Interlake Tunnel and Spillway Modification

DWR Presentation

10/6/16

Agenda

1. Introductions
2. Project description and background
3. Project Costs
4. Project Schedule
5. Identification of Project Phases
   - Phase I – activities Pre Proposition 218 vote
   - Phase II – activities Post Proposition 218 vote
6. Accomplishments to date
7. Actions required to complete Phase I [including the 218 vote]
8. Actions required to complete Phase II

Introductions

Project Owner

EPC Consultants, Inc

Program Management

HOLLENBECK CONSULTING

Phenix
Environmental Planning

Conceptual Engineering

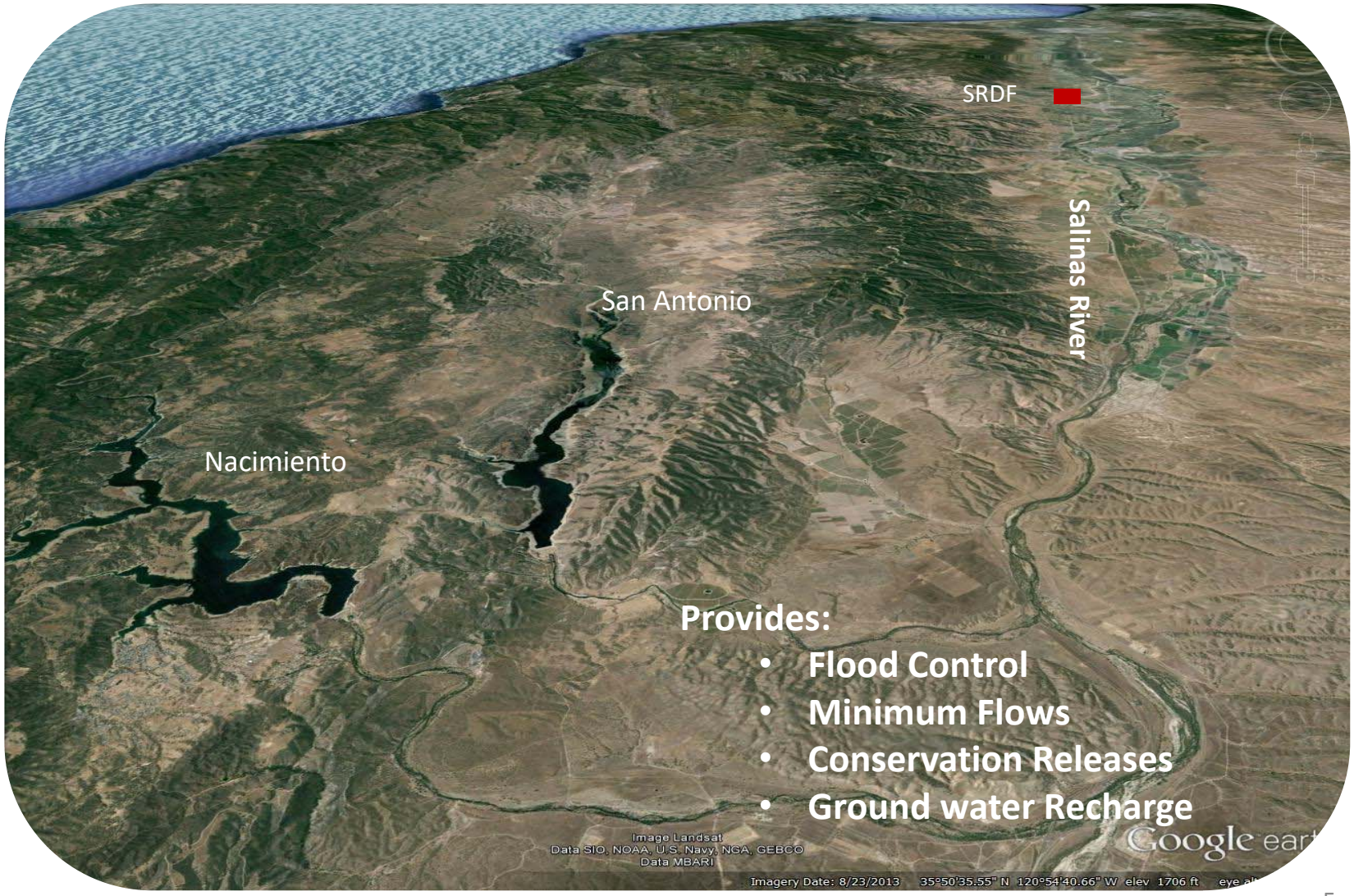
Horizon
WATER and ENVIRONMENT

Environmental services

Project Background, Description and Function

Salinas Valley Surface Water Supply

2 reservoirs, Salinas River, & Salinas River Diversion Facility (SRDF)



Tunnel has 38 year history from 1978

4-4-78 SAL-CAL

Report on waste spurs action on dam tunnel

About 126,000 acre-feet of water was wasted in required releases from Nacimiento Dam this year, much of which could have been saved with a water tunnel from Nacimiento to San Antonio Lake.

That revelation, made to the Salinas Valley Water Advisory Commission Monday night, played a part in the commission's decision to recommend continued study of a tunnel-power project at the lakes.

The commission also voted to recommend hiring a financial consultant to study whether it would pay to build the project with county resources rather than rely on financing by a power company.

Loran Bunte Jr., district

the power plant itself.

But Willer said it might pay the district to finance the construction locally because of the expected dramatic rise in the price of power in the next 30 years.

With financing by a power buyer, the price would be frozen during that period, Willer said, But if the district finances it, the price could be raised, yielding dramatic increases in revenue.

Willer said the prevailing price of power is 2.7 cents per kilowatt-hour today, but is expected to rise to 10 cents by the year 2000 and 15 cents by 2010.

That would mean that the county could get $700,000 a year for its power in the first 10 years, $1.3 million a year for

Nacimiento Lake's capacity is 350,000 acre-feet, but the top 150,000 acre-feet is set aside for flood control, requiring releases when the level goes above 200,000 acre-feet during flood season.

Bunte said that 50,000 acre-feet could have been saved by releasing it into San Antonio with a gravity flow nine-foot diameter tunnel.

1991 Analysis

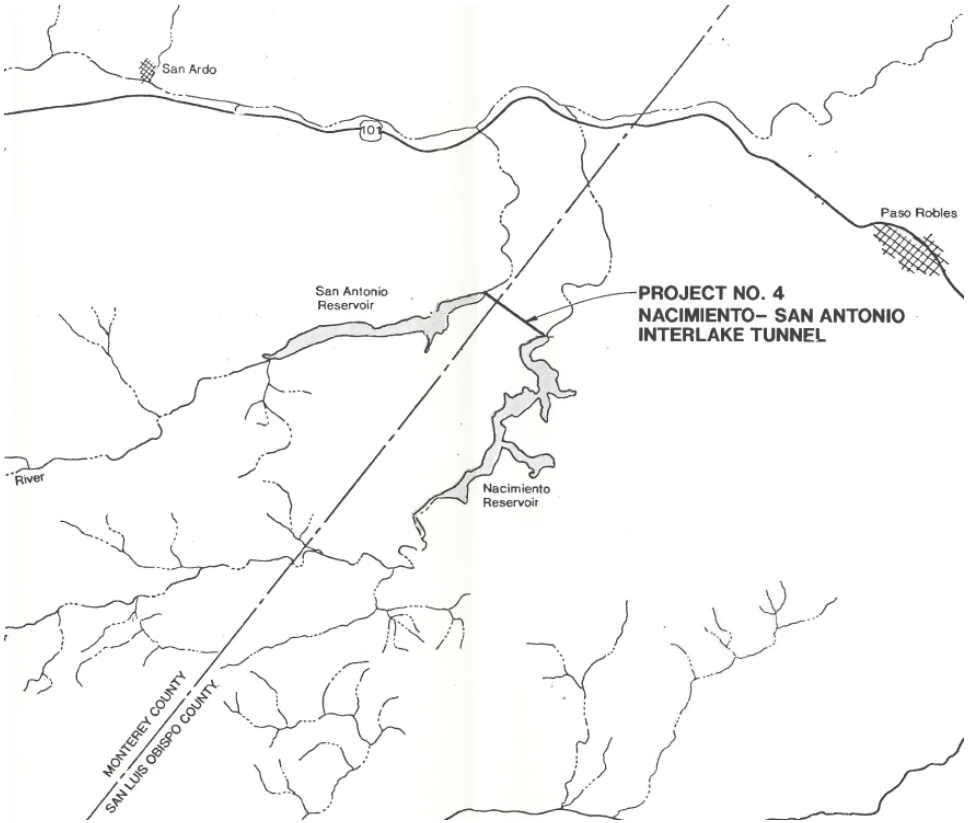
MONTEREY COUNTY
WATER RESOURCES AGENCY

WATER CAPITAL FACILITIES PLAN

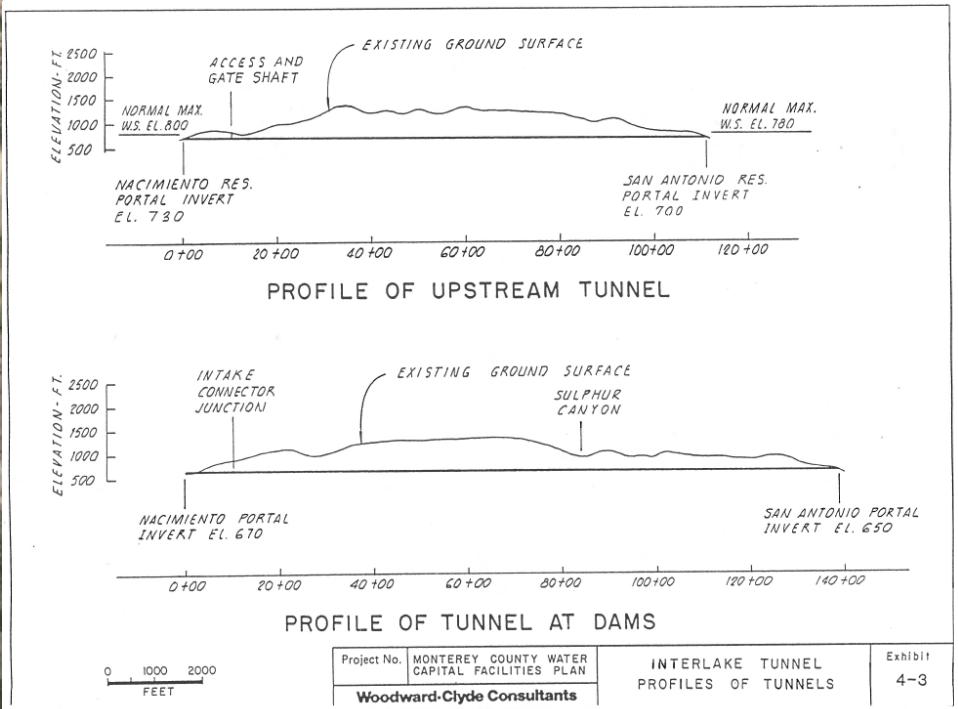
JULY 1991

VOLUME I REPORT

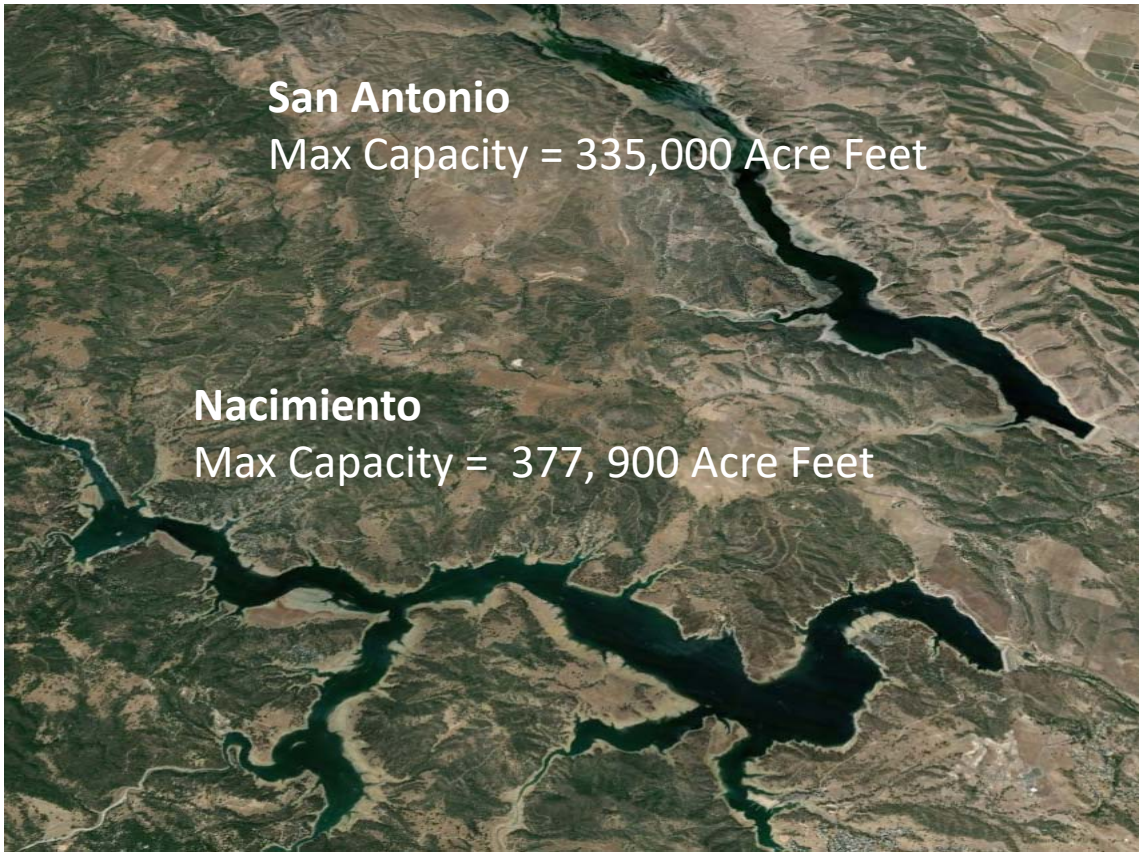
BOYLE ENGINEERING CORPORATION



1991 tunnel studies



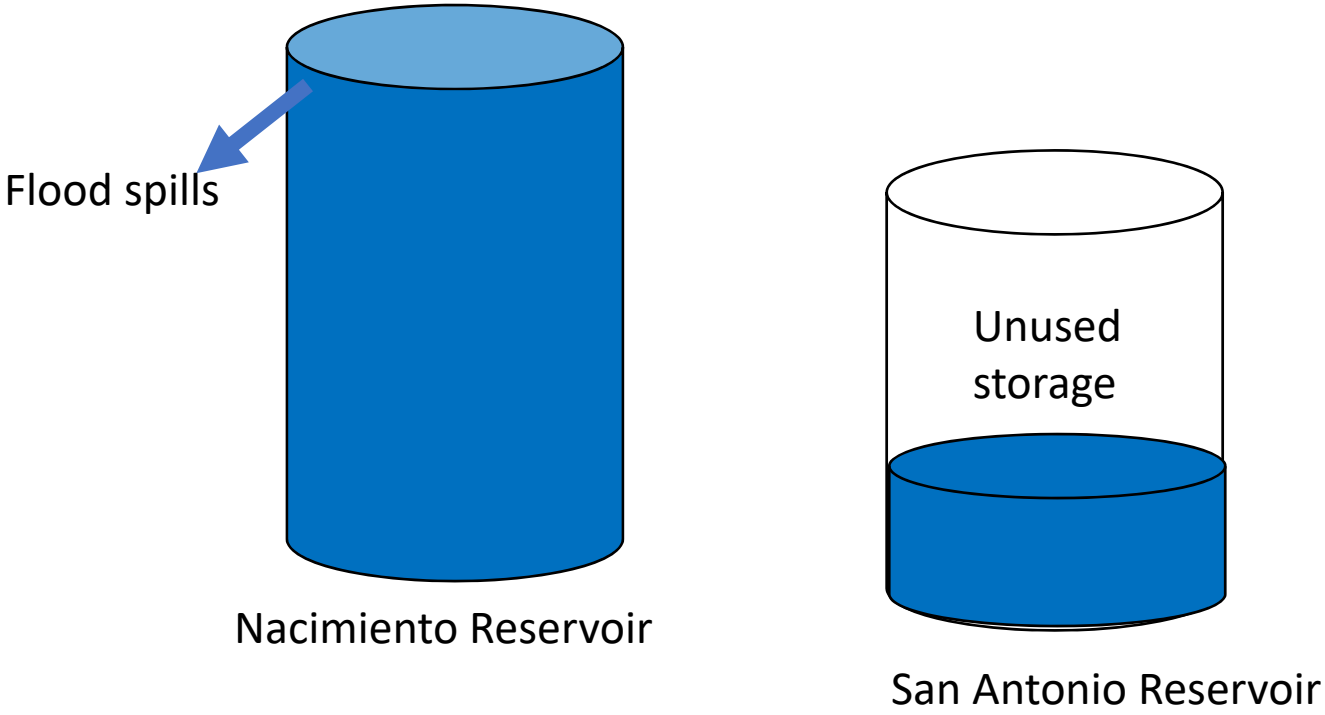
Reservoirs Features



Description	Average Annual Amounts (AFY)
Average annual controlled release from reservoirs (baseline)	200,000
Less Evapotranspiration & Conveyance losses	-40,000
SRDF deliveries	-6,000
Ground water recharge	154,000

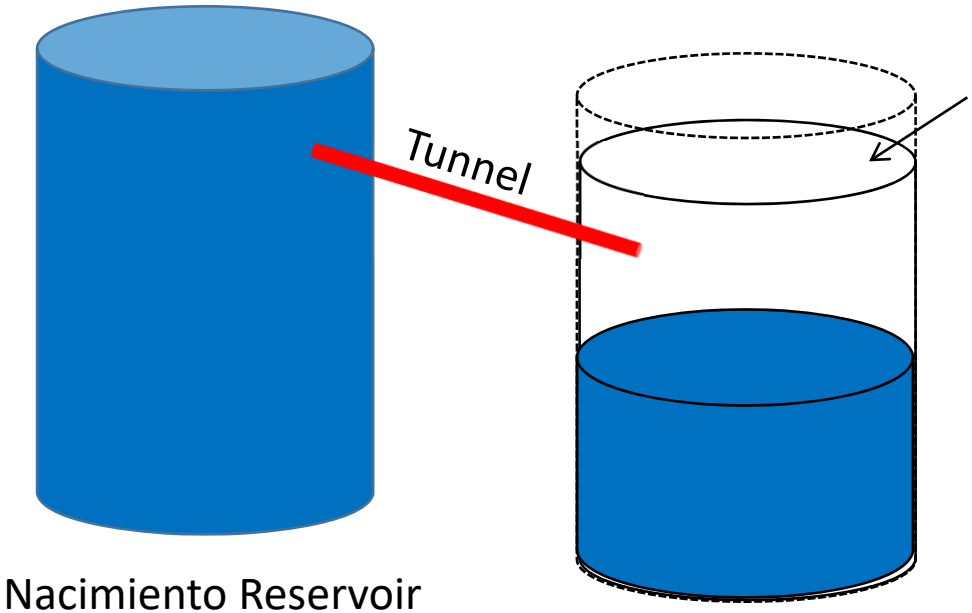
Current Situation at Reservoirs

- Nacimiento fills 3x faster than San Antonio
- San Antonio has unused storage
- **Excess water spilled to ocean**



Interlake Tunnel Project Fundamentals

Increases net storage of reservoirs
provides flood control and reduces flood spills

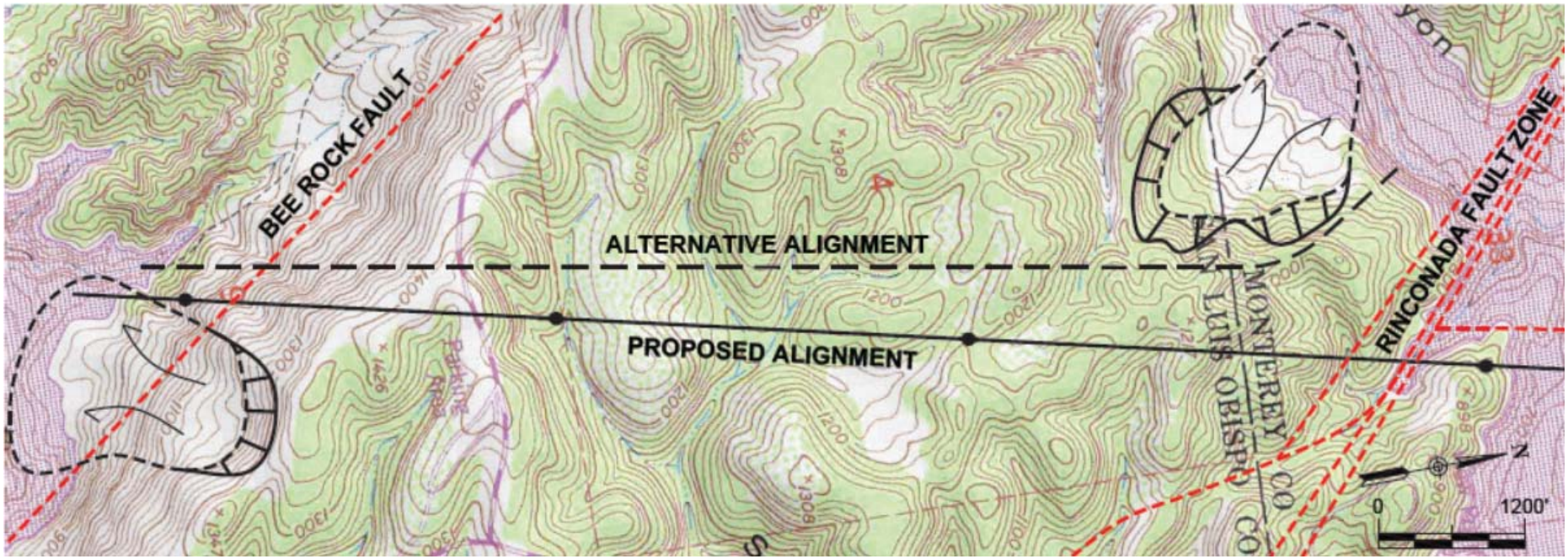


59,000 AF additional storage by raising San Antonio spillway 10’

Increased net storage

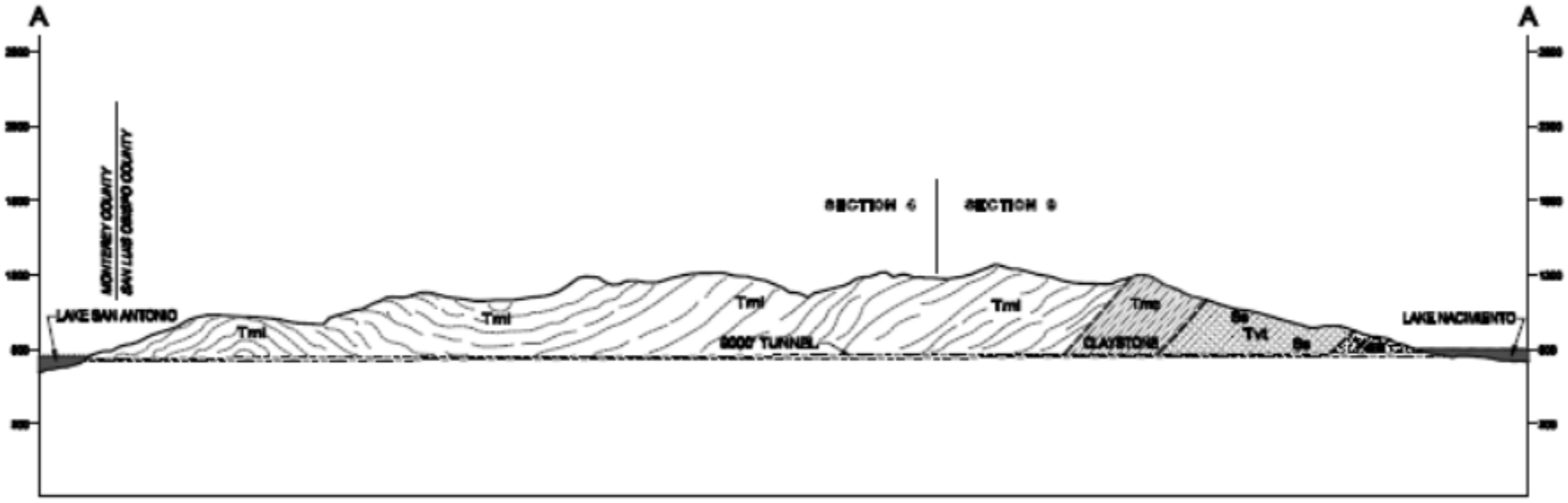
Interlake Tunnel

Tunnel alignment options



Sample geologic profile

Upper Cretaceous and lower Tertiary Rocks – Monterey Formation



Portals and Tunnel Profile

(conceptual)

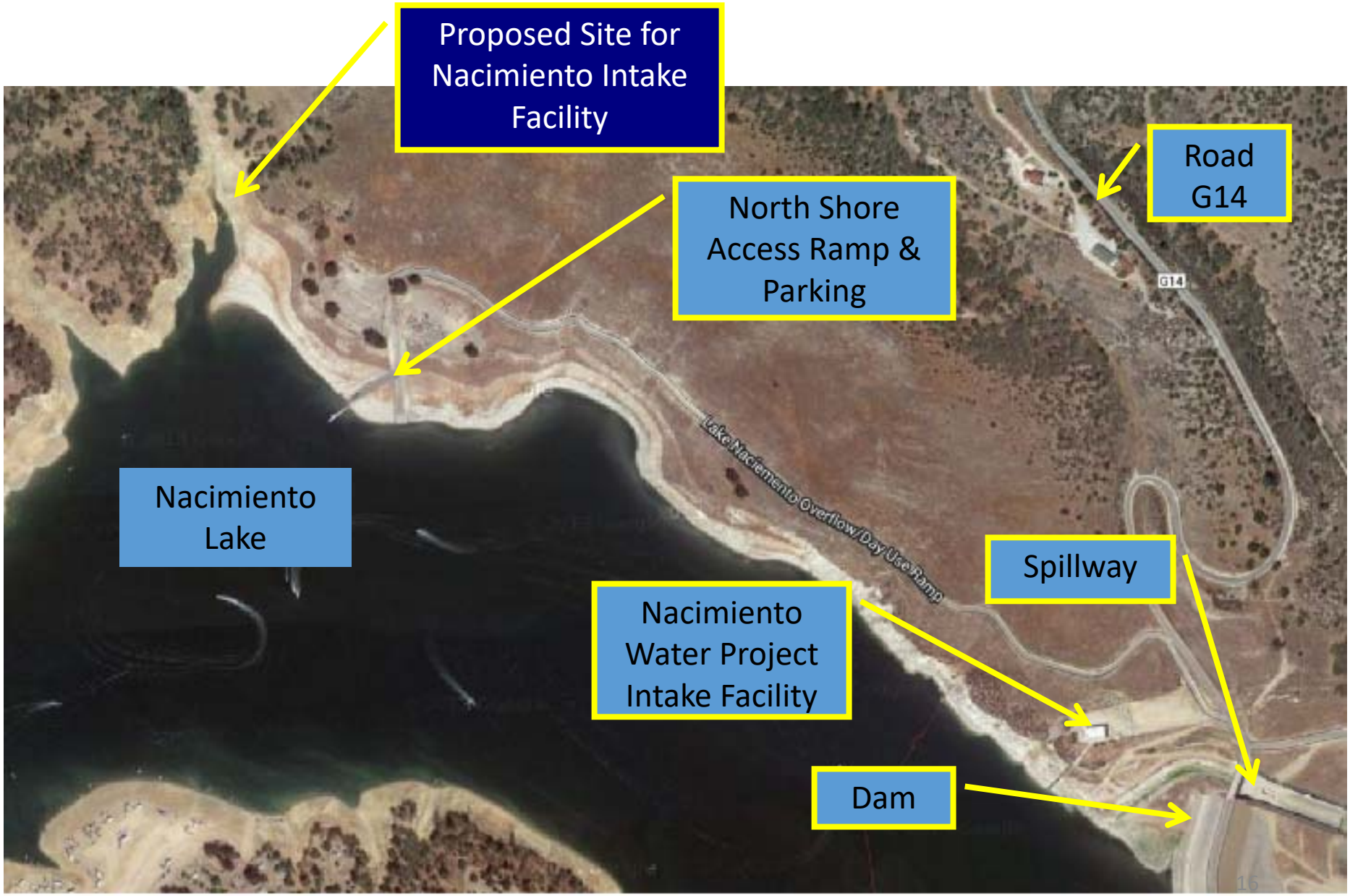
Nacimiento portal

Portal Invert Elevation (~745’)
Spillway elevation ~ 800’

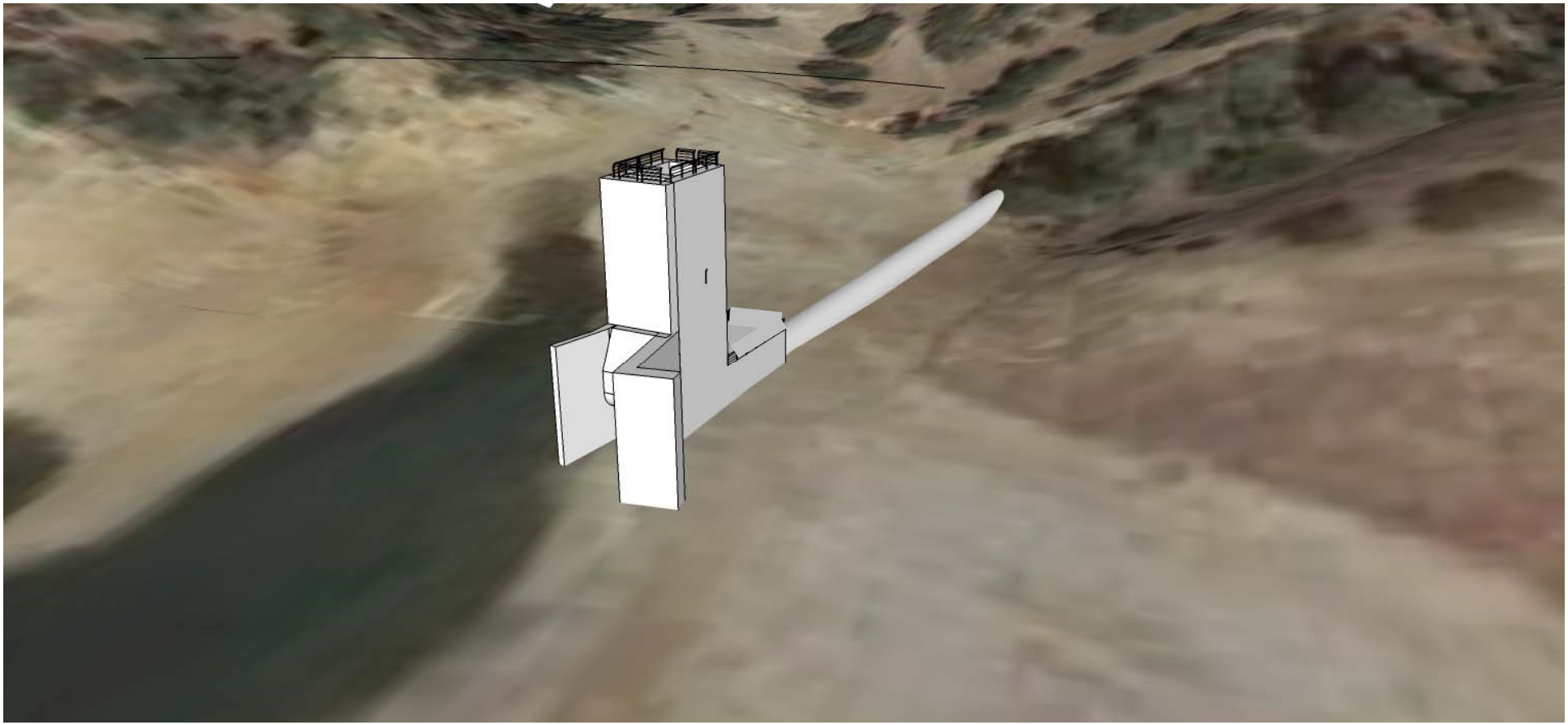
San Antonio portal

Portal Invert Elevation (~695')
Spillway elevation ~ 780’

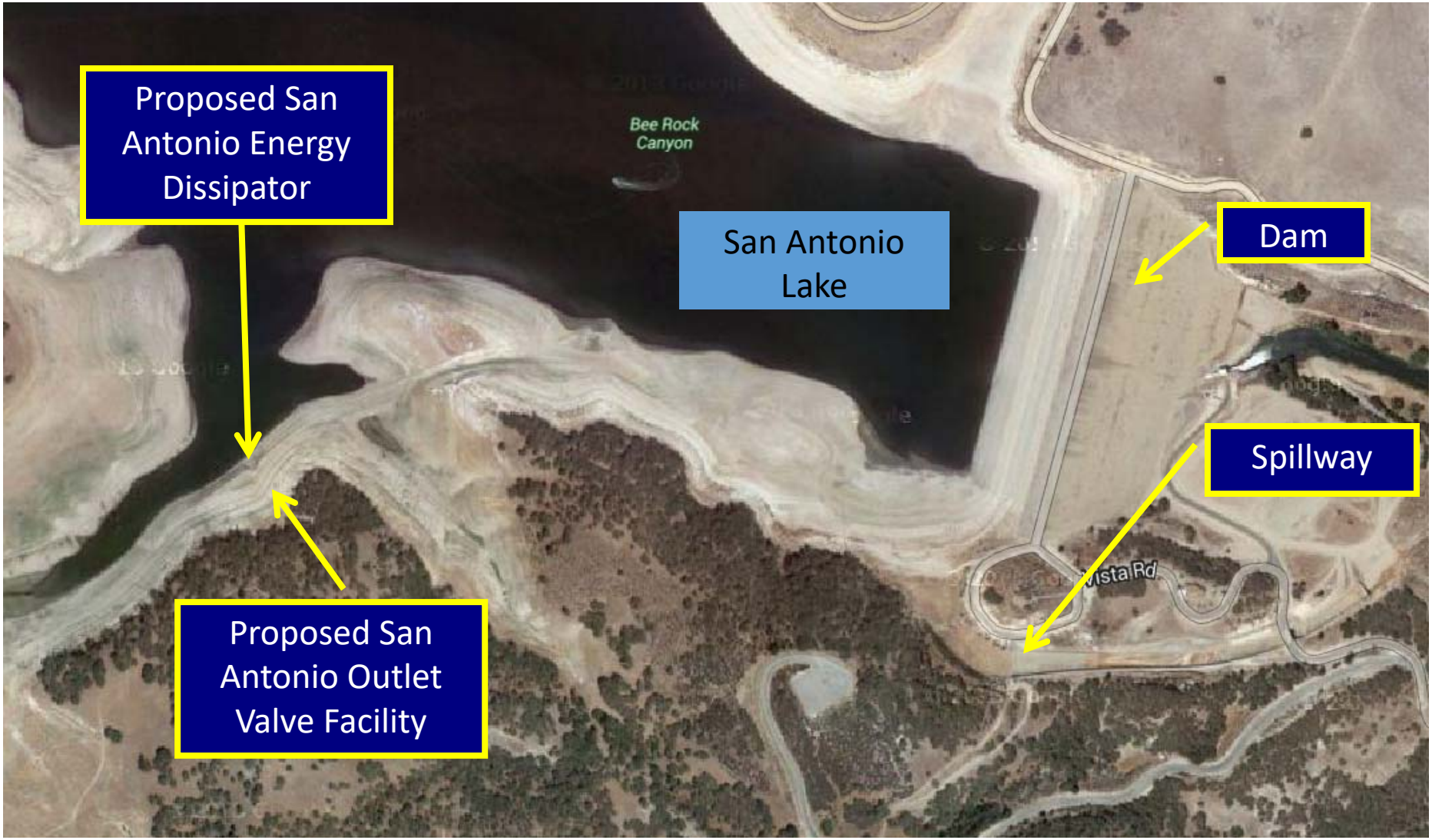
Nacimiento proposed intake



Nacimiento intake structure concept

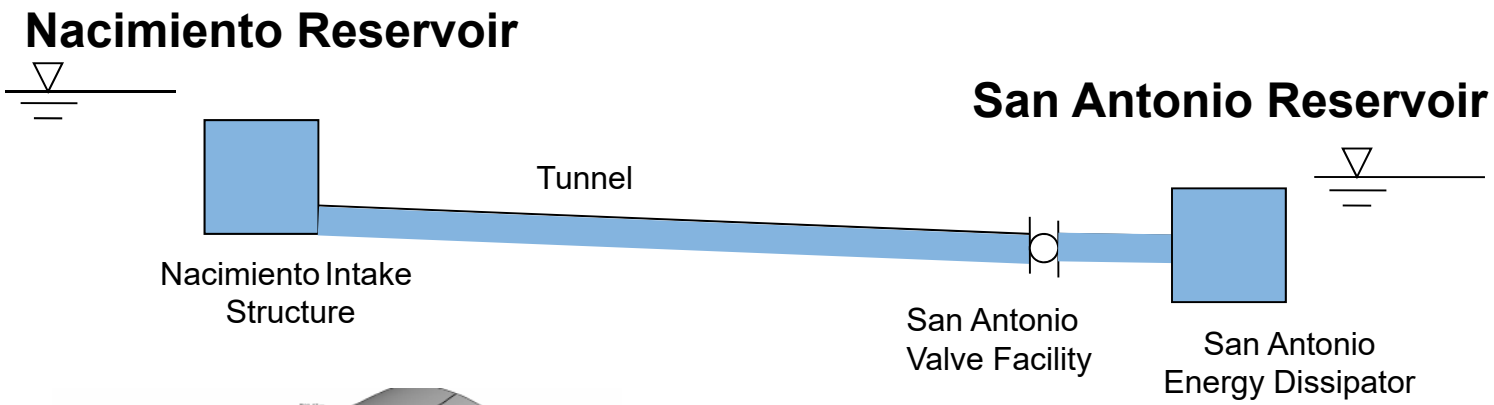


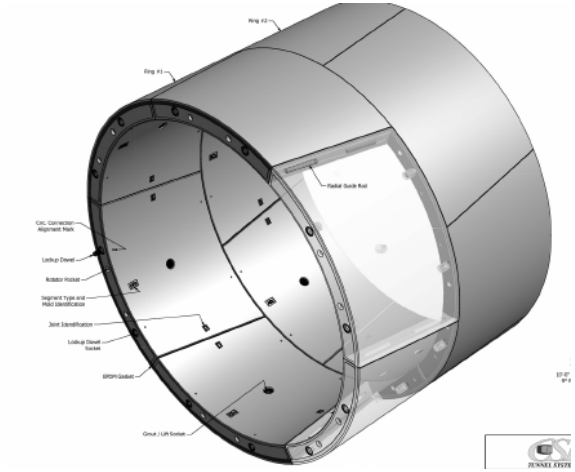
San Antonio Hydraulic Structures

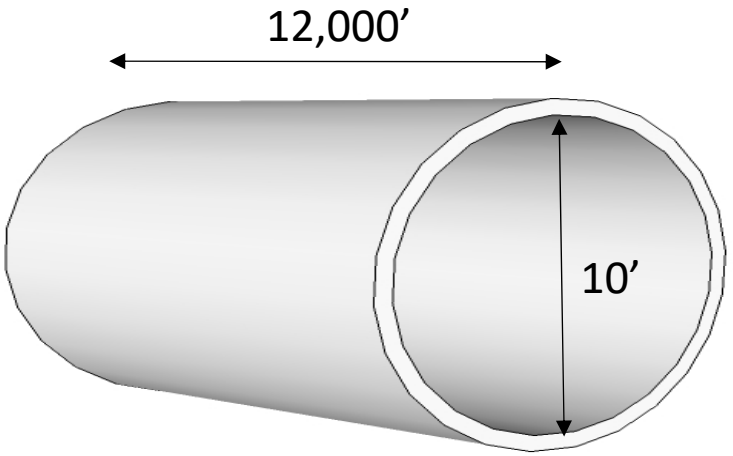


Interlake Tunnel Concept

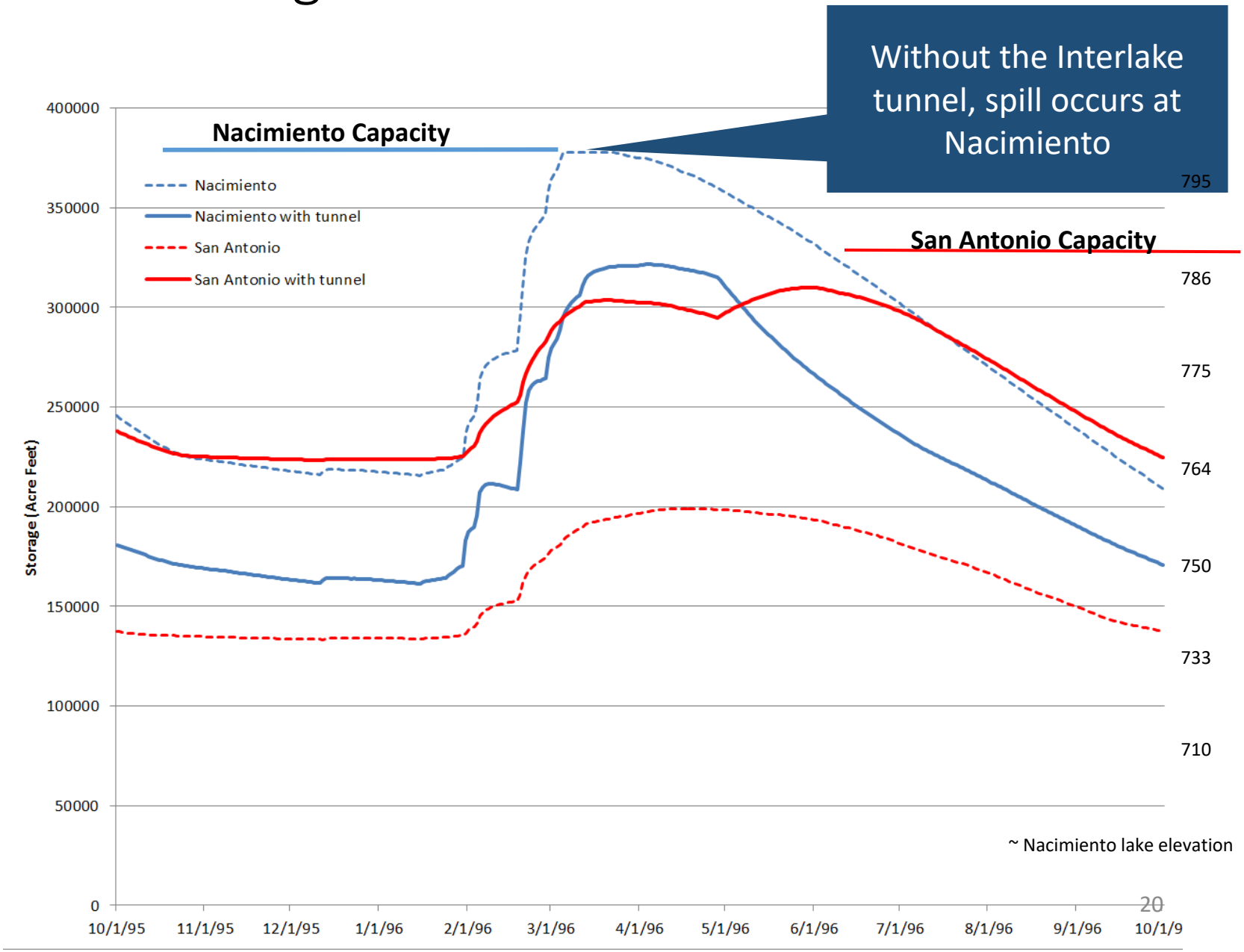
Tunnel maximum flow capacity ~ 1,700 CFS







Transfers Storage from Nacimiento to San Antonio



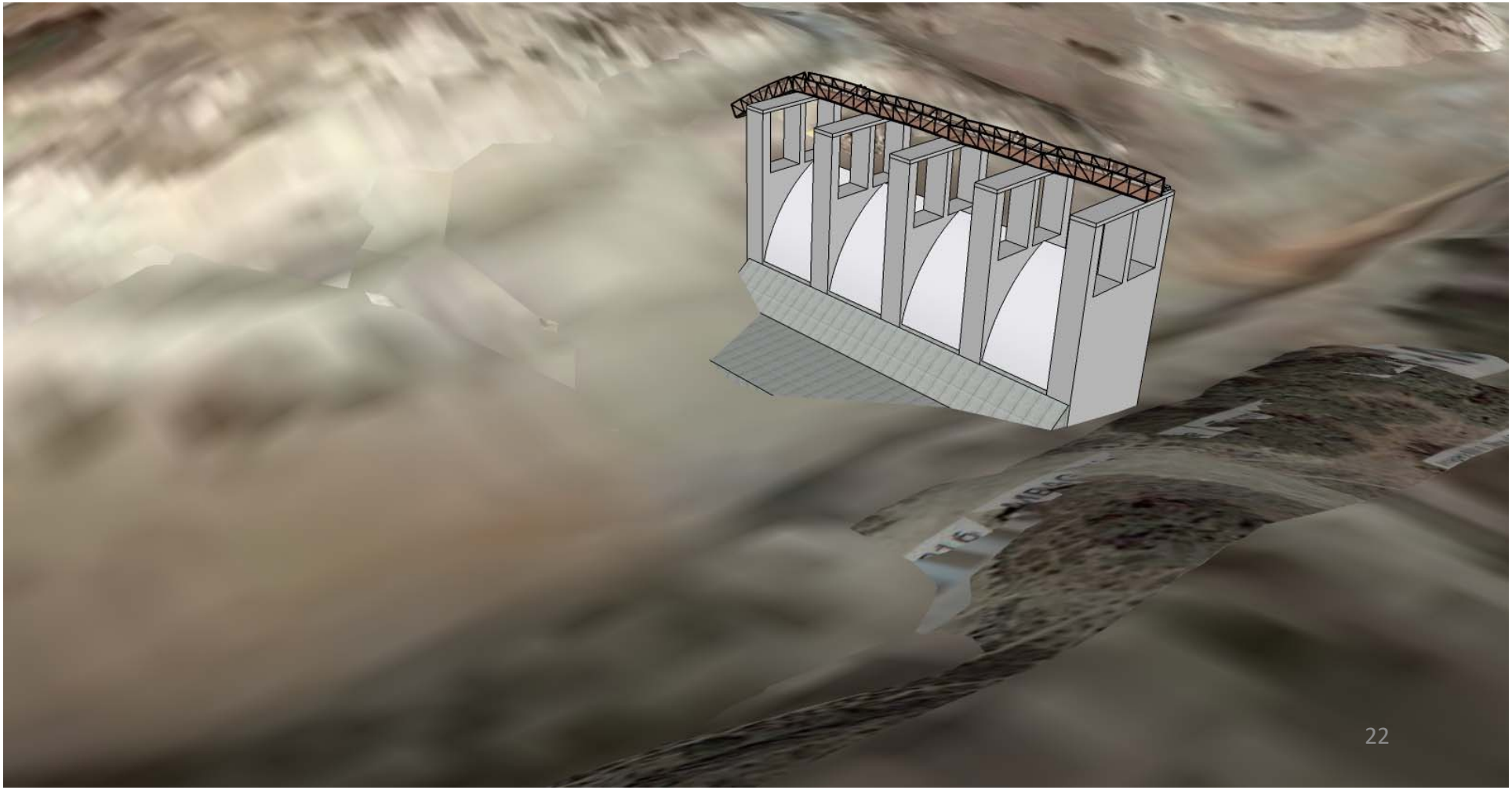
San Antonio Spillway Modification

Additional Storage Opportunity

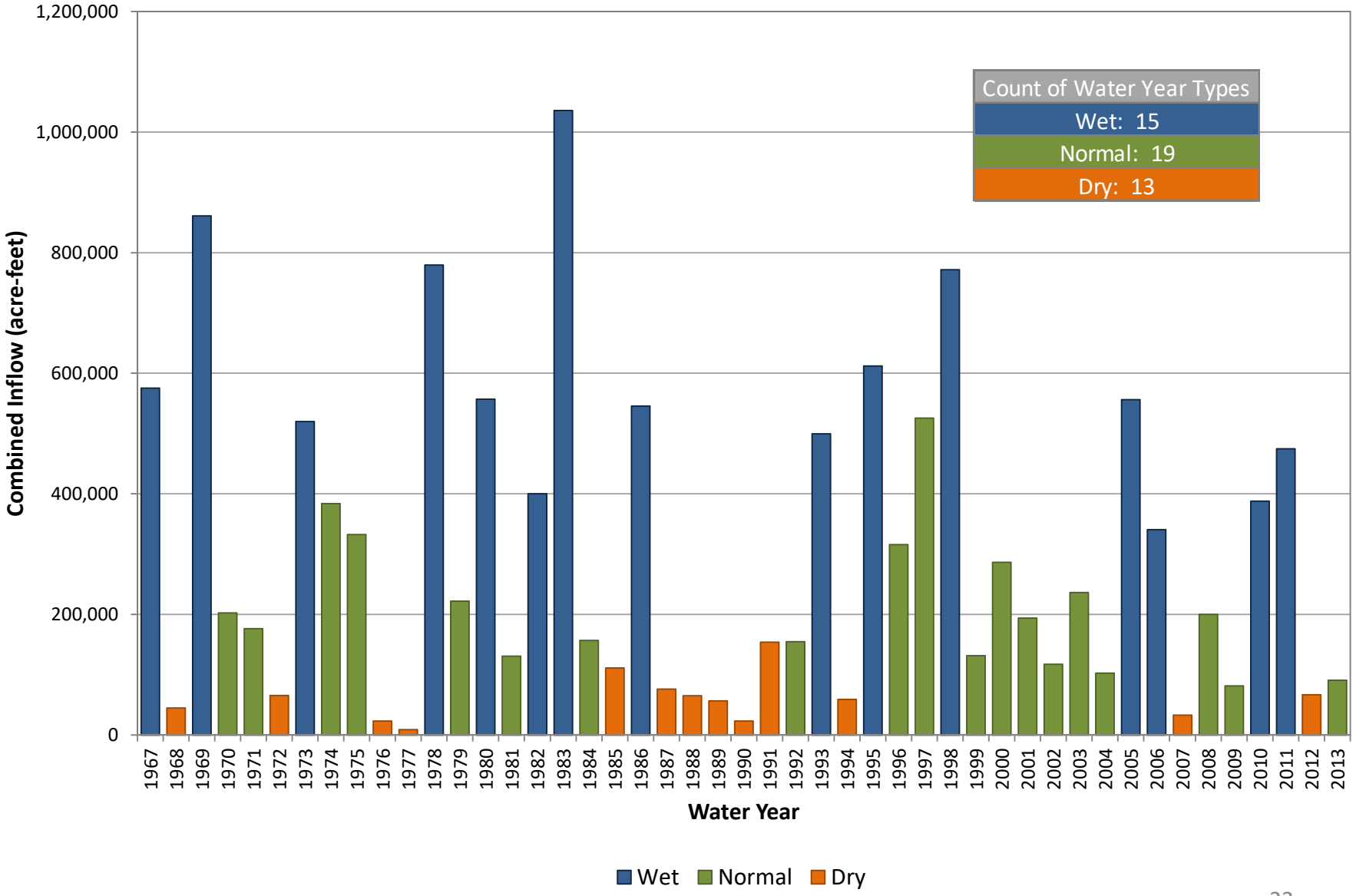
Opportunity to increase storage capacity in San Antonio reservoir 59,000 acre feet (18%)

Modifying the spillway with a crest control device provides the effect of “raising the dam” up 10 feet.

Spillway gates concept

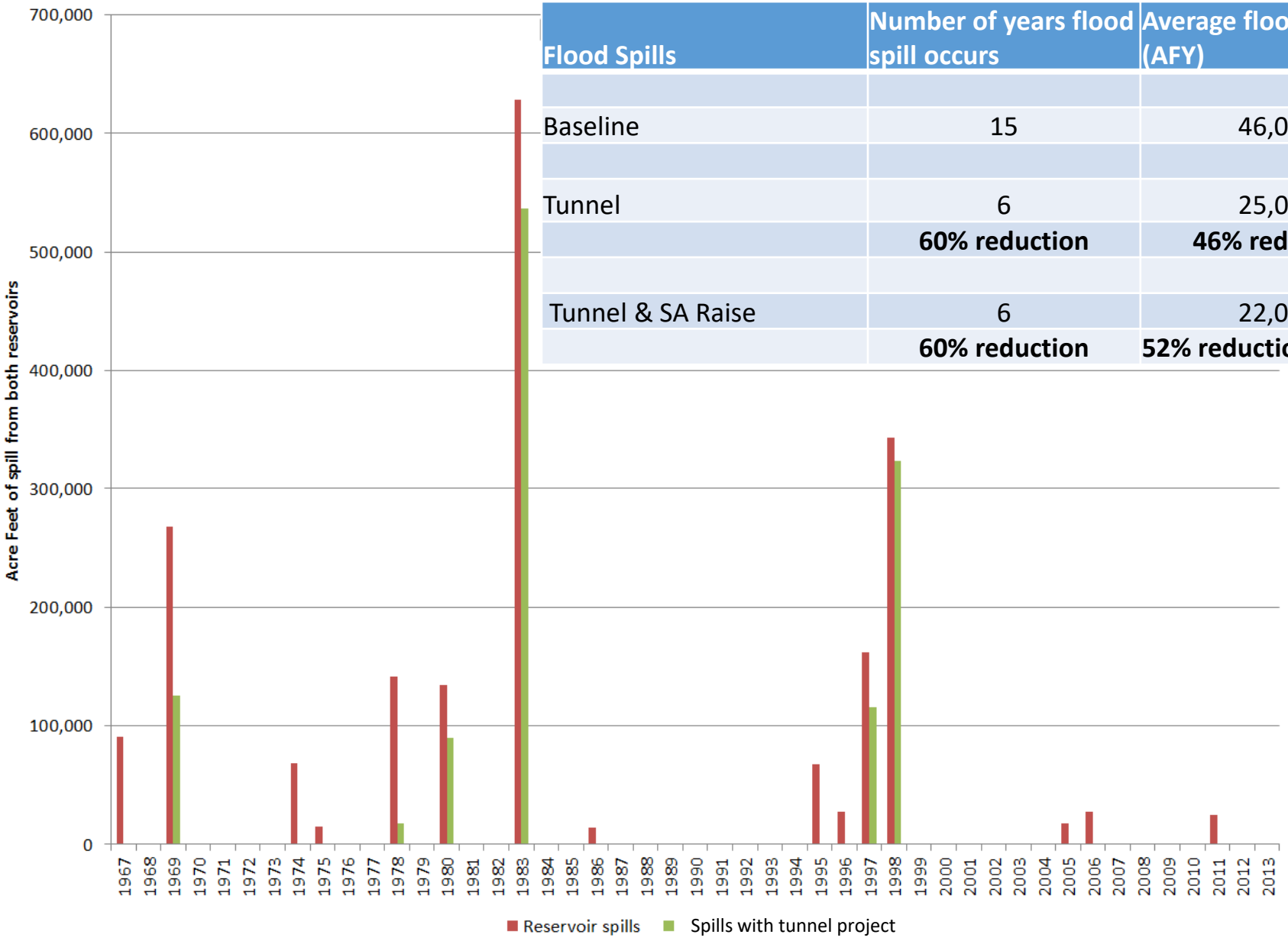


Combined Nacimiento and San Antonio Inflow by Water Year Type (Water Years 1967 - 2013)



Flood Control Benefit

Flood Spills	Number of years flood spill occurs	Average flood volume (AFY)
Baseline	15	46,000
Tunnel	6	25,000
	60% reduction	**46% reduction**
Tunnel & SA Raise	6	22,000
	60% reduction	**52% reduction**



Project modeling results

1. Reservoir simulation modeling performed on historical data
2. Forecast of <u>average</u> annual benefits (based on current demands):
   - Reduction in flood spills creates more stored water – 11,860 acre-feet
   - Increased conservation releases – 8,100 acre-feet

Table 4

AVERAGE ANNUAL

Nacimiento-San Antonio Interlake Tunnel and San Antonio Spillway Modification

Operational Results, Acre-Feet Annually

(Existing Downstream Conservation Demands)

Project Configuration	Existing Conservation Releases	Increase in Conservation Releases	Spill Reduction	Annual Tunnel Transfers
Tunnel	182,150	5,390	7,740	50,490
Tunnel with San Antonio Spillway Modification		8,100	11,860	53,840

Modeling results

Dry year releases increase an average of 20,950 acre-feet

Table 5
DRY YEARS[2]
Nacimiento-San Antonio Interlake Tunnel and San Antonio Spillway Modification
Operational Results, Acre-Feet Annually
(Existing Downstream Conservation Demands)

Project Configuration	Dry Year Existing Conservation Releases	Dry Year Increase in Conservation Releases	Dry Year Spill Reduction	Dry Year Annual Tunnel Transfers
Tunnel	135,790	14,810	0	220
Tunnel with San Antonio Spillway Modification		20,950	0	1,340

Modeling results

Adjusting demands for <u>average</u> added beneficial water use:

- Reduction in flood spills creating more stored water – 22,200 acre feet
- Increased conservation releases – 20,690 acre feet

Table 6

AVERAGE ANNUAL

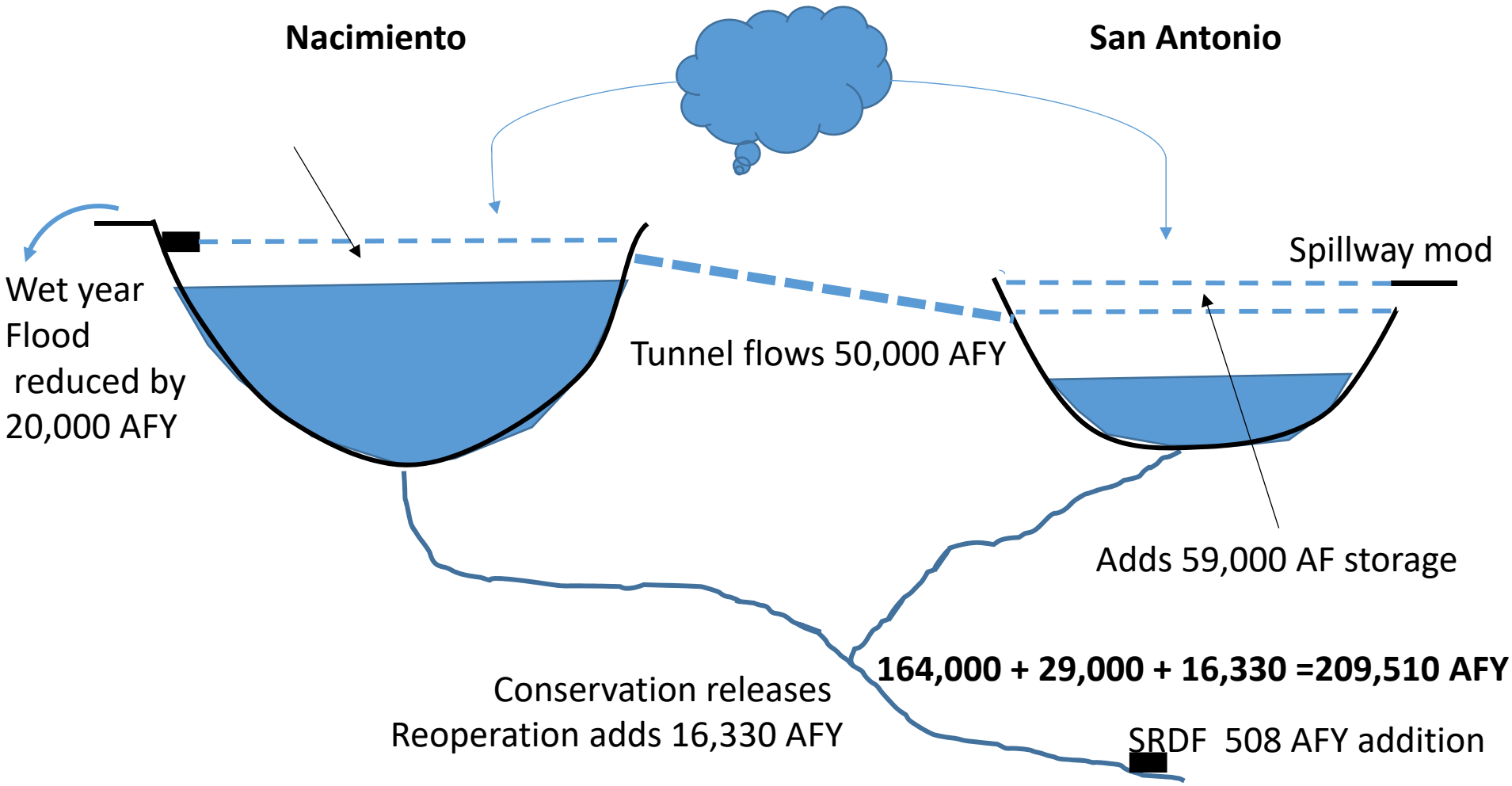
Nacimiento-San Antonio Interlake Tunnel and San Antonio Spillway Modification

Operational Results, Acre-Feet Annually

(Existing Downstream Conservation Demands and Additional Beneficial Uses)

Project Configuration	Existing Conservation Releases	Increase in Conservation Releases	Additional Beneficial Use (Dec - Mar)	Increase in Total Releases	Spill Reduction	Annual Tunnel Transfers
Tunnel	182,150	1,350	14,940	16,330	17,130	46,530
Tunnel with San Antonio Spillway Modification		2,060	18,630	20,690	22,200	50,180

Tunnel and spillway modification



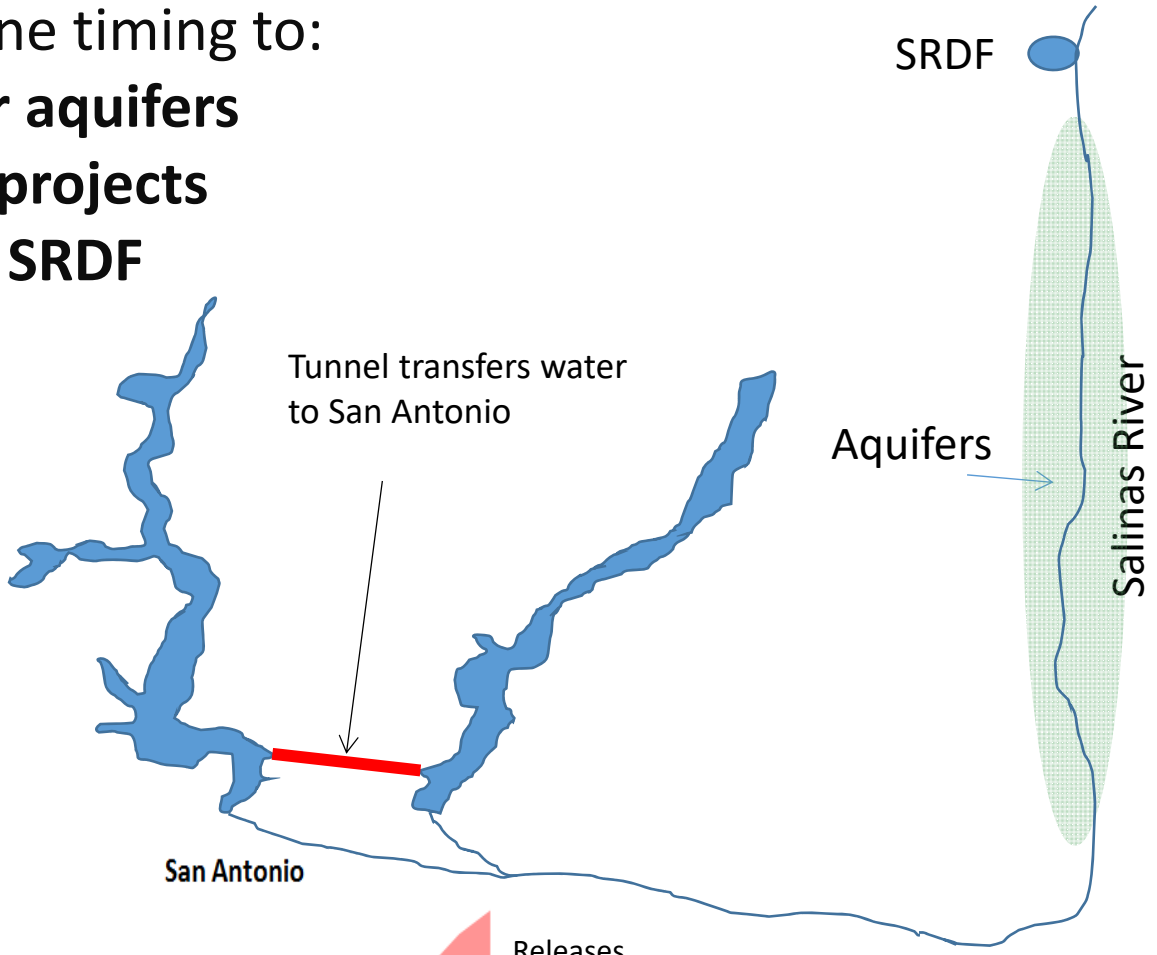
Water supply sustainability

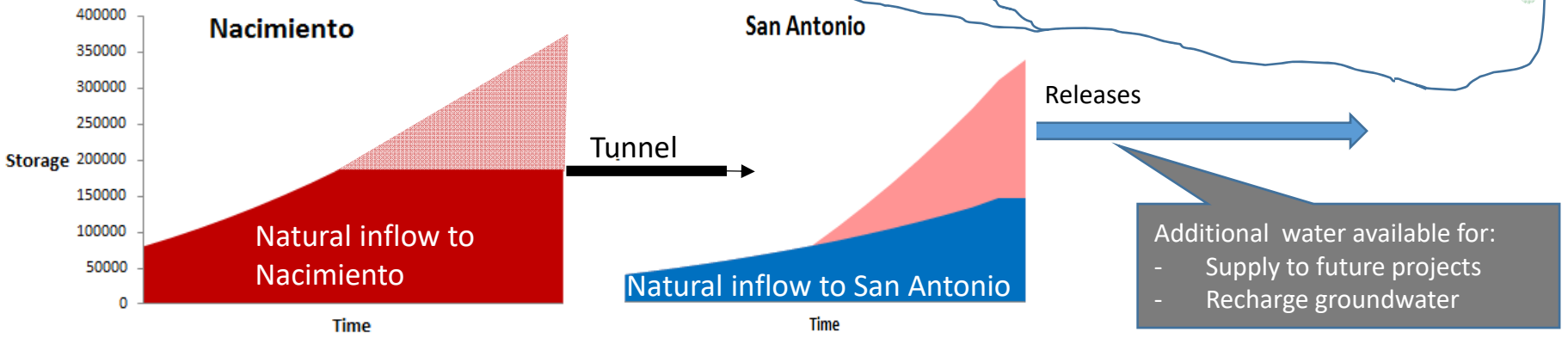
Release water at opportune timing to:

1) **Recharge groundwater aquifers**
2) **Supply suite of future projects**
3) **Augment deliveries to SRDF**

Benefits Include

1) Increased flood control
2) Increased supply of surface water
3) Increased downstream flows for steelhead





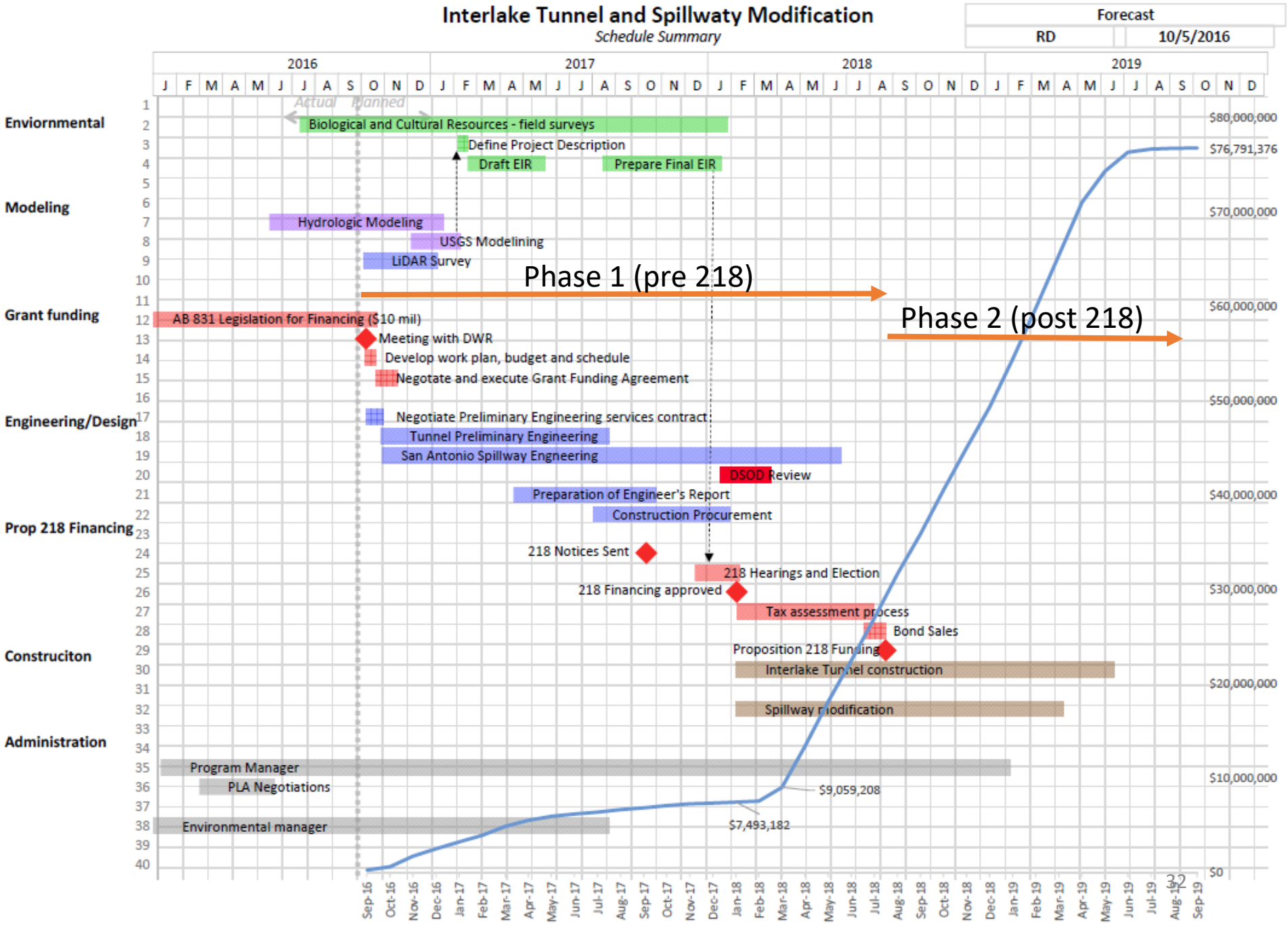
Project's Multiple Benefits

- Minimize flood releases from Nacimiento and reduce associated downstream flood damages
- Increase overall water supply available from both reservoirs
- Improve hydrologic balance of the Salinas Valley Groundwater Basin; reduce seawater intrusion
- Continue to meet environmental flow requirements
- Minimize impact to hydroelectric production
- Preserve recreational opportunities
- Protect agricultural capability and prime agricultural land

Project Budget

	Interlake Tunnel and Spillway Modification Budget and Cash Flow Forecast				($000)	10/5/2016
	Task Name	**Budget**	**Costs to Date**	**DWR Phase 1**	**DWR Phase 2**	**MCWRA**
1	Environmental and Permitting	$1,738	$218	$1,520		
2	Interlake Tunnel Engineering	$2,095		$2,095		
1	San Antonio Spillway Engineering	1,830		$1,830		
3	Preparation of Engineer's Report	$89		$89		
2	Construction Procurement	$84		$84		
4	Engineering support to DB RFP	$37		$37		
3	Right of Way Easements	$244		$244		
5	Proposition 218 Financing	$342				$342
4	Environmental and Engineering	$243	$83	$160		
6	Program Manager	$1,817	$653	$879	$285	
7	Environmental manager	$265	$138	$127		
8	Hydrologic Modeling	$270	$100	$170		
7	Res Ops Engineering support	$67		$67		
9	LiDAR Survey	$150		$150		
8	PLA Negotiations	$37	$37			
10	USGS Modeling Consultant	$150		$150		
9	Conceptual Engineering	$465	$209	$256		
11	Tunnel Construction	$42,306			$42,306	
12	Fish screen construction	$5,000			$5,000	
11	Spillway Modification Construction	$15,000			$15,000	
13	Construction Management	$1,200			$1,200	
12	Capitalized interest during construction	$4,800			$4,800	
	Total	**$78,230**	**$1,439**	**$7,858**	**$68,591**	**$342**

DWR Phase 2 $2,141


Interlake Tunnel and Spillwaty Modification
Schedule Summary
Forecast
RD
10/5/2016
2016
2017
2018
2019
Actual
Planned
Enviornmental
Biological and Cultural Resources - field surveys
Define Project Description
Draft EIR
Prepare Final EIR
Modeling
Hydrologic Modeling
USGS Modelining
LiDAR Survey
Phase 1 (pre 218)
Phase 2 (post 218)
Grant funding
AB 831 Legislation for Financing ($10 mil)
Meeting with DWR
Develop work plan, budget and schedule
Negotate and execute Grant Funding Agreement
Engineering/Design
Negotiate Preliminary Engineering services contract
Tunnel Preliminary Engineering
San Antonio Spillway Engneering
DSOD Review
Preparation of Engineer's Report
Construction Procurement
Prop 218 Financing
218 Notices Sent
218 Hearings and Election
218 Financing approved
Tax assessment process
Bond Sales
Proposition 218 Funding
Construciton
Interlake Tunnel construction
Spillway modification
Administration
Program Manager
PLA Negotiations
Environmental manager
$9,059,208
$7,493,182
$80,000,000
$76,791,376
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$60,000,000
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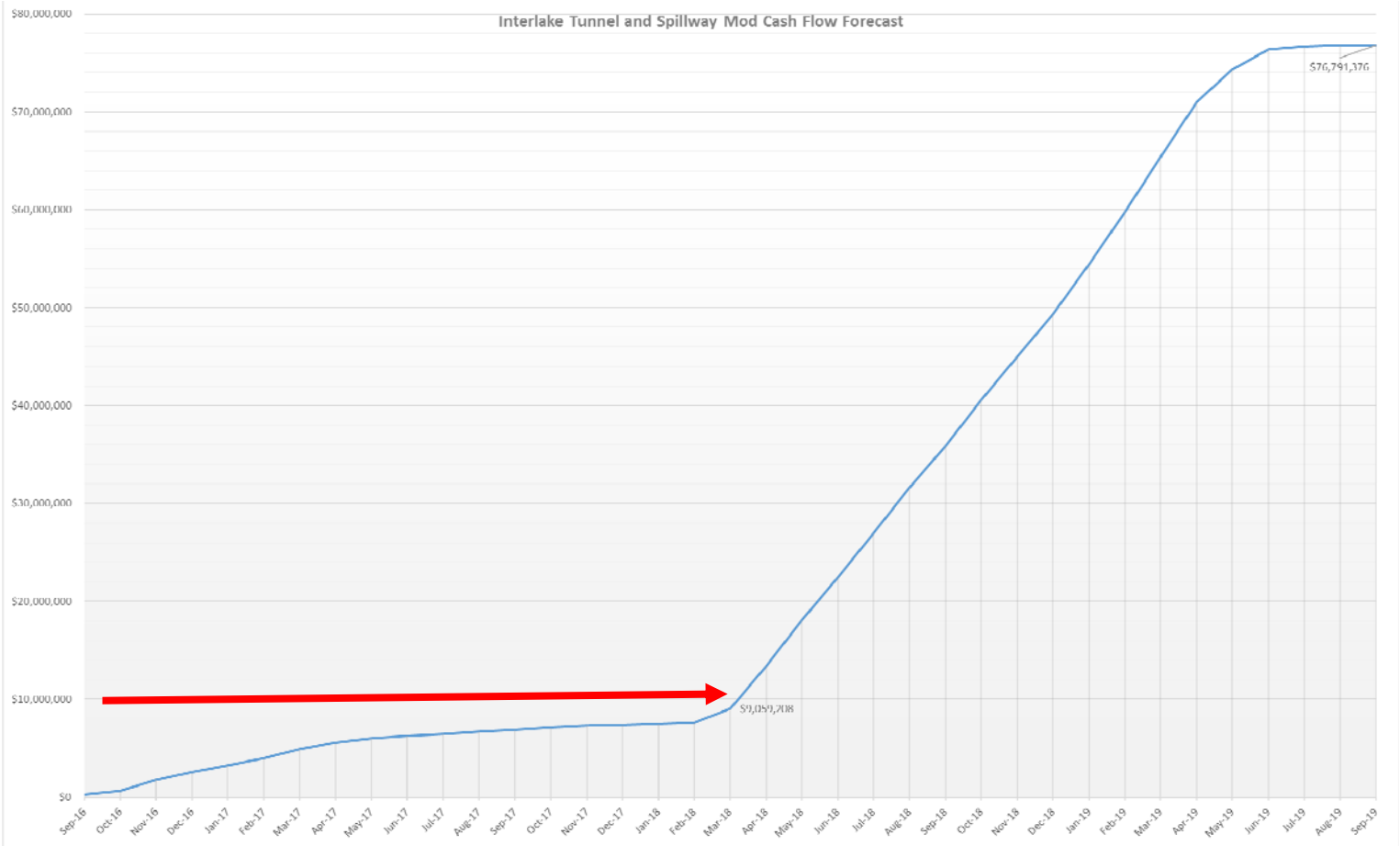
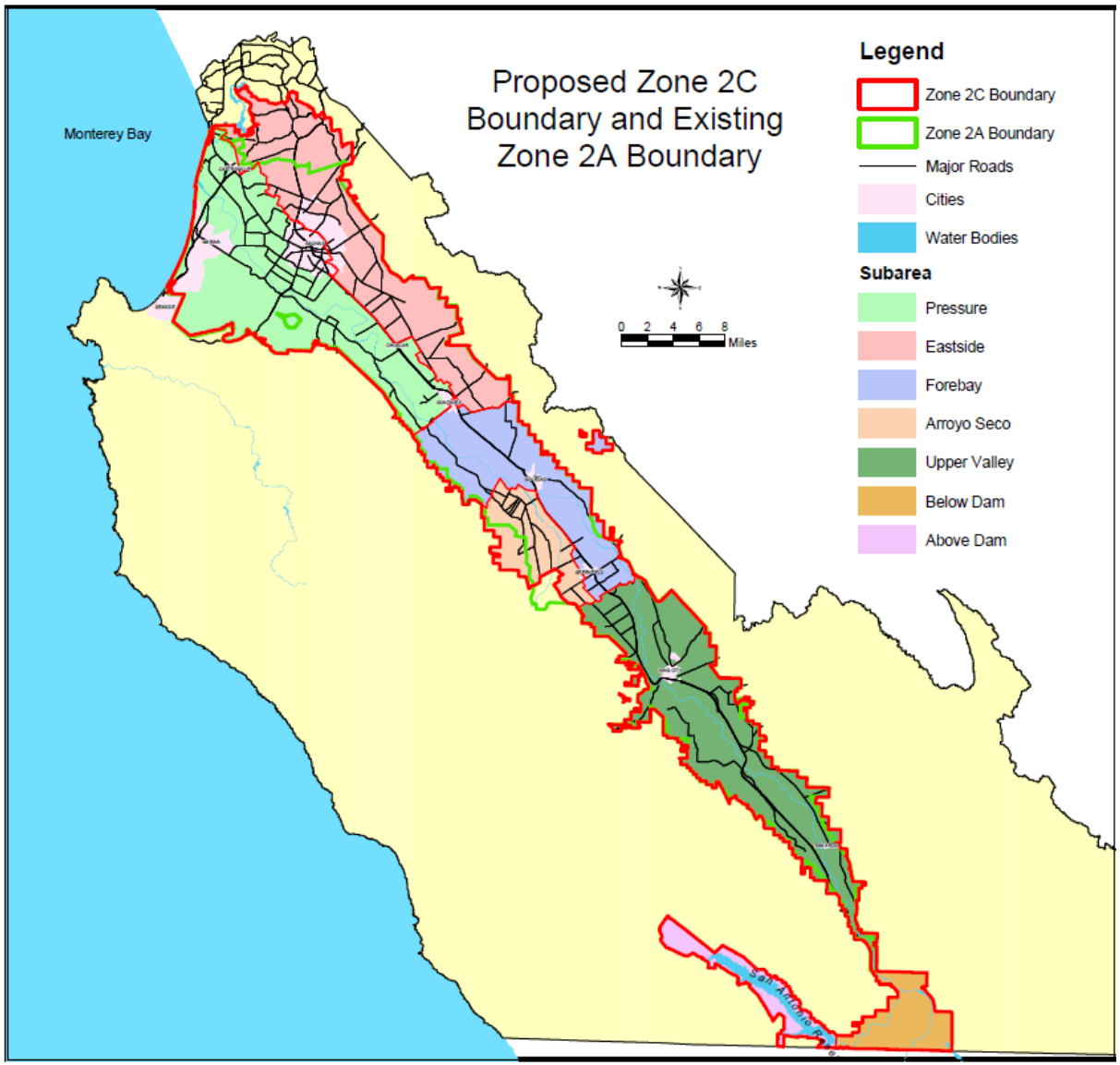
Cash Flow Forecast



	Task Name	Budget	Costs to Date	DWR Phase 1	DWR Phase 2	MCWRA	Sep-16	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19
1	**Environmental and Permitting**	$1,738	$218	$1,520			$164	$130	$135	$126	$121	$114	$186	$159	$100	$30	$7	$55	$62	$66	$57		$6																			
2	**Interlake Tunnel Engineering**	$2,095		$2,095				$31	$702	$205	$249	$216	$346	$140	$92	$24	$22	$25	$22	$21																					
1	**San Antonio Spillway Engineering**	$1,830		$1,830				$2	$95	$187	$141	$217	$274	$181	$103	$85	$76	$77	$47	$93	$66	$35	$42	$35	$41	$29	$4													
3	**Preparation of Engineer's Report**	$89		$89										$11	$32	$20				$7	$20																			
2	Construction Procurement	$84		$84														$15	$15	$15	$15	$15	$8																		
4	**Engineering support to DB RFP**	$37		$37																						$16	$21														
3	Right of Way Easements	$244		$244									$6	$41	$47	$45	$43	$47	$16																						
5	**Proposition 218 Financing**	$342				$342																	$15	$50	$44	$25	$27	$25	$26	$27	$92	$10									
4	Environmental and Engineering	$243	$83	$160			$13	$13	$13	$13	$13	$12	$14	$12	$14	$13	$13	$14	$1																					
6	Program Manager	$1,817	$653	$879	$285		$44	$50	$54	$52	$53	$50	$53	$52	$28	$26	$25	$28	$25	$26	$26	$25	$28	$24	$26	$25	$28	$25	$26	$28	$24	$28	$26	$25	$28	$24	$25	$26	$28	$24	$28	$26	$25
7	Environmental manager	$265	$138	$127			$9	$10	$11	$10	$10	$10	$10	$10	$5	$5	$5	$5	$5	$5	$5	$5	$5																			
8	Hydrologic Modeling	$270	$100	$170			$24	$23	$24	$24	$24	$23	$25																													
7	Res Ops Engineering support	$67		$67			$8	$8	$8	$8	$8	$8	$8	$9																												
9	LiDAR Survey	$150		$150				$48	$50	$50	$2																														
8	PLA Negotiations	$37	$37																																						
10	USGS Modelining Consultant	$150		$150						$67	$73	$10																													
9	Conceptual Engineering	$465	$209	$256			$32	$32	$32	$32	$32	$32	$32	$32																												
11	Tunnel Construction	$42,306			$42,306																				$788	$2,822	$3,019	$2,822	$2,921	$3,019	$2,724	$3,019	$2,921	$2,822	$3,019	$2,724	$2,822	$2,921	$2,266	$1,675			
12	Fish screen construction	$5,000			$5,000																														$438	$1,250	$1,313	$1,375	$625				
11	Spillway Modification Construction	$15,000			$15,000																				$421	$1,105	$1,211	$1,105	$1,158	$1,211	$1,053	$1,211	$1,158	$1,105	$1,211	$1,053	$1,105	$895					
13	Construction Management	$1,200			$1,200																				$29	$76	$84	$76	$80	$84	$73	$84	$80	$76	$84	$73	$76	$80	$84	$62			
12	Capitalized interest during construction	$4,800			$4,800																				$107	$280	$307	$280	$293	$307	$267	$307	$293	$280	$307	$267	$280	$293	$307	$267	$307	$53	
	Total	$78,230	$1,439	$7,858	$68,591	$342	$295	$347	$1,126	$775	$728	$693	$955	$647	$421	$248	$191	$266	$194	$235	$190	$80	$103	$109	$1,457	$4,363	$4,695	$4,355	$4,505	$4,675	$4,232	$4,658	$4,479	$4,309	$5,085	$5,390	$5,622	$5,590	$3,308	$2,027	$334	$80	$25
	Cumulative Total						$295	$642	$1,768	$2,543	$3,271	$3,964	$4,919	$5,566	$5,986	$6,235	$6,426	$6,691	$6,886	$7,120	$7,310	$7,390	$7,493	$7,603	$9,059	$13,422	$18,117	$22,472	$26,977	$31,652	$35,884	$40,542	$45,020	$49,330	$54,415	$59,805	$65,426	$71,017	$74,325	$76,352	$76,686	$76,766	$76,791

Proposition 218 Tax Assessment Financing



2008 acreages

Total Acreage = 424,786

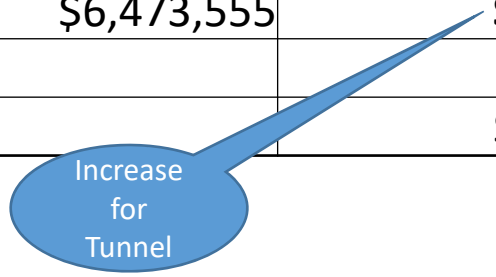
Equivalent Acreage = 283,837

Project – Proposition 218 Financing Terms

Financing Terms	**$ 000**
Amount Financed (Present Value)	$78,230
Two years P&I reserve	$1,300.0
Term (Years)	30
Interest Rate (APR)	5%
Annual Debt Service	($5,174)
Annual O&M Costs	($1,300)
Total Debt Services and O&M Costs	($6,474)

Prop 218 Flat Tax Assessment

Project	**Equivalent Acres**	**Annual Cost**	**Tax Assessment /Acre**
SVWP	264,425	$3,590,000	$13.58
Tunnel and Spillway Modification	264,425	$6,473,555	**$24.48**
Total			$38.06



Accomplishments to date

- Obtained initial development funding from Monterey County
- Project planning and conceptual engineering
- Hydrologic modeling and development of reservoir operations plan with tunnel
- Procurement of Environmental, Engineering and Survey services
- Commenced environmental clearance and EIR preparation
  - Scoping meetings conducted
  - Project Description and DEIR under development
- Project Labor Agreement negotiated
- Support to AB 1585 / SB 831 grant funding legislation
- Addressing regulatory issues regarding White Bass and endangered species

Actions required to complete Phase 1 and 2