



**“East is East and West is *Best*” - A
New Delta Conveyance Approach**

Peer Swan

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**Water Advisory Committee
of Orange County**



Attributes of a Successful Delta Conveyance Fix

#1 - Improve Supply Reliability and Quality

- **Earthquake, flood, rodents, climate change**
- **Protect from seawater intrusion, manage organics/THM, discharge impacts**

#2 - Improve Habitat Values

- **Restoration and enhancement**
- **Multi-species (HCP) approach**



Attributes of a Successful Delta Conveyance Fix

#3 - Protect Delta Integrity

- **Improve structural integrity of western-most islands**
- **Substantial levee/bank protection**

#4 - Accommodate varying hydrology and climate change

- **Ultimately sized to take more substantial flows during short duration wet periods**



Attributes of a Successful Delta Conveyance Fix

#5 - Other Key Objectives

- Protect and sustain the regional economy**
- Connect major exporters to reliable common infrastructure system**
- Provide carbon offset opportunities to mitigate impacts of export water pumping**
- Provide physical and hydraulic separation between water export pumps and sensitive habitat/restoration areas**

Western Conveyance Approach

- **Ultimately removes all regular export pumping from the Primary Delta**
- **Protects supply with strongest levees**
- **Uses existing Sacramento Ship Channel**
- **Transports export water across Delta in pipes and tunnels hydraulically separated from critical habitat**
- **Connects to all exporters**



Western Conveyance - Infrastructure Improvements

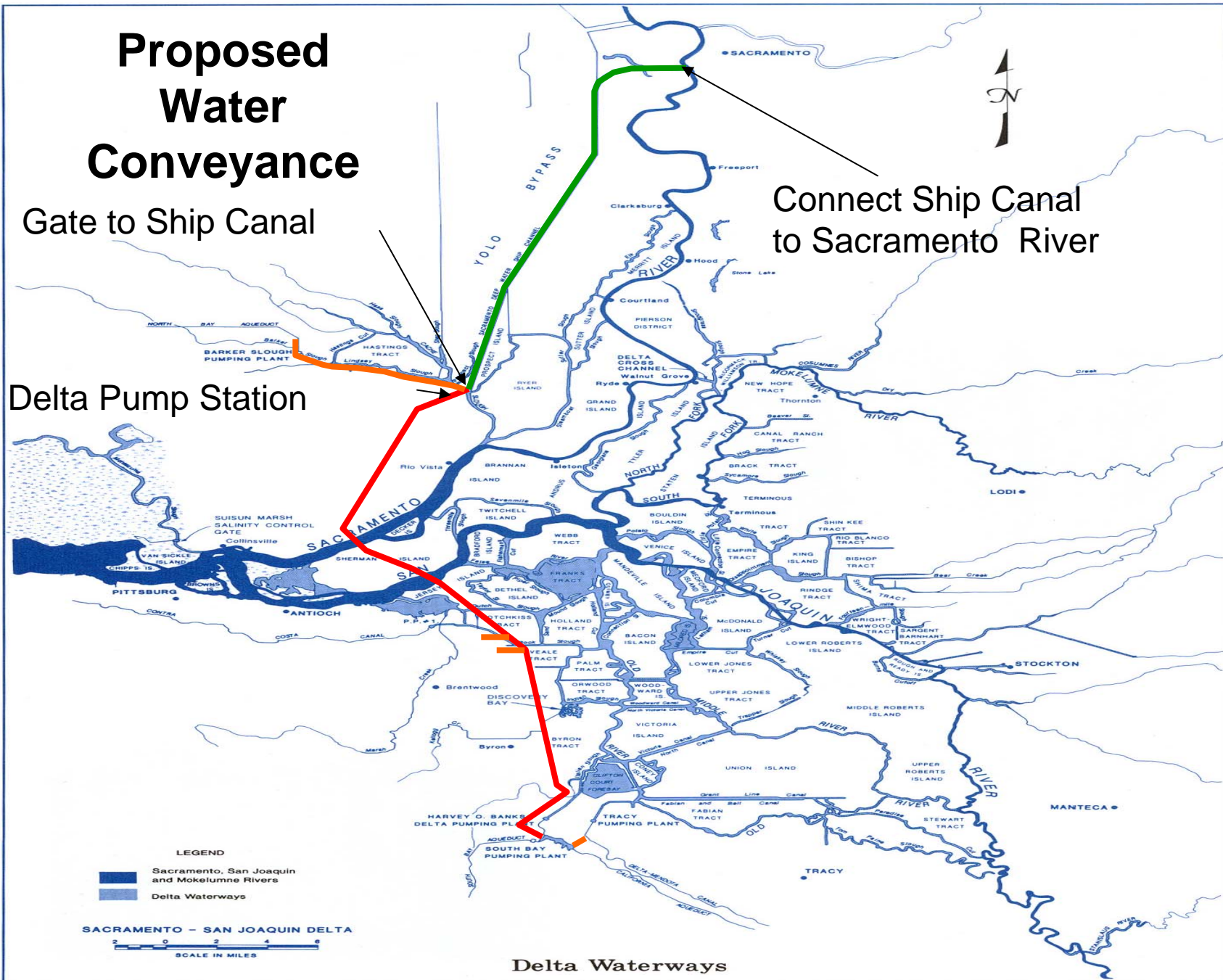
- **Connect Ship Channel to Sacramento River**
- **Install fish screen with thermal barrier**
- **Gate at lower end of Ship Channel**
- **Siphon to Rio Vista side**
- **Pump station on Rio Vista side**
- **Pipes around Rio Vista through Montezuma Hills**
- **Tunnels under unstable soil across Delta**
- **Connections to North Bay, Contra Costa, EBMUD, and CVP (Stockton and others if desired)**
- **Terminates at SWP canal above Banks**

Proposed Water Conveyance

Gate to Ship Canal

Connect Ship Canal to Sacramento River

Delta Pump Station

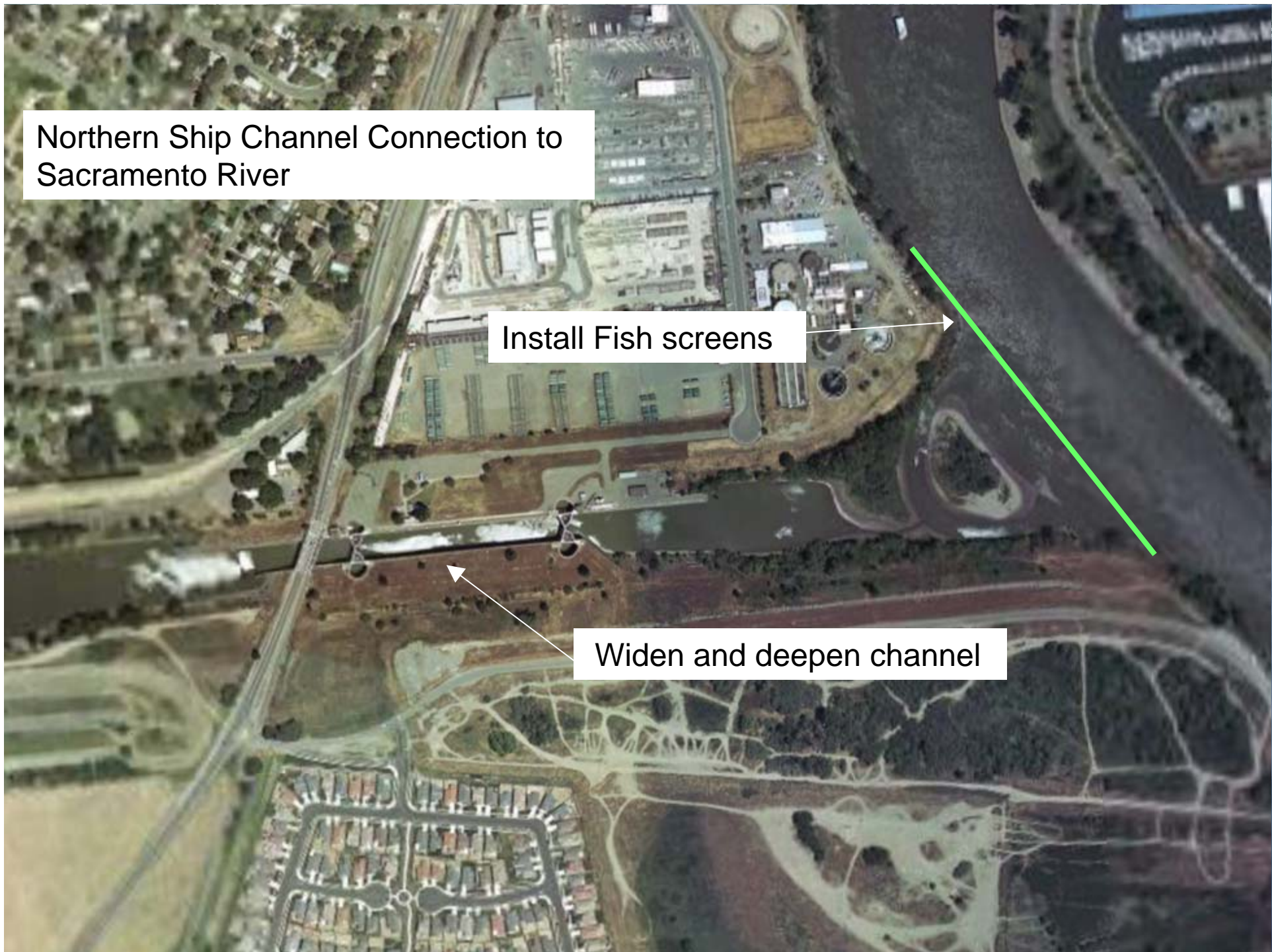


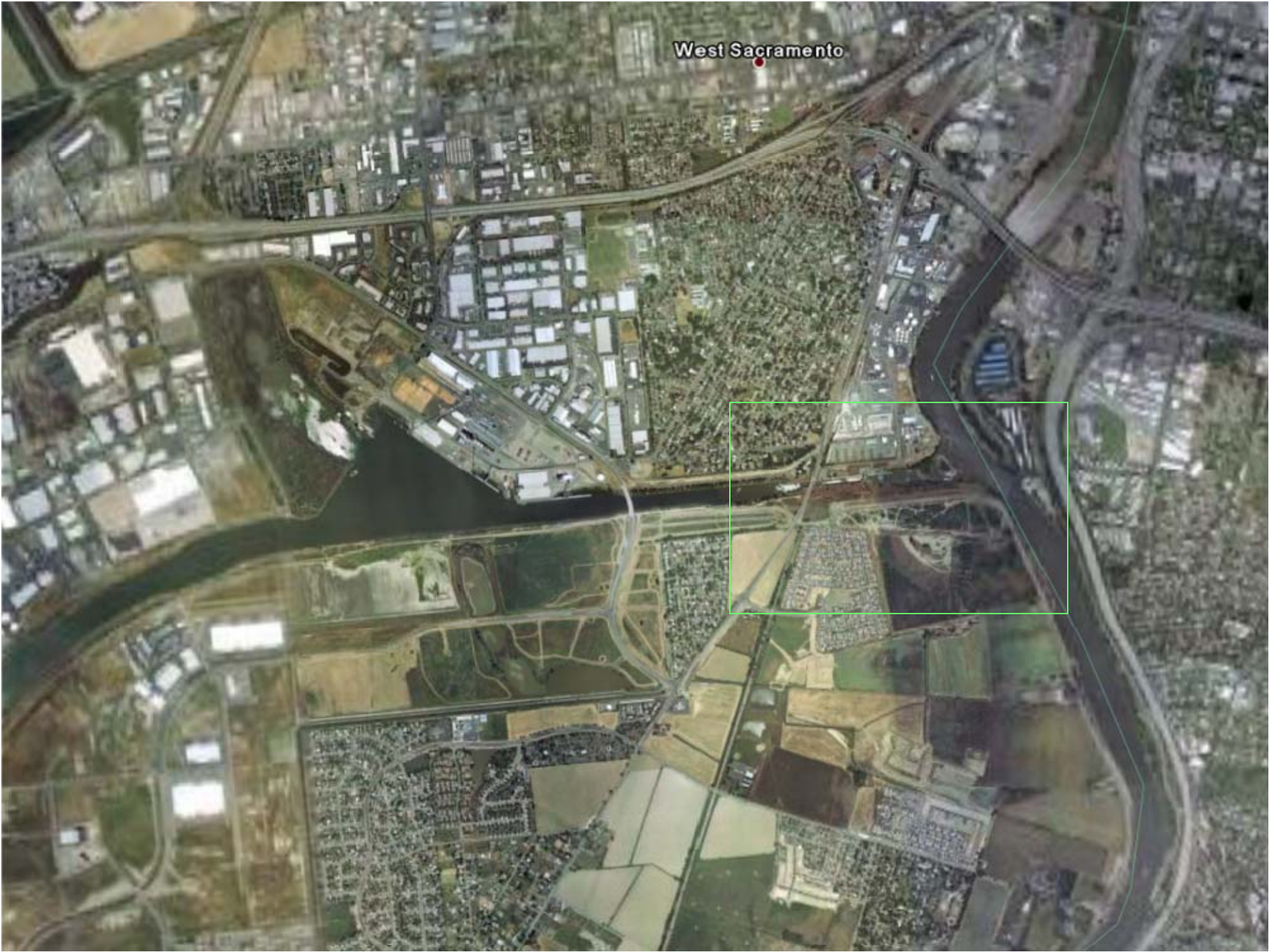
Delta Waterways

Northern Ship Channel Connection to Sacramento River

Install Fish screens

Widen and deepen channel





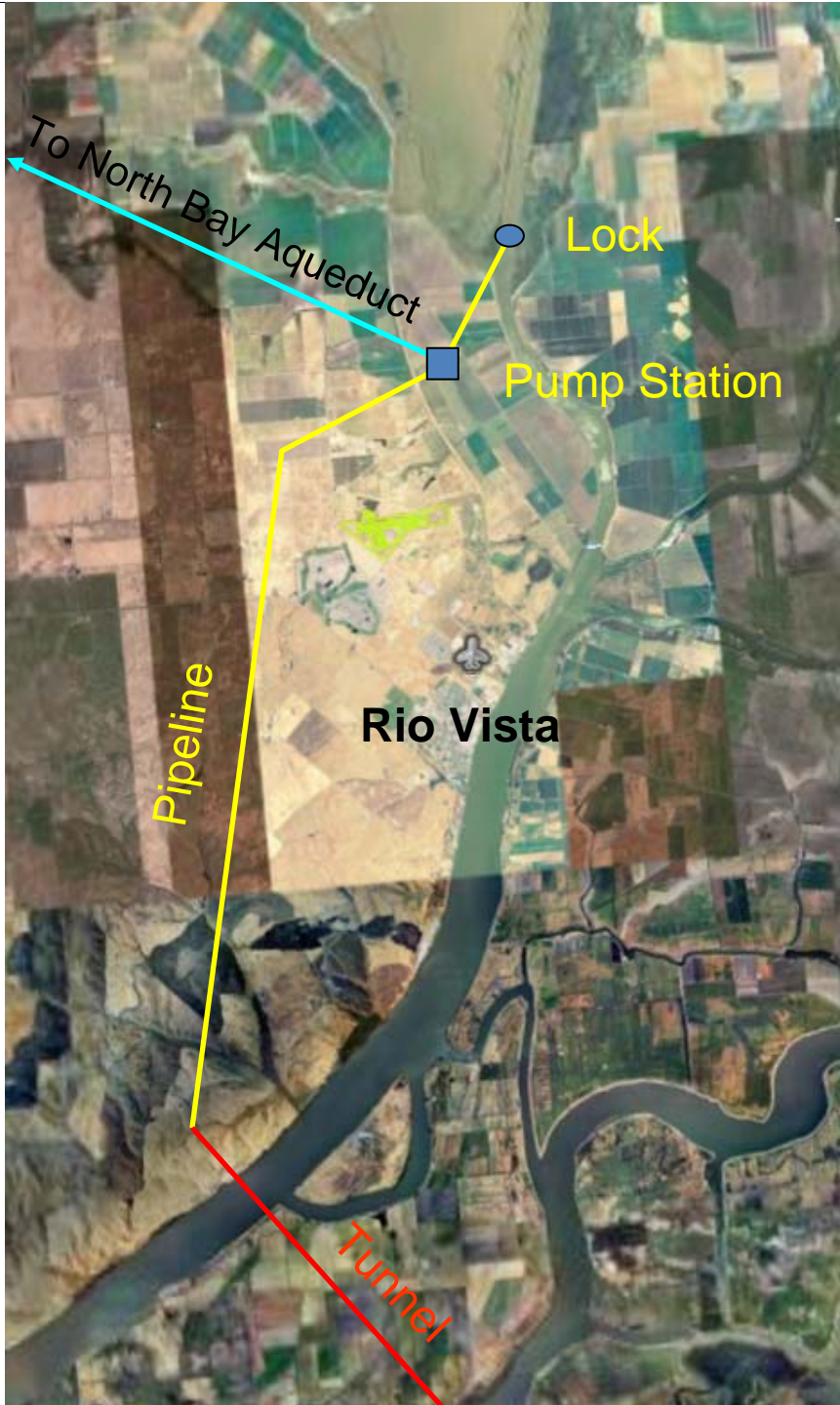
West Sacramento



Pump Station

Lock

Ship Channel

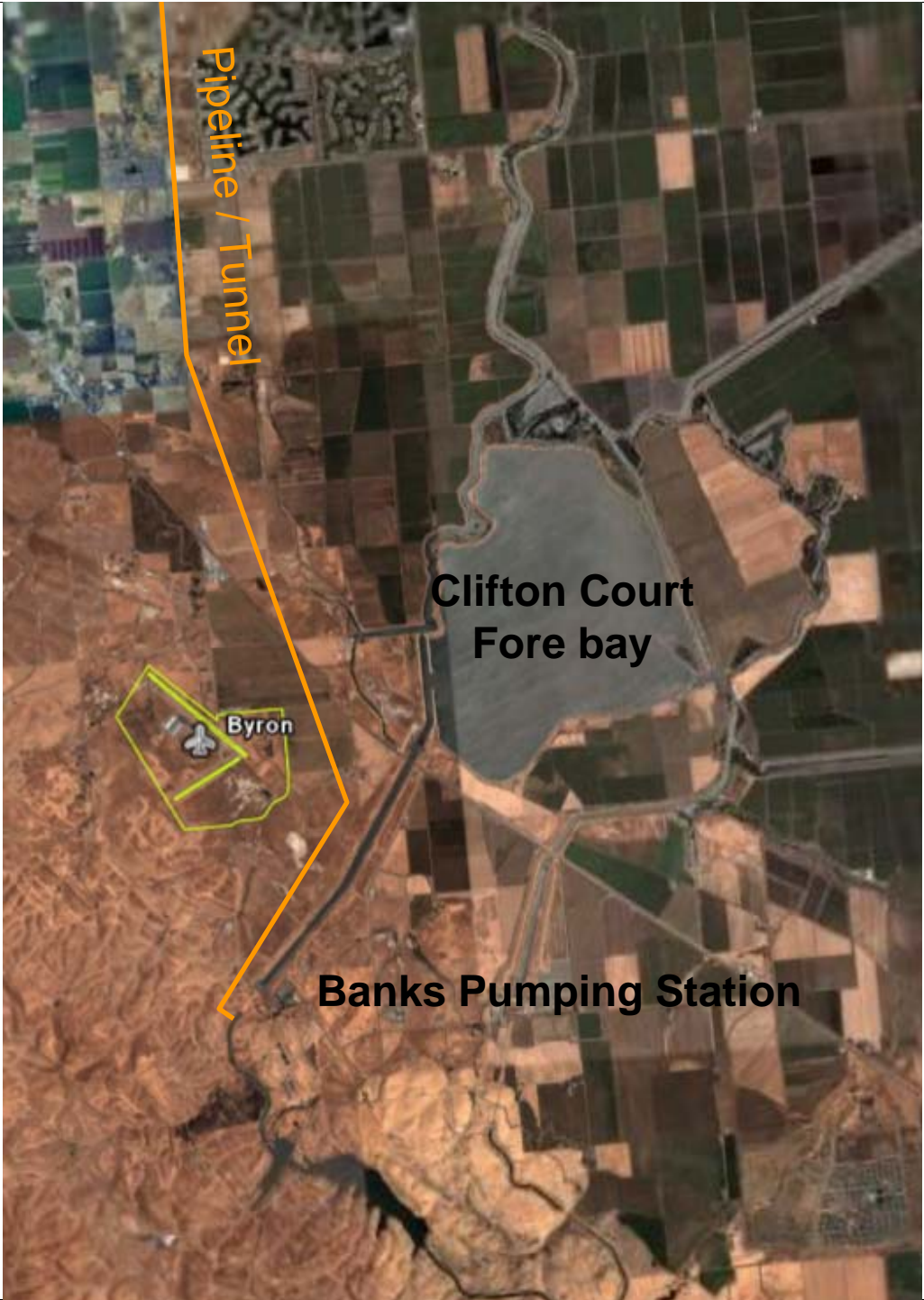




Tunnel

CCCWD Tie-in

Pipeline / Tunnel



Pipeline / Tunnel

Clifton Court
Fore bay

Byron

Banks Pumping Station



**Clifton Court
Fore bay**

Byron

Pipeline / Tunnel

Banks Pumping Station



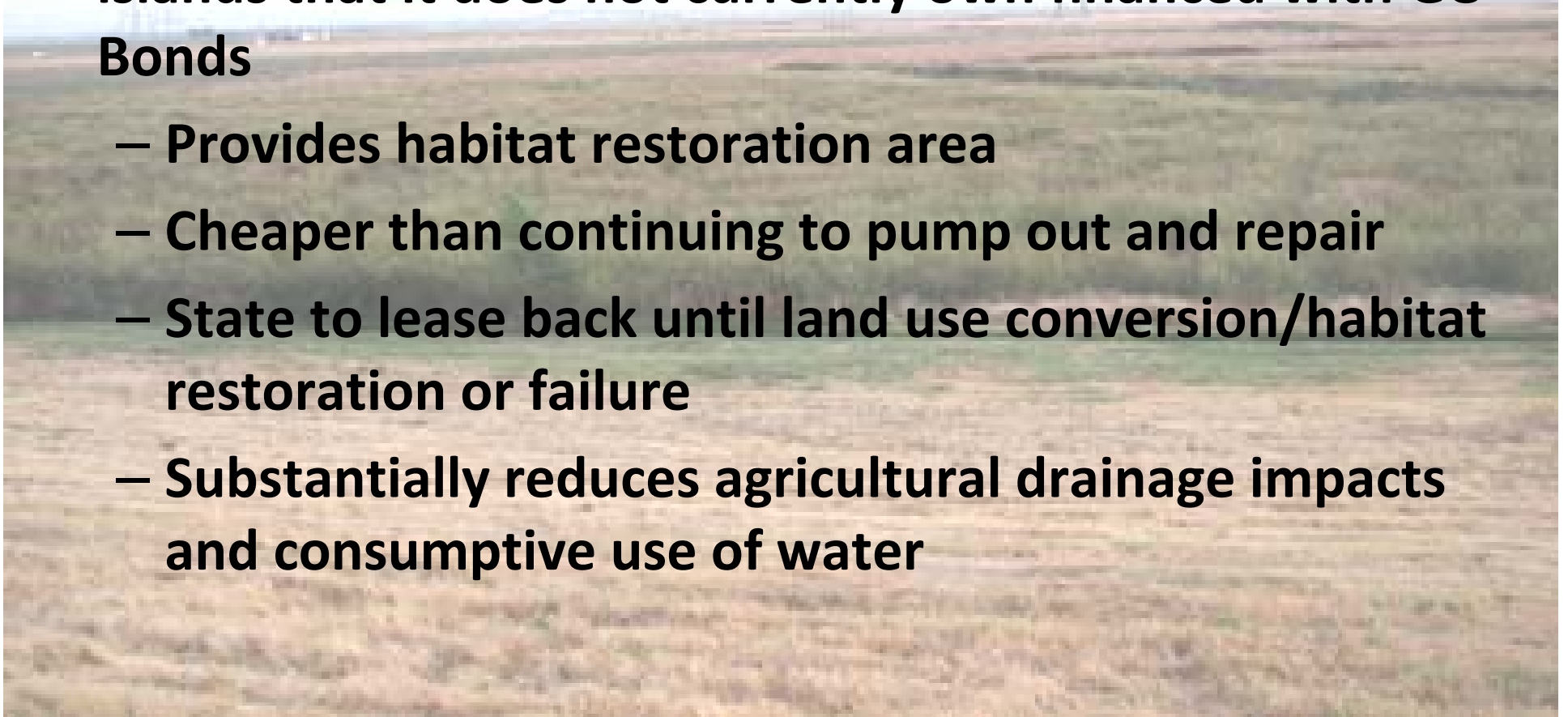
Banks Pumping Station

CVP Pumps

Pipeline to CVP

Land Use – West/Central Delta

- **State offers to purchase at current market value certain islands that it does not currently own financed with GO Bonds**
 - Provides habitat restoration area
 - Cheaper than continuing to pump out and repair
 - State to lease back until land use conversion/habitat restoration or failure
 - Substantially reduces agricultural drainage impacts and consumptive use of water



Benefits of Western Conveyance and Land Use Conversion Approach

- **Significant Improvements in Water Quality for all Delta Exporters** – reduces AG demand, new intake above Sacramento secondary discharge and Delta drainage
- **Protects from Flood** - not subject to levee failure
- **Minimizes Earthquake risk** – below unstable soil
- **Protects against rising sea level caused by Climate Change** – salt water gradient unlikely to reach Sacramento intake
- **Frees-up current “X2” water and reduction of in Delta Ag water use** – no longer necessary to maintain fresh water lake in Delta and Ag use decreases as islands are taken out of production. Freed-up water can be used for environmental purposes.

Benefits of Western Conveyance and Land Use Conversion Approach

- **Allows the return of the Primary Delta to a fluctuating water quality environment with hydraulically segregated water supply**
- **Early construction of a tunnel from Montezuma Hills to Sherman Island provides ability to move stable fill material to Sherman Island for Levee improvements and corridor construction**

Comparison of Conveyance Alternatives

Eastern Alignment

Western Alignment

	Eastern Alignment	Western Alignment
Construction	<ul style="list-style-type: none">– Substantial channel grading increases– Siphons cross three rivers and eight drainage facilities– Constructed at one time	<ul style="list-style-type: none">– Maximizes use of existing ship channel– Only two major river crossings– Easier construction through existing islands– Can be built in phases
Supply and Water Quality	<ul style="list-style-type: none">– Greater export delivery capacity– Impacts from Sacramento wastewater treatment plant secondary discharges	<ul style="list-style-type: none">– Greater export delivery capacity– Diversion upstream of Sacramento wastewater discharge
Flooding Integrity	<ul style="list-style-type: none">– Subject to wash-out and siphon failure	<ul style="list-style-type: none">– Less exposure to flooding and wash-outs
Earthquake	<ul style="list-style-type: none">– Levee conveyance system subject to sloughing and other related failures	<ul style="list-style-type: none">– Ship channel and new tunnel facilities seismically superior

Comparison of Conveyance Alternatives

Eastern Alignment

Western Alignment

	Eastern Alignment	Western Alignment
Rising Sea Levels	<ul style="list-style-type: none">– Intake only slightly above existing sea level– Water on both sides of canal	<ul style="list-style-type: none">– Intake 8 feet above existing sea level
West Delta Island Integrity	<ul style="list-style-type: none">– No improvements	<ul style="list-style-type: none">– Tunnel construction method also provides opportunity to move fill on to west Delta Islands for protection purposes
Endangered Species	<ul style="list-style-type: none">– Conveyance not completely hydraulically isolated– Export pumps still in Delta, impacts flow patterns	<ul style="list-style-type: none">– Provides hydraulically separate system– Allows natural flow patterns through Delta– Isolates export pumps
Cost	<ul style="list-style-type: none">– Less costly (if earth lined channels used)– Potentially greater lifecycle costs	<ul style="list-style-type: none">– Higher capital cost– Potentially lower lifecycle costs

Western Delta Approach Summary

- Don't be “penny wise and pound foolish” when building the Delta Conveyance fix
- Build a ROBUST fix that can be incrementally constructed
- Tie all the export systems together to gain maximum support and operational flexibility
- Get the best water quality possible for urban uses

Questions ?

