Bringing New Water Supplies to the Parched Central Valley
North Valley Regional Recycled Water Program (NVRRWP)

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Presentation Overview

- Introduction
- Need for the NVRRWP
- Conceptual Solution and Benefits
- Implementation Challenges
  - Securing Water Rights
  - Approval for Use of USBR Facilities
  - Obtaining a New NPDES Permit
- Next Steps
- Questions
Introduction
North Valley Regional Recycled Water Program

- Del Puerto Water District
- City of Ceres
- City of Modesto
- City of Turlock
- Stanislaus County

*Supported by the US Bureau of Reclamation (USBR)*
Current Operations

Sacramento-San Joaquin Delta

Delta Mendota Canal

Ag Turnouts

River Transfers

To San Luis Reservoir

Ag Tailwaters

Modesto & Turlock Discharges

To Wildlife Refuges & back to SJ River

Managed Rivers

To Wildlife Refuges & back to SJ River
Delta-Mendota Canal

- Owned by U.S. Bureau of Reclamation (Federal) under Central Valley Project
- Operated by San Luis Delta-Mendota Water Authority
- Max capacity of 4,600 cfs
- Primary source of water to DPWD and refuges
Need for the NVRRWP
Separate and Distinct Challenges

- **Del Puerto Water District**
  - Primary water source is Federal allocations from the Central Valley Project (CVP)
  - CVP SOD allocations largely restricted due to drought, regulation, and environmental concerns
  - Unreliable service

- **Cities of Modesto and Turlock**
  - Tertiary treated supply with minimal reuse opportunity
  - Future treatment requirements of cold-water fishery (SJR) costly
  - Using resource to generate benefits for their citizens
Del Puerto Customers Have Experienced Significant Shortages and Decreased Reliability in the Last 20 Years (Data as of 2014)

- Average Surface Water Need: \( \sim 90,000 \text{ AFY} \)
- Shortfall: \( \sim 90,000 \text{ AF} \)
- Average contractual water supplies over last 5 years: \( \sim 45,000 \text{ AFY} \)
- Current Year contract supply: 0 AF
Primary Crops in Del Puerto

- Almonds (16,500 ac)
- Tomatoes (3,000 ac)
- Beans (3,000 ac)
- Apricots (2,500 ac)
- Barley/Oats (2,500 ac)
- Wheat (2,000 ac)
- Walnuts (2,000 ac)
- Various Fruit Trees (2,000 ac)
- Other – Misc. (3,500 ac)
- Fallowed (8,000 ac)
- Total = 45,000 acres
Modesto’s Wastewater Story

- Total WW flows: 25 MGD
- Two disposal methods for secondary-treated wastewater
  - Limited seasonal discharge to San Joaquin River
  - Irrigation of 2,530 acres on City-owned ranch land
- NPDES permit requires tertiary-treatment for year-round disposal to San Joaquin River
  - $150 million tertiary upgrade plant has just been completed to allow year round disposal
  - Compliance date is June 2018
Turlock’s Wastewater Story

- Total WW flows: 10 MGD
- San Joaquin River disposal of tertiary-treated wastewater
  - Tertiary process - cloth media filters with chlorine disinfection
- Recently upgraded outfall from an open drain to a close pipeline for compliance with NPDES permit
Average Monthly Discharges to San Joaquin River (2000-2014)
Annual Average Discharge = 18,000 AFY
Monthly Average Discharge Range = 13 – 50 cfs
Cities discharges represent less than 1% of San Joaquin River Flows

San Joaquin River at Vernalis, 2000-2012 with Recycled Water Flows

- SJR Flows at Vernalis (2000-2012)
- Recycled Water Flows

Recycled Water Flows:
- March - 48 cfs
- April - 23 cfs
- May - 20 cfs

Flow, cfs

Jan  Feb  Mar  Apr  May  Jun  Jul  Aug  Sep  Oct  Nov  Dec
North Valley Regional Recycled Water Program Partnership Goals:

- Provide a regional solution for a local water supply crisis
- Make recycled water available for agricultural irrigation and environmental beneficial use (wildlife refuges)
- Provide DPWD a long-term, reliable water supply to mitigate on-going and severe contractual water shortages
- Reduce reliance on Delta conveyance and groundwater pumping to meet unmet water supply needs

City Benefits:
- Year-round use of City resources
- Avoiding future treatment costs
Conceptual Solution
Conceptual Solution

Sacramento-San Joaquin Delta

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Modesto & Turlock Recycled Water

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NVRRWP Objectives

- Establish an alternative, reliable, long-term water supply for DPWD
- Allow Cities to eliminate discharge to the San Joaquin River
- Provide storage of recycled water during non-irrigation season
- Deliver agricultural water to DPWD at a cost that supports regional economic sustainability
- Provide water for south of delta CVPIA designated wildlife refuges
Single Pipeline to DMC

- MODIFIED Pump Station
- Terminal Outfall Structure at DMC
- San Joaquin River
- Modesto Water Quality Control Facility
- Connection to Turlock Outfall Pipeline
## Estimated Volumes and Project Costs

### Volume

<table>
<thead>
<tr>
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<th>Volume</th>
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<tbody>
<tr>
<td>Start Up (2018)</td>
<td>25,000 AFY</td>
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<tr>
<td>Build out</td>
<td>30,000-48,000 AFY</td>
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### Single Pipeline Alternative

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<tbody>
<tr>
<td>Base Construction</td>
<td>$76 M</td>
</tr>
<tr>
<td>Implementation Costs</td>
<td>$22 M</td>
</tr>
<tr>
<td>Total Capital Cost</td>
<td>$98 M</td>
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Depending on grants and financing mechanisms, the first year water cost is estimated at $180-320 per acre-foot.
Implementation Challenges
Implementation Challenges

- Engineering is the *Easy* Part of This Project
- Moving Recycled Water Out of the San Joaquin River
  - Securing Water Rights
  - Protecting anadromous fisheries
- Moving Recycled Water Into the DMC
  - Obtaining a New NPDES Permit
  - Approval for Use of USBR Facilities
Water Rights Process

- Local Agency Files Wastewater Change Petition
- Local Agency Releases Draft EIR
  (Certified Final EIR Required for SWRCB to Issue Water Right)
- Petition Noticed
- Protests Filed, if any
  - Negotiate Protest Resolution, or
  - SWRCB Water Rights Hearing
- SWRCB Issues Water Right
Securing Water Rights

- Modesto and Turlock filed Section 1211 Petitions with the State Water Board (Wastewater Change Petitions)
- Removal of discharges from the San Joaquin River requires evaluating both flow and fish habitat impacts
- Work showed no significant impacts – confirmed by BO from NMFS and USFWS
Basis of Protests

- Protests varied widely and were sometimes conflicted each other
  - Exporting local groundwater (don’t discharge to river!)
  - Reduction in flows to Delta (do discharge to river!)
  - Keep status quo (don’t discharge to DMC!)
  - Do the project (but give me some water too!)
Obtaining a New NPDES Permit

- Use of the DMC creates an unusual permitting scenario
  - DMC is a concrete-lined engineered channel
  - More importantly, the DMC is a Water of the State
- Permit therefore is an NPDES Permit with the DMC as the receiving body
Approval Process Required

- Regional Board issued a joint NPDES permit in February 2016
- Issuance of NPDES permit was final action that triggered USBR to:
  - Issue a Record of Decision finalizing EIS
  - Sign an exemption to allow recycled water to be directly introduced into a Federal facility
  - Execute a long-term contract with Del Puerto (44 year contract in signed August 2016)
How Program Benefits are Shared

- Modesto and Turlock each hold an SRF loan for capital costs
- Del Puerto has Water Sales Agreements with Modesto and Turlock to purchase recycled water at a pre-negotiated price
  - Covers annualized capital costs and O&M
  - Includes a premium payment per AF (revenue generation for cities)
- Interest savings from grants shared among three partners
Thanks to all the NVRRWP Participants

- Del Puerto Water District
- City of Ceres
- City of Modesto
- City of Turlock
- Stanislaus County

- Basin Research
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- Richard Smith
- USBR
Questions?

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