

An aerial photograph showing a large-scale water management project. A wide, winding canal or river flows through a landscape of green agricultural fields and large areas of reddish-brown earth, likely recently excavated or under construction. The water is a deep blue-grey color. In the background, there are more fields, some white structures, and a distant horizon under a clear blue sky.

Update on Bay Delta Conservation Plan/ California Water Fix

Special Committee on Bay-Delta
Item 3a, September 29, 2015

Review of BDCP/California Water Fix

Board Review Process

- Previous review
 - Consistency with Board policy goals
 - Water supply analysis
 - Water quality analysis
 - Project operations analysis
- Today's review
 - Fishery/Ecosystem improvements
 - Seismic analysis
 - Climate change analysis
 - Revised cost estimates
 - Draft EIR/S comment process



Review of BDCP/California Water Fix

Board Review Process

- Upcoming review
 - Cost and financial analysis
 - Impacts on Integrated Resource Plan
 - Review business case for continued investment

An aerial photograph of a winding river with a dirt road following its path. The river is dark blue, and the surrounding land is a mix of green vegetation and brownish soil. A large blue gradient is overlaid on the right side of the image, and the text "Ecosystem Measures" is written in a bold, yellow, sans-serif font across the center. The entire image is framed by a dark, irregular border.

Ecosystem Measures



Ecosystem Measures

California Water Fix

- Cal Water Fix
 - New and diversified intake locations
 - Improved fish screening
 - Manage South Delta reverse flows
 - Lower fish salvage at pumps
 - Operable fish gate at the head of Old River
 - Non-physical fish deflection barrier at Georgiana Slough
 - Enhanced real-time monitoring
 - Habitat restoration mitigation



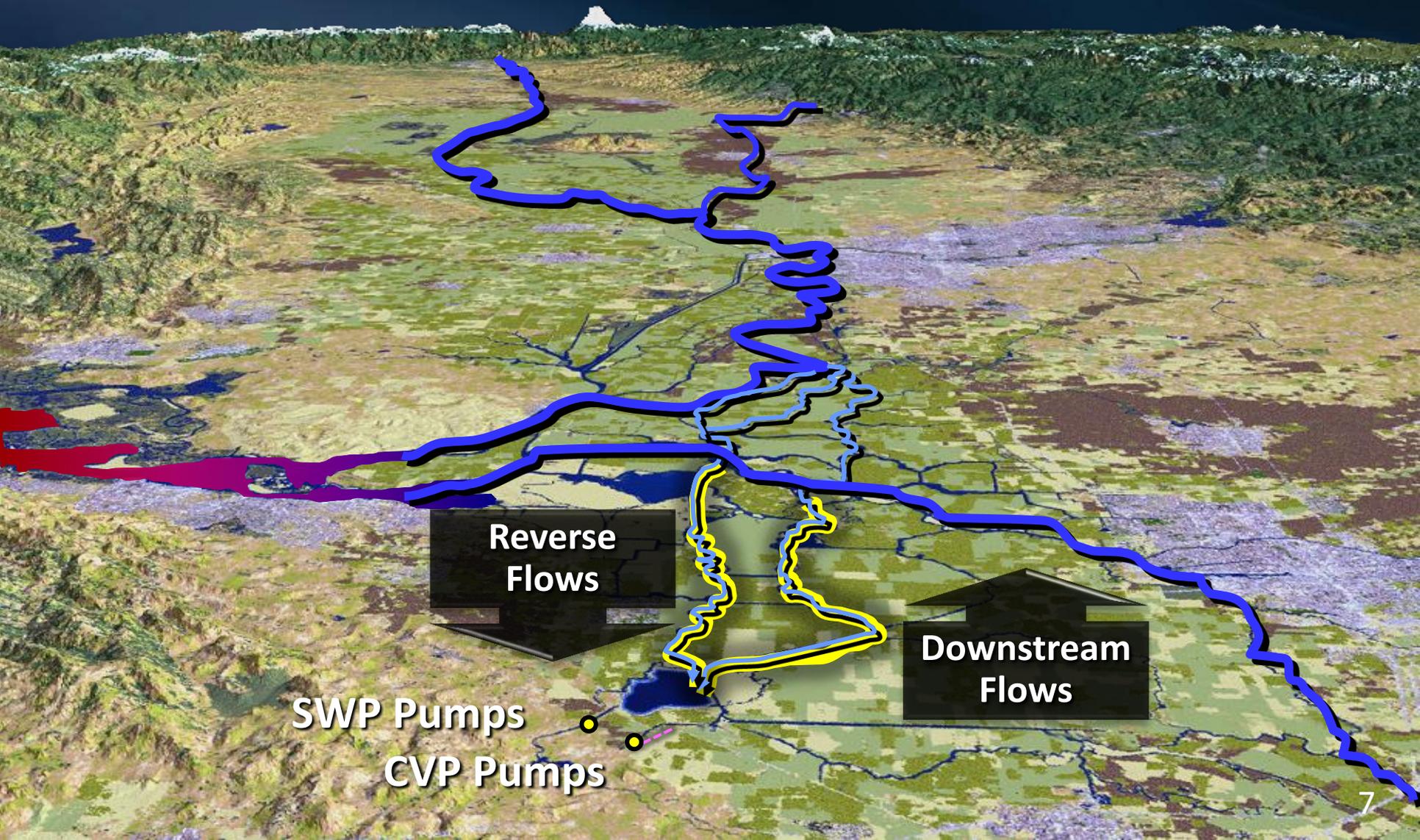
Ecosystem Measures

California Eco Restore

- California EcoRestore is unassociated with mitigation as part of the conveyance improvements
- Goal 30,000 acres of additional habitat restoration
 - 25,000 acres from existing SWP/CVP biological opinions
 - 5,000 acres from Proposition 1 grants

Ecosystem Measures

Reverse Flow & Fish Take Reduction



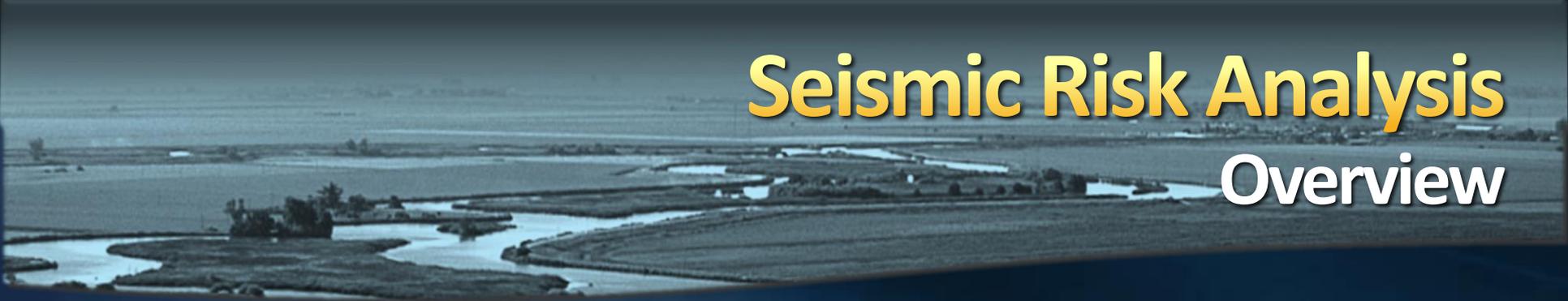
Reverse
Flows

Downstream
Flows

SWP Pumps
CVP Pumps

An aerial photograph of a winding river with a road and embankments. The river is dark blue, and the surrounding land is a mix of green grass and brown earth. The road is a light-colored, unpaved path that follows the curve of the river. The background is a solid dark blue gradient.

Seismic Risk Analysis



Seismic Risk Analysis

Overview

- Seismic Analyses
 - Effects on in-Delta salinity following an earthquake
 - Effects on Delta tunnels

Seismic Risk Analyses



Year	Research & Analysis
2008	Delta Risk Management Study
2009	Quantifying Seismic Risks
2011	Levee Stability Analyses Delta Seismic Design Report Emergency Resource Allocation Model
2012	Emergency Response and Recovery Tool Multi-Agency Flood & Earthquake Drills Peat Deformation/Consolidation Mechanisms
2013	Seismic Analyses of the Emergency Pathway
2015	Tech Eval. of Delta Levees-Emergency Pathway

These analyses were conducted by Department of Water Resources, URS, AECOM, Jack Benjamin & Associates, William Lettis & Associates, Moffat & Nichols, AMEC Geomatrix, University of California Los Angeles

Seismic Risk Analysis

Emergency Pathway along Middle River

- 6.5 M earthquake from 16 mile break on Southern Midland fault
- 50 breaches & 20 island failures
- 0.2 - 0.3 g ground acceleration
- 35% risk 20 islands failing in 25 yrs

RMA Salinity Modeling





Seismic Risk Analysis

Performance of Emergency Pathway

- Improvements

- South Delta levees
- Emergency Material & Rock Stockpiles
- Funding (State & Federal)

- Analysis

- Estimated 6-months to develop emergency pathway after major earthquake
- Potentially restores up to half of the SWP/CVP capacity

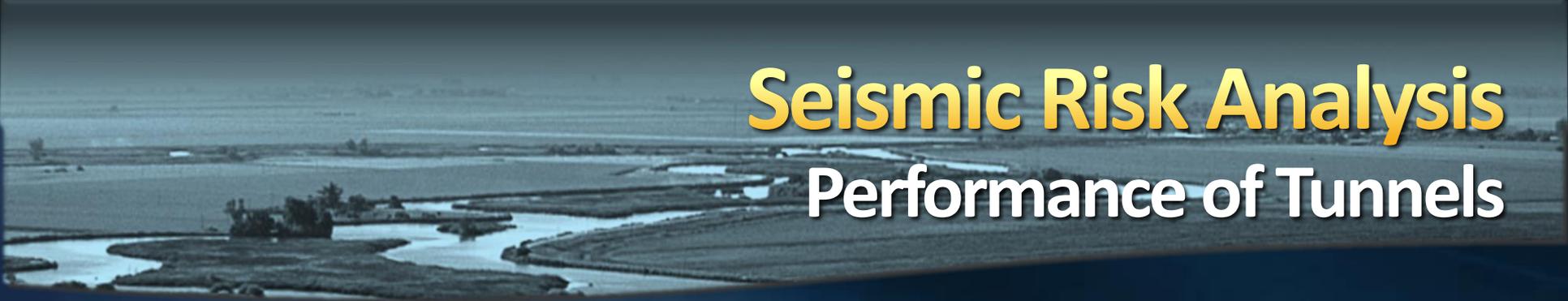
Seismic Risk Analysis

Performance of Tunnels

● Research

- Underground structures suffer less damage than surface structures
- Deeper tunnels less vulnerable than shallow pipelines
- Lined tunnels are safer than unlined tunnels
- Segmental liner has better performance among all tunnels

Earthquake	Magnitude	Surface Acceleration	Tunnel	Tunnel Damage
Athens	M 5.9	0.25 g	Athens Metro	None
Northridge	M 6.7	0.40 g	L.A. Metro	None
Kobe	M 6.9	0.50 g	Isobe Dori	Minor spalling
Chi-Chi	M 7.6	0.53 g	Taipei Metro	None

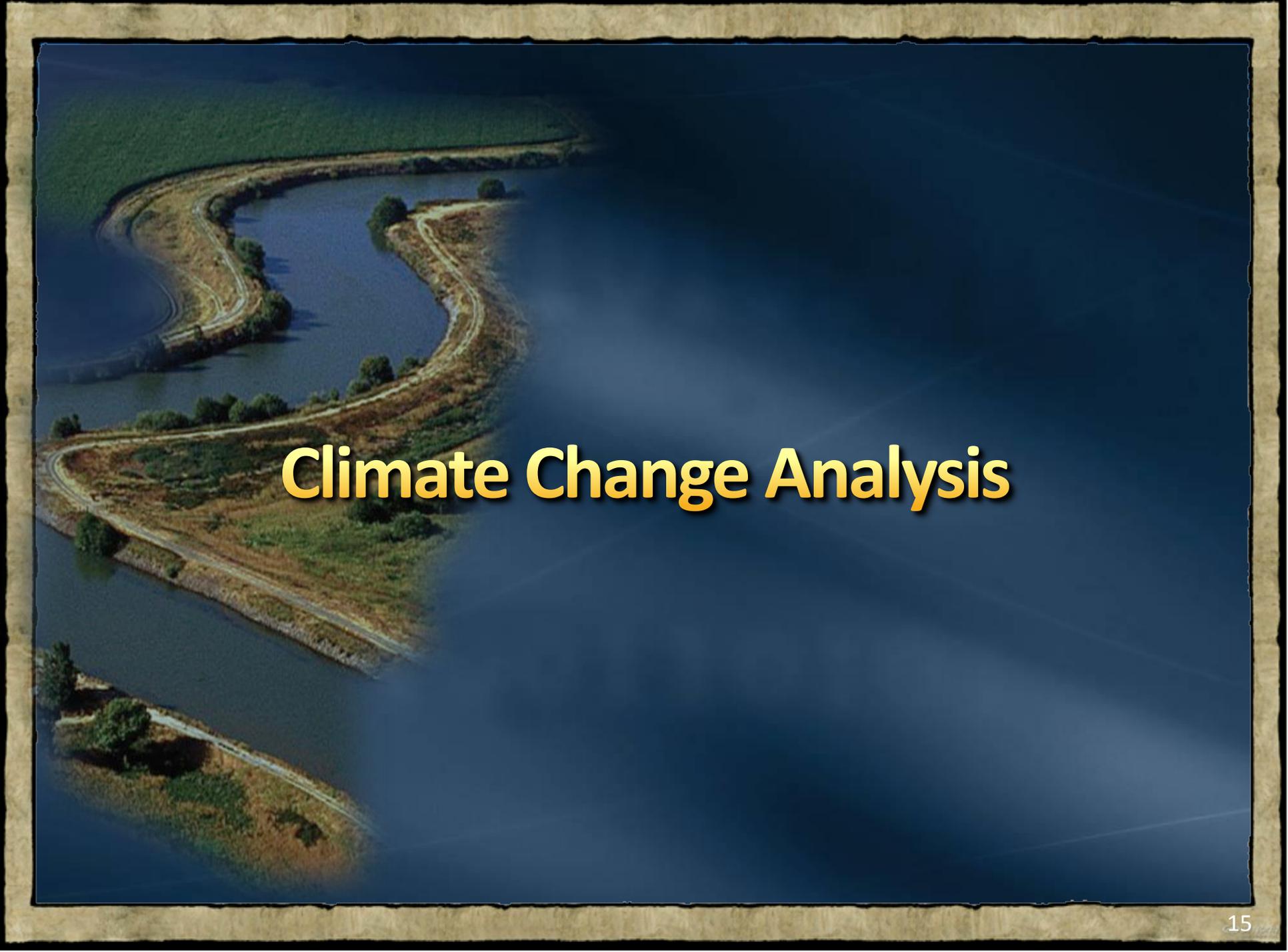


Seismic Risk Analysis

Performance of Tunnels

- Delta Tunnels Analysis

- Tunnel depth is well below liquefiable soil layer
- Tunnels do not cross any known active faults
- Research concludes that segmental liners experience no or very little damage for ground accelerations up to 0.5g*
- Delta Tunnels expected to perform well under accelerations of 0.27- 0.50g from magnitude M7.8 - M6.5 earthquakes (San Andreas, Hayward, Midland)

An aerial photograph of a winding river with a road and a large blue gradient overlay. The river is dark blue and curves through a landscape of green and brown vegetation. A road follows the curve of the river. A large blue gradient overlay covers the right side of the image, fading from dark blue to a lighter blue. The text "Climate Change Analysis" is centered in the middle of the image in a bold, yellow font with a black outline.

Climate Change Analysis



Climate Change Analysis

Overview

- Summary

- Cal Water Fix analysis & design incorporates climate change
- Cal Water Fix provides climate change adaptation

- Analyses

- Effects on water quality & water supply (DWR analysis)
- Effects on North Delta intake location (CH2M analysis)

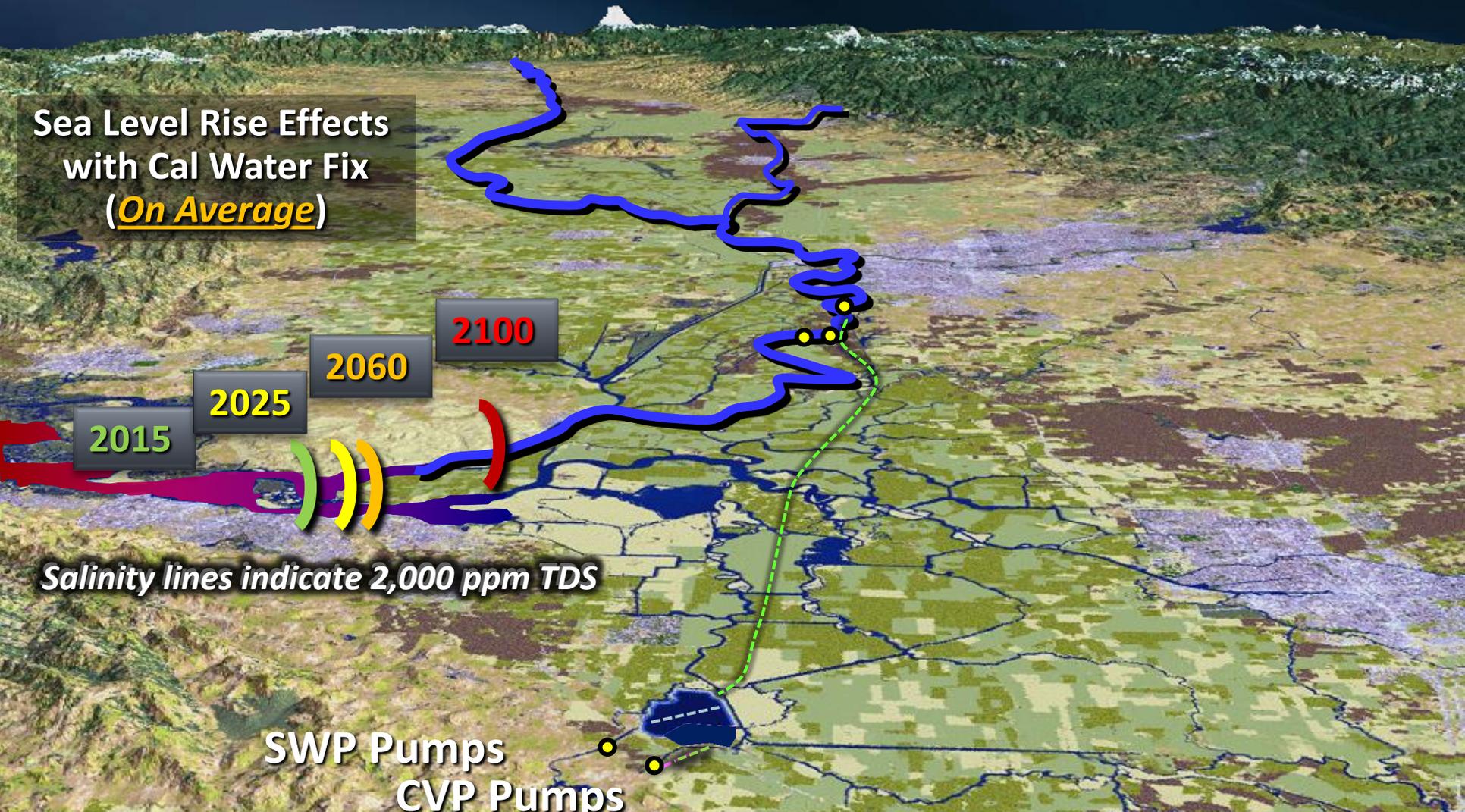
- Assumptions

- 20 global climate models used to project Delta sea-level rise
- Time periods modeled – 2025, 2060, 2100

Climate Change Analysis

Effects on Delta Intake Location

Sea Level Rise Effects
with Cal Water Fix
(*On Average*)



Salinity lines indicate 2,000 ppm TDS

SWP Pumps
CVP Pumps

Climate Change Analysis

Effects on Delta Intake Location

Sea Level Rise Effects
with Cal Water Fix
(*Drought Conditions*)



Climate Change Analysis

Effects on Delta Intake Location

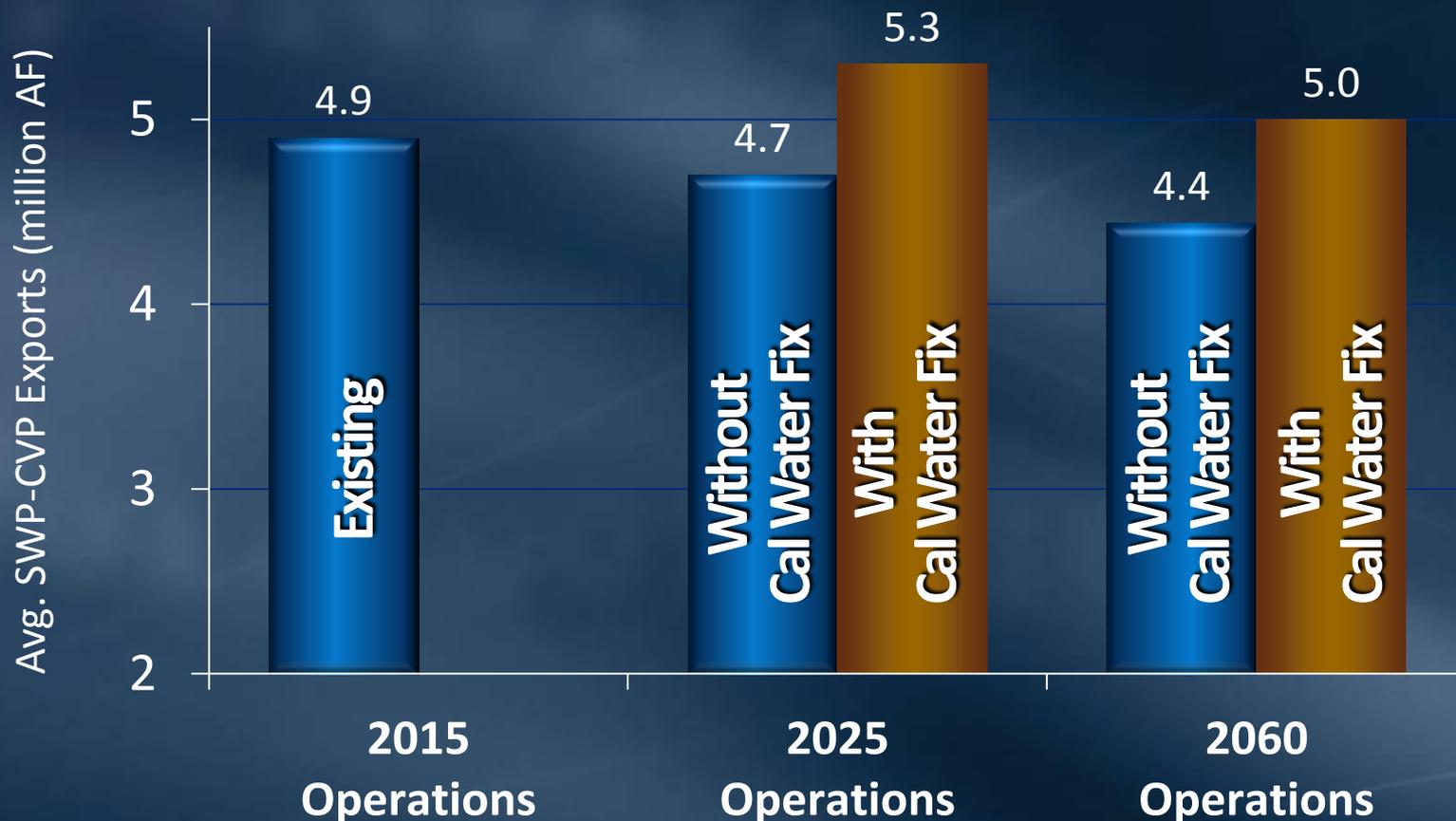
North Intake	2010	2025	2060
Salinity (TDS mg/L)	111	111	111
Bromide (mg/L)	0.08	0.08	0.08

South Intake	2010	2025	2060
Salinity (TDS mg/L)	301	311	326
Bromide (mg/L)	0.34	0.35	0.35

Combined	2010	2025	2060
Salinity (TDS mg/L)	214	221	228
Bromide (mg/L)	0.21	0.22	0.22

Climate Change Analysis

Potential Impacts of Sea-Level Rise on SWP/CVP Exports



Information from DWR CALSim model; MWD share ~ 25%; 2060 operations are preliminary estimates
The "without" Cal Water Fix assumes no reduction in future supplies due to potential additional eco-restrictions

An aerial photograph of a winding river with a dirt road following its path. The river is dark blue, and the surrounding land is a mix of green grass and brown earth. The road is light brown and follows the curve of the river. The background is a dark blue gradient.

Revised Cost Analysis

California Water Fix

Revised Cost Analysis

IMPROVEMENTS	Capital	O&M (Total 50 Years)	TOTAL
Conveyance	\$14.99 B	\$1.46 B	\$16.45 B
Mitigation, Monitoring	\$0.56 to \$0.82 B	\$0.22 B	\$0.78 to \$1.04 B
TOTAL	\$15.55 to \$15.81 billion	\$1.68 billion	\$17.23 to \$17.49 billion

*Estimated costs from DWR; in undiscounted 2014 dollars with a 36% contingency
Metropolitan's share is approximately 25%*

An aerial photograph of a winding river, likely the Colorado River, with a dirt road or levee following its path. The river is dark blue, and the surrounding land is a mix of green vegetation and brown, dry earth. The text "Draft EIR/S Comments" is overlaid in the center of the image in a bold, yellow, sans-serif font.

Draft EIR/S Comments

Draft EIR/S Comments Overview

- Metropolitan Board criteria
- Key points
- Sample comment letters
- Fact sheets
- Comment deadline

FAST FACTS
PARTIALLY RECIRCULATED DRAFT ENVIRONMENTAL ANALYSIS
JULY 2015

PROTECTING WATER SUPPLIES

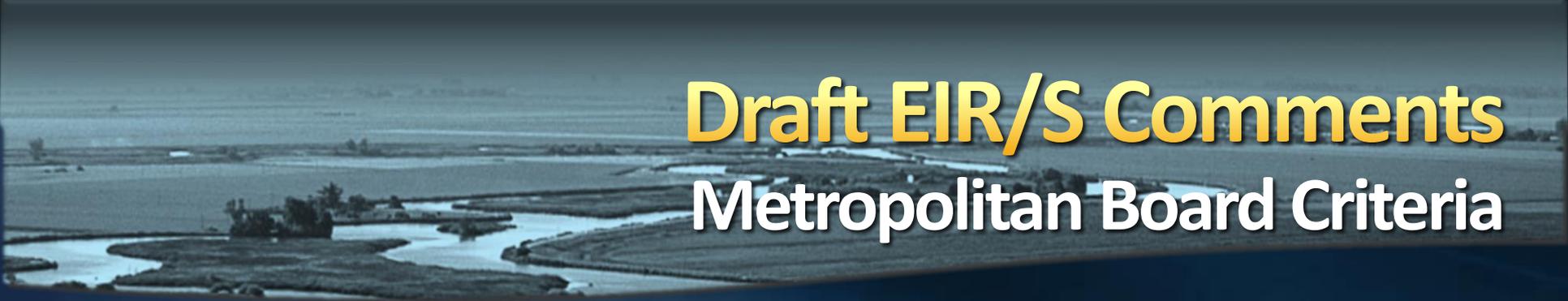
THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

STATE-FEDERAL PROPOSAL FOR DELTA RESTORATION AND WATER SUPPLY IMPROVEMENTS

Protecting Water Supplies: A New Permitting Approach

Restoring the Delta: A Focus on the Near Term

For more information, visit www.waterfix.com or www.resources.ca.gov/ecorestore



Draft EIR/S Comments

Metropolitan Board Criteria

- Water Supply Reliability
- Project Mitigation
- Improved Water Quality
- Flexible Pumping Operations in a Dynamic Environment
- Delta Ecosystem Restoration
- Seismic and Climate Change Risks
- Governance and Adaptive Management

Draft EIR/S Comments

Sample Comment Letters

- Member Agencies
- Interested Third Parties

Sample BDCP/California WaterFix Comment Letter For Metropolitan Member Agencies

BDCP/California WaterFix Comments
P.O. Box 1919
Sacramento, CA 95812

Dear BDCP/California WaterFix:

On behalf of the (agency name here), I would like to provide the following comments on the Bay-Delta Conservation Plan/California WaterFix (BDCP/WaterFix) and its recirculated draft environmental impact statement/report released on July 10, 2015.

(Agency name here) relies on State Water Project (SWP) supplies as an important component of Southern California's overall water portfolio. The SWP is uniquely capable of capturing significant quantities of wet-year and wet period supplies, allowing the Metropolitan Water District of Southern California to store these supplies for drought-cycle needs. Were it not for SWP supplies Metropolitan had stored prior to this historic drought cycle, the Southland would be in the throes of a devastating water shortage and severe economic hardship. The ability of the SWP to reliably capture wet-period water is at severe risk due to the existing configuration of the pumping system, regulatory constraints and long-term threats due to climate change and catastrophic natural events such as earthquakes and flooding.

Sample BDCP/California WaterFix Comment Letter For Metropolitan Member Agencies

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The modified preferred alternative outlined in BDCP/WaterFix represents a significant shift in this nine-year planning process that (Agency name here) must review and consider carefully. BDCP began as an effort that sought to combine water system and ecosystem improvements within a single permitting construct as a habitat conservation plan under Section 10 of the federal Endangered Species Act (ESA) and as a Natural Communities Conservation Plan under the State ESA law. The modified preferred alternative (Alternative 4a) delineates a different approach, with the WaterFix intake/conveyance improvements proceeding as a stand-alone project with ESA permitting acquired similar to the approach under the existing ESA permitting/regulatory construct of the SWP. Approximately 30,000 acres of proposed Delta ecosystem improvements, meanwhile, would proceed on a parallel, but separate program now as California EcoRestore. (Agency name here) understands that the rationale of this modification is to identify an achievable path to permitting given overwhelming scientific uncertainty on how to best manage the Delta in the coming decades. The ability of public water agencies to participate in a historic reinvestment of the SWP will rely on a final plan that meets the state co-equal goals of a reliable water supply and restoration of the Delta.

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Draft EIR/S Comments

Areas of Analysis

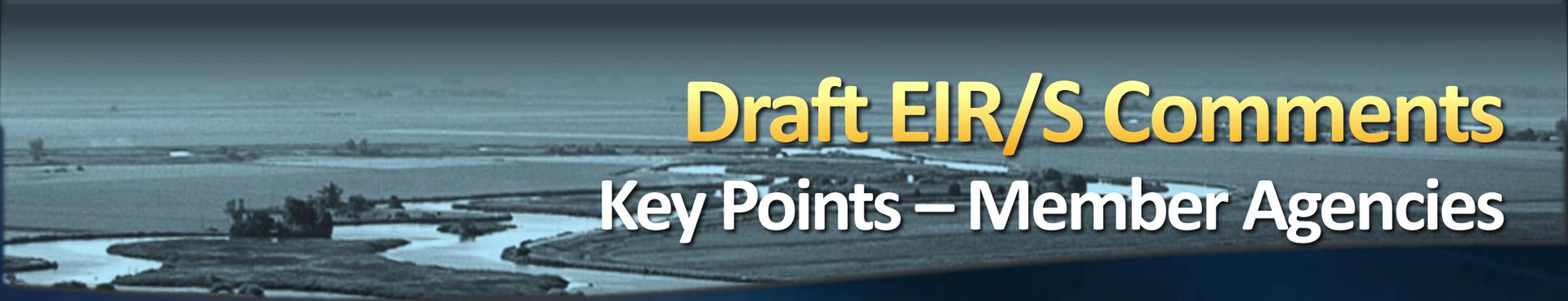
- Staff reviewing EIR/S & considering comments in several areas
 - Policy – consistency with Board principles & program goals
 - Technical – appropriate analysis for environmental resources
 - Legal – Recirculated EIR/S consistency with CEQA/NEPA requirements; does it address legal concerns in Public Draft
 - Record – providing evidentiary support to increase legal defensibility & ensure consideration of best available science



Draft EIR/S Comments

Focused Comments

- Focused comments are anticipated in following areas
 - Water supply analyses do not reflect potential supply benefits
 - Scientific justification for new operations criteria
 - Project design and constructability
 - Flexibility to revisit initial operations criteria as science improves
 - Alternatives



Draft EIR/S Comments

Key Points – Member Agencies

- SWP Reliability
 - Existing system unreliable
 - Regulatory constraints increasing
 - Long-term threats (climate change, natural disasters)
- Cal Water Fix Preferred Alternative
 - Achievable regulatory path
 - Reduces fishery impacts & enhances operational flexibility
 - Key for the California economy
- Integrated Resource Plan
 - Reliable SWP critical to implement local resource goals
 - Cost of not reinvesting is much greater

Draft EIR/S Comments

Key Points – Interested Third-Parties

- Importance of reliable supplies for California economy
- Existing system
 - No longer reliable
 - At risk of prolonged outages
- Preferred alternative
 - Workable framework
 - Reestablish reliability & protect supplies from natural disasters
- “All of the Above” approach
- Water agencies need solid business case for investments
- Now is the time for action



Next Steps

● 2015

- Draft EIR/S Public Comments Deadline (Oct 30, 2015)
- Determine consistency with Board policy
- Assess impacts on Integrated Resources Plan & MWD costs
- Assess business case for continued investment

● 2016

- Final EIR/S
- Record of Decision/Notice of Determination
- Section 7 Biological Opinion and 2081 Permit
- Other state & federal permits
- Approval of associated agreements

The Delta

Suisun Bay

Sacramento

Stockton

**State & Federal
Pumping Plants**

California's Bay-Delta

