

# **District Workshop**

## **Bay Delta Conservation Plan & Delta Habitat Conservation & Conveyance Program**

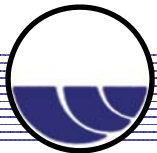
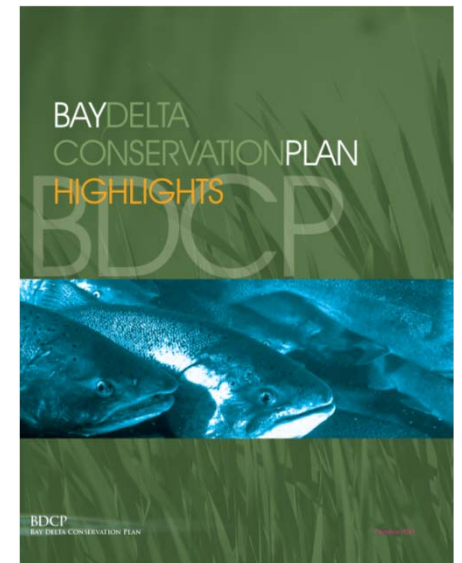
**2013 Nov 20**



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## 1a. Introductions

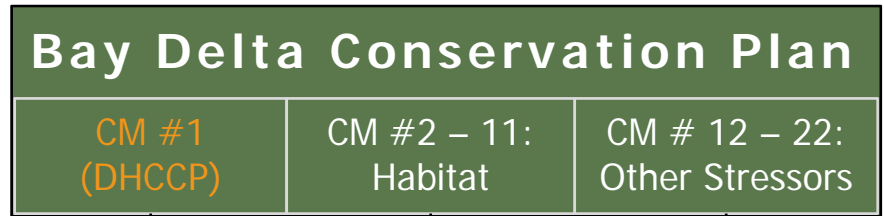
## 1b. DWR Perspective:



## 2. Overview:

### Purpose:

- Progress of BDCP and DHCCP
- Provide information for a decision regarding interim finance



### Overview (3b):

- Scope
- Schedule
- Cost

### Overview (3a):

Elements & Objectives

### Water Supply Benefits (3c)

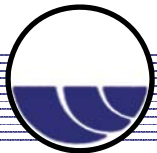
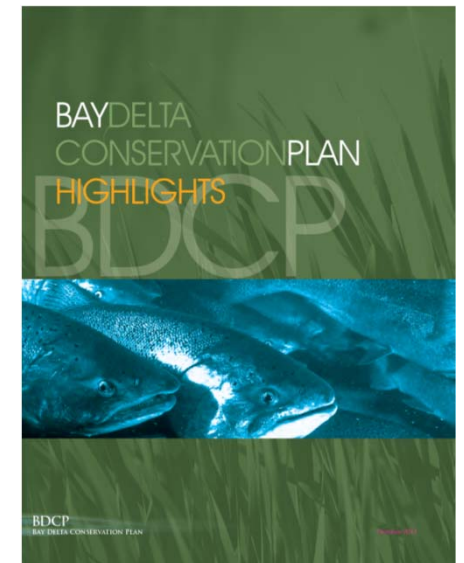
### Risks & Uncertainty (3d)

### Financing (4)

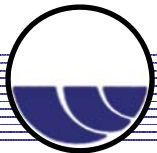
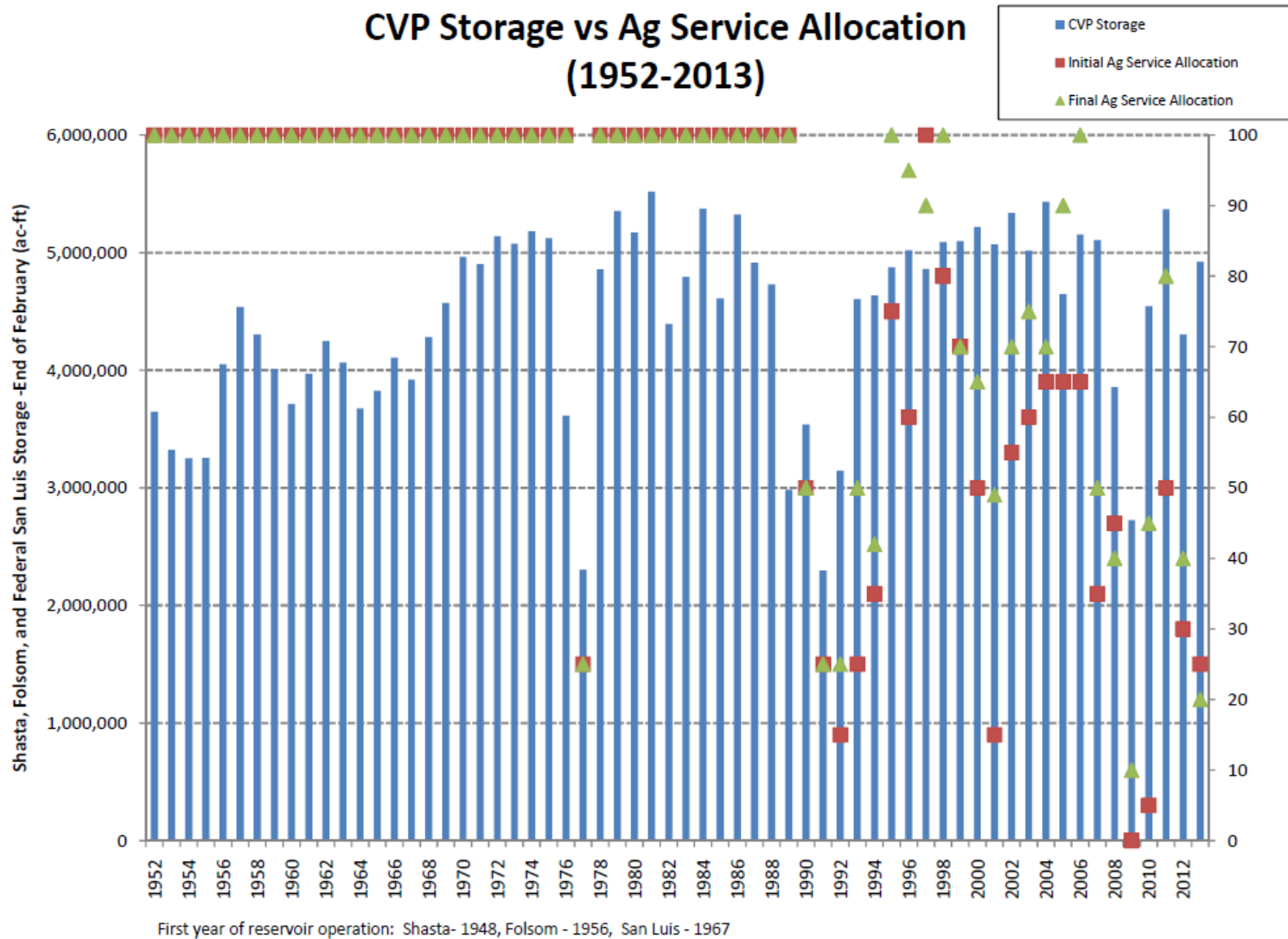
- Interim
- Construction

### Value

### Proposition (5)



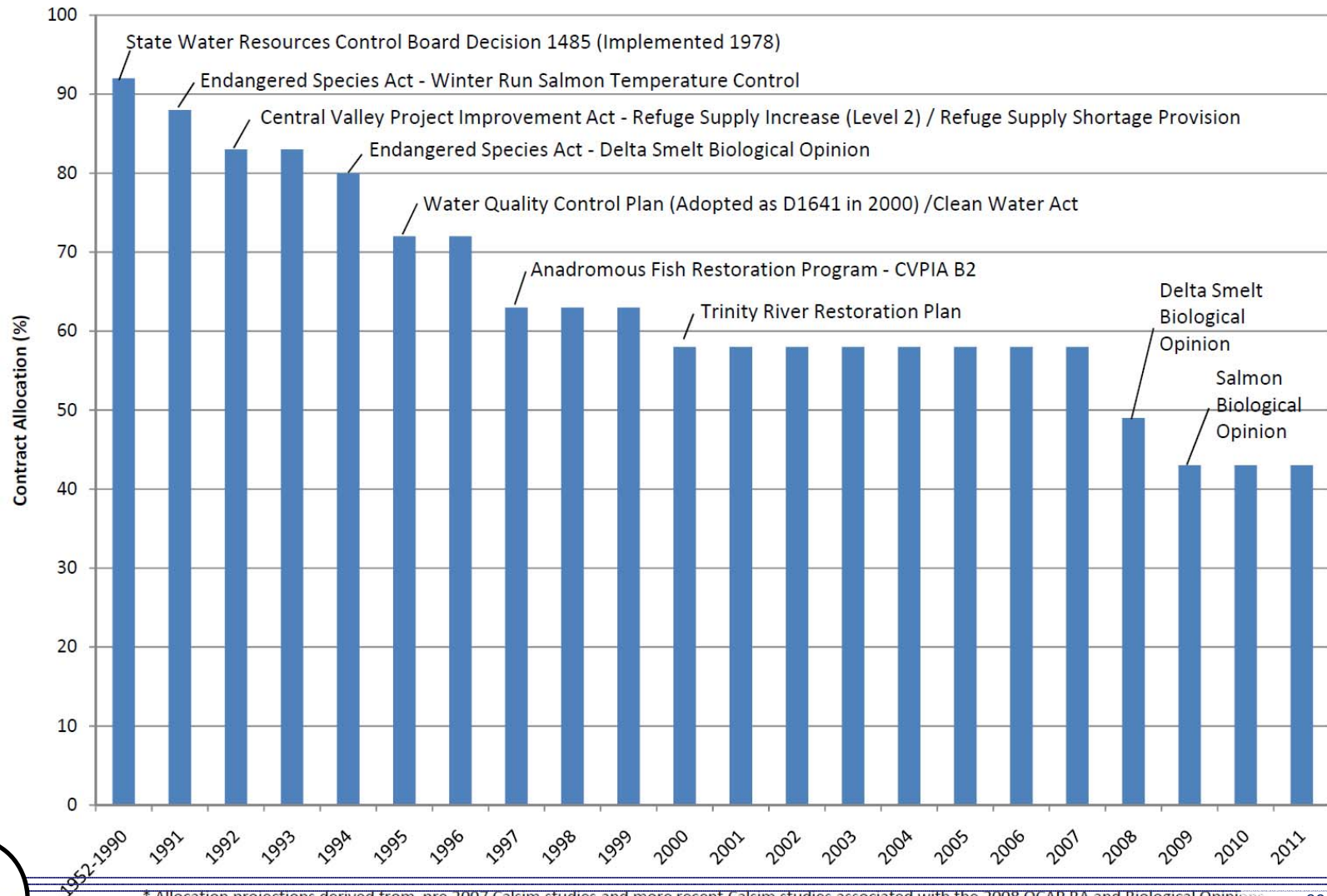
# 3a. Descriptions of Conservation Measures:





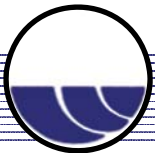
## 3a. Descriptions of Conservation Measures:

Long Term Average, CVP S. of Delta Ag Service Contract Allocation

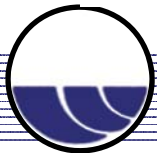
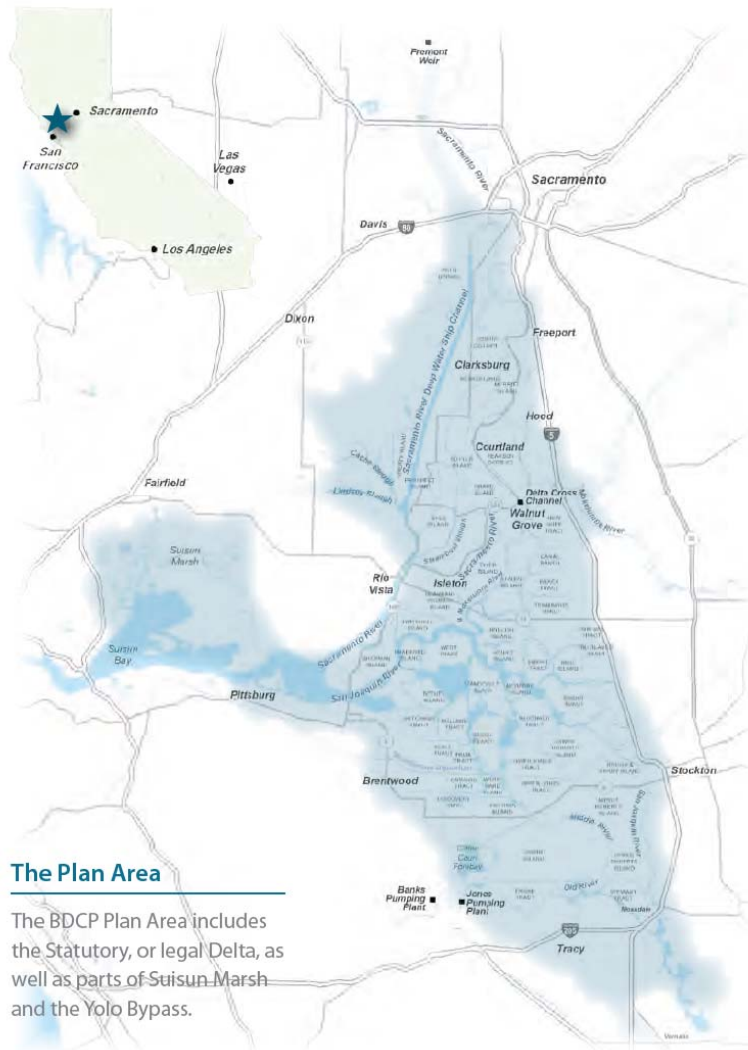


\* Allocation projections derived from pre 2007 Calsim studies and more recent Calsim studies associated with the 2008 OCAP BA and Biological Opinions

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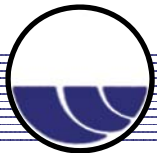
## 3a. Descriptions of Conservation Measures:



## 3a. Descriptions of Conservation Measures:

### ▪ Habitat

Measure	Title	Conservation Zone (CZ)	Level	Notes*
<b>CM2</b>	Yolo Bypass Fisheries Enhancement	CZ 2	Landscape	Seasonal modifications of the Yolo Bypass to improve the timing, frequency, and duration of inundation to improve fish habitat
<b>CM3</b>	Natural Communities Protection and Restoration	CZs 1-11	Landscape	Protection of a variety of natural communities with specific requirements by 5-year increments.
<b>CM4</b>	Tidal Natural Communities Restoration	CZs 1, 2, 4-7, 11	Natural Community	Restore 65,000 acres
<b>CM5</b>	Seasonally Inundated Floodplain Restoration	Plan Area-wide	Natural Community	Restore 10,000 acres
<b>CM6</b>	Channel Margin Enhancement	CZs 1, 2, 4-6, and/or 7	Natural Community	Restore 20 linear miles
<b>CM7</b>	Riparian Natural Community Restoration	CZs 4 and 7	Natural Community	Restore 5,000 acres, primarily in association with CMs 4, 5, and 6
<b>CM8</b>	Grassland Natural Community Restoration	CZs 1, 8, and/or 11, and other zones as needed	Natural Community	Restore 2,000 acres
<b>CM9</b>	Vernal Pool and Alkali Seasonal Wetland Complex Restoration	CZs 1, 8, or 11	Natural Community	Restore 67 acres of vernal pool complex and 150 acres alkali seasonal wetland complex; restore to achieve no net loss
<b>CM10</b>	Nontidal Marsh Restoration	CZs 2 and 4 and/or 5	Natural Community	Restore 1,200 acres to support giant garter snake and western pond turtle
<b>CM11</b>	Natural Communities Enhancement and Management	Plan Area-wide	Natural Community	Applies to all BDCP-protected and -restored habitats





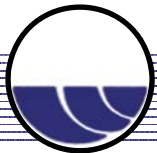
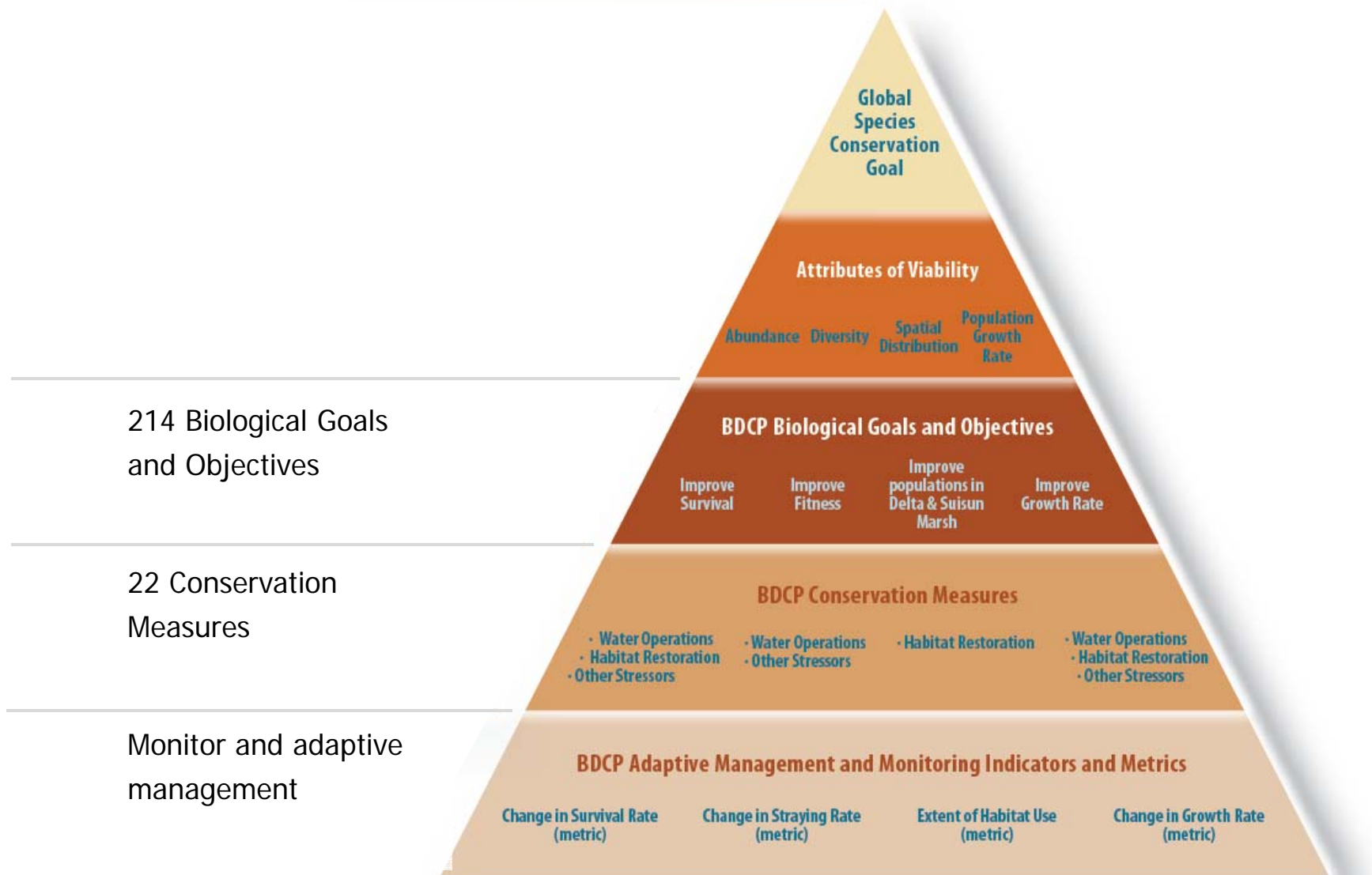
## 3a. Descriptions of Conservation Measures:

### ▪ Other Stressors

Measure	Title	Conservation Zone (CZ)	Level	Notes*
CM12	Methylmercury Management	CZs 1, 2, 4-7, 11	Species	Minimize the risk for methylation of mercury in restored habitats
CM13	Invasive Aquatic Vegetation Control	CZs 1, 2, 4-7, 11	Species	Control nonnative aquatic vegetation
CM14	Stockton Deep Water Ship Channel Dissolved Oxygen Levels	CZ 6	Species	Maintain dissolved oxygen concentrations above levels that impair covered fish species between Turner Cut and Stockton
CM15	Localized Reduction of Predatory Fishes	CZs 1, 2, 4-7, 11	Species	Reduce the abundance of predatory fish in high predator density locations
CM16	Nonphysical Fish Barriers	CZs 5-8	Species	Placement of nonphysical fish barriers at strategic locations throughout the Delta
CM17	Illegal Harvest Reduction	Plan Area-wide	Species	Reduce illegal harvest of Chinook salmon, Central Valley steelhead and sturgeon
CM18	Conservation Hatcheries	Plan Area-wide	Species	Expand and establish conservation hatcheries for Delta smelt and longfin smelt
CM19	Urban Stormwater Treatment	Plan Area-wide	Species	Implement stormwater treatment measures to decrease contaminant discharges to the Delta
CM20	Recreational Users Invasive Species Program	Plan Area-wide	Species	Minimize risk of introducing invasive nonnative species
CM21	Nonproject Diversions	Plan Area-wide	Species	Remediate agricultural and other diversions not associated with SWP or CVP through voluntary program.
CM22	Avoidance and Minimization Measures	Plan Area-wide	Species	Avoid and minimize effects of BDCP activities on natural communities and provide habitat for covered species



## 3a. Descriptions of Conservation Measures:





## 3b. Description of CM#1 (Conveyance):

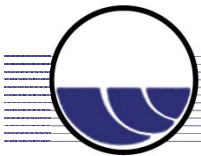
- Multiple Concepts Evaluated
- Multiple Alignments Studied
- Sizes from 3,000 to 15,000 cfs  
**(Proposed = 9,000 cfs)**
- ~ 10% level of engineering
- Limited geotechnical data collection

**Tunnel Option (CM1)**

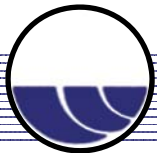
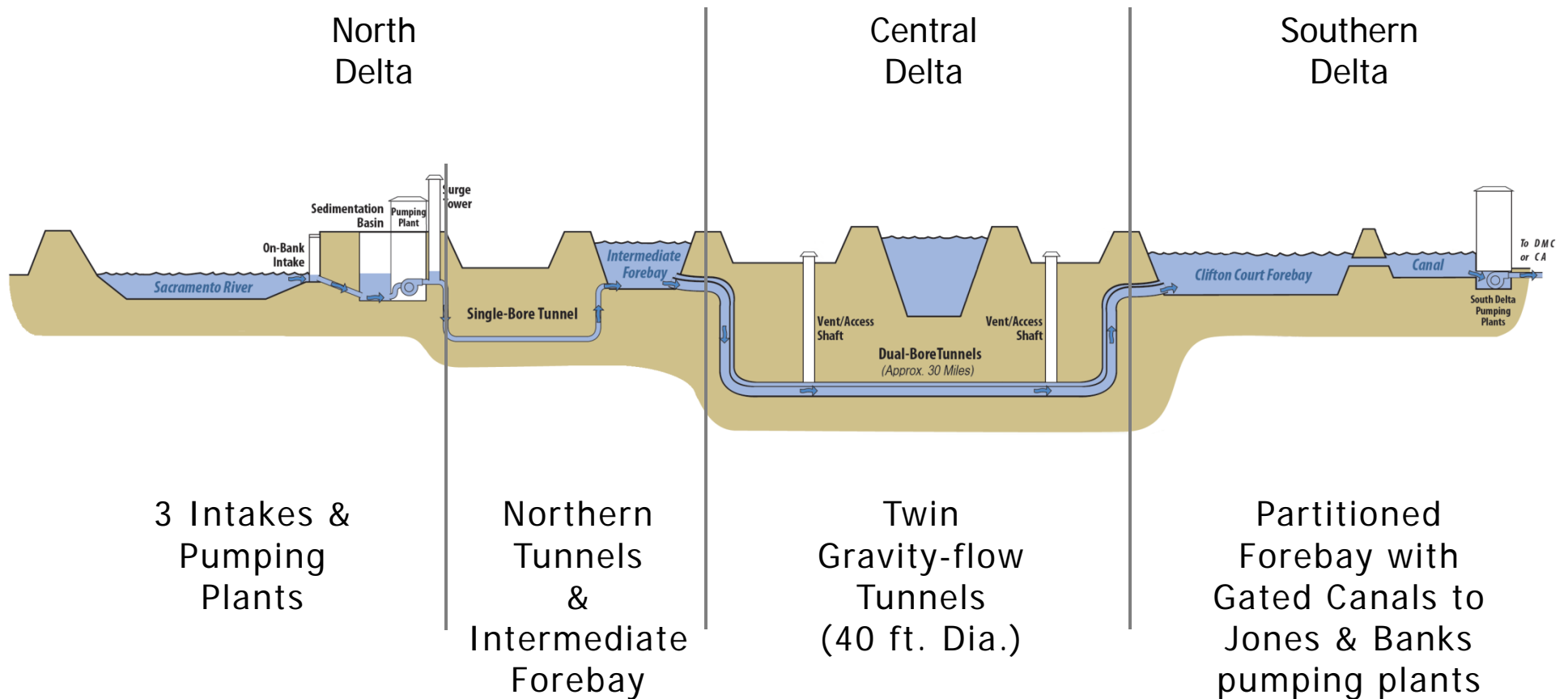
**Separate Corridors Option**

**West Canal/Tunnel Option**

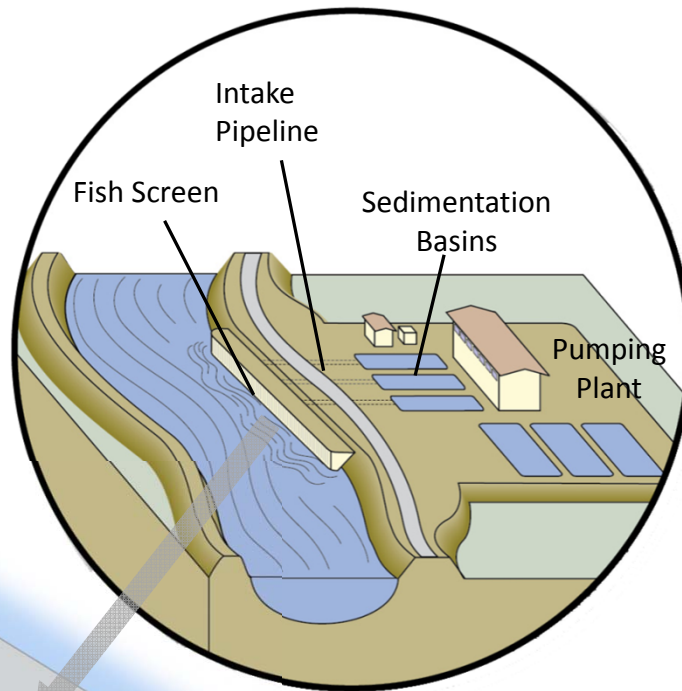
**East Canal Option**



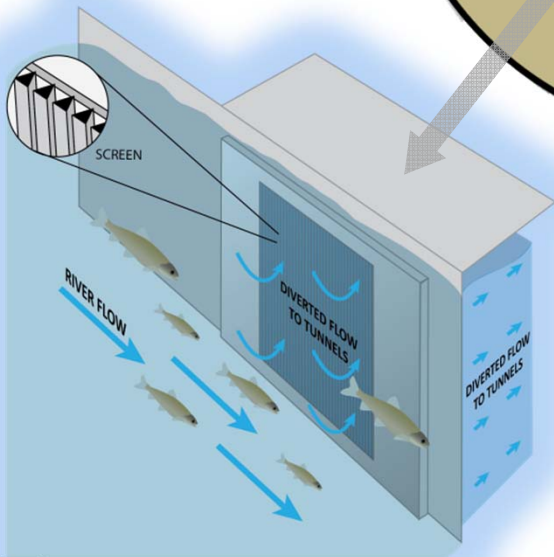
## 3b. Description of CM#1 (Tunnel Option):



## 3b. Description of CM#1 (Intakes & Pumping):

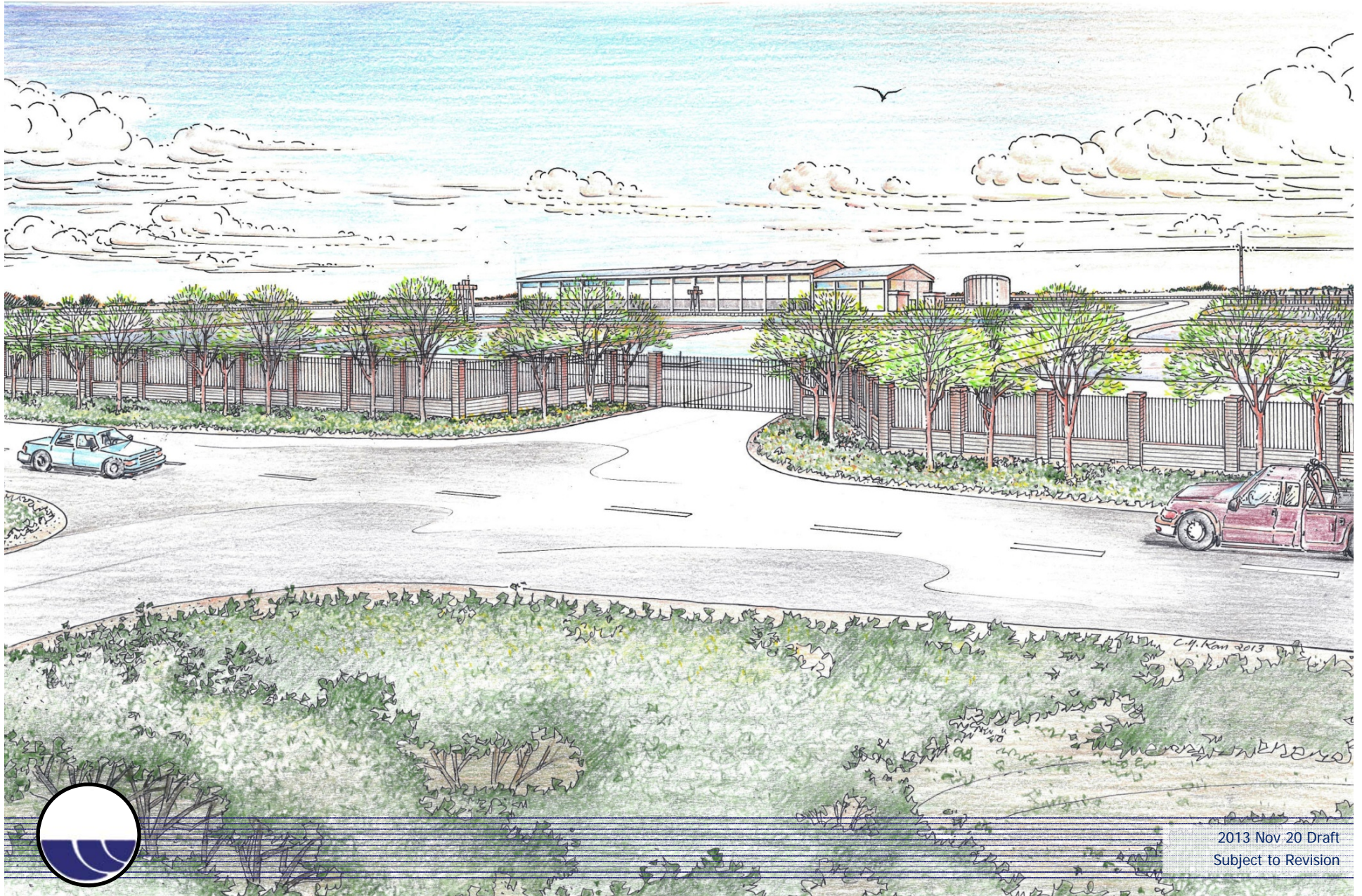


- Three intakes: 3,000 cfs each
- Multiple sites evaluated
- Three configurations evaluated (in-river, **on-bank**, and "cylindrical" screens)
- Designed to comply with the more stringent criteria to protect juvenile Salmonids and Delta Smelt





## 3b. Description of CM#1 (Intakes & Pumping):





## 3b. Description of CM#1 (Tunnels):



- Twin bores spaced ~ 120 ft. o.c.
- Length: Approx. 35 miles (each)
- 40 ft. diameter
- Concrete segmental liner (approx. 8 segments per ring, bolted with gaskets)
- Method: Tunnel Boring Machine (TBM)  
(a) Slurry or (b) Earth pressure-balance
- Geology & groundwater chemistry will dictate TBM type selection





## 3b. Description of CM#1 (Tunnels):

- Requires Deep Shaft Construction
- Explosion-proof equipment ('gassy' soil classification)
- Tunnel muck handling system (conveyor or rail)

Project: SFPUC's Bay-Division Tunnel

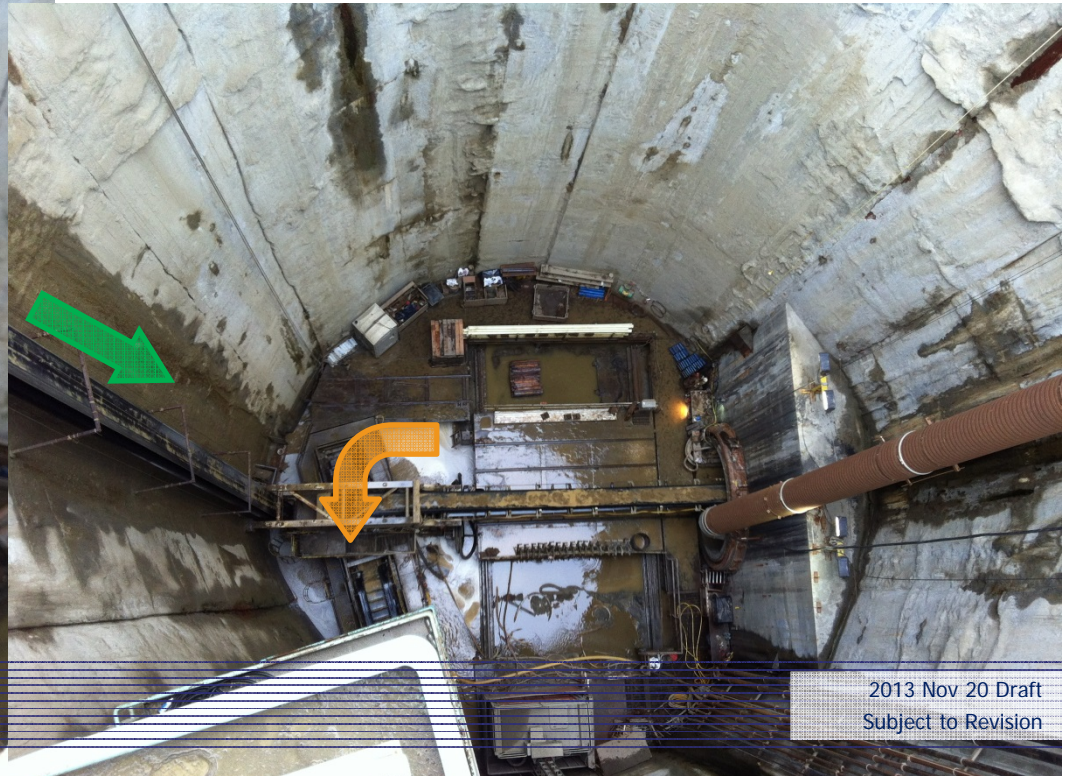


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## 3b. Description of CM#1 (Tunnels):

Tunnel Muck Operations – Conveyor System





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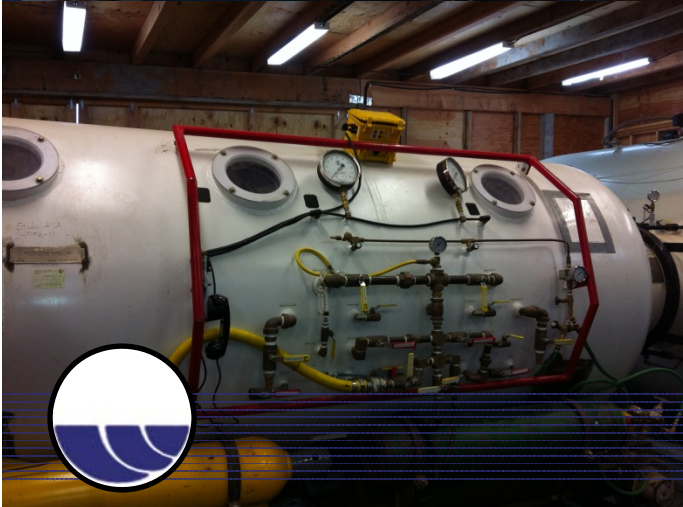
Tunnel Muck Operations – Conveyor System





## 3b. Description of CM#1 (Tunnels):

- Emergency response and rescue systems
- Primary & back-up power supply





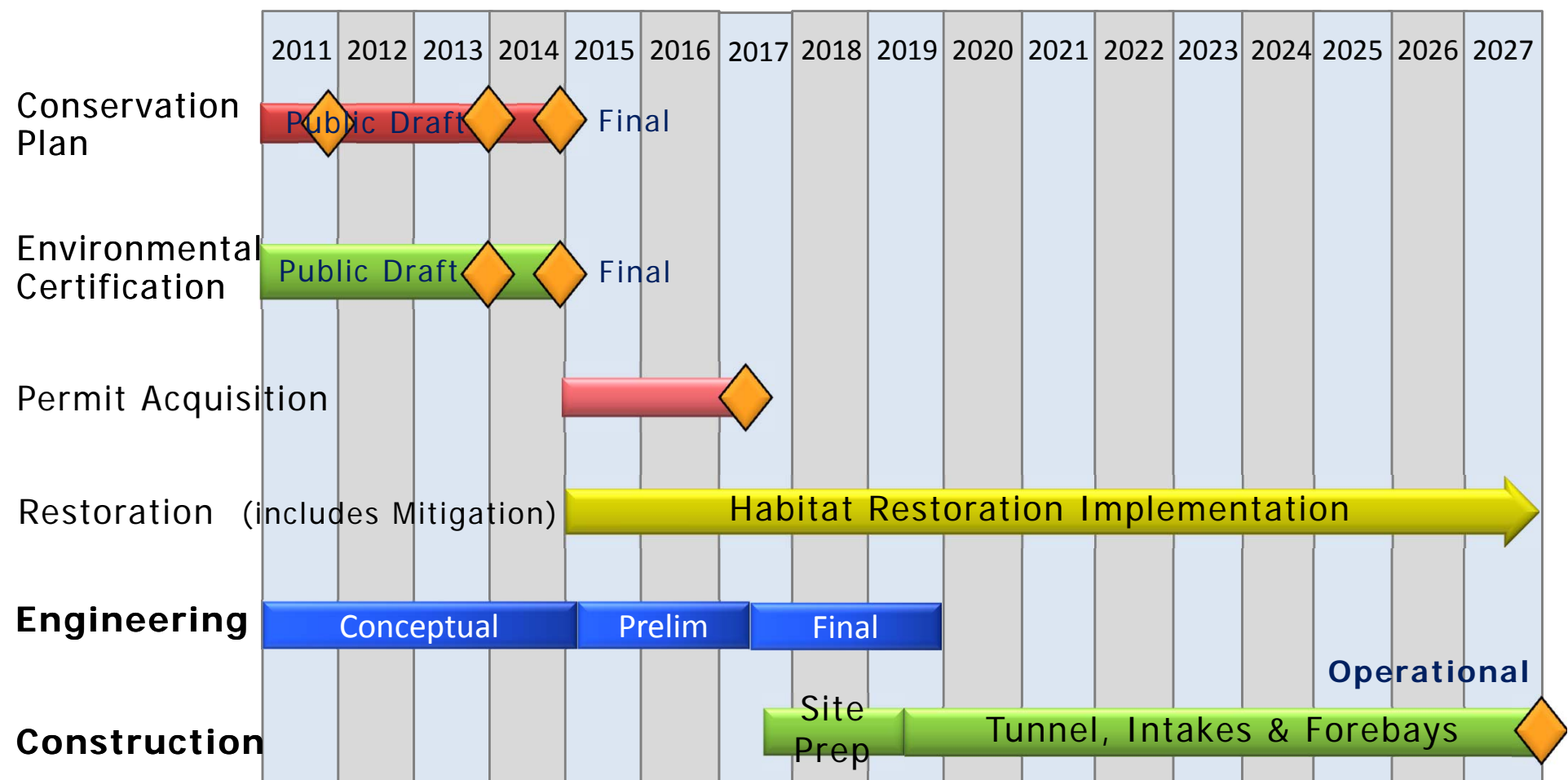
## 3b. Description of CM#1 (Clifton Court):

- Southern portion allows south of Delta exports during construction and long-term
- Northern portion stores flows diverted in north Delta

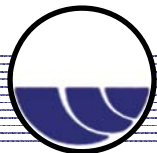




### 3b. Schedule:

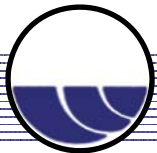


Note: BDCP Chapter 8 (Cost & Funding) assumes construction complete at the end of 2025.



### 3b. Cost (CM# 1 Construction & Operations):

<b>Construction</b>	<b>Cost \$ in Millions (2013 dollars)</b>	
Land Acquisition (with contingency)	\$	161.2
River Intake #2	\$	348.8
River Intake #3	\$	270.7
River Intake #5	\$	303.2
Intermediate Forebay and Flow Control Structures	\$	70.9
Byron Tract Forebay and Flow Control Structures	\$	619.4
North Tunnels and Shafts	\$	1,017.9
Main Tunnels and Shafts	\$	6,219.6
Access, Power delivery & Utility Relocations	\$	316.5
Communications and Control	\$	23.4
<b>Construction Subtotal</b>	<b>\$</b>	<b>9,190.4</b>
Tunnel Contingency	\$	2,641.7
All other Contingency	\$	657.7
<b>Contingency Subtotal</b>	<b>\$</b>	<b>3,299.4</b>
Program Management, Construction Management & Final Design	\$	1,919.9    13.2%
<b>Total Conveyance Construction</b>	<b>\$</b>	<b>14,570.9</b>
<b>Operating Cost (40 years)</b>	<b>\$</b>	<b>1,456.0</b>

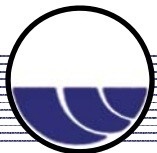


### 3b. Cost (CM# 1 Direct Mitigation):

Mitigation for Construction (Years 1 - 10)	Cost \$ in Millions (2013 dollars)
CM#3; Seasonally Inundated Floodplain	\$ 92.8
CM#4: Tidal Natural Communities (Marsh)	\$ 4.7
CM#6: Channel Margin Enhancement (Setback Levees)	\$ 15.6
CM#7: Riparian Natural Communities	\$ 1.3
CM#9: Vernal Pool & Alkali Seasonal Wetland	\$ 0.2
CM#10: Nontidal Marsh	\$ 2.1
CM#11: Natural Communities Enhancement	\$ 27.9
CM#15: Localized Reduction of Predatory Fishes	\$ 2.8
CM#16: Nonphysical Fish Barriers	\$ 36.3
Replace Count's Lost Property Tax	\$ 97.7
<b>Construction Mitigation Subtotal</b>	<b>\$ 281.4</b>

CM#1 Total Conveyance Construction	\$ 14,570.9
<b>Total Conveyance Construction</b>	<b>\$ 14,852.3</b>

*For Financing, round to \$ 14.9 Billion*



## 3b. Cost (Mitigation for Operations):

Mitigation for CM#1 Operations:	Cost \$ in Millions (2013 dollars)	
	Yrs 1 - 10	Yrs 11- 50
CM#11: Natural Communities Enhancement	\$ 9.5	\$ 38.2
CM#15: Localized Reduction of Predatory Fishes	\$ 8.0	\$ 32.0
CM#16: Nonphysical Fish Barriers	\$ -	\$ 145.4
CM#22: Avoidance & Minimization Measures	\$ 1.8	\$ 7.1
Program Admin	\$ 6.3	\$ 25.2
Monitoring & Research	\$ 15.1	\$ 60.3
Changed Circumstances	\$ -	\$ 37.1
<b>Total Mitigation for CM#1 Operations:</b>	<b>\$ 40.7</b>	<b>\$ 345.3</b>
CM#1: Operation of Conveyance		\$ 946.4
CM#1: Maintenance of Conveyance		\$ 509.6
40 years O&M of CM#1	\$ -	<b>\$ 1,456.0</b>

(Cap)

(Cap)

### Notes:

(BiOp) Denotes cost that are considered to be a CVP-wide cost. Cost are to implement the applicable RPA in the USFWS Biological Opinion

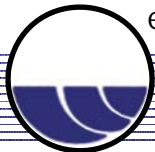
(Cap) Denotes work that can be capitalized as opposed to an expense cost.

Mitigation for Continued Operations (Years 1 - 10):	Cost \$ in Millions (2013 dollars)	
CM#4: Tidal Natural Communities (8,000 acres)	> \$ 235.9	\$ -

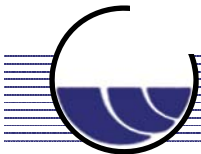
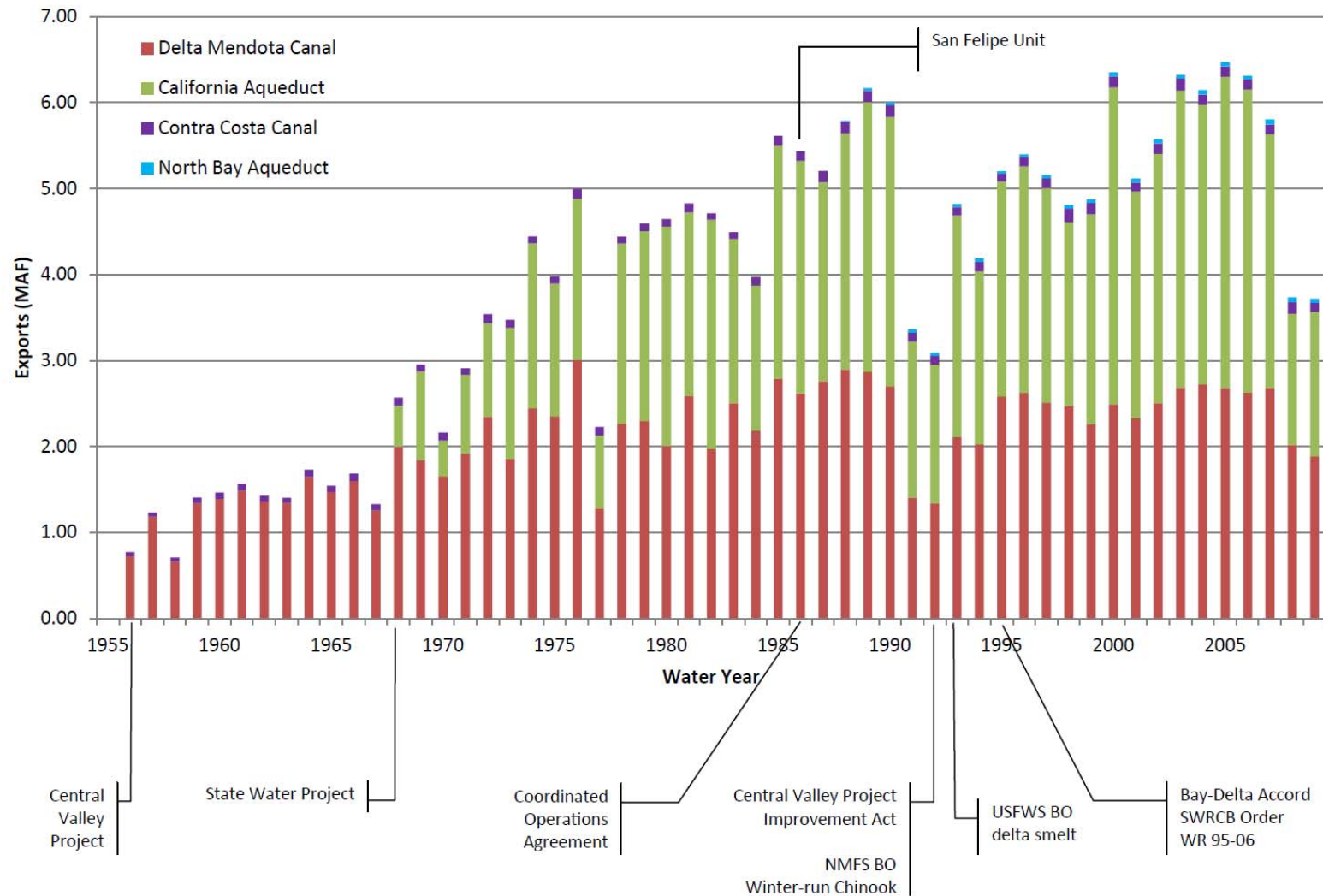
(BiOp,  
(Cap)

<b>Total Operating Costs</b>	<b>\$ 276.6</b>	<b>\$ 1,801.3</b>
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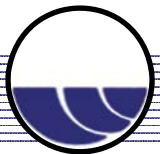
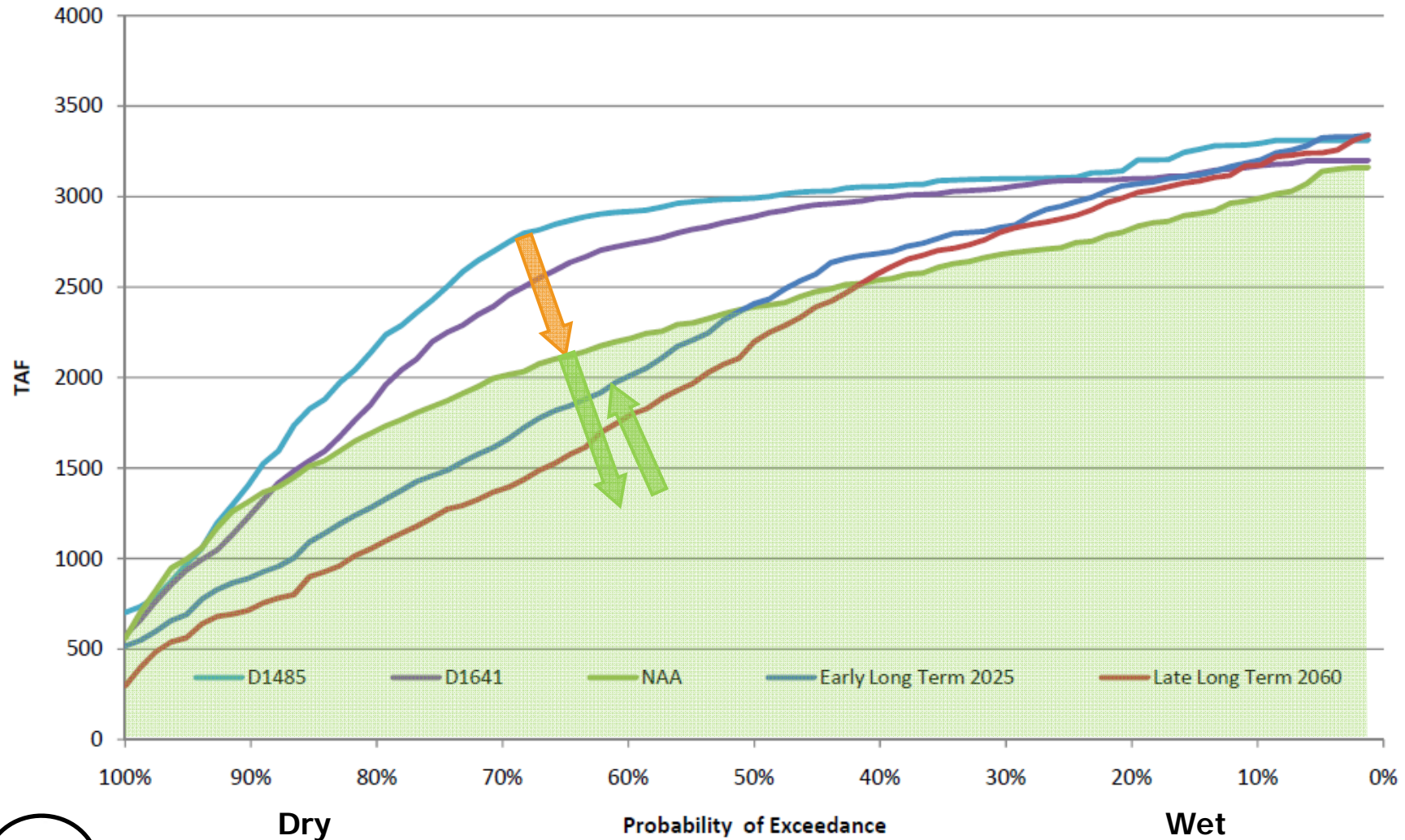
### 3c. Water Supply Benefits (Historical):



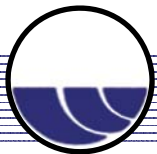
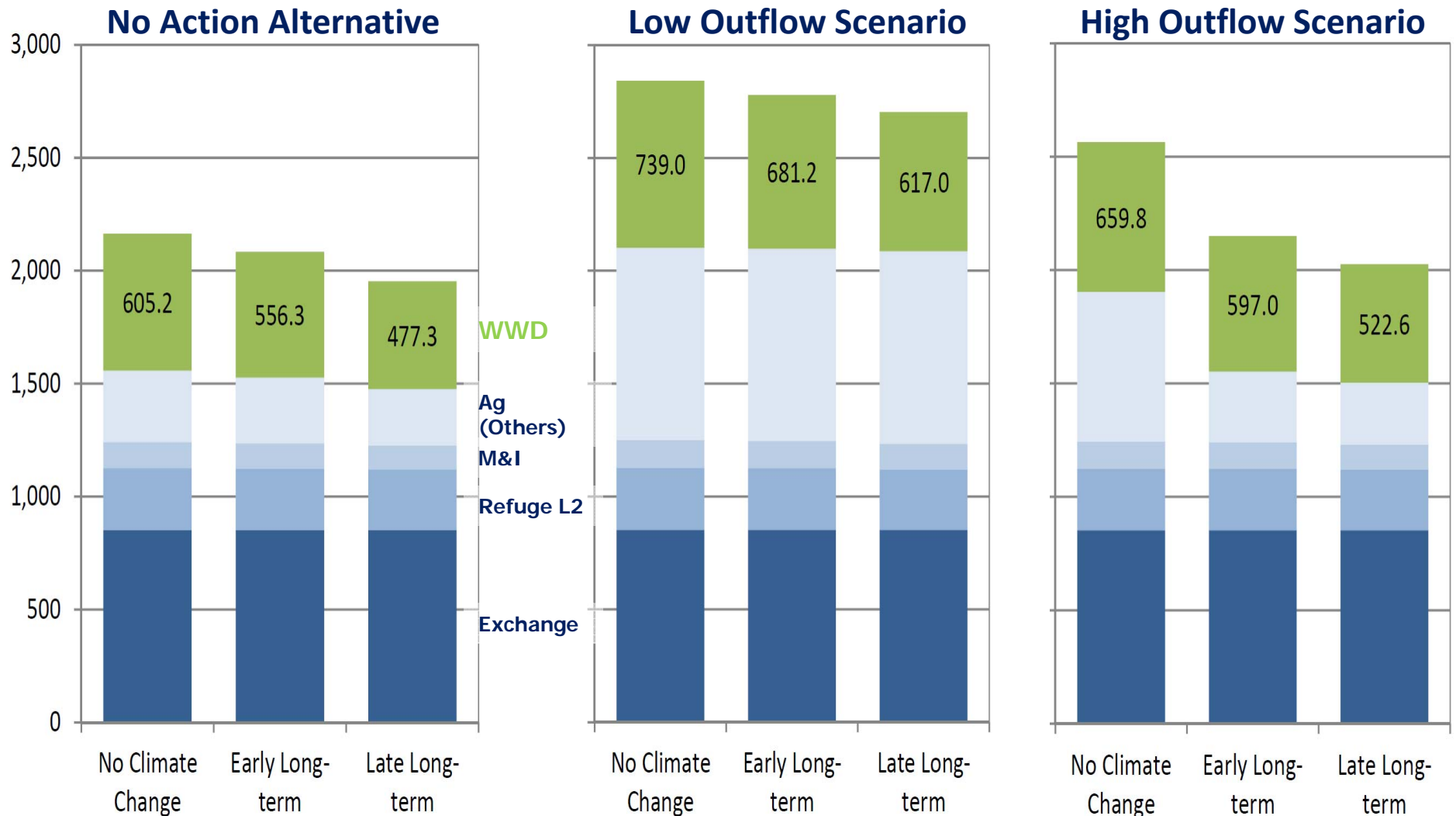


## 3c. Water Supply Benefits:

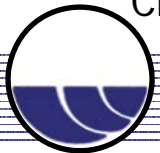
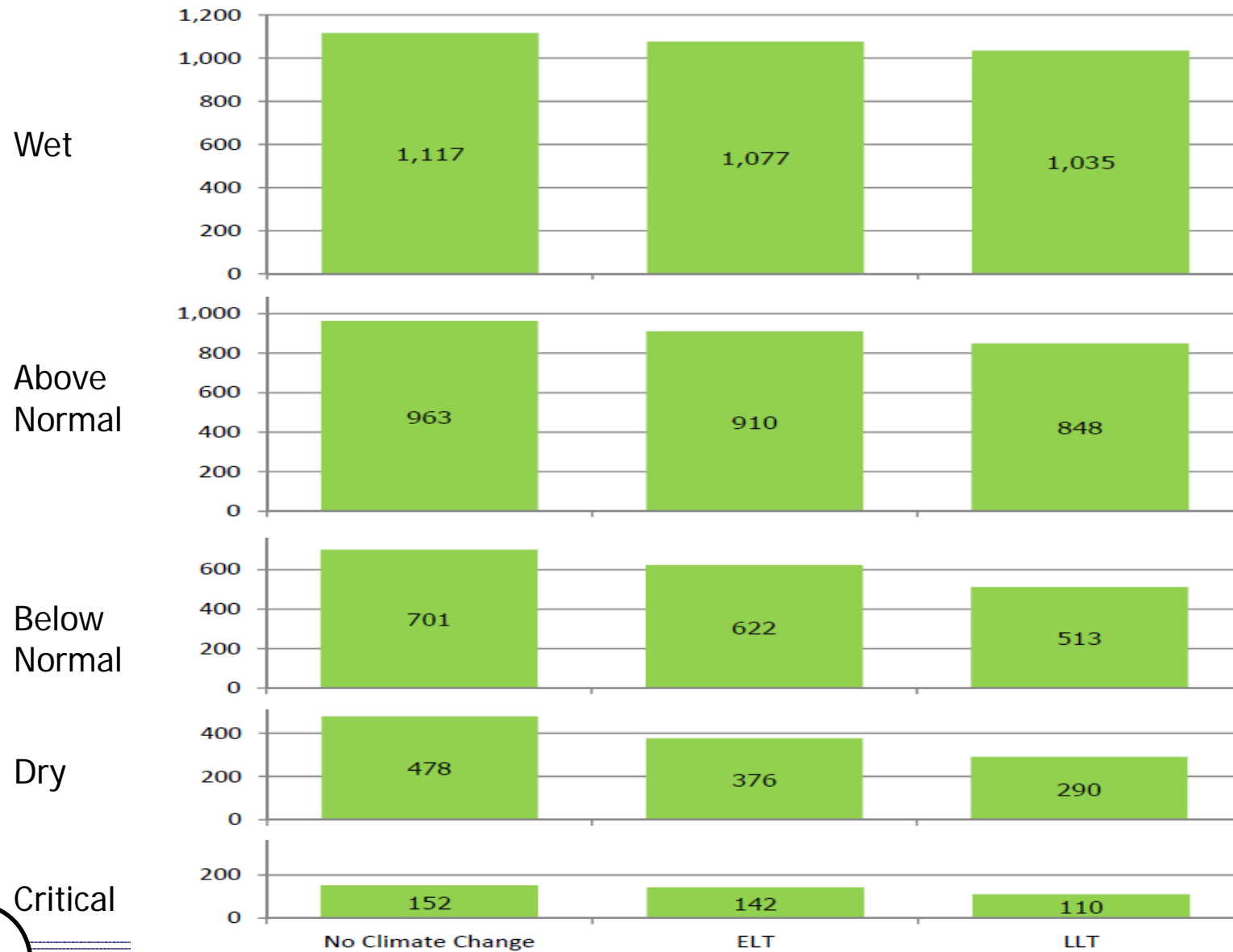
### BDCP Alt4 - Jones Exports



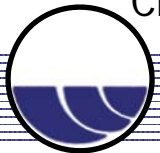
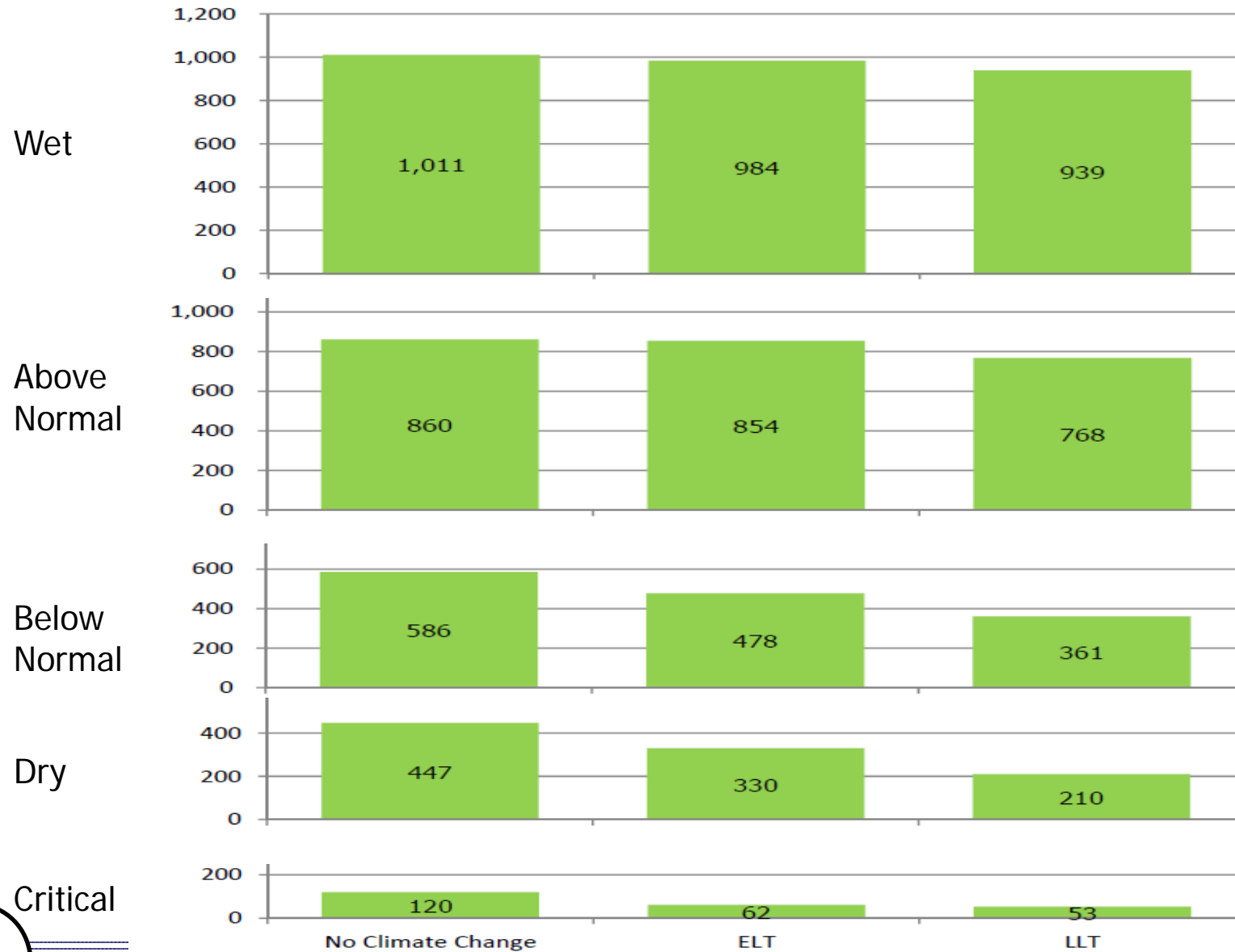
### 3c. Water Supply Benefits (as Modeled):



### 3c. Water Supply Benefits (LOS By Water Year):









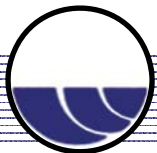
### 3c. Water Supply Benefits (HOS By Water Year):



## 3d. Risks Affecting Assumptions:

### Construction & Operating Costs:

- Future Scope Changes or 'refinements' (currently at ~ 10% design) 
- Geotechnical conditions encountered vs. assumed 
- Cost of schedule delays. Disruptions occurring both internally & externally as well as near-term vs. during construction 
- Cost of risk & its allocation 
- Role of Reclamation – How does BDCP benefit CVP contractors (including refuges and exchange contractors)? 
- Continued Participation: Impact if a water agency 'opts out' 








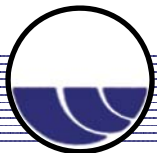
Blue font denotes risks that affect both cost allocation and water supplies to CVP south of Delta water service contractors



## 3d. Risks Affecting Assumptions:

### Construction & Operating Costs:

- International conditions at time construction contracts awarded 
  - a. Construction market (number of bidders)
  - b. Commodity prices & inflation (TBM, cement, steel, copper)
  - c. Financial markets (bonding & insurance)
- Labor conditions at time construction contracts awarded 
  - a. Costs (prevailing wage)
  - b. Willingness to allow foreign constructors to bid for work
- Non-Fish Agency Actions (e.g. EPA ~ air quality, USACE ~ CWA) 
- Construction contract packaging, Alt. delivery method(s) could be less costly, but legislative approval is needed 
- Future cost of power for O&M, which will also affect pumping at CVP (and SWP) facilities 



### 3d. Risks Affecting Assumptions:

**Illustration:** Partial levee failure as TBM passed underneath

Project: SFPUC's Bay-Division Tunnel,  
Levee at Cargill Salt Pond  
Newark CA

Date: 2012 Aug (Dutra)

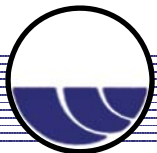
**~ 100 ft. = Depth  
to Tunnel**



## 3c. Risks Affecting Assumptions:








### Long-term Water Supplies (CVP South of Delta):

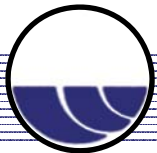
- CalSim modeling process
  - a. Sequence of future water year types
  - b. Estimates of future level of water demand
  - c. Magnitude & timing of climate change (both hydrology & sea-level rise)
  - d. Relationship between surface water and groundwater
- Actual vs. Simulated Operations
- Decision Tree's High vs. Low Outflow Scenarios
- ESA Section 10 Permit Conditions (which includes intra-service Section 7 consultations)
- Durability of regulatory assurances contained in BDCP (to mitigate for future regulatory actions)
- Water quality of diverted north Delta flows with near-zero flows in tunnel



### 3d. Risks Affecting Assumptions:

#### Long-term Water Supplies (CVP South of Delta):




- Coordinated Operating Agreement (sharing of available water)  
NOTE: 5-year reviews have not occurred since 1986 
- Continued Participation: Impact if a water agency 'opts out' 
- Rate & extent of tidal marsh creation (less acres needed) 
- Timing and scope of CALFED Storage Projects 
- Terms included in future CVP contract extensions 
- FERC License renewals in tributaries 
- Evolution of the water transfer market 

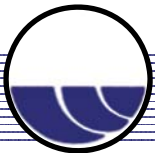


Blue font denotes risks that affect both cost allocation and water supplies to CVP south of Delta water service contractors

### 3d. Short-Term Risks:

#### Water Supplies (CVP South of Delta): Today through operation of conveyance

- Seismic or flood event(s) affecting Delta Levees (prior to conveyance becoming operable) 
- Coordinated Operating Agreement (sharing of available water) First 5-year review since 1986 
- Regulatory actions in progress (e.g. SWRCB & unimpaired flows). 





# 4a. Financing (Construction):

## Cost Overview and Analytic Assumptions

The BDCP projects that \$14.92 billion in capital improvements (2012 dollars) will be required to ensure sustainable water delivery.

- **Purpose:** Build project improvements in the Delta to protect water supplies for municipal and agricultural users and enhance water quality and environmental resources in the Bay/Delta estuary
  - Restore and protect the ecological health of the Delta
  - Restore and protect water supplies
- **Estimated Capital Cost<sup>1</sup>:** Approximately \$17.9 billion is needed to Implement BDCP conveyance improvements
  - Cost assumed to be Paid for By State and Federal Water Contractors
    - Conveyance Facilities.....\$14.925 billion
    - Accumulated Inflation Costs (through 2024 at 2.00% annually).....3.017 billion
    - **Total Costs to be Financed.....\$17.942 billion**
- **Structuring Assumptions:** Project financing, bond amortization and interest cost assumptions
  - Interest cost assumed to be the 10-year average of the Revenue Bond Index (approximately 5.00%)
  - Each bond series is assumed to be issued with a debt service reserve fund (“DSRF”)
    - Increases the bonding amount and assumed negative arbitrage (DSRF may be avoided which reduces debt service by \$100MM/year)
    - DSRF applied to make the final debt service payment of each series
  - **Scenario 1:** Base Case Scenario
    - The project bonds are scheduled to amortize 30 years past the anticipated in service date (2025-2055)
  - **Scenario 2:** 2-Year Delay and Increased Cost Scenario
    - Construction period is delayed by two years and costs in this period increase by \$1.5 billion
    - The project bonds are scheduled to amortize 30 years past the anticipated in service date (2027-2057)
  - **Scenario 3:** 2-Year Delay and Increased Cost Scenario with Capitalized Interest
    - Interest is capitalized through the in-service date
    - The project bonds are scheduled to amortize 30 years past the anticipated in service date (2028-2058)

Costs accumulating inflation of 2.00% annually



# 4a. Financing (Construction):

## Expenditure Timeline: Baseline Scenario 1

Bonds are assumed to be issued annually to meet project funding needs.

Projected Expenditure and Bond Issuance Timeline <sup>1,2</sup>													
Scenario 1 (\$millions)	Planning / Permitting / Engineering Phase						Construction Phase (In Service December 2025)						Total Cost
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	
Remaining Cost of Delta Improvements	14,925	15,224	15,419	15,508	15,600	15,693	15,788	14,043	11,345	8,592	5,785	2,921	
+ Inflation (2.00% annually)	299	304	308	310	312	314	316	281	227	172	116	58	3,017
- Scheduled Construction expenditure <sup>1</sup>		109	219	219	219	219	2,061	2,979	2,979	2,979	2,979	2,979	17,942
= Remaining Construction Costs	15,224	15,419	15,508	15,600	15,693	15,788	14,043	11,345	8,592	5,785	2,921	0	
<b>Total Cost Financed (Including Inflation)</b>													<b>\$17,942</b>



<sup>1</sup> Estimated capital costs reference those provided in Chapter 8 of the Bay Delta Conservation Plan, released May 2013. Adjusted to accommodate \$350MM of initial mitigation expenses as well as inflation at 2.0%. <sup>2</sup> Expenditure schedule for illustrative purposes only.



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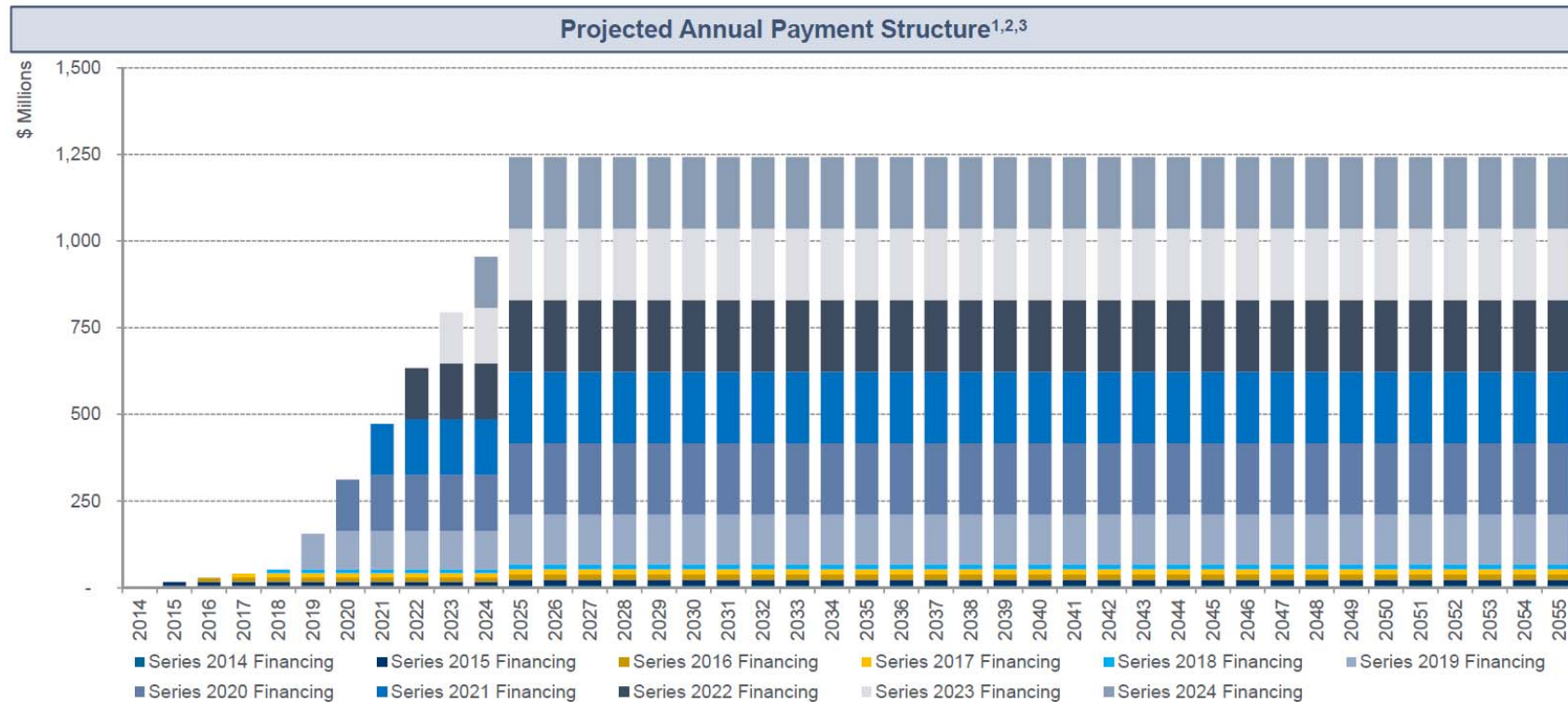


# 4a. Financing (Construction):

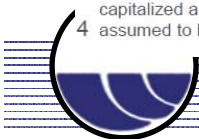
## Projected Debt Service for Conveyance Facilities

Bonds are assumed to be issued annually 2014 through 2024 and amortize principal 2025 through 2055 (30 years from the assumed in-service date).<sup>1</sup>

Scenario 1 (\$ millions)	Planning / Permitting / Engineering Phase					Construction Phase <i>(in Service December 2025)</i>									Total
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026-55		
Bond Issue Amount	118	237	237	237	237	2,226	3,218	3,218	3,218	3,218	3,218	0	0	\$19,380	
Annual Debt Service Payment	3	17	29	40	52	155	312	473	634	795	956	1,243	1,243	\$41,993	



(1) Estimated capital costs reference those provided in Chapter 8 of the Bay Delta Conservation Plan, released May 2013. (2) Expenditure schedule for illustrative purposes only. (3) Interest is not capitalized and assumed debt service payments begin during construction. Interest cost assumed to be the 10-year average of the Revenue Bond Index (Approximately 5.00%). Each bond series is assumed to be issued with a debt service reserve fund ("DSRF") which has increased the bonding amount compared to project cost).

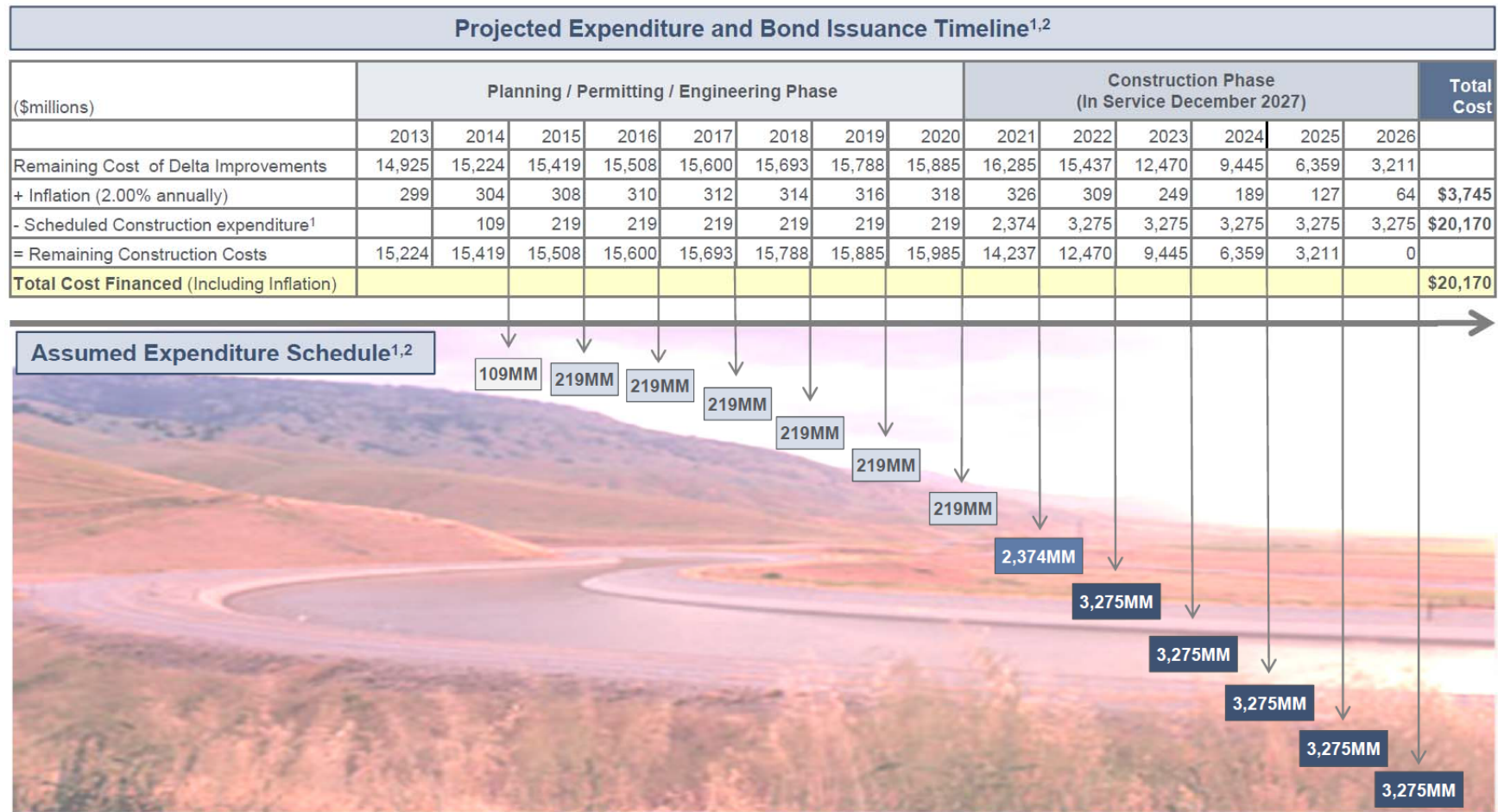




# 4a. Financing (Construction): Risk Adjusted

Expenditure Timeline: 2-Year Delay and Escalated Costs (\$1.5 billion)

Bonds are assumed to be issued annually to meet project funding needs.



(1) Estimated capital costs reference those provided in Chapter 8 of the Bay Delta Conservation Plan, released May 2013. Adjusted to accommodate \$350MM of initial mitigation expenses as well annual inflation at 2.0%. (2) Expenditure schedule for illustrative purposes only.

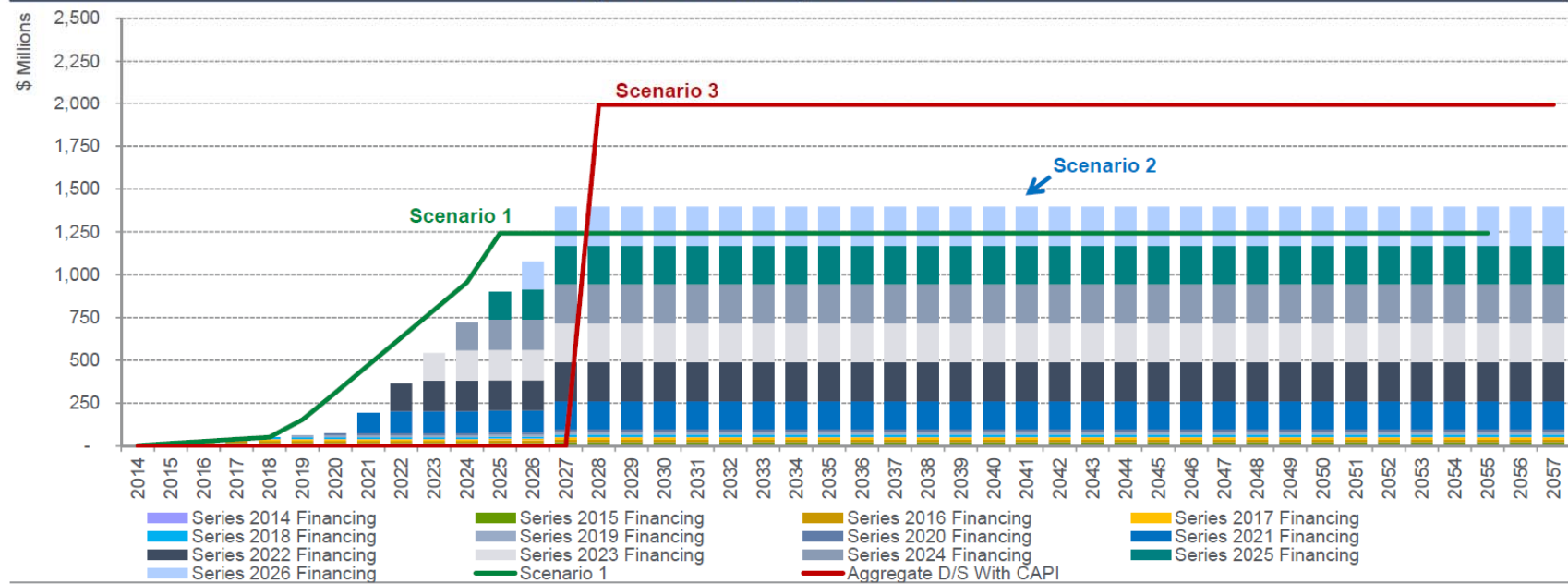
# 4a. Financing (Construction): Risk Adjusted

## Projected Debt Service for Conveyance Facilities: Delay and Capitalized Interest Impacts

Scenario 2 assumes a 2-year delay in construction schedule and bonds amortize principal 2027 through 2057 (30 years from the assumed in-service date).<sup>1</sup> Scenario 3 assumes the delay in construction as well as capitalizing interest through the in-service date, with the first full debt service payment made in 2028.

(\$ millions)	Planning / Permitting / Engineering Phase							Construction Phase <i>(in Service December 2027)</i>								Total
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028-57	
Scenario 2: 2-Year Delay Impact																
Bond Issue Amount	118	237	236	237	237	237	237	2,564	3,537	3,537	3,537	3,537	3,537	0	0	\$21,786
Annual Debt Service Payment	3	17	29	40	52	64	76	194	367	544	721	901	1,078	1,397	1,397	\$47,386
Scenario 3: 2-Year Delay w/ CAPI Impact																
Bond Issue Amount	436	785	665	578	510	457	414	4,099	5,206	4,822	4,492	4,203	3,950	0	0	\$30,617
Annual Debt Service Payment	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,992	\$57,759

Projected Annual Payment Structure<sup>1,2,3</sup>



(1) Estimated capital costs reference those provided in Chapter 8 of the Bay Delta Conservation Plan, released May 2013. (2) Expenditure schedule for illustrative purposes only. (3) In Scenario 1, interest is not capitalized and assumed debt service payments begin during construction. In Scenario 2, interest is capitalized until 1 year past the 2027 in service date. Interest cost assumed to be the 10-year average of the Revenue Bond Index (Approximately 5.00%). Each bond series is assumed to be issued with a debt service reserve fund ("DSRF") which has increased the bonding amount compared to project cost).





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Citi works with its clients in greenhouse gas intensive industries to evaluate emerging risks from climate change and, where appropriate, to mitigate those risks.

efficiency, renewable energy and mitigation





## 4b. Financing (Interim):

### BDCP Interim Financing - Overview

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Interim financing will have an important role in shaping the future of BDCP financing

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- To maintain the implementation schedule, contractors will need to finance \$1.2 billion for design and pre-construction activities

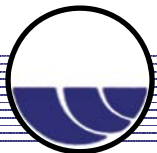
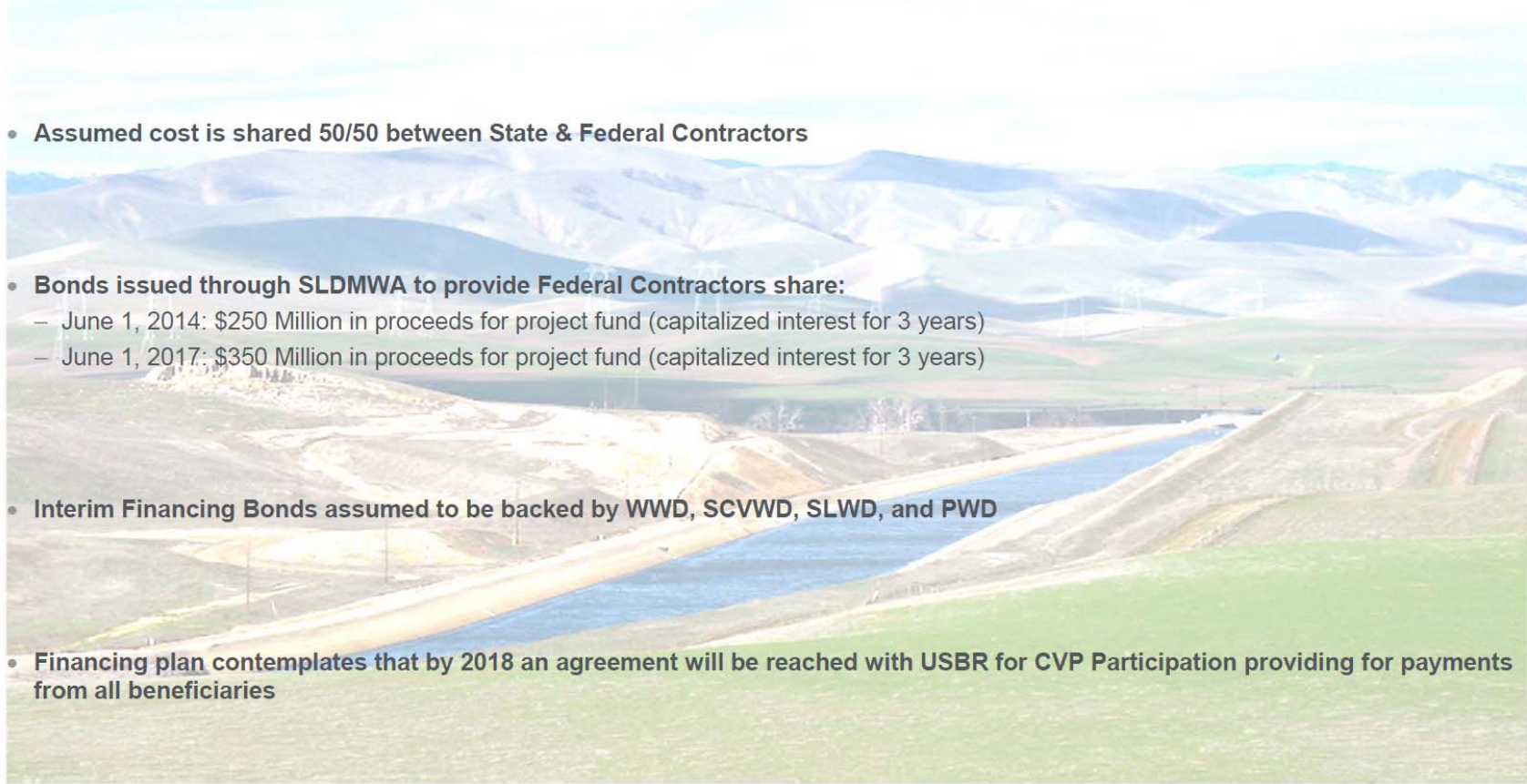
- Assumed cost is shared 50/50 between State & Federal Contractors

- Bonds issued through SLDMWA to provide Federal Contractors share:

- June 1, 2014: \$250 Million in proceeds for project fund (capitalized interest for 3 years)
- June 1, 2017: \$350 Million in proceeds for project fund (capitalized interest for 3 years)

- Interim Financing Bonds assumed to be backed by WWD, SCVWD, SLWD, and PWD

- Financing plan contemplates that by 2018 an agreement will be reached with USBR for CVP Participation providing for payments from all beneficiaries



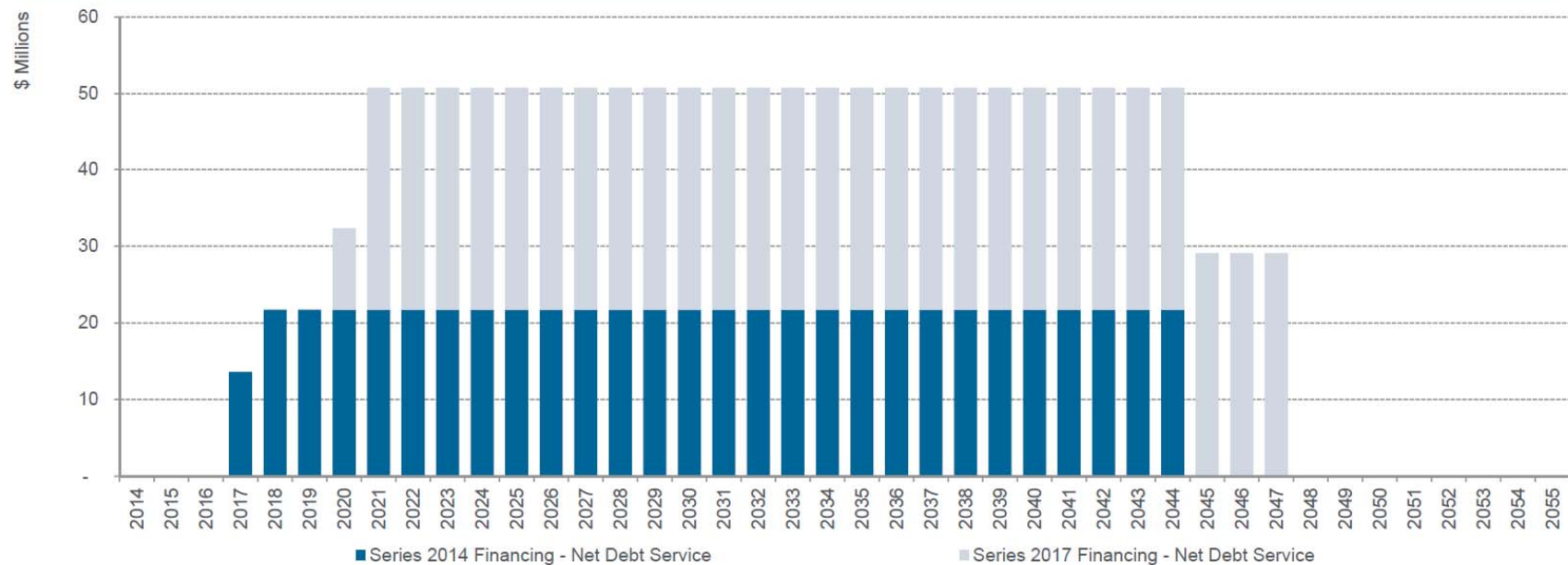
## 4b. Financing (Interim):

### BDCP Interim Financing – Annual Financing Cost Structure

Anticipated cost sharing structure assuming Contract Group-only participation

Cost Sharing Allocation			Annual Debt Service Cost <sup>1,2,3</sup>										
Water District (\$ Millions)	Share (AF)	Share (%)	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023-48	Total
Westlands WD	1,195,383	76.2%	-	-	-	10	17	17	25	39	39	39	\$1,064
Santa Clara Valley WD	154,065	9.8%	-	-	-	1	2	2	3	5	5	5	137
San Luis WD	125,080	8.0%	-	-	-	1	2	2	3	4	4	4	111
Panoche WD	94,000	6.0%	-	-	-	1	1	1	2	3	3	3	84
<b>Total</b>	<b>1,568,528</b>	<b>100.0%</b>	-	-	-	14	22	22	32	51	51	51	<b>\$1,396</b>

Projected Annual Payment Structure<sup>1,2,3</sup>



(1) For illustrative purposes only. (2) Interest is not capitalized and assumed debt service payments begin during construction. Interest cost assumed to be the 10-year average of the Revenue Bond Index (Approximately 5.00%). (3) Each bond series is assumed to be issued with capitalized interest for 3 years and with a debt service reserve fund ("DSRF") which has increased the bonding amount compared to project cost).



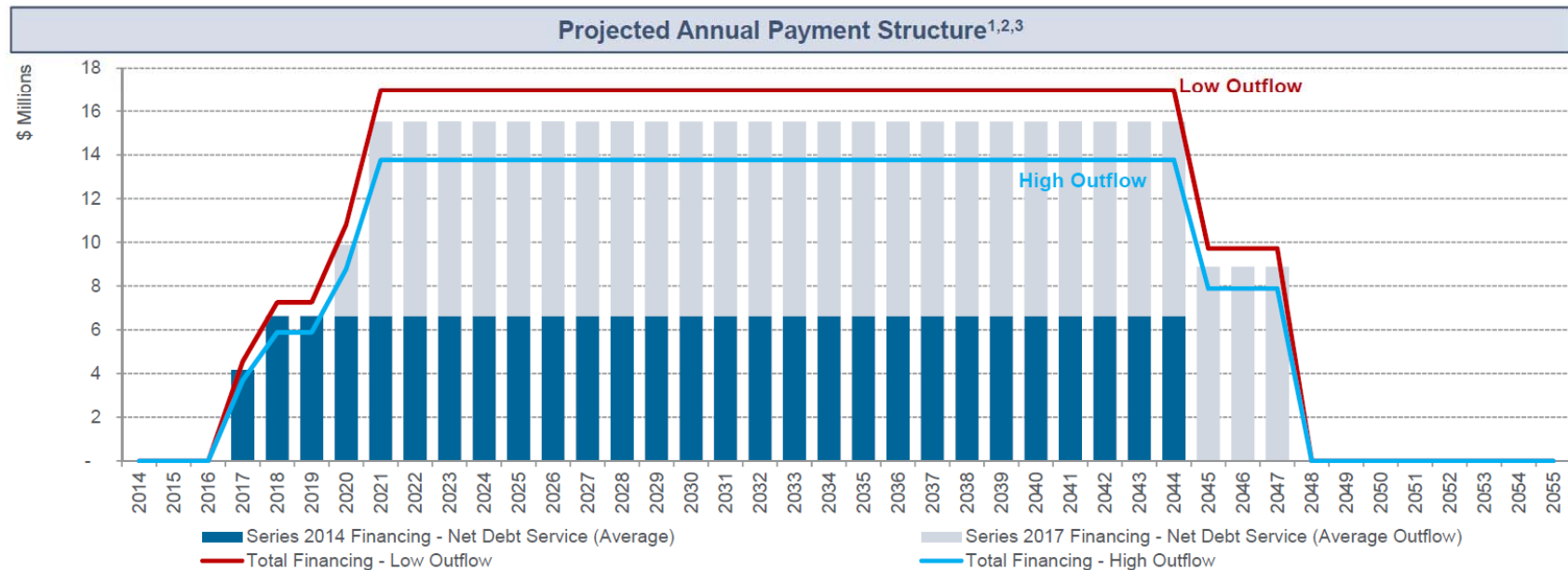
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## 4b. Financing (Interim):

### Potential Cost Allocation with CVP Participation, South of Delta Contractors

Outflow will be an important factor in determining the cost for Westland Water District

Cost Sharing Allocation				Annual Debt Service Cost <sup>1,2,3</sup>											
(\$ Millions)	Low Outflow	High Outflow	Average of High Low	WWD Outflow	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023-48	Total
Exchange Contracts	877,000	877,000	877,000	Low 33.42%	-	-	-	5	7	7	11	17	17	17	\$466
Refuges	300,000	300,000	300,000		-	-	-	-	-	-	-	-	-	-	
M&I @75%	134,000	134,000	134,000	Average 30.55%	-	-	-	4	7	7	10	16	16	16	\$426
Westlands WD	902,294	609,994	756,144		-	-	-	-	-	-	-	-	-	-	
Other SOD Ag	453,092	306,302	379,697	High 27.11%	-	-	-	4	6	6	9	14	14	14	\$378
Other SOD M&I	33,614	22,724	28,169		-	-	-	-	-	-	-	-	-	-	
Total	2,700,000	2,250,020	2,475,010												



(1) For illustrative purposes only. (2) Interest is not capitalized and assumed debt service payments begin during construction. Interest cost assumed to be the 10-year average of the Revenue Bond Index (Approximately 5.00%). (3) Each bond series is assumed to be issued with capitalized interest for 3 years and with a debt service reserve fund ("DSRF") which has increased the bonding amount compared to project cost).

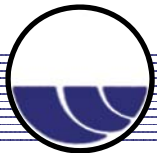




## 4b. Financing (Interim): Agreement

### **Assumptions to be confirmed:**

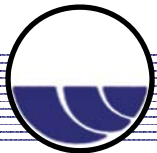
- A mechanism for financing all pre-construction costs (design, permitting, land acquisition and pre-ordering of equipment) after ROD/NOD and prior to commencement of construction (up to [\$1.2] billion) will need to be in place on or about the date of the ROD/NOD so that contractors are not charged on a pay as you go basis;
- While not all pre-construction costs (or all categories of pre-construction costs) may be included in initial financing, initial financing proceeds need to be sufficient to sustain the project for the period of potential litigation with respect to ROD/NOD (three years)- (approximately [\$500] million);
- Because DWR will not be in a position to issue DWR revenue bonds for these pre-construction costs until sometime significantly later than ROD/NOD approval, bonds will be issued by contractors or contractor JPAs (until, in the case of SWC share of costs, DWR validation action is favorably resolved);
- Federal contractor share of bonds will be net of Bureau contribution, if any;
- New or amended funding agreements required to cover pre-construction costs, to address applicability of existing MOU to current pre-construction activities and to address the interaction between MOU and existing funding agreements.
- Financing proceeds need to be available at time ROD/NOD approved to assure no delay in the payment of post - ROD/NOD preconstruction costs;



## 4b. Financing (Interim): Agreement

### Outstanding Issues:

- Will new management structure be in place by early 2014 or do financing documents (including new or amended funding agreements) need to provide flexibility to implement new management structure at a later date?
- Contractors working with DWR legal on issues related to DWR authority to accept and spend state and federal contractor moneys for pre-construction activities and, in the case of state water contractors, collect revenues and repay debt service on the statement of charges.

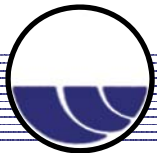


## 5. Value Proposition (Economics):

### Economic Analysis by Brattle Group

(aka Sunding Report, dated 2013 July)

<b>DHCCP (CVP &amp; SWP)</b>	<b>LOS</b>	<b>HOS</b>
Long-term Average Deliveries (TAF)	5,591	4,705
<b>Expected Present Value Benefits (\$ in Millions)</b>		
Water Supply Reliability (\$ millions)	\$16,642	\$15,722
Water Quality Impacts	\$1,789	\$1,819
Seismic Risk Reduction	\$364	\$470
<b>Total Benefits:</b>	<b>\$18,795</b>	<b>\$18,011</b>
Benefit to Cost Ratio:	<b>1.41</b>	<b>1.35</b>





## 5. Value Proposition (Cost/acre-ft.):

Key Assumption: Cost follows the delivery of water

\$ /acre-ft. at DHCCP Level:	Early Long-Term				Late Long-Term			
	LOS		HOS		LOS		HOS	
Early Long Term	5,398	TAF/yr	5,078	TAF/yr	4,541	TAF/yr	4,270	TAF/yr
<b>Scenario 1: BDCP (Public Draft)</b>								
Construction Cost with Debt Service	1,243	\$ M/yr	1,235	\$ M/yr	1,243	\$ M/yr	1,235	\$ M/yr
Annual Operating Cost	45	\$ M/yr	45	\$ M/yr	45	\$ M/yr	45	\$ M/yr
Total Annualized Cost:	1,288	\$ M/yr	1,280	\$ M/yr	1,288	\$ M/yr	1,280	\$ M/yr
<b>Average Annual:</b>	<b>238.6</b>	<b>\$ /acre-ft.</b>	<b>252.1</b>	<b>\$ /acre-ft.</b>	<b>283.6</b>	<b>\$ /acre-ft.</b>	<b>299.8</b>	<b>\$ /acre-ft.</b>
<b>Scenario 2: BDCP with 2-year Delay + \$1.5 B Construction Cost Increase</b>								
Construction Cost with Debt Service	1,397	\$ M/yr	1,397	\$ M/yr	1,397	\$ M/yr	1,397	\$ M/yr
Annual Operating Cost	45	\$ M/yr	45	\$ M/yr	45	\$ M/yr	45	\$ M/yr
Total Annualized Cost:	1,442	\$ M/yr	1,442	\$ M/yr	1,442	\$ M/yr	1,442	\$ M/yr
<b>Average Annual:</b>	<b>267.1</b>	<b>\$ /acre-ft.</b>	<b>284.0</b>	<b>\$ /acre-ft.</b>	<b>317.6</b>	<b>\$ /acre-ft.</b>	<b>337.7</b>	<b>\$ /acre-ft.</b>
<b>Scenario 3: BDCP &amp; Capitalize Construction Interest</b>								
Construction Cost with Debt Service	1,992	\$ M/yr	1,992	\$ M/yr	1,992	\$ M/yr	1,992	\$ M/yr
Annual Operating Cost	45	\$ M/yr	45	\$ M/yr	45	\$ M/yr	45	\$ M/yr
Total Annualized Cost:	2,037	\$ M/yr	2,037	\$ M/yr	2,037	\$ M/yr	2,037	\$ M/yr
<b>Average Annual:</b>	<del>377.3</del>	<del>\$ /acre ft.</del>	<del>401.1</del>	<del>\$ /acre ft.</del>	<del>448.6</del>	<del>\$ /acre ft.</del>	<del>477.1</del>	<del>\$ /acre ft.</del>

NOTE: Costs in 2012 dollars

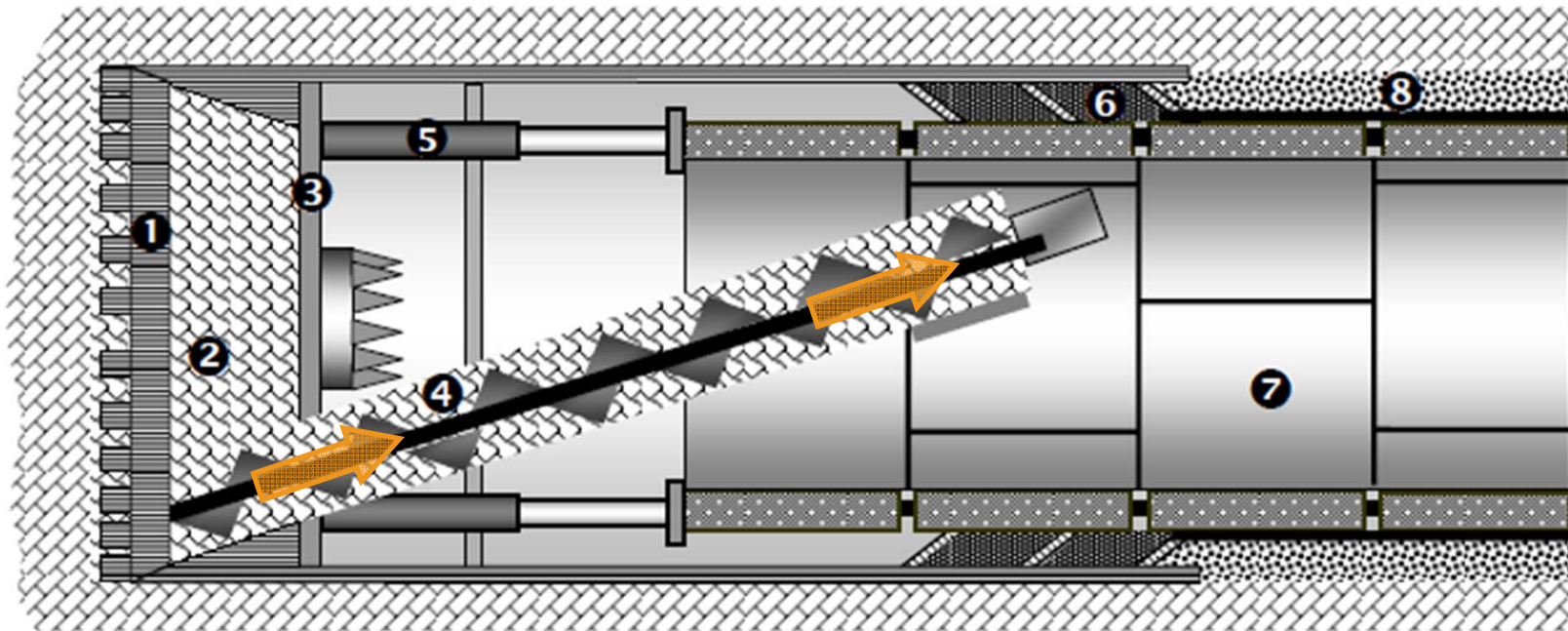
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## 6. Questions & Answers:



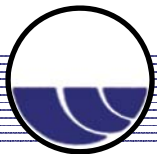
# Q&A How a TBM Works



❶ Cutterhead  
❷ Working Chamber  
❸ Pressure Wall

❹ Screw conveyor  
❺ Thrust Arm  
❻ Tail sealant

❼ Segments  
❽ Annulus Grout





# Q&A What is Tunnel Muck?

'Native' Material



DHCCP  
Baseline Soil Conditioning  
Bulk Sample 2B  
Near Field Water Content, 33 %

Conditioner Just Applied



Conditioner at 'full strength'

