

# The Need to Address the True Cost of Long-Term Operations, Maintenance, Repair, Rehabilitation, and Replacement (OMRR&R) of the Flood System

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Presented by:

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# Discussion Overview

- CVFPP Context
- What is OMRR&R and Background
- Challenges to Sustainable Flood System Maintenance and Repair
- What we set out to estimate and describe
- Findings and Recommendations

# A Stressed System, the Need for Action

- Central Valley people, property and assets at risk
- Current flood risk management path unsustainable
- Lack of funding for capital works and for ongoing operations and maintenance of existing infrastructure
- In 2008, the Legislature enacted the Central Valley Flood Protection Act, which authorized and required development of the Central Valley Flood Protection Plan (CVFPP) to address these issues

# 2017 Update to the CVFPP

- CVFPP is a dynamic, programmatic plan, updated in five year cycles – CVFPP first adopted in 2012, first “Update” in 2017
- 2017 Update has same goals 2012 CVFPP
- The planning horizon is the 30 years
- Refines and updates the State Systemwide Investment Approach (SSIA)
- Adds specificity about recommended near and longer-term investment and financing approach
- Provides broad guidance about more resilient risk management
- Coordinated and aligned with other major flood management efforts



# Technical Work to Support CVFPP Goals

- Technical analyses informing a reasonable, balanced and cost-effective approach
- Emphasis on sustainable, integrated flood management
- Diverse array of actions to improve flood protection
- CVFPP Public Draft December 2016

## CVFPP GOALS

### Primary Goal: Improve flood risk management

Reduce the chance of flooding

Reduce damages once flooding occurs

Improve public safety, preparedness, and emergency response

### Supporting Goals

Improve Operations and Maintenance

Promote Ecosystem Functions

Promote Multi-benefit Projects

Improve Institutional Support

# What is OMRR&R?

## OPERATIONS, MAINTENANCE, REPAIR, REHABILITATION, AND REPLACEMENT



**Operations:** labor, facilities, inspections, emergency response activities



**Maintenance:** routine vegetation management, rodent control, sediment removal, mechanical service



**Repair and Rehabilitation:** minor and major repairs



**Replacement:** end of life or catastrophic failure

# Why the Need to Identify True Costs

- 2012 CVFPP, AB 156, and USACE “simple” estimates are outdated and generally inaccurate
- Reasonable “true cost” estimates – identify all needs
  - O&M and RR&R – very different categories
  - Long-term (50 year+) evaluation
- Repeatable and defensible method
- Evaluate and Quantify the OMRR&R funding shortfall
- Account for and integrate environmental concerns
- Identify real-world permitting and mitigation costs

# Workgroup Members

Workgroup members from diverse backgrounds and areas of expertise were gathered from:

## DWR

- Planning Office
- Flood Maintenance Office
- Hydrology and Flood Operations Office
- Statewide Infrastructure Investigations Branch
- Floodway Ecosystem Sustainability Branch

## Outside DWR

- Central Valley Flood Protection Board Staff
- CH2MHill
- MBK
- Ford Engineers



# The Challenge

How things were...

How things are now...

COST 

1950s

VS

 COST

2015



From Single Purpose



To Multi-Benefit

# Identifying “True Cost”

*The Question: what should be spent vs. “making do”*

*Next question: So... what level of maintenance are we shooting for?*

- 1955/57 Design Profiles?
- State and Federal Inspection Criteria?
- Zero annual deferred maintenance?
- Strict interpretation/conformance with Manuals?
- Strict conformance with ESA/CESA and other regs?

# Identifying “Proper Level” of OMRR&R

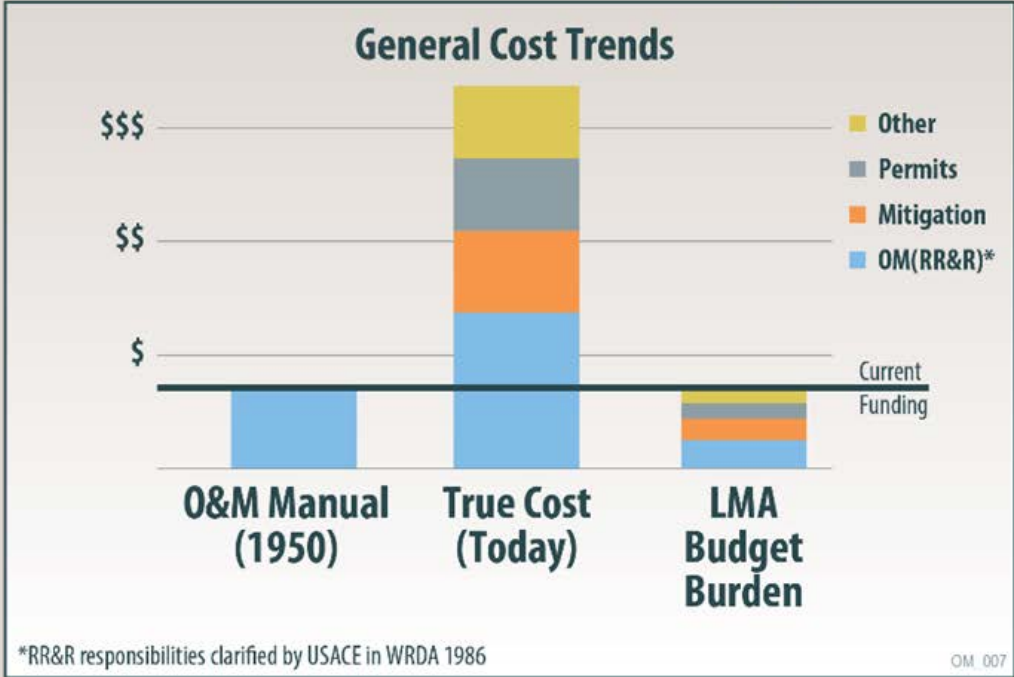
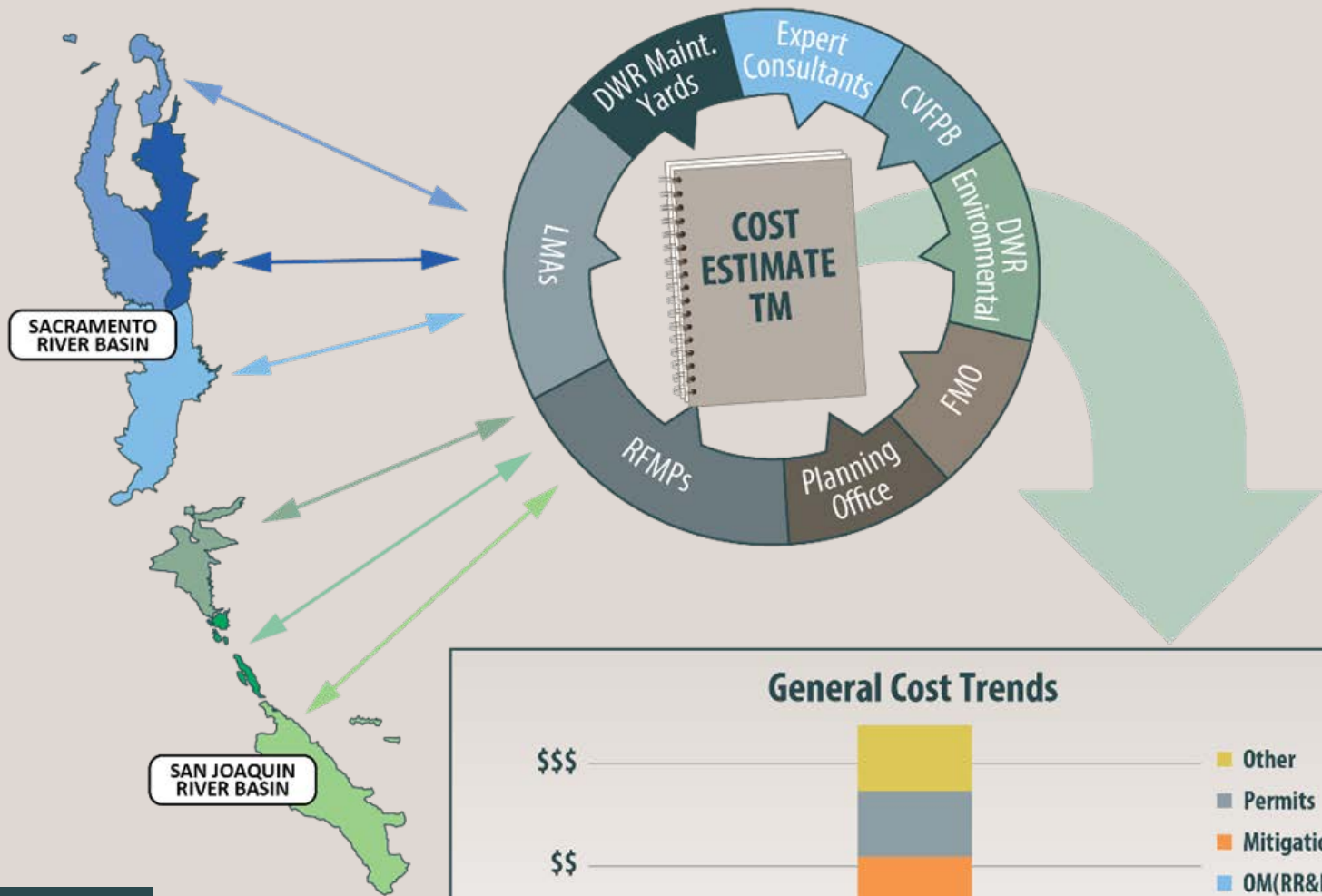
- 1955/1957 Design Profiles
  - Developed to establish levee profiles/capacities
  - Changing conditions including geomorphic effects, reservoir operations and initial hydrologic assumptions
  - Guide but not the definitive source for all OMRR&R
- Federal and State Inspection Criteria
  - USACE checklist (from Flood Damage Reduction System Inspection Report) – PL84-99 eligibility
  - DWR similar including interim vegetation criteria

**Generally agreed PL84-99 eligibility is important threshold but not the whole story**

# Current Spending vs “Proper Level” – What’s the Best Source of Information?

- AB 56 – inconsistent reporting of expenditures
- Levee Maintaining Agencies – making do with what \$ they have
- Existing grant programs (e.g. Delta Subventions) – focused on funding as available
- Account for deferred maintenance and capital projects?
- Account for replacement?

**Agreed best approach was obtain input from regional groups**



Bottom-up approach reveals "true cost"

# What you will find in the OMRR&R TM

## Chapters

- 1- Background
  - 2- Factors and Challenges Influencing the Costs
  - 3- Current OMRR&R Practices
  - 4- Our Approach
  - 5- Regional OMRR&R Cost Tables
  - 6- Potential Funding Sources
  - 7- Recommendations
- Appendices- Issue Summaries

# Cost “Categories”

## Breakdown of Costs - both O&M and RR&R

- Levees (urban/non-urban)
- Sediment and vegetation removal (O&M as well as major invasives e.g. Arundo)
- Small structures (e.g., pipe inspections, abandonment, or replacement)
- Large structures (e.g., weirs, gates)
- Environmental

# Key Issue Summaries

1. Existing Conditions and the 1955/1957 Design Profiles
2. Environmental Compliance and Other Transactional Costs
3. Comparison of Setback and Rebuild-in-Place Levee Maintenance Costs
4. Prioritizing and Addressing the Cost of Inspection Compliance
5. Cost of Addressing Levee Pipe Penetrations in State Plan of Flood Control
6. Vegetation Management: Cost of Maintaining Channel Capacity
7. Cost of Sediment Removal in the State Plan of Flood Control
8. Three Amigos Nonstructural Alternative Project at the San Joaquin River National Wildlife Refuge
9. District Governance: Consolidation Opportunities and Challenges
10. Lessons Learned from Hurricane Katrina – Redesigning Cities
11. Lessons Learned from Hurricane Katrina – Spreading the Cost



# Findings by the Numbers

**\$130M**

**What we *should* be spending annually**

**\$30M**

**What we *are* spending annually**

## Other Numbers and Cost Examples

\$40K-\$60K.... O&M on 1 Mile of Levee

\$10 ..... Removal of 1 Cubic Yard of Sediment

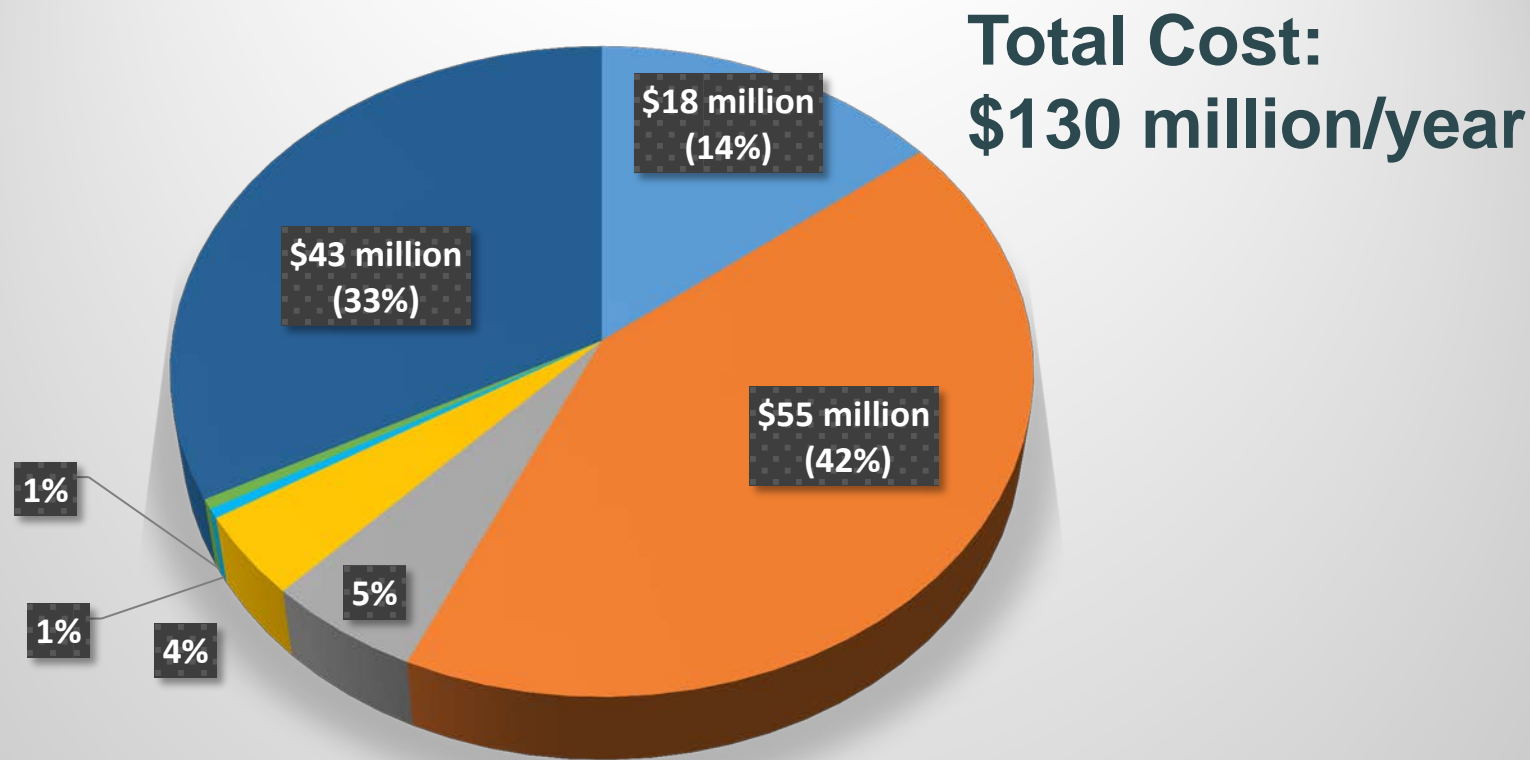
\$25K..... Removal of 1 Acre of Arundo (estimated 360 acres total)

2,274..... # of Pipes potentially the responsibility of LMA's  
(out of 5,500 total penetrations based on UCIP data)

\$2K ..... Each Video Pipe Inspection

\$240K ..... Pipe Replacement (lower \$ for abandon/removal/slip-lined)

# Anticipated Proportion of Needed Annual Cost



■ Urban Levee O&M

■ Non-urban Levee O&M

■ Channel Sediment Removal

■ Channel Vegetation/Debris Removal

■ Small Structures O&M

■ Large Structures O&M

■ RR&R

# OMRR&R Workgroup Recommendations

## Increase Awareness

- Create better governance and a tracking system of OMRR&R activities and spending to provide additional transparency about the value of investment

## Fix What's There Now

- Catch up on deferred maintenance and address legacy system deficiencies

## Increase Efficiency

- Explore, resolve, and implement strategies to streamline permitting (regional, programmatic, etc.)

## More \$

- Establish adequate and reliable OMRR&R funding

# The Path Forward

- Need to change how we think about flood risk management
- 2017 Update will refine the 2012 CVFPP and provides a holistic path forward to a different approach
- The refined SSIA enables the State to integrate and prioritize investments in multi-benefit flood risk reduction projects
- CVFPP will take 30 years to implement



# Questions?

“The structures and facilities constructed by the United States for local flood protection shall be continuously maintained in such a manner and operated at such times and for such periods as may be necessary to obtain the maximum benefits.”

- 1955 SRFCP Standard O&M Manual (taken from 33 CFR 208.10)



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