Presentation Outline

• CV-SALTS Overview

• Technical Foundation
  – Groundwater Water Quality
  – Nitrate Management (NIMS)
  – Salt Management (SSALTS)

• Implementation Framework
Overview

CV-SALTS is in the home stretch of a 10-year stakeholder effort

• State, Federal, local agencies, discharger community, EJ and DAC representatives

• Comprehensive Salt and Nitrate Management Plan

• Environmental and Economic Sustainability
Central Valley Nitrate Issues

• Legacy/Current Conditions
• Direct Impacts
  – Drinking Water Supplies
• Economic Costs
  – Treatment
  – Alternate Supply
• Diverse Sources
Central Valley Salt Issues

More salt enters the Central Valley Region than leaves

- Impacts (current/legacy)
  - Agricultural Production
  - Drinking Water Supplies

- Economic Cost by 2030
  - Direct Annual: $1.5 Billion
  - Statewide annual income impact: $3.0 Billion

- Diverse Sources
Existing Water Quality

- TDS and Nitrate Ambient Conditions
Salt and Nitrate Management Goals

• Management Goal 1 – Assure Safe Drinking Water
  – Short & Long-term Solutions

• Management Goal 2 - Achieve Salt/Nitrate Balance
  – Timeframe and costs vary

• Management Goal 3 - Restore Groundwater Quality
  – Where feasible and practicable
Nitrate Management Measures

• Alternate drinking water supplies
• Source control measures
• Recharge of high quality waters/coordination with Groundwater Sustainability Plans
• Groundwater remediation
Central Valley Salinity Problem

- Over seven million tons of salt are accumulating annually in the groundwater basins underlying the Central Valley floor.
- The sources of salinity in groundwater are agriculture, municipal and industrial discharges, and – in some groundwater basins – sediments of marine origin with naturally-occurring salts that can be leached out.
- In a study commissioned by the State Water Board, UC Davis economists found “that if salinity increases at the current rate until 2030, the direct annual costs will range from $1 billion to $1.5 billion. Total annual income impacts to California will range between $1.7 billion to $3 billion by 2030.”
SSALTS – Identify Sustainable Salt Management Alternatives

- SSALTS investigating:
  - Magnitude of the problem
  - Requirements to achieve sustainability
  - Available salt management tools - now vs. future
  - Implementation measures for inclusion in the SNMP
Achieving Salt Sustainability – Example Scenario from Southern Part of Central Valley

Even with use of existing tools, the volume and mass of unmanaged salt is significant.
# Key Salt Management Alternatives

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<th>Brine Disposal and Storage</th>
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<td>- Zero Discharge Distillation by Veolia – Electrodialysis Metathesis</td>
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<td>- New Sky Energy – Temperature Control and Electrodialysis</td>
<td>- Regulated Brine Line</td>
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<td>- Element Renewal – Addition of polymers to remove trace elements</td>
<td>- Bay Area WWTP</td>
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<td>- New, permitted Bay Area Outfall</td>
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Achieving Sustainability Requires Having the Means to Move Salt Out of the Central Valley

- Central to all evaluated salt management alternatives is a regulated Central Valley brine line
- Concept level analysis completed
  - Alternative Central Valley routes
  - Preliminary Brine Discharge Alternatives
    - Via existing East Bay Municipal Utility District outfall
    - Via an alternative outfall to San Francisco Bay
  - Concept-level cost estimate – Capital and O&M
Implementation Timeline – Regulated Brine Line Alternative

• Short-Term Implementation Activities (~20 Year Period). Key activities during this period include:
  – Prioritization and Optimization Plan – Further evaluate possible project configurations;
  – Conceptual Design – Feasibility study to evaluate the engineering approach;
  – Funding Plan – Capital and operation & maintenance costs;
  – Environmental/Permitting – Meet the requirements of CEQA/NEPA;
  – Project Design – Detailed design of key components
  – Governance Plan – Develop operational plan with roles and responsibilities defined

• Long-Term Implementation Activities (~30 Year Period)
  – Phased construction and operation over extended period
Summary of Key Findings

- Feasibility Studies are necessary to determine the optimal economic and environmental design of a Central Valley wide salt management program.
- A key salt disposal option that can manage or dispose of the mass of salt that is accumulating annually in a sustainable manner is disposal of brine through a regulated brineline with a permitted ocean or San Francisco Bay outfall.
- The major components of this treatment system include extraction wells, desalter facilities (e.g., Reverse Osmosis [RO]), injection wells, post-RO treatment for trace elements, the Central Valley Brine Line (CVBL), CVBL pump stations, and disposal costs at the wastewater treatment plant (WWTP).
- Conceptual level capital costs for the long-term regional salinity treatment system is about $11 billion dollars. Operations and maintenance (O&M) costs would be about $1.2 billion dollars.
Nitrate and Salinity Management Program: Timelines

- Address nitrate/safe drinking water first

- Realistic Timelines are Necessary
  - Comprehensive Salinity Management Program: 20 years to design, permit, fund; 30-years to build necessary infrastructure

- Interim Activities: Plan/Organize/Fund/Implement

- Not immediate crisis; Need to motivate society to take action
Timeline

- December 2016 SNMP Submitted
- 2017 - Basin Plan Development
- Early 2018: Regional Board Consideration Basin Plan Amendment
- Early 2018: State Board Consideration Basin Plan Amendment