



REGION-WIDE SALT AND NITRATE MANAGEMENT PLANNING WORKSHOP

June 12, 2012
1:00 to 4:00 PM

Regional Water Quality Control Board
Fresno Office



Slide **2**

Pamela Creedon, Executive Officer Central Valley Water Board

- 💧 Introduction
- 💧 Purpose and Agenda

Purpose

Slide 3

- 💧 Inform Board of salinity background and CV-SALTS Effort Plan and Status
- 💧 Receive feedback and comments from Board on approach, workplan, schedule and milestones
- 💧 Receive feedback and comments from Board on Archetypes/Prototypes and Management Practice Toolbox



Workshop Agenda

Slide 4

💧 Opening Statement and Introduction

- Pamela Creedon, Executive Officer RWQCB

💧 Background of Salinity and Nitrates in the Central Valley

- Jeanne Chilcott, Senior Environmental Scientist RWQCB

💧 CV-SALTS Overview and Organization

- David Cory, President, CV Salinity Coalition

💧 Workplan, Strategy and Framework

- Daniel Cozad, CV-SALTS Program Manager

💧 Current Implementation and Policy efforts

- Parry Klassen, Executive Committee Chair

💧 Addressing Difficult Questions/Charting a Path-Archetypes/Prototypes

- Tim Moore, CV-SALTS Policy Facilitator

💧 Public Comment

💧 Summary and Closing

- Jeff Willett, Executive Committee Vice-Chair





Slide **5**

Jeanne Chilcott, Sr. Env. Scientist Central Valley Water Board

💧 Background of Salinity and Nitrates in Central Valley

- Issues
- Current Regulation
- Options

Salt Issues



More salt enters the region than leaves

- Sacramento Basin has relatively few salt impaired areas but salt exported to the Delta can be picked up and redistributed by SWP and CVP
- San Joaquin River is the SJR Basin's sole outlet. Salt imports exceed export capacity



Salt Issues



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- San Joaquin River is the SJR Basin's sole outlet. Salt imports exceed export capacity

Salt Issues

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◆ Salt build-up threatens agricultural productivity

(Delta, Tulare Lake, Westside SJR Basin)

- Need for Agricultural Drainage Recognized Since Late 1800's
- CVP's San Luis Unit Authorized in 1960



Salt Issues

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Increasing salt concentrations (including NO_3) in groundwater threaten drinking water

💧 Particularly areas with:

- Irrigated agriculture
- Dairies
- Septic systems



Salt Issues

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- 💧 **Water used for dilution is (usually) water lost to other uses**



7/2/2012

Diverse Sources

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Regional Sources

- Agricultural
- Urban
- Rural
- Environmental
- Industrial
- Water Providers



Local Sources

- Municipal wastewater
- Septic tanks
- Oil field brines
- Confined animal facilities
- Food processors



Economic Costs

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- ◆ If the Region does not change it's approach to salt, by 2030...
 - Direct annual costs anticipated to range between **\$1 to 1.5 BILLION**
 - Total annual income impacts statewide anticipated between **\$1.7 to 3 BILLION**

There is presently no means of distributing these costs equitably or assigning costs to all responsible parties.



Current Regulation

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Regulatory Basis:

💧 Basin Plans

- Identify how we protect water quality
- Regulatory document
 - Establish beneficial uses
 - Establish water quality objectives to protect BUs
 - Prescribes an implementation plan
 - Actions and timetables



Current Regulation

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Regulatory Tools:

- ◆ Setting limitations in WDR and NPDES permits
- ◆ TMDLs

Waste Discharge Requirements (WDRs) are our primary tool for regulating salt



Current Regulation

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WDRs MUST comply with Basin Plans

**Most sections of the current
Basin Plans addressing salt are over
30-years old**



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Current Regulation

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Results:

- ◆ Limited data available for staff to interpret water quality objectives and implement the Basin Plans
- ◆ Over time, salt and nitrate has become a more prominent issue for Regional Board
- ◆ Outcry from dischargers and others for doing too much or too little



Current Regulation

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Examples:

- ◆ POTWs protecting MUN use in ag drains (Colusa, Willows, Live Oak, Biggs)
- ◆ Dischargers (including Ag) held to conservative salinity concentrations to protect AGR use
- ◆ Prohibiting discharges of nitrate does not in itself translate to safe drinking water for those impacted by high concentrations



Current Regulation

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Need:

- ◆ Update Regulatory Basis
 - ie. Update Basin Plans



Options

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- 💧 Traditional Regional Board approach
- 💧 Stakeholder approach
 - Collaborative and integrated approach

No Action is also an alternative
If willing to accept economic cost



Stakeholder Based Solutions

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- ◆ Stakeholder involvement and ownership
- ◆ Better addresses all needs and concerns
- ◆ Utilize everyone's efforts & resources more efficiently and effectively
- ◆ Basin Plan - based on better data
- more effective



27 March 2012



Slide **22**

David Cory, CVSC President

- ◆ Overview of CV-SALTS
- ◆ History and Organization

CV-SALTS Status and Progress

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- 💧 CV-SALTS is complicated
- 💧 CV-SALTS is organized
- 💧 CV-SALTS is important
- 💧 CV-SALTS is working



CV-SALTS History

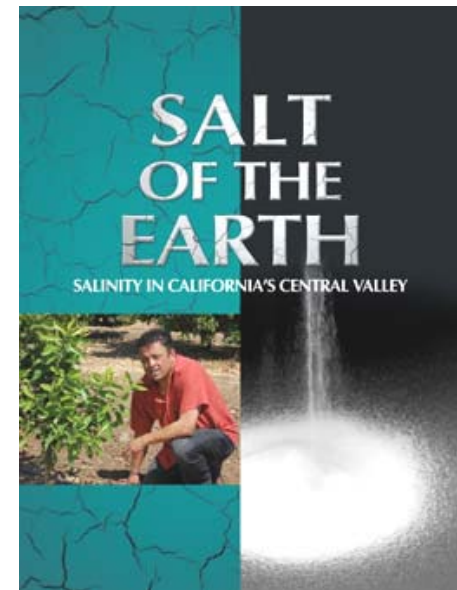
24

2006: Joint Workshop

- Initial Products
 - Economic study
 - Metadata report
 - Educational Video
 - Strategy

2009: MOA

- State Water Board
- Central Valley Water Board
- Central Valley Salinity Coalition
 - Stakeholder JPA



CV-SALTS Mission

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Develop a comprehensive regional salinity nitrate management plan that is robust enough to support basin plan amendments

Plans to be amended:

- ◆ Sacramento/San Joaquin River Basin Plan
- ◆ Tulare Lake Basin Plan
- ◆ Delta Plan



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CV-SALTS Tackling Important Issues

Slide 26

- 💧 Stakeholder issues
- 💧 Water Board Issues
- 💧 Changes to the Basin plan to assist the Regional Board
- 💧 Mutual Decisions not Litigation



Recycled Water Policy Relationship

Slide 27

- 💧 CV-SALTS was initiated before the State Water Board Recycled Water Policy
- 💧 CV-SALTS was designed with the same basis
 - Stakeholder driven
 - Basin Salt and Nitrate Management
 - Some
- 💧 Avenue for local agencies to produce SNMPs
- 💧 Will comply Recycled Water Policy Requirements

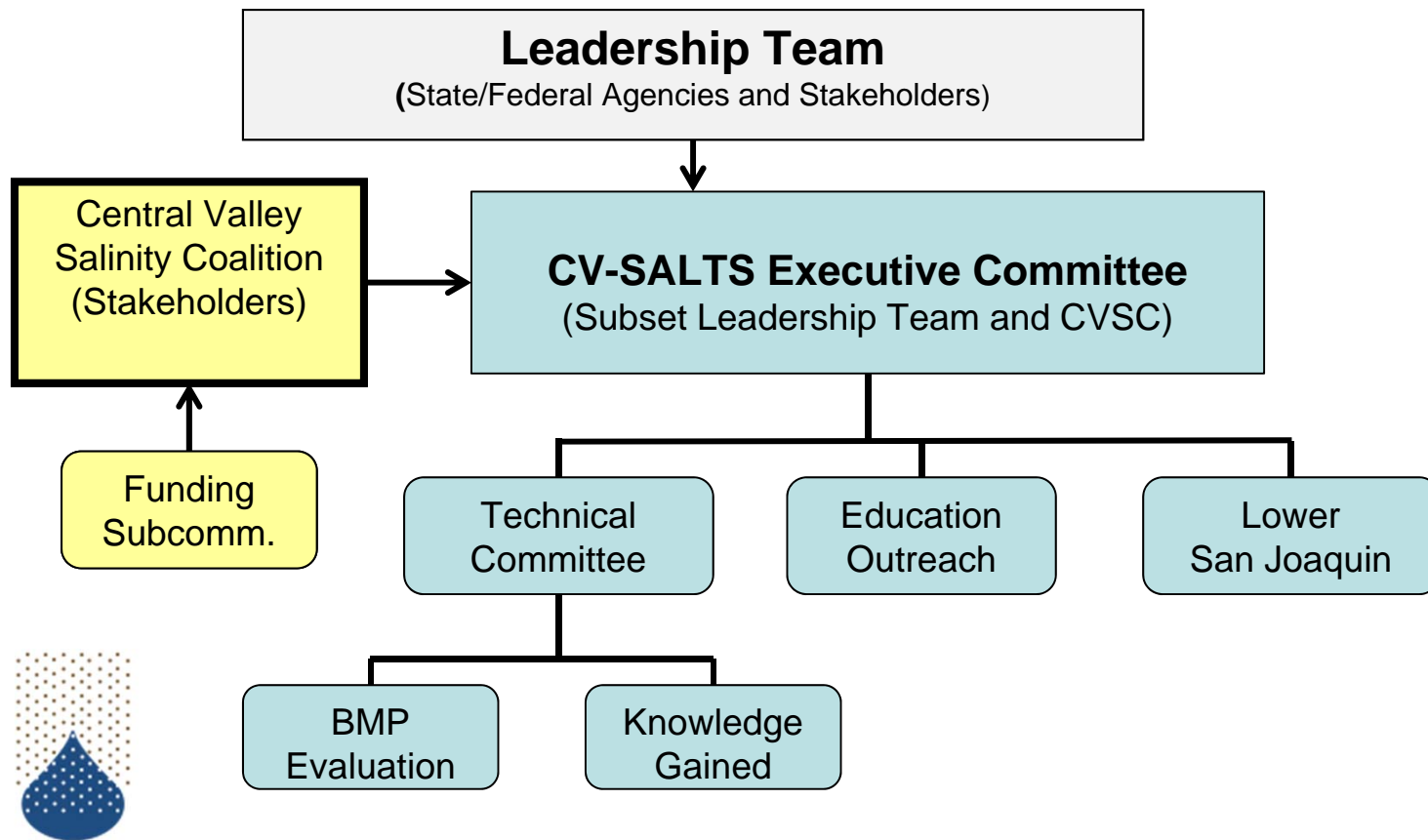


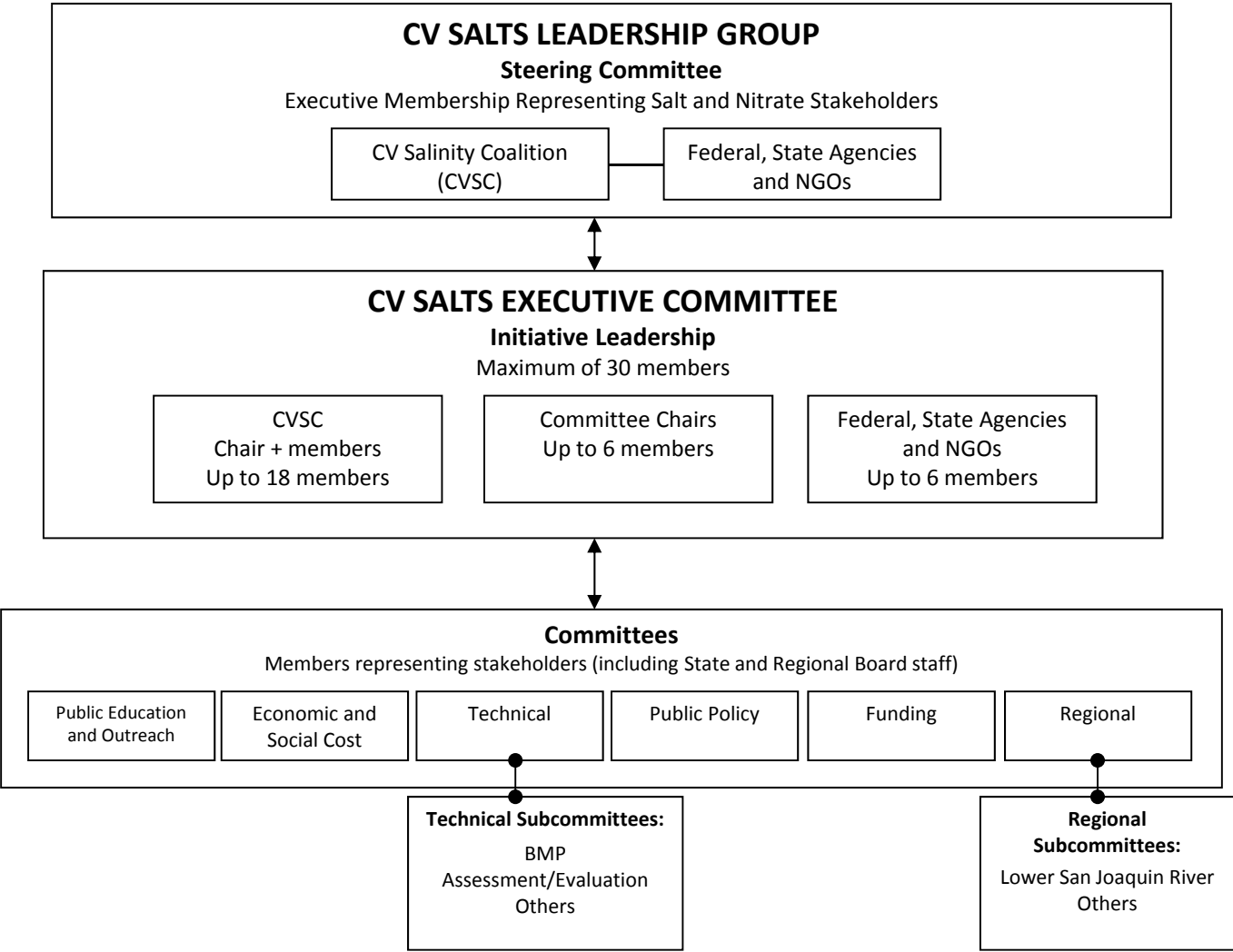
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CV-SALTS Organization

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Stakeholders are Organized

30

- ◆ Central Valley Salinity Coalition, (CVSC)
- ◆ Stakeholder involvement and ownership
- ◆ Better addresses all needs and concerns
- ◆ Utilize everyone's efforts & resources more efficiently and effectively
- ◆ Funding for elements of CV-SALTS
- ◆ Basin Plan - based on better data
- more effective



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Central Valley Salinity Coalition

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Members

- Tulare Lake Drainage District
- County of San Joaquin
- City of Stockton
- Stockton East Water District
- The Wine Institute
- City of Tracy
- California Rice Commission
- City of Manteca
- City of Modesto
- San Joaquin River Group
- City of Vacaville
- City of Fresno
- Dairy CARES/Western United Dairymen
- California Association of Sanitation
- California League of Food Processors
- Tulare Lake Basin Water Storage District
- San Joaquin Valley Drainage Authority
- Iron House Sanitary District
- Discovery Bay Community Services
- Sacramento Regional County Sanitation
- Pacific Water Quality Association
- Los Angeles County San District
- Western Plant Health Association
- East San Joaquin Water Quality Coalition



Central Valley Salinity Coalition

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- 💧 24 Member Benefit Non-Profit Coalition of Central Valley Water users

- 💧 Contributed \$1,007,000 to date Plus In-Kind

- Representing

- Water and wastewater
- Agricultural producers and processors
- Industry groups
- Others

- 💧 Developing and funding studies, planning and implementation efforts as match to other funding sources



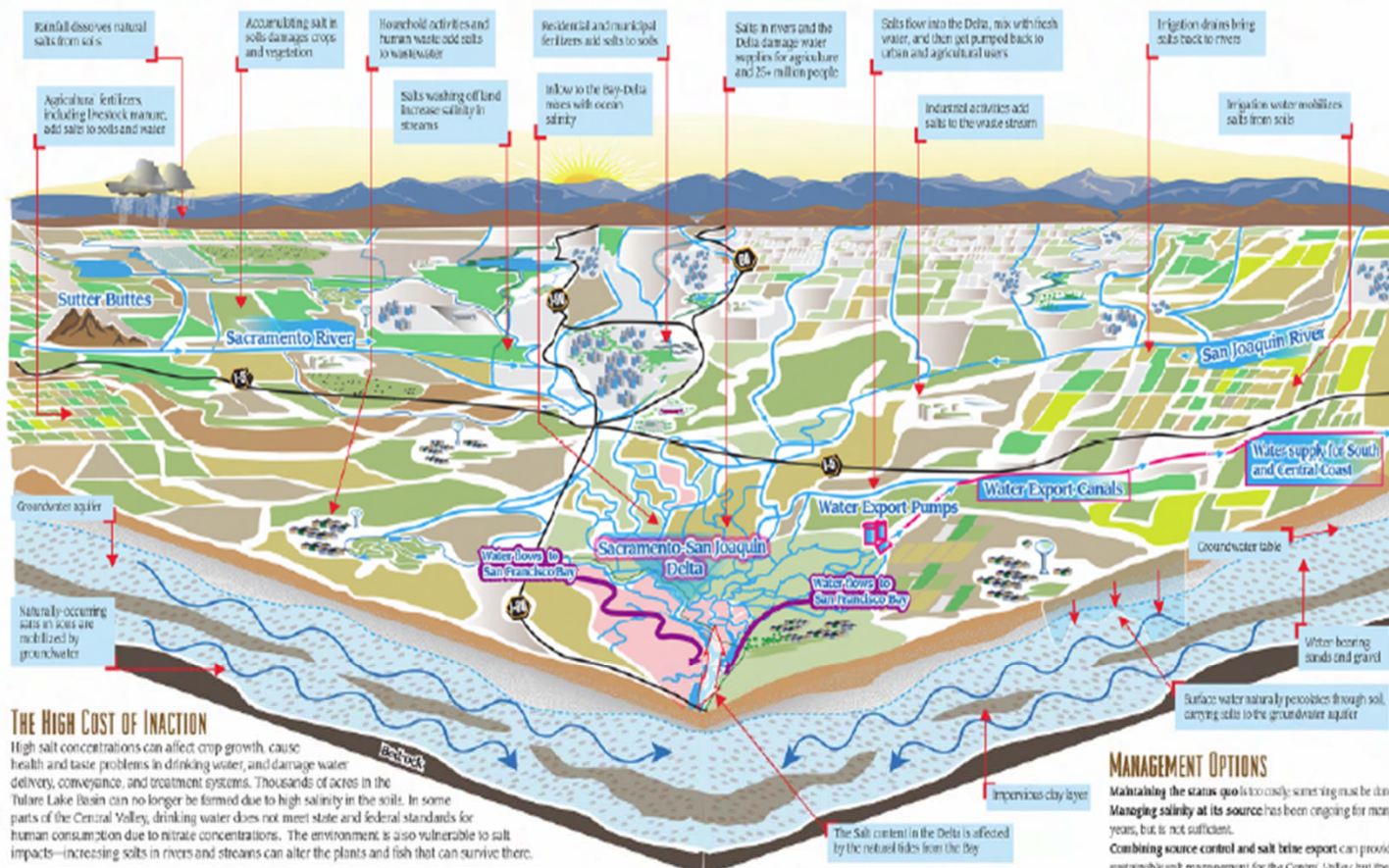
Funding and Fundraising

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- 💧 CVSC Member Funding
- 💧 State Water Board Cleanup and Abatement
- 💧 Project Contributions
- 💧 In-Kind Contributions



SALTS AND NITRATES IN THE CENTRAL VALLEY COME FROM NATURAL SOURCES AND HUMAN ACTIVITIES



THE HIGH COST OF INACTION

High salt concentrations can affect crop growth, cause health and taste problems in drinking water, and damage water delivery, conveyance, and treatment systems. Thousands of acres in the Tulare Lake Basin can no longer be farmed due to high salinity in the soils. In some parts of the Central Valley, drinking water does not meet state and federal standards for human consumption due to nitrate concentrations. The environment is also vulnerable to salt impacts—increasing salts in rivers and streams can alter the plants and fish that can survive there.

Salts squeeze the productive life out of agricultural soils • Nitrates affect groundwater

Without action to improve salts management for the Central Valley, the economic vitality of the region is threatened, business and residential growth will be constrained, and the environment will suffer further damage. A 2009 University of California study found that salts and nitrates are already costing Central Valley residents \$54 million annually for treatment and lost production. Increasingly, freshwater supplies will be used to dilute salts, reducing supplies for people and the environment, especially during droughts.

IF WE DON'T ACT NOW, BY 2030...

- The costs for managing salinity could reach \$1.5 billion per year.
- Stateside productivity could be reduced by as much as \$6.7 billion.
- The Central Valley could lose between 27,000 and 53,000 jobs.

MANAGEMENT OPTIONS

Maintaining the status quo is too costly; something must be done. **Managing salinity at its source** has been ongoing for many years, but is not sufficient. **Combining source control and salt brine export** can provide sustainable salt management for the Central Valley, but the costs will be high.

CV-SALTS participants concluded that a comprehensive, collaborative effort is needed to reduce the accumulation of salts in the Central Valley.



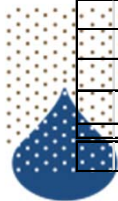
Stakeholder Expenditures HANDOUT

35

CV-SALTS Funding, Expenditures and Services: 2008 - 2012

As of 5/31/12

| Stakeholder Contributions | Calendar Year | | | | | | Total Cost |
|-----------------------------|------------------|------------------|------------------|------------------|------------------|------------------|--------------------|
| | 2008-2009 | 2010 | 2011 | Projected 2012 | Projected 2013 | Projected 2014 | |
| Contracted by CVSC | | | | | | | |
| Project Support | \$228,491 | \$206,942 | \$120,000 | \$36,000 | | | \$591,433 |
| Technical Studies | | | | | | | \$0 |
| a. Salt Source Pilot Study | \$170,228 | \$100,000 | \$100,000 | \$68,896 | | | \$439,124 |
| b. Consultant Contribution | | \$55,588 | | | | | \$55,588 |
| Subtotal: | \$398,719 | \$362,530 | \$220,000 | \$104,896 | | | \$1,086,145 |
| Other Sources | | | | | | | |
| Studies | | | | | | | |
| a. USBR Westside Studies | \$100,000 | \$100,000 | \$200,000 | | | | \$400,000 |
| b. EKI Turlock Basin Study | | \$50,000 | | | | | \$50,000 |
| c. Animal Drinking Criteria | | | | \$29,000 | | | \$29,000 |
| d. future studies | | | | \$250,000 | \$300,000 | \$300,000 | |
| Grants | | | | | | | |
| FREP Low Salt Peeling/ ETC. | | | \$100,000 | | | | \$100,000 |
| Future FREP and Grants | | | | \$300,000 | \$300,000 | \$100,000 | |
| Pledges | | | | | | | |
| Remaining CVSC Projects | | | | \$120,104 | \$250,000 | \$250,000 | \$370,104 |
| Other Support | | | | | | | |
| a. Co-Chair Support | | \$12,000 | \$12,000 | \$12,000 | \$12,000 | \$12,000 | \$60,000 |
| Subtotal: | \$100,000 | \$162,000 | \$312,000 | \$711,104 | \$862,000 | \$662,000 | \$2,147,104 |
| Total: | \$498,719 | \$524,530 | \$532,000 | \$816,000 | \$862,000 | \$662,000 | \$3,233,249 |



Cleanup and Abatement Funding

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Approximately
\$700,000
expended

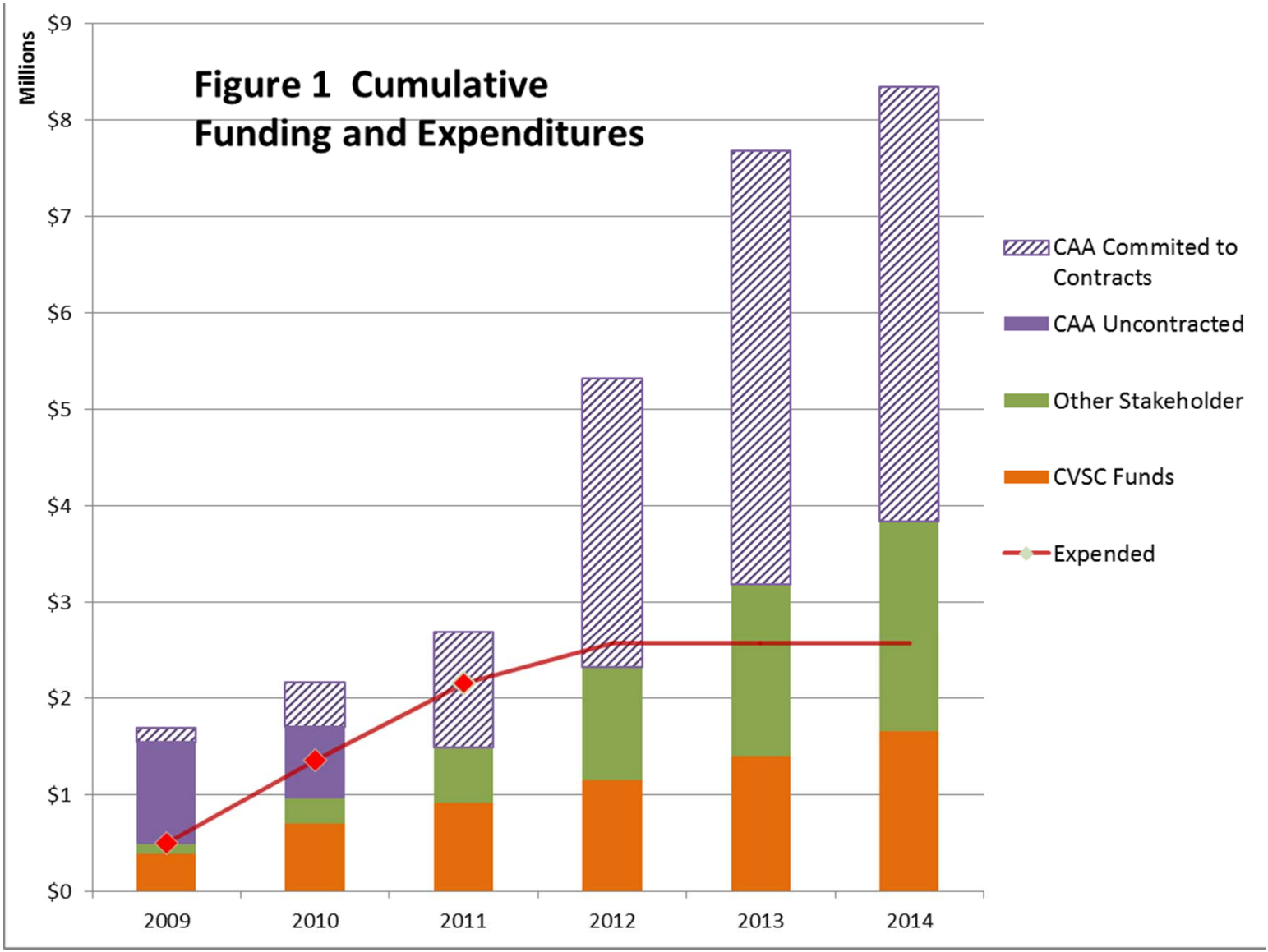
Approximately
\$1.5 M
Contracted

Approximately
\$1.2 M in
awards over
summer



| CAA Funding | Fiscal Year | | | | | Total |
|-----------------------------------|--------------------|------------------|--------------------|--------------------|--------------------|--------------------|
| | FY09/10 | FY10/11 | FY11/12 | Projected FY12/13 | Projected FY13/14 | |
| Resolution 2009-0023 (\$1.2-mil) | | | | | | |
| Contracted SJVDA | | | | | | |
| a. SJVDA Mgt. Services | \$95,948 | | | | | \$95,948 |
| b. BUOS Phase I | \$49,982 | | | | | \$49,982 |
| c. Program Mgt/Facilitation | | \$308,776 | \$358,980 | | | \$667,756 |
| d. TPM I Completed | | | \$111,915 | | | \$111,915 |
| d. Technical Support Uncontracted | | | \$274,399 | | | \$274,399 |
| Subtotal Contracted: | \$145,930 | \$308,776 | \$745,294 | | | \$1,200,000 |
| Expended | | | | | | |
| a. SJVDA Mgt. Services | | \$29,006 | \$64,028 | | | \$93,034 |
| b. BUOS Phase I | | \$49,982 | \$0 | | | \$49,982 |
| c. Program Mgt/Facilitation | | \$308,776 | \$89,361 | | | \$398,137 |
| d. Technical Support | | | \$111,915 | | | \$111,915 |
| Subtotal Expended: | | \$387,764 | \$265,303 | | | \$653,067 |
| Remaining | | | | | | |
| a. SJVDA Mgt. Services | | | | | | \$34,057 |
| b. BUOS Phase I | | | | | | \$0 |
| c. Program Mgt/Facilitation | | | | | | \$269,619 |
| d. Technical Support | | | | | | \$274,399 |
| Subtotal Remaining: | | | | | | \$578,075 |
| Resolution 2010-0042 (\$3.8-mil) | | | | | | |
| Pending Contract SJVDA | | | | | | |
| a. SJVDA Mgt. Services | | | \$176,500 | \$142,500 | | \$319,000 |
| b. Basin Planning Support | | | \$103,240 | | | \$103,240 |
| c. Initial Conceptual Model | | | \$200,000 | | | \$200,000 |
| d. BUOS Phase II | | | \$75,000 | | | \$75,000 |
| e. Interim Committee Mgr | | | \$50,000 | | | \$50,000 |
| e. Conceptual Model SNMP | | | \$730,951 | | | \$750,000 |
| f. Initial Implementation SSALTS | | | \$25,000 | | | \$25,000 |
| f. Other Technical Studies | | | \$487,500 | \$307,500 | | \$820,000 |
| g. Economic Analysis | | | | \$250,000 | | \$250,000 |
| h. CEQA Documentation | | | | \$750,000 | | \$750,000 |
| i. CV Salt/Nitrate MP | | | | \$300,000 | | \$300,000 |
| j. Draft BPA Language | | | | \$50,000 | | \$50,000 |
| Subtotal Expended: | | | \$44,951 | \$0 | | \$44,951 |
| Subtotal Remaining: | | | \$1,803,240 | \$1,800,000 | | \$3,712,191 |
| Total Expended: | | \$387,764 | \$310,254 | \$0 | | \$698,018 |
| Total Remaining: | \$1,200,000 | \$812,236 | \$2,305,221 | \$4,105,221 | \$4,105,221 | \$4,105,221 |

**Figure 1 Cumulative
Funding and Expenditures**



Financial Impacts of Salt & Nitrate

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💧 Central Valley pays for Salt

- \$544 million per year
- Impacts to Industry and communities
- Impacts to the local economies

💧 California pays for Salt

- If not for CV-SALTS work UC Davis estimates
- \$1.5B in annual impacts statewide
- Loss of agricultural production
- Loss of tax revenue and increased unemployment





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Daniel Cozad, CV-SALTS Program Manager

- 💧 Strategy/Framework and Approach
- 💧 Workplan and Milestones

Strategy and Framework

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- ◆ Summary of Approach
- ◆ Approved Workplan
- ◆ Milestones
- ◆ SNMP Draft Delivered by May 2014 to Regional Board
- ◆ Basin Plan Amendment Completed in 2015



Strategy and Framework

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Revise Regulatory Structure

- Beneficial Uses; Water Quality Objectives; Policies
- Revise Basin Plan

Develop Policies and Procedures to:

- Evaluate Compliance
- Provide Regulatory Flexibility

Provide basis for short and long-term management of salts and nitrate at appropriate geographic scales



Key Work Areas

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💧 Regulatory Planning

- Regulatory structure and policies to support basin-wide S/N management

💧 CV-SNMP Master Plan Development

- Creates framework for implementation

💧 SNMP Implementation

- Provides basis and process for future development of area-specific SNMPs

A Plan Within a Plan










Work Plan

3 Goals

- Regulatory Planning
- SNMP Master Plan
- SNMP Implementation

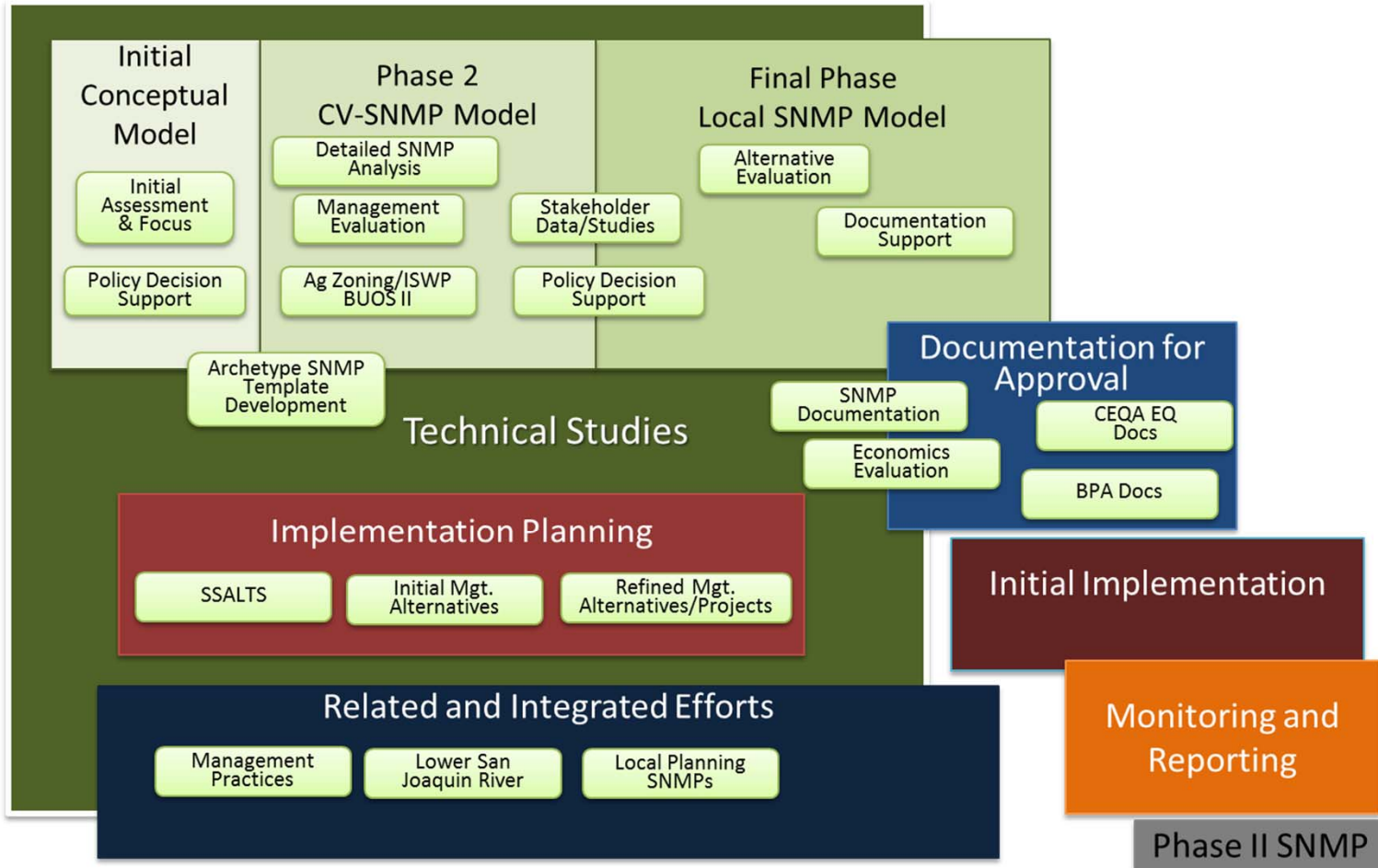
7 Major Work Elements

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 



CV-SALTS PROGRAM ELEMENT INTEGRATION

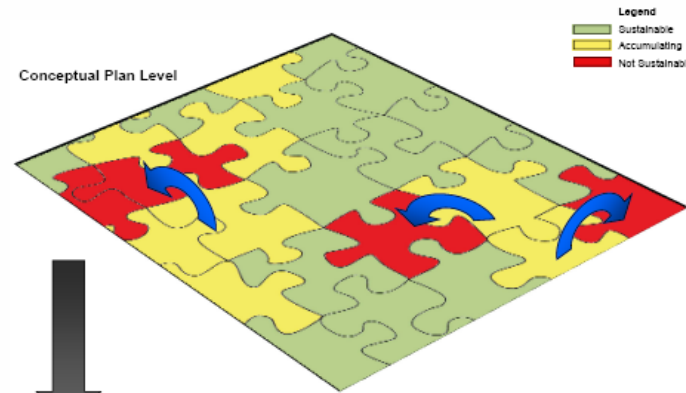
Policy Development, Planning, Outreach and Program Management



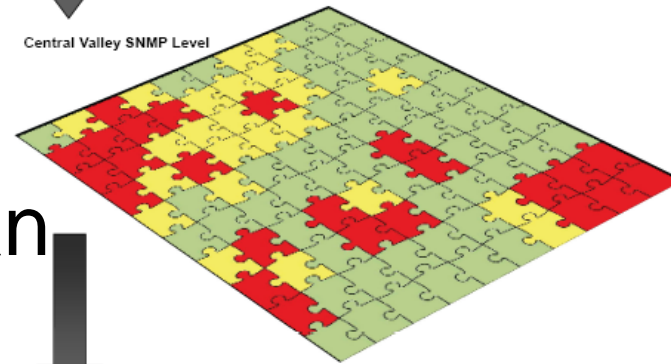
Conceptual Model



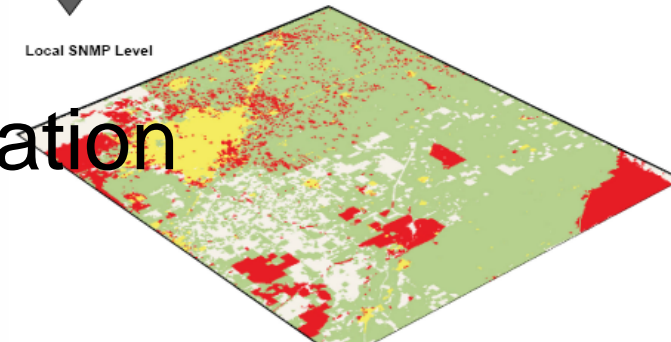
Policy



Master Plan



Implementation



Workplan Supports Policy Decisions

Attachment 1 CV-SALTS Multi Level Entry Parallel Archetype/Prototype Approach

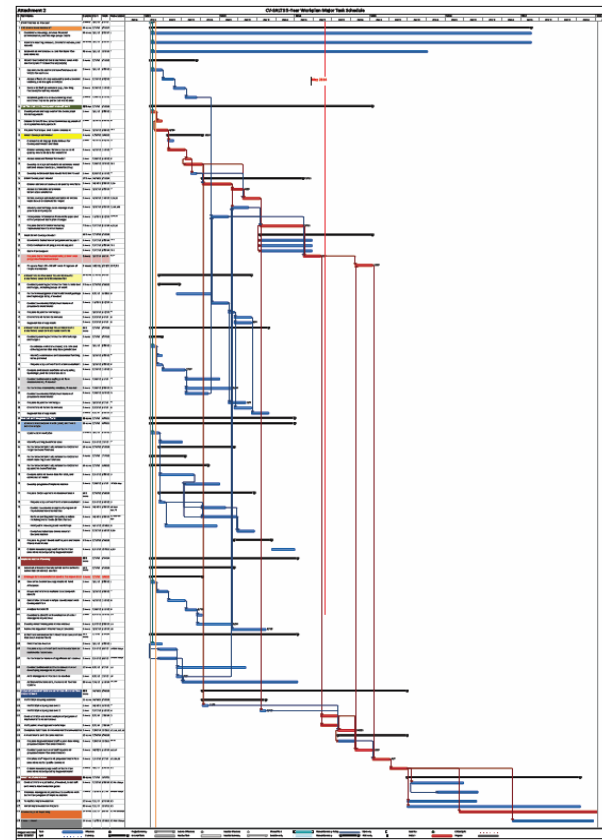
| Tier | Description | Focal Areas | Technical Tasks | Policy Decisions | |
|------|----------------|--------------------|----------------------------------|---|---------------------------|
| 1 | WATERBODIES | Surface Water | GIS Maps | | |
| | | | Map Characteristics | | |
| | | Groundwater | Map Connectivity | | |
| | | | Identify Aquifers | Define "Point of Use" | |
| 2 | STANDARDS | MUN Uses | Identify Production Zones | | |
| | | | Map Supply Intakes | 88-83 Exceptions | |
| | | MUN Objectives | Map Effluent Discharges | Define Subcategories | |
| | | | Quantify EC Impacts | Define EC Thresholds | |
| | | AG Uses | Map Crops | AG Zoning Rules | |
| | | | Map Limiting Conditions | Define Existing Use | |
| | | AG Objectives | Crop Sensitivity | | Define Most Sensitive Use |
| | | | | | Points of Compliance |
| 3 | ASSESSMENT | Attainment Metrics | Assess Available Data | Spatial Averaging | |
| | | | Assess Data Quality | Temporal Averaging | |
| | | | # Historic Quality | Threshold Values | |
| | | | # Current Quality | Action Triggers | |
| | | Surveillance Plan | Water Quality Monitoring Program | | |
| | | | Source Analysis | | |
| 4 | IMPLEMENTATION | Anti-Degradation | # Assimilative Capacity | Define Thresholds for Degradation, Assimilative Capacity, & "Maximum Benefit" | |
| | | | # Trend | | |
| | | Restoration | Source Control Projects | | |
| | | | Treatment Projects | | |
| | | Offsets | ID Projects | | Define Conditions |
| | | | | | Variances |



| Color Key | Program Mgt/Policy |
|-------------|------------------------------------|
| 5-Year Plan | Conceptual Model/Technical Studies |
| | Related/Integrated Efforts |
| | Implementation Planning |
| | Documentation for Approval |
| | Initial Implementation |
| | Monitoring and Reporting |

Detailed Critical Path Schedule

- 💧 Detailed Critical Path Schedule prepared
- 💧 Parallel Tasks
- 💧 Early Critical Tasks
 - Policy Decisions
 - Conceptual Model Technical work
 - Implementation Planning



Selected Critical Milestones

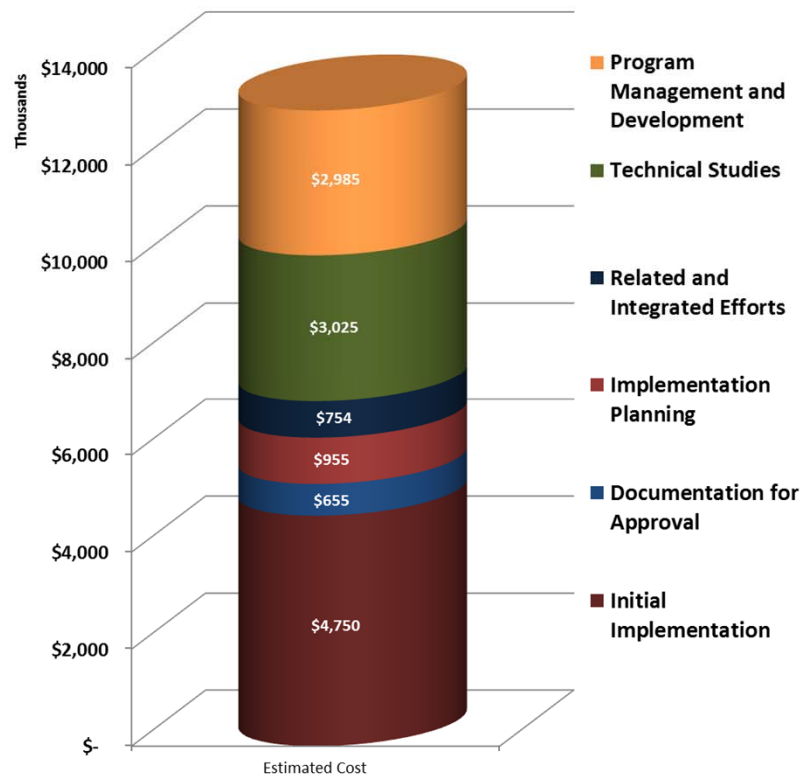
Selected CV-SALTS Milestone Tasks

| ID | Task Name | Duration | Finish | Status |
|-----|--|------------|------------|--------|
| 6 | POLICY DISCUSSIONS ON BENEFICIAL USES AND WATER QUALITY OBJECTIVES (WQOs) | 8 mons | 9/11/2012 | 28% |
| 11 | CENTRAL VALLEY Conceptual Model/SNMP | 38.5 mons | 1/13/2015 | 9% |
| 15 | Initial Conceptual Model | 6 mons | 10/9/2012 | 0% |
| 21 | SNMP Conceptual Model | 17.5 mons | 2/11/2014 | 0% |
| 28 | Final SNMP Concept Model | 19.5 mons | 1/13/2015 | 0% |
| 29 | Economics Evaluation of program and support | 9 mons | 3/25/2014 | 0% |
| 30 | CEQA Evaluation of program and support | 9 mons | 3/25/2014 | 0% |
| 32 | Prepare Draft Final Central Valley SNMP with program of implementation | 3 mons | 5/6/2014 | 0% |
| 33 | Prepare Final CV- SNMP with Program of Implementation | 3 mons | 1/13/2015 | 0% |
| 34 | ARCHETYPE PERTAINING TO APPROPRIATE BENEFICIAL USES OF GROUNDWATER | 16 mons | 6/4/2013 | 18% |
| 45 | ARCHETYPES PERTAINING TO APPROPRIATE BENEFICIAL USES OF RECEIVING WATERS | 20.5 mons | 8/27/2013 | 10% |
| 53 | Conduct economic/CEQA/Peer Review of proposed amendments | 4 mons | 11/6/2012 | 0% |
| 54 | Prepare Report for Archetype | 3 mons | 5/7/2013 | 0% |
| 55 | CV-SALTS and Public Comments | 3 mons | 6/4/2013 | 0% |
| 56 | Regional Board Approvals | 3 mons | 8/27/2013 | 0% |
| 58 | LOWER SAN JOAQUIN RIVER (LSJR) SALT AND BORON WQOs | 25 mons | 12/31/2013 | 4% |
| 82 | Complete Substitute Environmental Documentation | 3 mons | 6/18/2013 | 0% |
| 83 | Prepare Regional Board staff report and Basin Plan amendments | 6.5 mons | 9/10/2013 | 0% |
| 87 | Obtain necessary approvals of Basin Plan amendments adopted by Regional Board | 4 mons | 12/31/2013 | 0% |
| 88 | Implementation Planning | 29 mons | 4/22/2014 | 9% |
| 89 | DISADVANTAGED COMMUNITIES WITH NITRATE IMPAIRED DRINKING WATER | 24.95 mons | 12/30/2013 | 10% |
| 96 | Strategic Salt Accumulation Land & Transport Study | 10.5 mons | 11/20/2012 | 10% |
| 104 | EFFECTIVE MANAGEMENT PRACTICES EVALUATION FOR SALT AND NITRATE | 29 mons | 4/22/2014 | 5% |
| 109 | Add Management Practices to toolbox | 1 mon | 10/9/2012 | 0% |
| 110 | Additional Sectors calls, Review and Toolbox Update | 20 mons | 4/22/2014 | 0% |
| 111 | CEQA EQUIVALENT DOCUMENTATION FOR CENTRAL VALLEY SNMP | 35.5 mons | 6/30/2015 | 0% |
| 123 | Initial Implementation | 30 mons | 10/17/2017 | 0% |
| 128 | Monitoring and Reporting | 24 mons | 1/9/2018 | 0% |
| 129 | Phase II SNMP | 14 mons | 12/19/2017 | 0% |



Costs \$\$

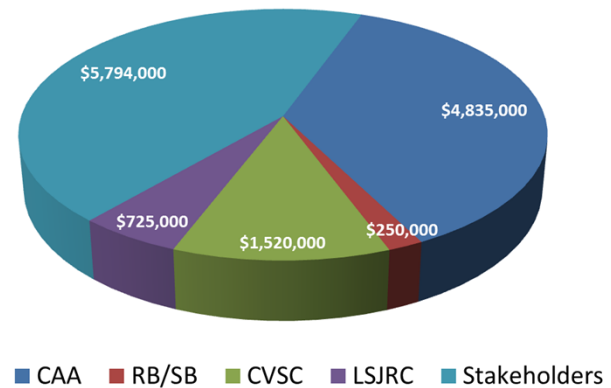
Element Cost at Point Estimates



How Much

Who/Where

Fundsource Breakout at Point Estimate Costs



CV-SALTS Workplan and Status

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- 💧 Well Planned
- 💧 Work well underway
- 💧 Produce a Draft SNMP by May 2014
- 💧 2015 Final
- 💧 Funding largely in place Stakeholder participating
- 💧 Implementation will need funding





Slide
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Regional Board Questions/Discussion/Feedback

- Are we headed in the right direction?
- Are any important issues missing?





Slide **53**

Parry Klassen, Exec. Comm. Chair

💧 Current Implementation and Policy Efforts

Current Implementation

Slide 54

- 💧 Early Implementation Commitment
- 💧 Management Practice BMP Toolbox
- 💧 Management Practices approval
 - Process for review and approval
 - Approved Management Practices



Management Practice Toolbox

Slide 55

- 💧 Purpose
- 💧 Process
- 💧 Review of practices
- 💧 Utility of toolbox



Practices Under Review

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💧 Collections of Practices

- Wine Institute Manual of Practice for salt and nutrients
- California League of Food Processors Manual of Practice for salt and nutrients
- 4-R Plant Nutrition On-Farm Nitrogen Management

💧 Individual Practices

- Dairy Feed Management Practice
- Potassium for Sodium Hypochlorite substitution



Practices Under Review

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Nitrate Issues Status in CV-SALTS

- Collaboration - Counties and communities - SOAC
- Identification, development and implementation
- Provide community support upon recommendation
- BPA to support compliance offset





Slide **58**

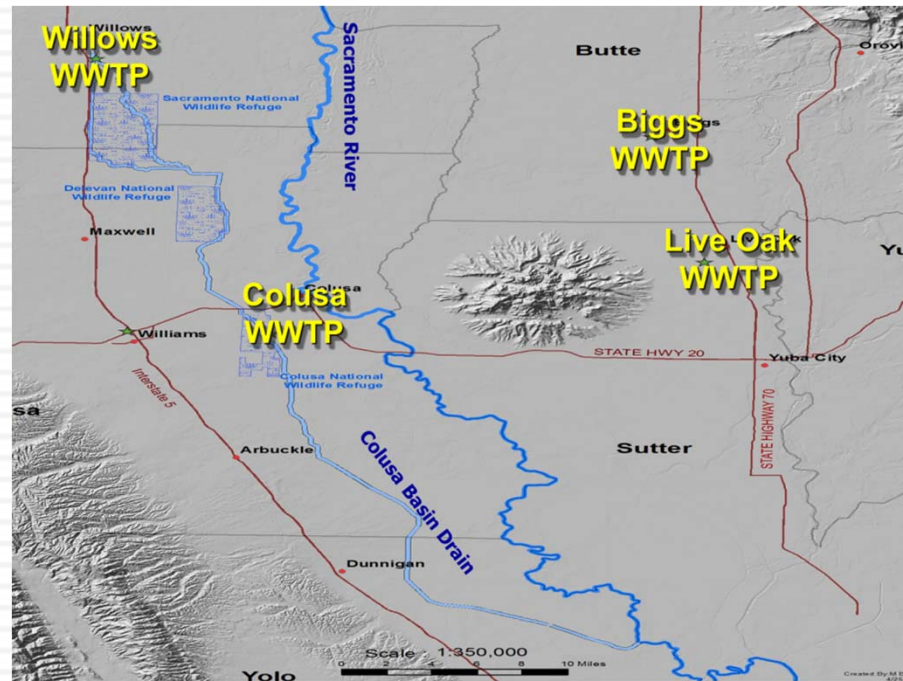
Tim Moore, CV-SALTS Policy Facilitator

- 💧 Addressing Difficult Questions
- 💧 Charting a Path
- 💧 Archetypes
- 💧 Prototypes
- 💧 New Decision-making Models



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Addressing Difficult Questions



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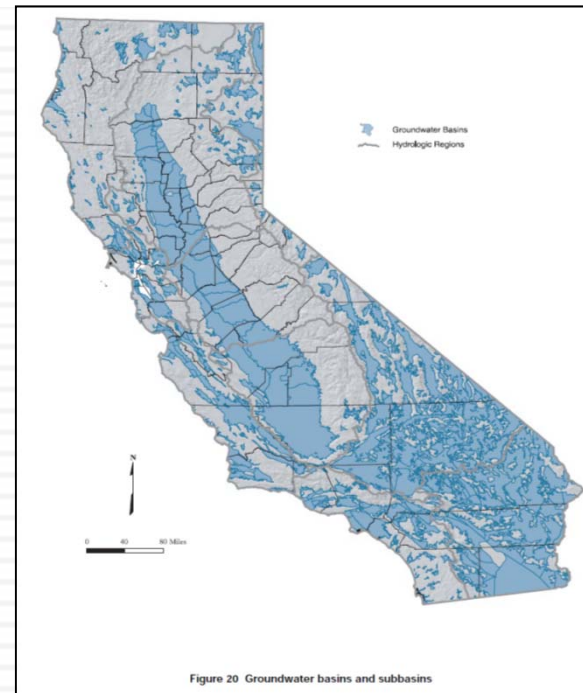
Charting a Path



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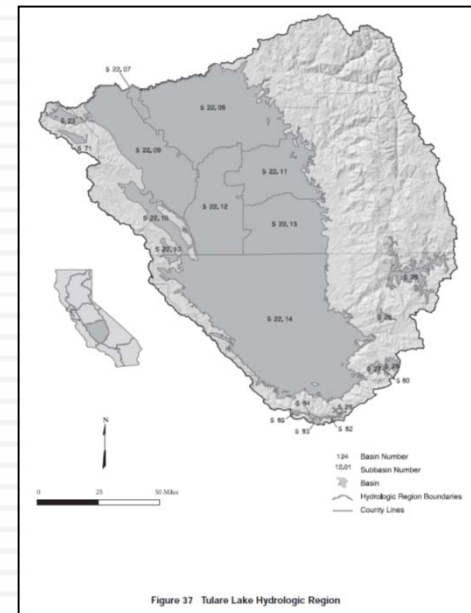
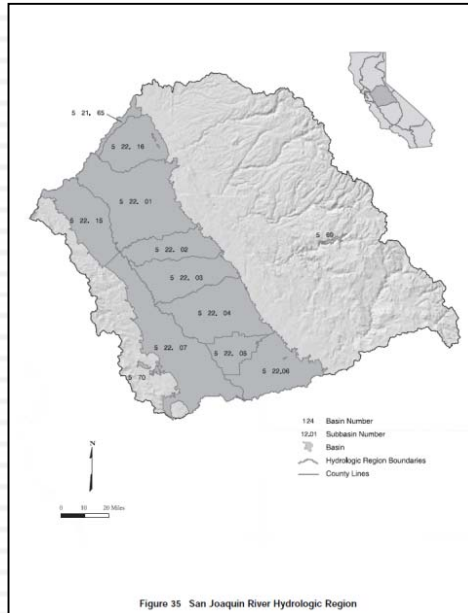
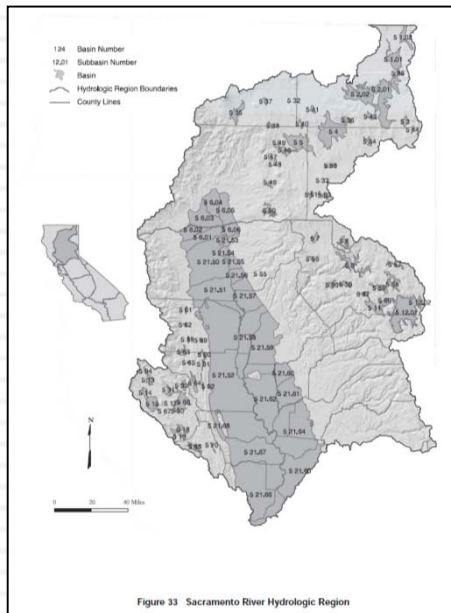
The Central Valley Region





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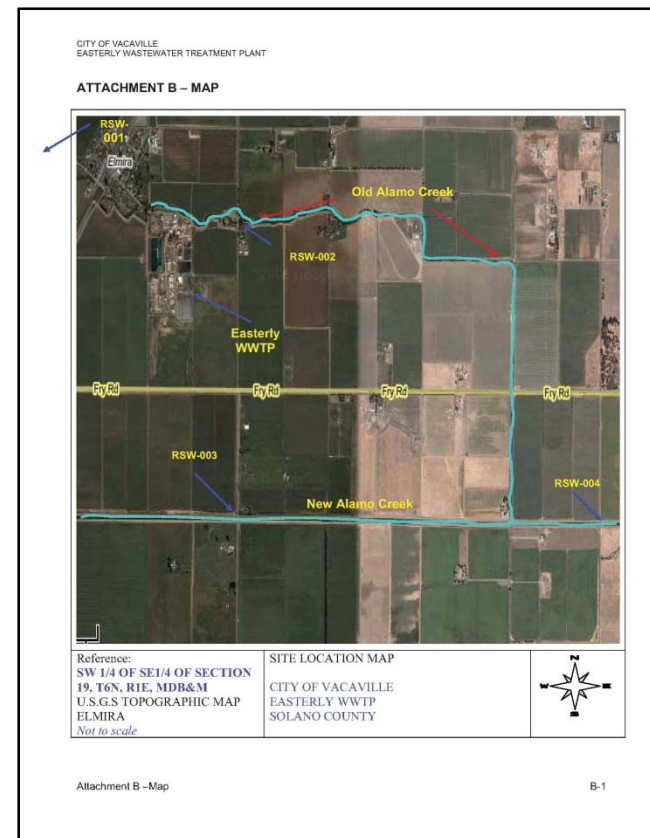
The “Traditional Approach”



Archetype Studies

65

- Constructed Ag Drains
- Lower San Joaquin River
- Tulare Lake Bed
- Groundwater Basins
- Crop Zoning Studies

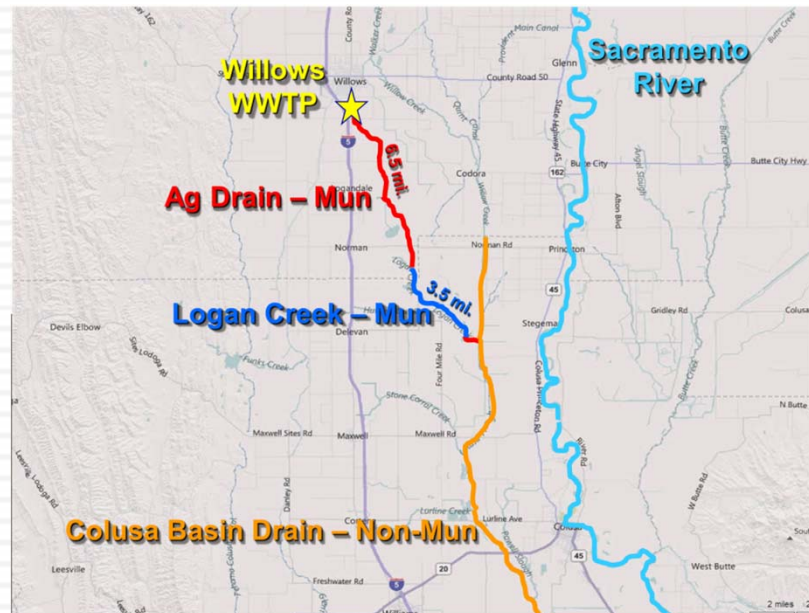




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MUN – designation Archetypes

-  Willows
-  Live Oak
-  Biggs
-  Colusa

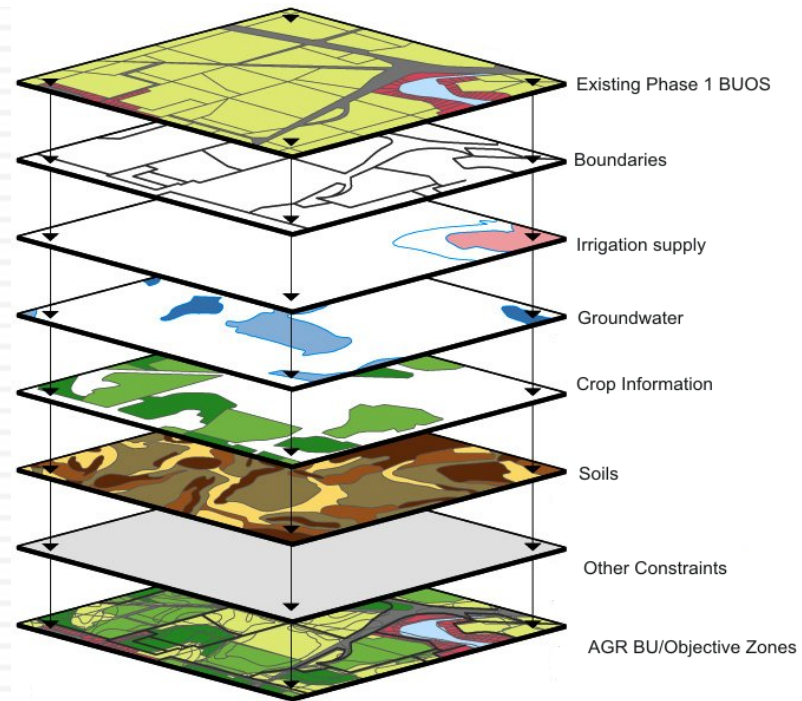


Agenda Item #

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Crop Zoning Archetype



Prototypes

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💧 Lower San Joaquin River

💧 Disadvantaged Communities

💧 ILRP groundwater WDRs





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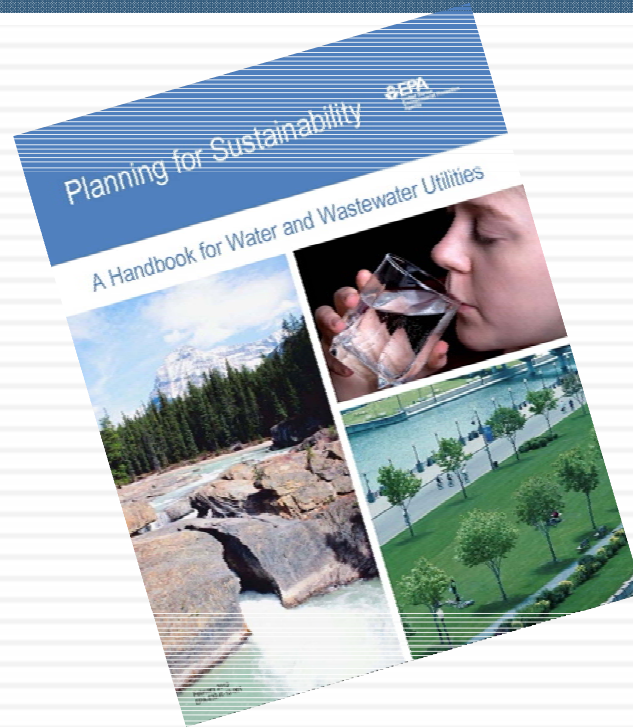
New Decision-making Models



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New Decision-making Tools





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Addressing Difficult Decisions





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Regional Board Questions/Discussion/Feedback

- ◆ Do these areas address important issues for the Board?
- ◆ Are any important issues missing?



Public Comment

Questions/Discussion/Feedback

Slide 73





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Jeff Willett, Exec. Comm. Vice Chair

💧 Summary and Closing

Summary and Closing

Slide 75

- 💧 On the road to a successful process
 - Significant progress has been made
 - Significant work underway
- 💧 This is how it comes together for a sustainable Central Valley future
 - Path to follow for dealing with difficult issues and making difficult choices successfully
 - Tradeoffs to gain best use of limited funds
- 💧 Long term benefits for the Central Valley

