period ending January 31, 2013.

The contract performance review meeting was held on January 20, 2012. Actions requested from the meeting are shown below:

1. Meeting Notes and Actions for participants or appropriate agreements to be documented within one week after the meeting with deadlines for action.
2. Policy meeting structure will be formatted to reach decisions and gain input from participants and policy meeting schedule and milestones will be prepared for 2012.
3. New website will be prioritized and alternative subcontractor procured.
4. IPM will work with CVSC to prepare a plan to expand membership based on the work plan and regional board 13267 information requests.
5. IPM will coordinate with CDM/Meyerhoff to provide assistance for the Lower SJR Committee to get work plan updated and get tasks underway.
6. IPM will prepare a revised budget for year two to achieve the goals discussed in the review.
   a. Provide additional policy meetings and time to work with ExCom
   b. Budget revision is attached obligating existing funding under the contract total.

Requested changes to the budget for Year 2 are summarized below:

- Use $12,627.75 from Year 1 to fund the Salt Story ($6K layout/Graphics, $2K printing) and closeout costs.
- Roll forward $55,000 from under run on 2011 budget to 2012 budget.
- Adjust hours/costs as follows:
Reduced hours from
- Program Coordination and Agenda Preparation
- Communications and Outreach
- Leadership group meeting, remaining hours budgeted for Board June 12th meeting or State Board Meeting needs in fall 2012
- CVSC membership - small reduction

Restored or increased funds
- Meeting support/Documentation
- Website and complete work plan etc.
- Small amount of support for grant funding
- Contract development and management
- Limited support for work plan elements scope

Increased time for Tim Moore from 12 to 20 hours per month for 11 months, Tim reduced his billing rate to $250/hr. to accommodate this change due to the level of engagement.

Delete unneeded or descoped deliverables not carried over to year two for Task 1
- Annual report – replaced with 2, 6 month reports
- All quarterly reports merged to report on work plan, budget and schedule status for Executive Committee Admin Call two separate reports, two included in the 6 month reports.

These actions modify the existing contract and budget and are acceptable to Integrated Planning and Management Inc. In addition, we accept and will sign the contract change requested by the State Board to existing contract language regarding potential withholding payment when the State does not have an approved budget. Should this eventuality occur we will discuss alternatives for work to continue.

Sincerely,

Daniel B. Cozad
Principal
Integrated Planning and Management Inc.

Attached:
2012 Budget Revision

cc:
Jeanne Chilcott – Regional Water Quality Control Board
David Cory – Central Valley Salinity Coalition
### CV-SALTS Management, Facilitation and Administration

#### Fee Estimate

#### February 2012 to January 2013

#### Integrated Planning and Management Inc.

<table>
<thead>
<tr>
<th>Tasks</th>
<th>Meetings or Months</th>
<th>Hours per Unit</th>
<th>Total Hours</th>
<th>Total Labor Costs (1)</th>
<th>Sub Consultant Total Cost (2)</th>
<th>ODCs</th>
<th>Total ODCs (4)</th>
<th>Total Fee</th>
<th>Original</th>
<th>Adjustment</th>
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</thead>
</table>

**Task 1: Program Coordination**

**1.0 Program Coordination**

- 12 Months 10 172 $29,980 $0 $150 $150 $30,500 $32,715 $-2,215
- 1.1 CV-SALTS Committee Coordination
  - 12 Months 3 60 $9,480 $0 $150 $150 $10,130 $10,380 $-2,250
- 1.2 Salty 5 Meetings
  - 12 Months 2 72 $8,400 $0 $600 $600 $9,040 $10,130 $-1,090
- 1.3 Other Meetings and Documentation
  - 0 Meetings 0 0 $0 $0 $0 $0 $0 $0 $0

**Subtotal Task 1:** 304 $47,860 $0 $900 $900 $54,351 $0 $49,351

**Task 2: Meeting Management and Facilitation**

**2.0 Meeting Management and Facilitation**

- 12 Months 4 52 $10,820 $0 $0 $10,820 $10,820 $0
- 2.1 Coordinated Meeting Schedule
  - 2 Versions 4 11 $1,955 $0 $0 $1,955 $1,955 $0

**Subtotal Task 2:** 709 $54,445 $65,725 $6,190 $6,190 $119,649 $166,455 $46,806

**Task 3: Communication, Outreach and Information Exchange**

**3.0 Communication, Outreach and Information Exchange**

- 12 Months 2 72 $8,400 $0 $600 $600 $9,040 $10,130 $-1,164
- 3.1 Email Database
  - 12 Months 1 72 $6,540 $0 $600 $600 $7,140 $7,140 $0
- 3.2 CV-SALTS Stakeholder Website
  - 12 Months 1 104 $14,780 $0 $600 $600 $15,380 $15,380 $0
- 3.2.1 Website Redesign
  - 0 site 2 9 $2,740 $0 $0 $0 $2,740 $2,740 $0
- 3.2.2 Website Implementation
  - 1 site 8 36 $3,400 $0 $2,500 $2,500 $5,900 $5,900 $0
- 3.3 Outreach
  - 6 Meetings 8 90 $15,360 $0 $2,340 $2,340 $17,700 $17,700 $0

**Subtotal Task 3:** 472 $57,360 $188 $6,840 $6,840 $65,096 $79,478 $-14,382

**Task 4: Identify and Pursue Funding**

**4.0 Identify and Pursue Funding**

- 11 Months 4 110 $15,720 $0 $250 $250 $16,164 $18,465 $-2,294
- 4.1 Increase CVSC Membership
  - 11 Months 4 110 $15,720 $0 $250 $250 $16,164 $18,465 $-2,294
- 4.2 Identify Grant Funding Opportunities
  - 1 Report 8 16 $2,280 $0 $0 $0 $2,280 $2,280 $0
- 4.2.1 Develop Funding Needs for Requests
  - 0 Document 16 0 $0 $0 $0 $0 $0 $0 $0
- 4.2.2 Foundation Database Search and Assessment Report
  - 0 Document 5 0 $0 $0 $0 $0 $0 $0 $0
- 4.3 Support Proposal Development
  - 0 Proposal 12 0 $0 $0 $0 $0 $0 $0 $0

**Subtotal Task 4:** 126 $18,000 $0 $250 $250 $18,472 $18,958 $-486

**Task 5: Development Support and Management of Selected Contracts**

**5.0 Development Support and Management of Selected Contracts**

- 1 Contracts 40 52 $9,680 $0 $50 $50 $10,230 $11,280 $-1,050
- 5.1 Oversees and Manage Contracts and Subcontracts
  - 12 Months 6 120 $18,960 $0 $50 $50 $19,510 $21,065 $-1,555

**Subtotal Task 5:** 172 $28,540 $0 $500 $500 $30,090 $32,590 $-2,500

**Task 6: Develop Policy Framework Strategy and Workplan**

**6.0 Develop Policy Framework Strategy and Workplan**

- 1 Document 8 16 $2,280 $3,150 $0 $0 $5,430 $5,430 $0
- 6.1 Refine Policy and Framework
  - 1 Document 8 16 $2,280 $3,150 $0 $0 $5,430 $5,430 $0

**Subtotal Task 6:** 42 $6,760 $6,300 $0 $0 $13,060 $13,410 $-3,350

**Task 7: Develop Scope of Work for Elements in Updated Workplan**

**7.0 Develop Scope of Work for Elements in Updated Workplan**

- 1 Document 10 18 $2,720 $0 $0 $0 $2,720 $2,720 $0
- 7.2 Finalize SWP
  - 1 Document 8 16 $2,280 $0 $0 $0 $2,280 $2,280 $0

**Subtotal Task 7:** 34 $5,000 $0 $0 $0 $5,000 $5,000 $0

**PROJECT TOTAL:** 272 $85,917 $72,213 $14,280 $14,280 $134,571 $291,571 $157,000

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**Notes:**

1. Fully burdened hourly rates include salary, overhead and profit.
2. Subconsultants will be billed at actual cost plus 5%.
3. Cost of Funds is based on 5% interest on working capital and 90 day payment of invoices.
4. Other direct costs (ODCs) reproduction, delivery, mileage (allowed by current IRS guidelines), and travel expenses (allowed by State Guidelines), billed at actual cost.

**Assumptions:**

- Old 2012-13 $291,571
- New 2013-14 $157,000

**Total Remaining Under Existing Contract:** $346,571

**Roll Forward 2011** $55,000

**Old 2012-13** $291,571

**February 2012 to January 2013**
Action #6.4.1 CV-SALTS Develop a Salt and Nitrate Management Plan
Project Sponsor: Pamela Creedon
Project Manager: Jeanne Chilcott, jchilcott@waterboards.ca.gov

Stakeholder Group Sponsor: CV-SALTS Executive Management Committee
Stakeholder Group Project Manager: Daniel Cozad, dcozad@cvsalinity.org

Goals: Through the CV SALTS initiative, a collaborative stakeholder effort, develop a basin plan amendment to implement a comprehensive Salt and Nitrate Management Plan for surface and ground water within the entire Central Valley Region.

Objective: Ensure that ground and surface water within the Central Valley Region are protected from impacts of salt and nitrates such that all applicable beneficial uses are attained.

Action: Amendment to the Basin Plans covering the Sacramento River, San Joaquin River, and Tulare Lake basins. The amendment will address review of beneficial use designations and establishment of new water quality objectives for salts and nitrates as appropriate. The amendment will also establish a comprehensive implementation plan to protect water quality, achieve compliance where those water quality objectives are not met, and identify a monitoring and surveillance program to insure objectives of the amendment are met.

Time schedule: CV-SALTS Executive Committee is currently re-evaluating the issues and needs that the Stakeholders and the Central Valley Water Board believe are most critical to complete in this basin planning process. The results of this will be used to update and revise the following workplan, schedule, and budget by October 2011.

Resource needs: As noted in the goal of this action the CV-SALTS initiative is a broad effort to develop a comprehensive Salt and Nitrate Management Plan for the entire Central Valley Region. Over $1 million dollars has been put towards the planning effort and $5 million has been allocated for the next three years from the Clean-up and Abatement Account (CAA). Resource needs are estimated by stakeholders based on CV-SALTS May 2009 workplan to be approximately $20 to $40 million for the development and implementation of the Salt and Nitrate Management Plan. These figures will be updated as part of the revised workplan in October 2011.

Workplan Task(s) Narrative Description:

The following tasks have been developed by CV-SALTS committees in an attempt to capture the efforts needed to produce an implementable Salinity and Nitrate Management Plan for the Central Valley and complete a basin plan amendment and to support the plan.
Some of the sub-tasks under Task 1 are underway during the current re-evaluation of the needs and issues. Based on the outcome of the re-evaluation Tasks 2, 3 and 4 will be updated by October 2011.

**Task 1 Program Development**

1.1 Scoping and revising the CV-SALTS Strategy
   1.1.1 Update schedule, critical path, milestone monitoring, and program implementation
   1.1.2 Budget/Funding Plan and Financing Program
   1.1.3 Continue to increase membership

**Deliverables:** Semi-annual Status Reports

<table>
<thead>
<tr>
<th>Date:</th>
<th>June/Dec</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final Updated Strategy (including policy &amp; framework)</td>
<td>July 2011</td>
</tr>
</tbody>
</table>

1.2 Initial Efforts and Pilot Studies
   1.2.1 Westside Salt Assessment (Bureau of Reclamation)

**Deliverable:** Report

<table>
<thead>
<tr>
<th>Date:</th>
<th>May 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assess Validity of Salt and Nitrate Sources Pilot Studies:</td>
<td></td>
</tr>
<tr>
<td>• A Mass Balance Approach to Evaluate Salinity Sources in the Turlock Sub-Basin, California June 2010</td>
<td></td>
</tr>
<tr>
<td>• Westside Salt Assessment (Bureau of Reclamation) May 2011</td>
<td></td>
</tr>
</tbody>
</table>

**Deliverable:** Report identifying adjustments to make studies useful for the rest of the Central Valley Region

<table>
<thead>
<tr>
<th>Date:</th>
<th>April 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Develop interim recommended review process for identifying Best Practical Treatment or Control (BPTC) for salinity and nitrate</td>
<td></td>
</tr>
</tbody>
</table>

**Deliverable:** BPTC Screening Tool

<table>
<thead>
<tr>
<th>Date:</th>
<th>June 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.3 Consolidate and Prioritize Issues to be Addressed</td>
<td></td>
</tr>
<tr>
<td>1.3.1 Solicit Stakeholder and Regional Water Board issues and needs</td>
<td></td>
</tr>
<tr>
<td>1.3.2 Categorize into areas of policy and technical work</td>
<td></td>
</tr>
<tr>
<td>1.3.2.1 Integrate prior work and develop work needed to address consolidated issues and needs</td>
<td></td>
</tr>
<tr>
<td>1.3.2.2 Update CV-Salts workplan based on prioritized issues and needs</td>
<td></td>
</tr>
</tbody>
</table>

**Deliverable:** Final 5-Year Workplan

<table>
<thead>
<tr>
<th>Date:</th>
<th>October 2011</th>
</tr>
</thead>
</table>
1.4 Technical Project Management Team  
1.4.1 Under direction of the CV-SALTS Executive Committee will manage task 2 ensuring technical tasks needed to complete effort accomplished on time and on budget  

Deliverable: Contract awarded  
Date: July 2011  

Task 2 Technical Studies, Research, and Monitoring to Support Prioritized Needs and Issues  

2.1 Scope and initiate contracts to support development of Salt and Nitrate Management Plan and associated basin plan amendment through technical studies, research, and monitoring. This task will be further defined and deliverables identified following the completion of Final 5-Year workplan in October 2011.  

Task 3 Salinity and Nitrate Management Plan for Central Valley  

3.1 Develop Salinity and Nitrate Management Plan for Central Valley  
3.1.1 Identify actions needed to implement the “regulatory and non-regulatory” salt management strategies.  
3.1.2 Utilizing information gathered in Tasks 1, 2, and 3.1.1, develop components of salinity and nitrate management plan to insure sustainable economic and environmental health of the Central Valley and provide the sound technical basis for a basin plan amendment.  

Deliverable: None during this workplan time frame  
Date: June 2014  

Task 4 Basin Plan Amendments to the Sacramento and San Joaquin Rivers, and Tulare Lake Basin Plans  

4.1 Basin Plan Amendments Supported by Salinity and Nitrate Management Plan  
4.1.1 Develop amendment language and supporting documents  
4.1.2 Coordinate with Regional Board for review and approval with the State Water Board, Office of Administrative Law, and USEPA.  

Deliverable: None during this workplan time frame  
Date: June 2015
### Table #6.4.1: Task Summary - CV-SALTS Develop a Salt and Nitrate Management Plan

**Time Frame: June 2011 through June 2013**

<table>
<thead>
<tr>
<th>Task #</th>
<th>Task Description</th>
<th>Task Deliverable</th>
<th>Coordination Commitment</th>
<th>Contract Dollars</th>
<th>Completion Date</th>
</tr>
</thead>
</table>
| 1      | Program Development  
1.1 Scoping & revising the CV-SALTS Strategy | -Updated Final Strategy based on re-evaluation of schedule, critical path, and milestone monitoring and program of implementation  
- Semi-annual Status Reports | ~$400,000 as of Dec 2010 in stakeholder support from CVSC | ~$500K in CAA support Utilized | Began in 2007 and will continue through at least 2014 |
| 1.2 Initial efforts and Pilots | - Salt and Nitrate Sources Pilot Implementation Study  
- Westside Salt Assessment  
- Report on Validity of Pilot Studies  
- BPTC Screening Tool | ~$450,000 for studies funded by CVSC stakeholders & ~$350,000 BOR | -Feb 2010  
- May 2011  
- Apr 2011  
- June 2011 |
| 1.3 Consolidate and Prioritize Issues to be addressed | - Final 5-Year Workplan | ~1850 hours for July 2009 to January 2011 and $50,000 in stakeholder in kind support | $100K CAA Support utilized | Oct 2011 |
| 1.4 Technical Project Mgt Team | - Contract Award | -1 | $ tbd CAA | July 2011 |
| 2 | Technical studies, research, and monitoring to support needs and issues | Scope and initiate contracts to support the basin plan issues above with technical studies and data as needed, This task will be better defined by Oct 2011 | -1 | CAA funding ~$4.3 Mil will need other funds | June 2014* |
| 3 | Salinity and Nitrate Management Plan For Central Valley | - Develop implementation plan  
- Combine with components in Tasks 1 and 2 to develop overall plan to provide sustainable economic and environmental health | -1 | -1 | June 2014* |
| 4 | Basin Plan Amendment | - Develop amendment language and supporting documents. Coordinate for review and approval with State Water Board, OAL, and EPA  
- Implementation Plan | -1 | -1 | June 2015* |

*Potential for time extension -1: Being developed as part of revised workplan*
CV-SALTS Management Practice Subcommittee

Effective Management Practices Evaluation for Salt and Nitrate

(Version 10 - Approved November 17, 2011, with minor changes and January 24, 2012 committee changes)

The Management Practice Subcommittee’s (Subcommittee) charter is to assist CV-SALTS to improve salt and nitrate management through industry and community management practices, identifying and screening the management practices to improve implementation and monitoring of results. This document is part of the Management Practice Document Review developed in 2010 and 2011. This approach and process draw from others used to review stormwater\(^1\) and water conservation practice and criteria.\(^2\)

1 Management Practice Review Approach

At the recommendation of the CV-SALTS Committees or in accordance with the sector schedule below the Subcommittee will evaluate management practices in accordance with the following process and standards. These standards will be used to screen management practices for inclusion in a “toolbox” of Effective or Beneficial Management Practices, generally referred to as Management Practices (MPs) in this document. These MPs have been vetted in the CV-SALTS process to assist others in reducing salinity and nitrate. This “toolbox” of MPs provides a range of new and existing MP options, their documented effectiveness, expected reductions, current status of implementation and cost when available. The listed practices provide early implementation opportunities and the basis to recommend reasonable implementation requirements for the Salt and Nitrate Management Plan for the Central Valley including the related Basin Plan Amendment. In addition, the “toolbox” identifies new technology and innovative practices that may provide further improvement and flexibility.

1.1 Products

A brief description of the products of the Subcommittee’s efforts is described in the following sections.

1.1.1 Screening Tool

The Subcommittee uses the enclosed procedure and standards along with a related Nomination Form to evaluate the presence of adequate evidence and information to characterize the utility and efficacy of MP’s to reduce or manage salt components and nitrates. The purpose of the screening tool and standards is to assist in the review of the scientific and monitoring documentation, not to perform that assessment or certify a practice for purposes other than those evaluated. The use of the screening tool requires that the Subcommittee (or help available to it) be able to understand the information provided

\(^1\) International Stormwater BMP Database Performance evaluation
http://www.bmpdatabase.org/MonitoringEval.htm#PerformanceEval

not necessarily be experts in the scientific area or the region it is being applied. The screening tool Nomination Form will result in practices added to the “toolbox”. The screening process will rely on groups, industries, and practice proponents to nominate and complete the nomination form and supporting information for evaluation. This process will be described in the sections below.

1.1.2 Toolbox of Practices
The Management Practice Subcommittee will utilize volunteers and technical support available to it to review and evaluate MPs that reduce salt constituents and nitrates of relevance to the Central Valley. Initially the “toolbox” may be a reviewed set of electronic documents for each practice with supporting materials. Later, as the number and diversity of practices increase, the “toolbox” format will likely need to become more sophisticated to facilitate its use. The “toolbox” and the practices were extensively discussed among the Subcommittee members.

The Subcommittee identified the best use of the “toolbox” as a source of documented and validated practices that regulated entities could use to develop their management plans for salinity and nitrate for both voluntary action and Regional Board consideration as part of the permittees plan or other regulatory programs.

A factsheet or summary technical document should be prepared for practices accepted into the “toolbox” so that potential users can easily evaluate the practices for their own use. Other examples of “toolbox” development include the Stormwater BMP Manual\(^3\) and the Salinity Guideline\(^4\). The Subcommittee however wants to ensure that users of the “toolbox” understand the need to evaluate any practice for their own application. Additionally, regulatory programs and permits should not inappropriately default to the “toolbox” as a requirement for any specific facility or location. Dischargers will be able to take advantage of the information developed on the treatment and control options provided in the “toolbox”, but the “toolbox” will not limit their options. Any discharger that wants to use an alternative approach to manage salt or nitrate will be able to submit information that will be evaluated by the same process the committee followed when creating the “toolbox”. This consistency will provide the discharger and Regional Board a clear understanding of how nominated practices perform relative to practices documented in the “toolbox”.

2 Process
The process for documenting new or developing practices and validated practices differ. The new and developing and validated practices are described in section 3 of this document. The process for each is summarized below (additional details or modifications may be made by the Subcommittee). After a call for nominations of practices by an industry, the practices will be evaluated for acceptance in the “toolbox” with the screening tool, or further information and study may be requested and developed, as needed. The Subcommittee may then recommend to the Executive Committee that the practice be included (or not) in the toolbox.


The Subcommittee may request support from consulting entities where support is needed to develop documentation or to assist with review. The Subcommittee will also propose projects for grant support or coordination with other efforts where this is consistent with MP development goals.

2.1 Sector Review Schedule

The Pilot Salt and Nitrate Source Implementation Study\(^5\) identified sources of salt. Each significant source by industry sector of salt shown in the report will be scheduled for review. Review priority will be based on salt and nitrate loading that was reported in the pilot implementation study. This initial list and prioritization is intended as a guideline, and should not result in exclusion of unlisted sources. The list will be reviewed and revised as needed by the Subcommittee. Industries or communities which have prepared MP documents may request to be reviewed ahead of schedule, subject to Subcommittee approval. The Subcommittee will establish the final schedule for review of practices and technologies in

each industry sector, at a pace that is manageable but that reviews MPs from significant sources before developing the implementation portion of the Salt and Nitrate Management Plan. The Call Dates shown below are set to allow 2-3 months for preparation and review of the MPs before the next is called. As processes are reviewed, the common MPs will be reviewed for consistent assumptions and completeness. When a practice’s effectiveness is based on readily-available information, it may be recommended for approval by the Executive Committee with less rigorous review or scientific study. The Water Boards will assist with the calls for practices via their Lyris List for CV-SALTS and other related groups.

<table>
<thead>
<tr>
<th>Source</th>
<th>Call Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Pilot Implementation candidates-Significant sources</td>
<td>November 2011</td>
</tr>
<tr>
<td>2. Surface Drinking and Irrigation Water</td>
<td>January 2012</td>
</tr>
<tr>
<td>4. Irrigated agriculture/Fertilizer</td>
<td>January 2012</td>
</tr>
<tr>
<td>5. Non-point source/stormwater</td>
<td>May 2012</td>
</tr>
<tr>
<td>6. Wetlands</td>
<td>May 2012</td>
</tr>
<tr>
<td>7. Wastewater/Industrial dischargers</td>
<td>May 2012</td>
</tr>
<tr>
<td>8. Food processing industries</td>
<td>October 2012</td>
</tr>
<tr>
<td>10. Dairy and CAFO</td>
<td>October 2012</td>
</tr>
<tr>
<td>11. Water treatment and softening</td>
<td>January 2013</td>
</tr>
<tr>
<td>12. Septic tank discharges</td>
<td>January 2013</td>
</tr>
<tr>
<td>13. Other point sources and discharges to land</td>
<td>January 2013</td>
</tr>
<tr>
<td>14. Atmospheric deposition and other sources</td>
<td>May 2013</td>
</tr>
</tbody>
</table>

Nominations provided will undergo a preliminary review to be sure the documentation is adequately complete for review, for more information see Attachment 1. This initial review will include data on use of the practice in field implementations, or recommendation by an industry association, farm advisor, public agency, a user of the practice in the Central Valley or recommendation from a Subcommittee member. Review of practices is limited to the capacity of the Subcommittee and its resources.

### 2.2 Conflicts

Because the Subcommittee has an active role in the review and recommendation for approval of MPs, the credibility of the process relies on member’s objectivity. Members will disclose any potential conflicts of interest to the Co-Chairs of the Subcommittee who may ask them to recuse themselves from practices where the member has a direct or indirect personal financial interest.

### 2.3 Committee Test Run

Subcommittee members performed a “test run” of the screening tool and Nomination Form to identify gaps in the tool and to better understand the level of effort that will be required to complete the review. This review took place in summer 2011 and screened practices from Ag and wastewater treatment industries.

### 2.4 Committee Pilot Testing

As the Subcommittee continues developing the screening tool and toolbox the Subcommittee may prepare a technical scope of work for pilot implementation of the screening tool on several practices. This testing will expand on the reviews completed by the committee in the “test run” and help improve the screening tool and “toolbox” as well as help to determine the cost of the review process. The Pilot
Test was encouraged to include a broader variety of practices, including physical change projects and outreach or management projects, in order to better explore diverse practices.

2.5 Consultant Scope of Work
After pilot testing, the committee may recommend broader application through a scope of work for larger scale review of practices for the “toolbox”.

3 Practice Types
To simplify review and inclusion in the “toolbox” the MPs have been separated into three types: validated practices, new or developing practices, and indirect or policy practices. All three types of practices may be included in the “toolbox” if they meet the standards provided in section 4.0 as screened in the tool. Each type of practice represents a different stage or expectation for the documentation and analysis. Additionally, practice types may characterize single practices or sets of practices that address salt, nitrate, or both. Additional types of practices, or practice variations, may be developed in the future. Validated practices are intended to be a “high bar” for practices where complete information is available. Most other practices will fall into the developing category. Developing practices require additional evaluation and monitoring before they can be validated.

3.1 Validated Practices
MPs for which information shown in Attachment 1 (to be developed by the Subcommittee) is available should be submitted under the validated practices category. The standards (described in Section 4) for effectiveness and field implementation should be met by documentation including scientific studies (university research, trade research publications, other technical literature), by monitoring results, or by some other verifiable evidence. These practices will allow the greatest implementation flexibility and lowest monitoring requirements. Attachment 1 provides the information and evaluation process and Attachment 2 the nomination form to be submitted. The result will be a compendium of information concerning the practice or action that makes it amenable to implementation (inclusion in the “toolbox”). Where a practice has complete information but is lacking in one or two areas deemed non-critical to the approval, it may be classified as validated with conditions or flags. The condition flags would identify the area where added information is needed or recommended if used for a regulatory purpose. An example could be additional monitoring of implementation or cost effectiveness information or format preferences.

MPs that have been evaluated by other Best Management Practice programs acceptable to the Subcommittee may be submitted in their existing formats provided they contain equivalent information.

3.2 New or Developing Practices
Many MPs to address salt and nitrate are new or documentation is still being developed, demonstrated or validated. The identification of a practice as new or developing should not detract from its perceived effectiveness or value, but only indicates it status of implementation and review. New or developing practices will not have all documentation under the standards section and will not generally have monitoring necessary for full validation. When practices characterized as new or developing it may be anticipated that additional monitoring or information may need to be provided by implementing industries or communities for it to be considered a fully validated practice.
3.3 **Indirect or Policy Practices**

Another grouping of practices includes practices that are deemed appropriate or necessary, that may not directly impact salt or nitrates in the environment, and for which the only possible quantification of impact may be a general estimate. For these practices, inclusion in the “toolbox” will be based on industry recommendations or regulatory requirements or where they are a clear adjunct to other practices. Examples of such practices may include public outreach to improve awareness of urban and rural water users, or economic incentives (e.g., rate structures and fees) to reduce salt and nitrate releases. When salt and nitrate load reductions cannot be reliably estimated, cost effectiveness of the practice may be impossible to determine.

4 **Standards**

Screening of practices requires review of their effectiveness in reducing salt and nitrate in the system. If a practice is demonstrated as superior to general current practices for salt and nitrate management, and meets other (e.g., cost, feasibility) criteria, then it warrants consideration for the “toolbox”. General practice is defined as the unregulated or unimproved baseline. Industries that previously or voluntarily reduced salt or nitrate discharges will not be penalized for such leadership. MPs in this document are defined as beneficial or effective at management of salt and nutrients. The demonstration of Best Practices may be highly situational or impossible to determine before practices are implemented and monitored in several locations. The Subcommittee will further develop screening standards to provide additional detail on standards, as needed. The Screening of nominations uses the following standards. The nominator of the practice shall provide readily available documentation of the practice relative to each question on the Nomination Form (Attachment 3). The standards discussion in this section includes the directions to reviewers in evaluating a nomination. The Nomination Form has corresponding instructions for those completing the form.

4.1 **Technical Effectiveness – does it work?**

Demonstrating technical effectiveness is critical for a MP to be implemented and accepted by industry or communities. Reviewers will look for evidence of technical effectiveness as demonstrated by lab, pilot and evaluated demonstration studies. The documentation should indicate the practice removes, destroys, manages or otherwise reduces negative impacts to beneficial uses from salt and nutrient constituents or otherwise assists with compliance or improvement of the waters of the valley for these constituents.

4.2 **Implementability – can it be used broadly?**

Implementability includes both feasibility as well as broad applicability. In most cases, satisfactory implementability is demonstrated by documentation of the use of the MP by a significant portion of the sector and considers other issues related to cost and efficiency covered in other sections.

4.3 **Benefits and Impacts**

In evaluating the implementability of MPs the Subcommittee will consider the benefits and impacts of the MP. Have the benefits and impacts been acceptably quantified? Do the benefits appear to outweigh identified negative impacts of its implementation?
Additionally, the Subcommittee should consider cross-media impacts, such as impacts to air quality, water supply, energy consumption, and other water quality constituents. The ideal practices are effective on salt and nutrient constituents and have few or minimal impacts to other areas.

Reviewers should look for MPs that reduce any detrimental effect to other media while achieving the goals of the MP. These should be identified and any impact quantified if possible.

4.4 Cost effectiveness – is it economic to implement today?
Cost effectiveness is critical to being an effective best practice. Low efficiency costly practices are not likely to be broadly implemented. High value practices will likely be implemented with minimal regulatory encouragement. Reviewers assessment of effectiveness related to cost is not always a simple as dollars per ton of salt or pound of nitrate, often costs include a technically trained workforce to implement, operate and maintain the practices. Additionally, this may vary across industry and across regions. The cost effectiveness should strive to take into account all benefits to the entity implementing the practice as well as direct and indirect cost of implementation. In other words not just the technology but the impacts on quality of the product or preparation or disposal of wastes and other potential cross media impacts. These costs should evaluate life cycle benefits and costs of implementations and societal and environmental benefits and costs, when possible.

The ideal practice nomination will provide information on the practices costs on an industry appropriate unit basis such as, per acre, per acre foot, per million gallons, per ton or etc. so it may be compared.

4.5 Monitoring – proving it works?
Reviewers should evaluate both the ability to monitor as well as the length and breadth of the monitoring history as a part of screening. Monitoring during the implementation stage may be greater in developing practices than fully validated practices that have already identified critical monitoring parameters for implementation and operations.

4.6 Other Regulatory or Non-Regulatory Approvals
CV-SALTS, as an option, may be able to utilize prior validation work performed by Regional Water Quality Control Boards (Regional Water Board) and State Water Resources Control Board (State Water Board) collectively Water Boards, Department of Public Health, building codes, or other accreditation groups for validation. Where appropriate this should be done to reduce the cost and delays associated with duplication of validation. Cost effectiveness of the MP should still be evaluated.

Additionally, in cases where a practice is obvious, broadly implemented and effective it may be recommended with less rigorous review or scientific study for approval by the Executive Committee.

5 Management Practice Toolbox
The Subcommittee will establish and update a list of MPs for each sector in the form of a “toolbox”. The “toolbox” will change as more information is reviewed and may also be used to track MPs, alternatives and technologies. The list will be maintained by the Subcommittee and Central Valley Salinity Coalition (CVSC). The “toolbox” will be available on the cvsality.org website and facilitate tracking the status of evaluation, verification, and monitoring. The Preliminary list of practices is shown as Attachment 2; this list will be updated or replaced as the “toolbox” is developed by the Subcommittee.
6 CV-SALTS Management Practice or Technology Presentations

MPs and Technologies that warrant recommendation for inclusion in the tool box by the CV-SALTS Technical Committee and Executive Committee will have been reviewed according to the processes described previously. Recommended MPs will have been found to merit wider application to CV-SALTS stakeholders. Technologies warranting recommendation should have been monitored during several pilot deployments to demonstrate effectiveness. Exceptions may be granted by the Subcommittee for practices that show special promise or at the request of the Executive Committee. Executive or Technical Committee members may recommend practices for Subcommittee consideration at the next regularly scheduled meeting. The Subcommittee should assist in promotion of the practices.

Vendors or technology proponents who wish to have specific practices evaluated for inclusion in the “toolbox” should contact the Central Valley Salinity Coalition or the Subcommittee Chair. Nominations provided will undergo a preliminary review to be sure the documentation is adequately complete for review. This initial review will include data on use of the practice in field implementation, or recommendation by an industry association, farm advisor, public agency, a user of the practice in the Central Valley or recommendation from a Subcommittee member. Review of practices is limited to the capacity of the Subcommittee and its resources.
Attachment 1

This attachment provides information on the review of MPs for inclusion in the CV-SALTS “toolbox” for reductions in salt and nitrate that are significant to the Central Valley.

Screening Process

The Subcommittee will use the evaluation framework process in Section 2 and standards in Section 4 to review MP documentation submitted on the Nomination Form in Attachment 3 or alternatively provided as industry collections of MPs. Such collections of MPs may summarize information on the practices in a matrix or summary to improve review and may need to interpret the Nomination Form to fit their documents.

Steps in the process

1. Industry nomination or source or industry sector call for nominations request sent by Subcommittee
2. Formatting of information by nominator using the Nomination Form or alternate format acceptable to the Subcommittee.
3. Initial review for completeness and appropriateness for review by Subcommittee
4. Assessment of submitted data by Subcommittee and recommendation for additional information and/or expert review, if needed
5. MP Committee Review process
5.1 Committee reviews nominations depending on volume and complexity
5.2 Assistance provided by experts or others, if needed
5.3 Consensus review call or meeting for discussion
6. Recommendation of acceptance of the Nomination into the Toolbox by Subcommittee
7. MP Subcommittee and Technical Committee recommend practices for Toolbox
8. Executive Committee approves acceptance recommendation and Toolbox is updated or disapproves returning to the Subcommittee
9. Practice Implementation, Operations and Maintenance, Monitoring, Reporting conducted by anyone implementing for regulatory purposes
10. Revision, if needed and review

This is also shown in Figure 1 in Section 2.

Committee Process

Although a thorough review of proposed BMP’s is warranted, it will be important to recognize that the BMP Subcommittee, Technical Committee, Executive Committee, and stakeholders have limited time and resources to devote to reviewing and commenting on nomination forms.

The toolbox will expand and improve over time but practices should be added to the toolbox. The committee chairs should strive to strike a fine balance between understanding the details of a proposal and clarifying every possible detail.
Regarding the approval process, the committee utilizes the processes:

1. Approval by the BMP subcommittee requires a simple majority of the members present and voting.

2. Approval by the Technical Committee will require a majority of the members present. In most cases, the committee should render its decision within 30 days of receiving the nomination form and recommendation or the Subcommittee may request approval of its recommendation by the Executive Committee directly.

3. Approval by the Executive Committee requires a simple majority of the members present and should be agendized as a consent item on the Executive Committee Administrative meeting unless there are well defined objections which must be communicated to the Executive Committee Chair in advance of the meeting. The Subcommittee does not see value in revisiting the same issues in separate venues. In most cases, the committee should render its decision within 30 days of receiving the nomination form and recommendation of the subcommittee.

4. The review and approval process with the initial Toolbox practices will be presented to the Regional Board for at the Water Board CV-SALTS workshop in June 2012 and when updated at subsequent Water Board presentations. Ultimately this process will become part of the implementation component of the Basin Plan Amendment and updated as indicated.

5. Industries providing leadership to prepare collection of practices in holistic BMP manuals the approach should be viewed as a validated BMP. These manuals many individual practices that may evolve over time, a holistic approach to managing will only improve. Individual practices may be viewed as validated or developing, however, the approach should be viewed as validated if it has been vetted.

The Nomination Form with brief instructions for users shown in Attachment 3 to ensure nominated practices meet the standards presented in section 4.0.

Comparison of practices is and their relative effectiveness and costs on a common basis are a goal of any practice in the toolbox. The Subcommittee will assess the completeness of this goal in the pilot.

Depending on number, complexity and other factors the Subcommittee will prepare a recommended scope for any Technical Support that may be needed to assist the review of nomination or formatting into final products. Support may also be available from the NRCS, UC Davis Extension, CDFA-FREP, Fertilizer Institute and others.
The Subcommittee has compiled a preliminary list of potential MPs for salt and nitrate to be developed and screened in the Pilot Testing of the screening process. The following practices have nominators from the Subcommittee willing to submit and participate in the screening of the nominations:

1. Nitrogen/Nutrient Management by well testing for leaching of nutrients to groundwater one of the Sustainable Growing Practices in a collection from the Almond Board nominator Parry Klassen
2. A Selected Dairy Practice from the Dairy Practice Report Nominated by Paul Martin
3. KOCI substitution for NaOCl use in cleaning and processes (Tom - Enviro Tech)

Pilot practice Nominations to be submitted to Daniel Cozad on behalf of the committee by January 9, 2012. The practice documents will be aggregated and distributed to the committee for review at its January 17, 2012 call.

Potential Practices (listed to promote discussion only, not as nominations to prioritize)

1. Irrigation efficiency/reduce irrigation – Reduce salts imported with water or from groundwater
2. Tailwater reuse/drainage recirculation – reduced discharges of salt
3. Growing salt tolerant crops – reduced imported water while maintaining production
4. Evaporation ponds, solar evaporators – isolates the salt to allow management
5. Salt separation and utilization – fractionate and create products for reuse or sale
6. Drain water and brackish water desalination- Isolates salt for management
7. Detergent reformulation – source control
8. Industrial biomass and brine management – isolates salts and potentially reuses salts
9. Reduce imported feed for CAFO’s – reduces salt import from feed sources
10. Reduce seepage from brine conveyance - reduces dissolution of salt from soils
11. Industrial salt source reduction/reuse – reduces salts for production
12. Increase export of salt containing products - exports salt unless salt is imported for products
13. Increase salt export in surface waters leaving the region
14. Increase outdoor landscape irrigation efficiency – reduces imported water/groundwater use
15. Increase indoor water use efficiency – reduces imported water and groundwater use
16. Reduce water softening need or shift to ocean disposal of brine – reduces residential salt source
17. Local salt collection and disposal – Disposal and removal from basins
18. Increase salt discharge at EBMUD – ocean discharge and removal from basins
19. Salt collection and treatment (ocean qualified brine) for ocean discharge and removal
20. Deep well injection storage/recovery of salts – Removal from basins, recovery when economic
21. Soil testing for accurate nutrient fertilization
22. Nitrate removal from drinking water by fluidized bed reactor technology
23. Selective pumping of well water without TDS via insitu membrane filtration/RO
Attachment 3

MP Screening Nomination Form is located at:
and appears on the following pages in PDF format.