Matilija Dam Ecosystem Restoration Project

Re-evaluation of D/S Project Components
Real Estate Plan
Short-term Water Supply Mitigation
Long-term Water Supply Mitigation
Craig Smith, PE
Agenda

1. Re-evaluation of Downstream Project Components
   a) Bridges
   b) Levees
   c) Water Production Infrastructure
2. Real Estate Plan
3. Short-term Water Supply Mitigation Alternatives Refinement
4. Long-term Water Supply Mitigation Alternatives Refinement
Re-evaluation of Downstream Components (Task 2.4)

Objectives:

• The design of each downstream project component is based on USACE Alternative 4b 100-year flood levels

• SCOPE: Re-evaluate the downstream project component designs in light of the results of Subtask 2.3 (100-year flood depths and extent following dam removal)
Re-evaluation of Downstream Components

Components:

Bridges
• Santa Ana Bridge
• Camino Cielo Bridge

Levees
• Live Oak Acres Levee
• Meiners Oaks Levee
• Casitas Springs Levee

Water Production
• Robles High Flow Bypass
• Foster Park Wells
Santa Ana Bridge

- USACE 2004 Recommendations: Extend bridge and widen channel
- Santa Ana Bridge Replacement WSE (Quincy Engineering, 2016): $408.00
- Future 100-year WSE: $410.51
- Existing flood risk around Santa Ana Blvd to be confirmed

Future increase in 100-year WSE at bridge location: 1.1 ft
Santa Ana Bridge
Camino Cielo Bridge

- Existing box culvert exacerbates flooding in constricted channel
- Bridge is sole egress for residents
- Future 100-year WSE: 884.20
- Construct bridge at new location and restore channel width
- Property acquisition is under consideration

Future increase in 100-year WSE at bridge location: 2.3 ft
Camino Cielo Bridge
Live Oak Acres Levee

- Current level of flood protection: 100+ years
- Mitigation would require the levee to be raised beyond the 100-year height to maintain the existing level of protection
- Future 100-yr WSE: 410.51 to 463.06
Meiners Oaks Levee

- New levee along east bank
- Future 100-yr WSE: 714.71 to 772.80

Future increase in 100-year WSE: up to 2 ft
Meiners Oaks Levee

Reclamation 2007
Casitas Springs Levee

- Existing levee not currently certified: Raise existing levee
- Future increase in 100-year WSE in Casitas Springs of up to 0.7 ft
Casitas Springs Levee
Water Production Infrastructure: Foster Park Wells

- The increase in sediment deposition may impact water supply facilities located at Foster Park.
- These facilities include both groundwater (wells) and surface water diversion (not currently in use).
Water Production Infrastructure: Robles

- Refer to short-term and long-term water supply mitigation alternatives refinement
Real Estate Plan

SCOPE: Review and update the 2004 USACE Real Estate Plan
GIS Mapping: Zoning

Slide 17
GIS Mapping: Inundated Structures

Inundated structures
GIS Mapping: 100-yr WSE Increase & Depths

Future Increase in WSE: 3-6 ft

Future Increase in WSE
(Camino Cielo): 0.5-3 ft

Future Increase in WSE
(Friends Ranch): 2-4 ft

Surface Elevation: 2005 LiDAR
Other Considerations

- USACE 2004 Real Estate Plan recommendations
- Existing FEMA 100-year flood extent
- Water velocity
- Erosion modeling
- Proximity to dam (and accuracy of modeling)
**Draft Decision Matrix**

- Is the Project expected to exacerbate existing conditions?
- Do we need to consider public safety?

<table>
<thead>
<tr>
<th>Site Use Category</th>
<th>Main Structure in Future 100-yr Flood Extent</th>
<th>Future Increase in WSE</th>
<th>Proposed Recommendation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential, Industrial, Trade</td>
<td>Yes</td>
<td>≥1 ft</td>
<td>Purchase</td>
<td>Residential lots that are expected to see future 100-year flood depths of &gt;6 feet and/or water velocity &gt;3 fps at the structure will be considered for purchase on a case-by-case basis for public safety</td>
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<tr>
<td></td>
<td></td>
<td>&lt;1 ft</td>
<td>Insurance</td>
<td></td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>≥1 ft</td>
<td>Inundation Easement</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>&lt;1 ft</td>
<td>Insurance</td>
<td></td>
</tr>
<tr>
<td>Recreation</td>
<td>N/a</td>
<td>All</td>
<td>No Action</td>
<td></td>
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<tr>
<td>Resource Production</td>
<td>Yes</td>
<td>All</td>
<td>See “Residential”</td>
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<tr>
<td></td>
<td>No</td>
<td>≥3 ft</td>
<td>Inundation Easement</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>&lt;3 ft</td>
<td>Insurance</td>
<td></td>
</tr>
<tr>
<td>Services, Transport &amp; Utilities</td>
<td>All</td>
<td>All</td>
<td>Mitigation</td>
<td>Critical services, transportation or utilities with structure(s), infrastructure or equipment in the floodplain are required to have flood protection measures up to the 100-year flood event. All other parcels will be assessed on a case-by-case basis</td>
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<tr>
<td>Undeveloped</td>
<td>Yes</td>
<td>All</td>
<td>See “Residential”</td>
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<tr>
<td></td>
<td>No</td>
<td>≥0.5 ft</td>
<td>Inundation Easement</td>
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<tr>
<td></td>
<td></td>
<td>&lt;0.5 ft</td>
<td>No Action</td>
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<tr>
<td>Unknown</td>
<td>All</td>
<td>All</td>
<td>To be assessed on a case-by-case basis</td>
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Real Estate Plan: Next Steps

• Final Decision Matrix: February
• Draft Plan: March
• Erosion Modeling Results: TBD
• Final Plan (incorporating erosion modeling): TBD
Short-term Water Supply Mitigation Alternatives Refinement
Short-Term Alternatives: Scope

Purpose: Consider possible short-term impacts caused by the flushing of fine sediment from the Project on the Agencies’ water supplies and identify and evaluate potential water supply mitigation alternatives.

- Water Supply Agencies:
  - Meiners Oaks Water District
  - Ventura River Water District
  - City of Ventura
  - Casitas Municipal Water District

- Tasks:
  - Data review
  - Analysis of short-term impact to Agencies
  - Development of conceptual alternatives
  - Coordination with Agencies
  - Refinement of alternatives
  - Feasibility Study (following selection of preferred alternative)
Short-Term Alternatives: Schedule

<table>
<thead>
<tr>
<th>Matilija Dam Removal 65% Design Study</th>
<th>Task 4</th>
<th>Water Supply Mitigation Alternatives Refinement</th>
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<td>Draft Date: 12/26/19</td>
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4 Water Supply Mitigation Alternatives Refinement
4.1 Short-Term Sediment Impact Water Supply Alternatives Refinement
   4.1.1 Data Review
   4.1.2 Impacts Analysis
   4.1.3 Alternatives Development
   4.1.4 Agency Coordination
   4.1.5 Alternatives Refinement

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<thead>
<tr>
<th>Month</th>
<th>Jan-20</th>
<th>Feb-20</th>
<th>Mar-20</th>
<th>Apr-20</th>
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Long-term Water Supply Mitigation Alternatives Refinement
Long-Term Alternatives: Scope

Background: It is estimated that 2-2.5x the current annual deposition of sediment is expected to be deposited in the Robles forebay after dam removal.

Tasks:
- Background and operational review
- Case study evaluation
  - Alameda Creek Fish Passage Project (SFPUC)
  - Salinas River Diversion Facility (MCWRA)
  - Nelson Dam
- Alternatives Development
- Alternatives Analysis
## Long-Term Alternatives: Scope

<table>
<thead>
<tr>
<th>#</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Modifications to the existing fish passage facilities to reduce fine sediment organic debris accumulation and improve diversion efficiencies</td>
</tr>
<tr>
<td>2</td>
<td>Modification to the three existing radial bypass gates to better direct river flow towards the Robles Diversion intake</td>
</tr>
<tr>
<td>3</td>
<td>Modify the timber cut-off wall to allow periodic breaching during high flow events</td>
</tr>
<tr>
<td>4</td>
<td>Install a hardened foundation for the existing trash rack immediately upstream of the diversion intake to more effectively direct flows to the intake</td>
</tr>
<tr>
<td>5</td>
<td>Relocate the Robles diversion intake upstream to a location where the natural channel width is narrower</td>
</tr>
<tr>
<td>6</td>
<td>Install infiltration gallery in conjunction with an improved surface diversion</td>
</tr>
<tr>
<td>7</td>
<td>Institute increased periodic sediment removal from the forebay</td>
</tr>
<tr>
<td>8</td>
<td>Creation of a shallow channel in the forebay to direct flows to the existing intake</td>
</tr>
<tr>
<td>9</td>
<td>Additional alternatives that were considered by USACE during HFSB design</td>
</tr>
<tr>
<td>10</td>
<td>Consider a “no action” alternative (base case)</td>
</tr>
</tbody>
</table>
Questions