

Evaluation of BDCP Operations Sensitivity to a Range of San Joaquin River Flows

BDCP Steering Committee

August 12, 2010

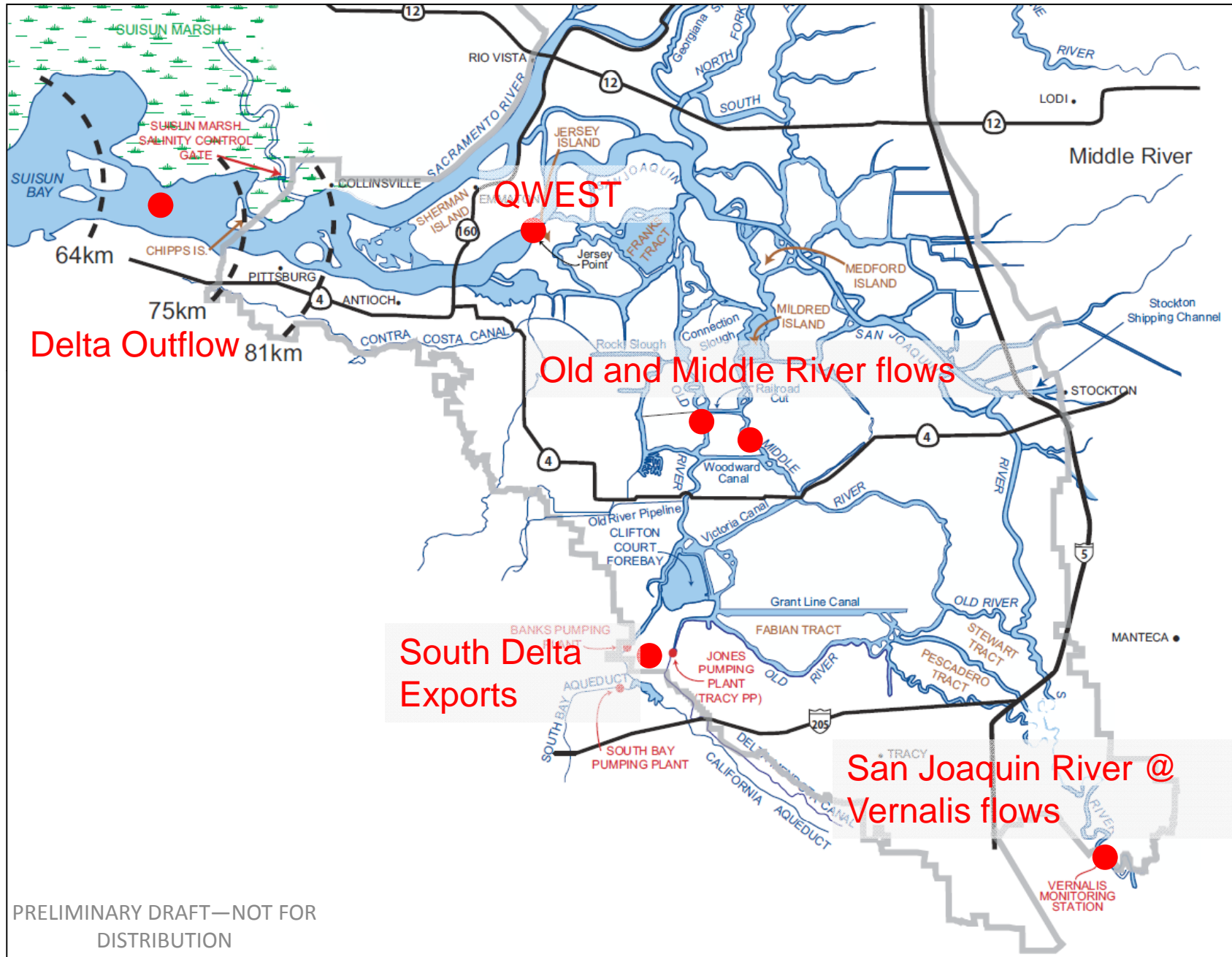
Separate Analyses

- Separate analyses designed to provide information to Steering Committee
- Separate Analyses (* = completed)
 - *North delta intake and conveyance sizing sensitivity analysis
 - *North delta intake location sensitivity analysis
 - *Delta levee failure and sea level rise
 - North delta alternative fish pathways analysis
 - ***San Joaquin River inflow sensitivity**
 - Isolated Old River corridor analysis

Objectives

- Understand the sensitivity of the draft BDCP operations and delta flows to uncertainty in future San Joaquin River flows
- Evaluate sensitivity in terms of:
 - San Joaquin River Vernalis flows
 - Old and Middle River flows
 - QWEST
 - Delta Exports
 - Delta Outflow
 - Delta Water Quality
- High level, preliminary analysis to provide information

South Delta Locations Considered in the SJR Inflow Sensitivity



Scenarios Considered in this Study

- 4 Scenarios Considered
 - Existing Requirements (D1641, VAMP, etc)
 - San Joaquin Restoration Program Flows
 - DFG Flow Targets (submitted to SWRCB, July 2010)
 - SWRCB Flow Targets (July 2010)
- Scenarios used to recognize risks/opportunities -- No judgment or likelihood of occurrence placed on scenarios
- All scenarios were implemented in the BDCP draft proposed operations (“proposed project”) at the Early Long-Term phase (~2025)

Methodology & Assumptions

- CALSIM II studies for 82-years of hydrology performed for each scenario
- SJR Restoration Program flows implemented per approximate implementation
 - Includes re-operation of Friant and New Melones
- DFG and SWRCB flow targets implemented at Vernalis
 - Did not consider how water would be made available to meet the targets
- If target flows were lower than “Existing”, then “Existing” was maintained
- Partial month flow targets were weighted with base flows to arrive at monthly targets
- All simulations should be considered approximate

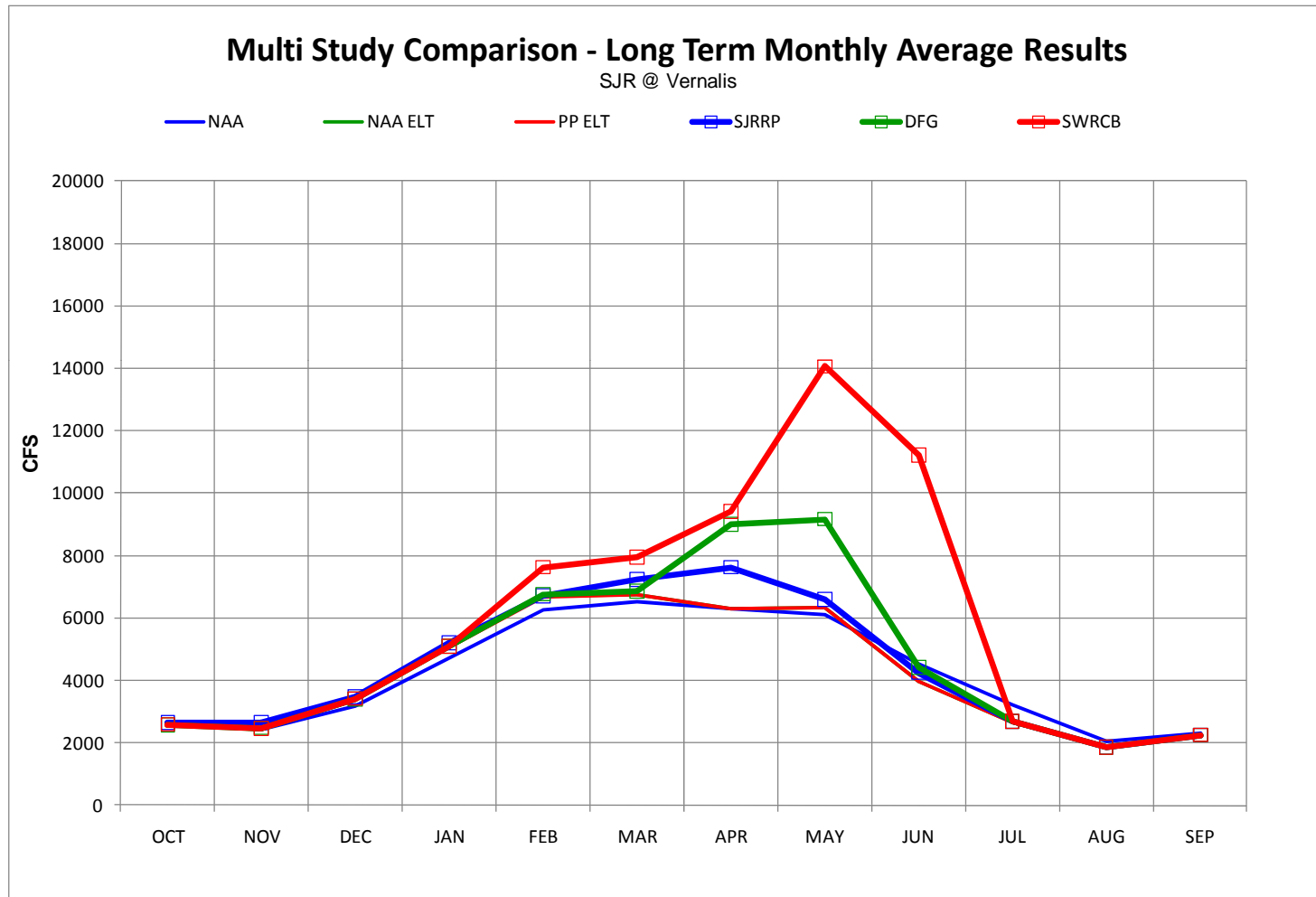
What are the Range of Flows?

- SJRRP Friant releases in range of 1,500 – 4,000 cfs, March 15 – June 30
 - Duration and flows depend on year type
- DFG and SWRCB

Only these Spring flows were considered in this analysis

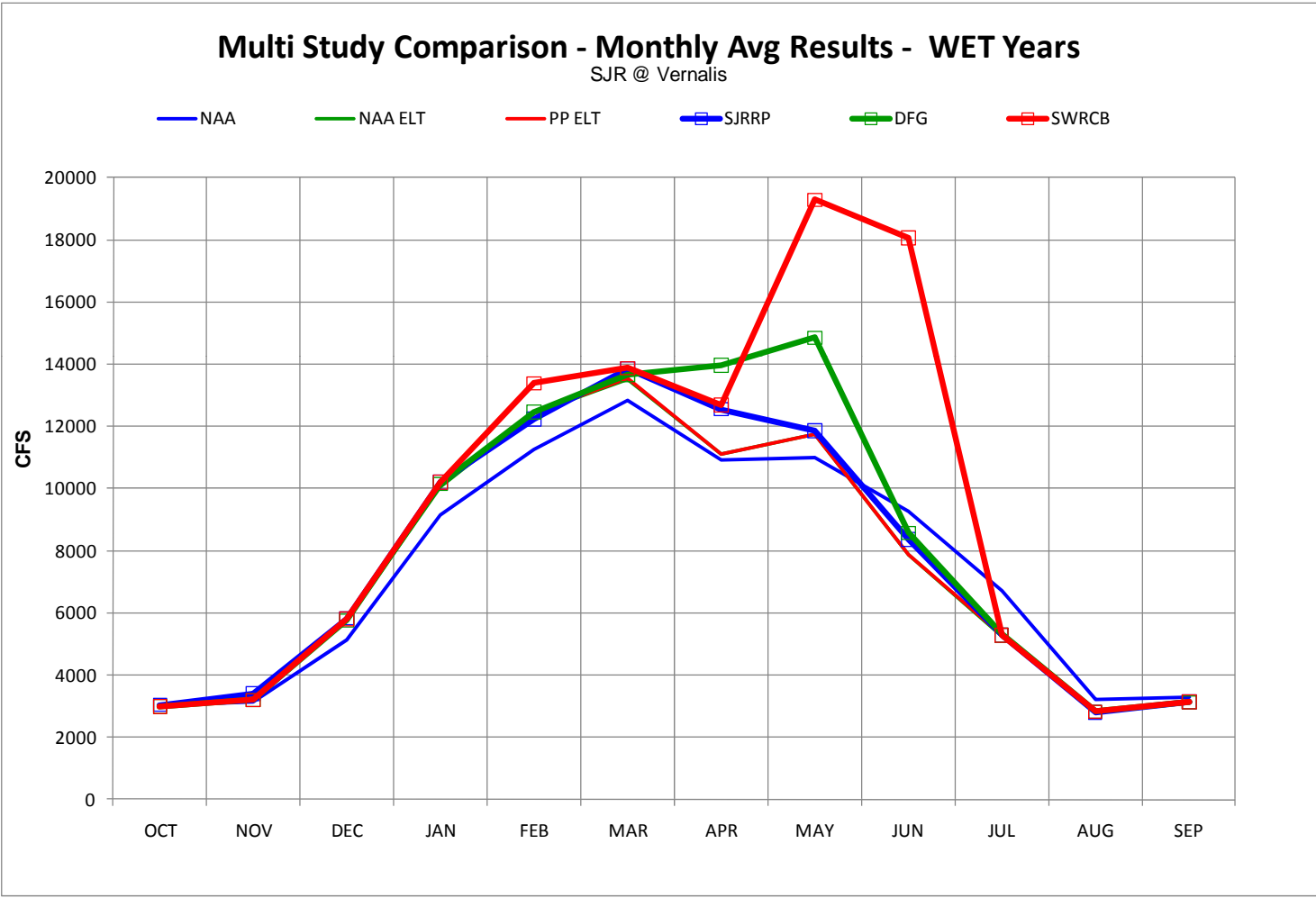
San Joaquin River														
Source	Period												WY Type	Criteria
	O	N	D	J	F	M	A	M	J	J	A	S		
CDFG													C	1,500 cfs base (3/15-6/15) 5,500 cfs pulse (4/15-5/15), Total 7,000 cfs
													D	2,125 cfs base (3/15-6/15) 4,875 cfs pulse (4/11-5/20), Total 7,000 cfs
													BN	2,258 cfs base (3/15-6/15) 6,242 cfs pulse (4/6-5/25), Total 8,500 cfs
													AN	4,339 cfs base (3/15-6/15) 5,661 cfs pulse (4/1-5/30), Total 10,000 cfs
													W	6,315 cfs base (3/15-6/15) 8,685 cfs pulse (3/27-6/4), Total 15,000 cfs
													All	1) Vernalis: 60 percent of 14-day average unimpaired flow
													All	2) Vernalis: 10 day minimum pulse of 3,600 cfs in late October (e.g., October 15 to 26)
													All	3) 2006 Bay-Delta Plan October pulse flow
SWRCB														

SJR Vernalis Flow Comparison (All Years)



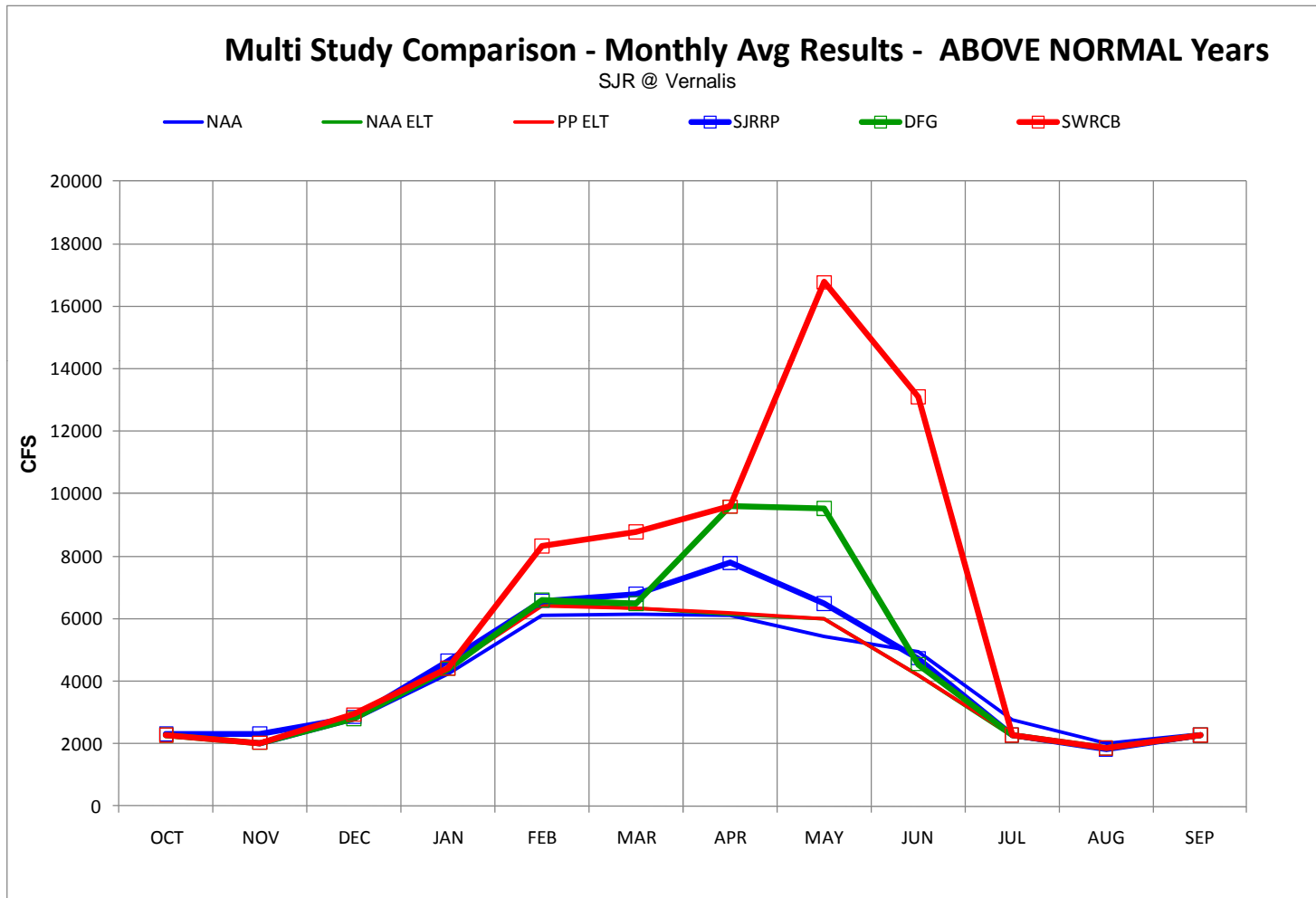
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SJR Vernalis Flow Comparison (W Years)



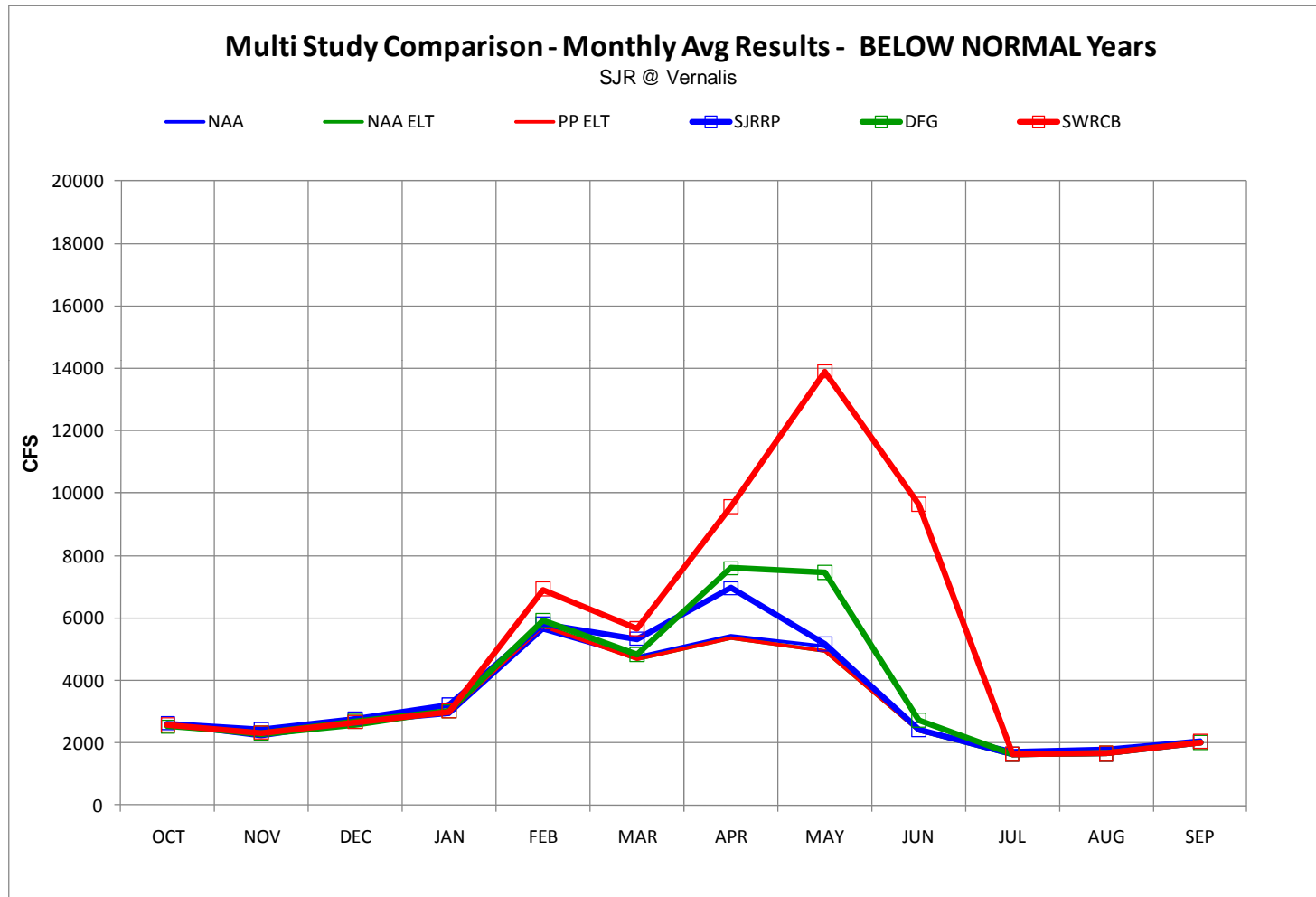
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SJR Vernalis Flow Comparison (AN Years)



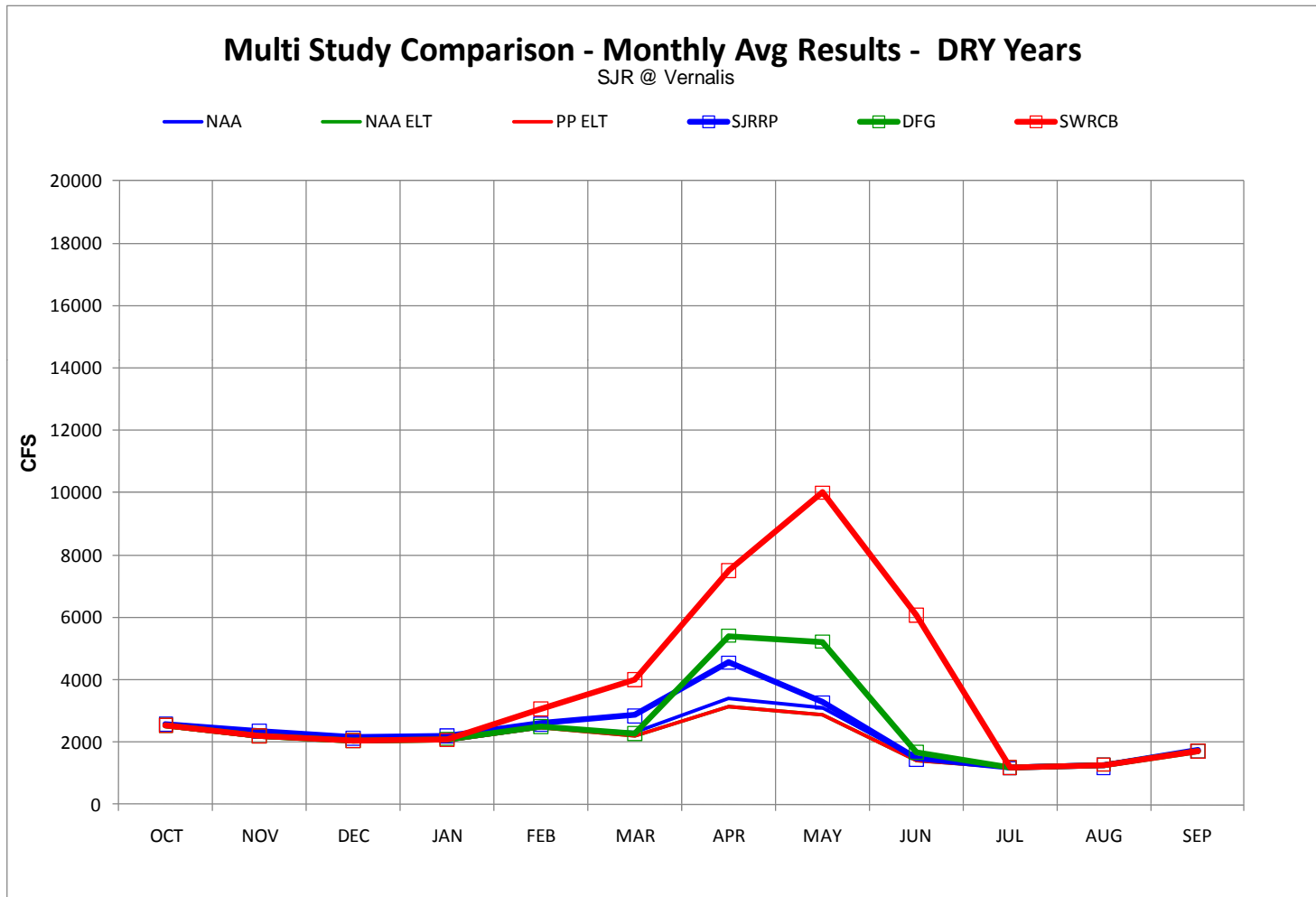
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SJR Vernalis Flow Comparison (BN Years)



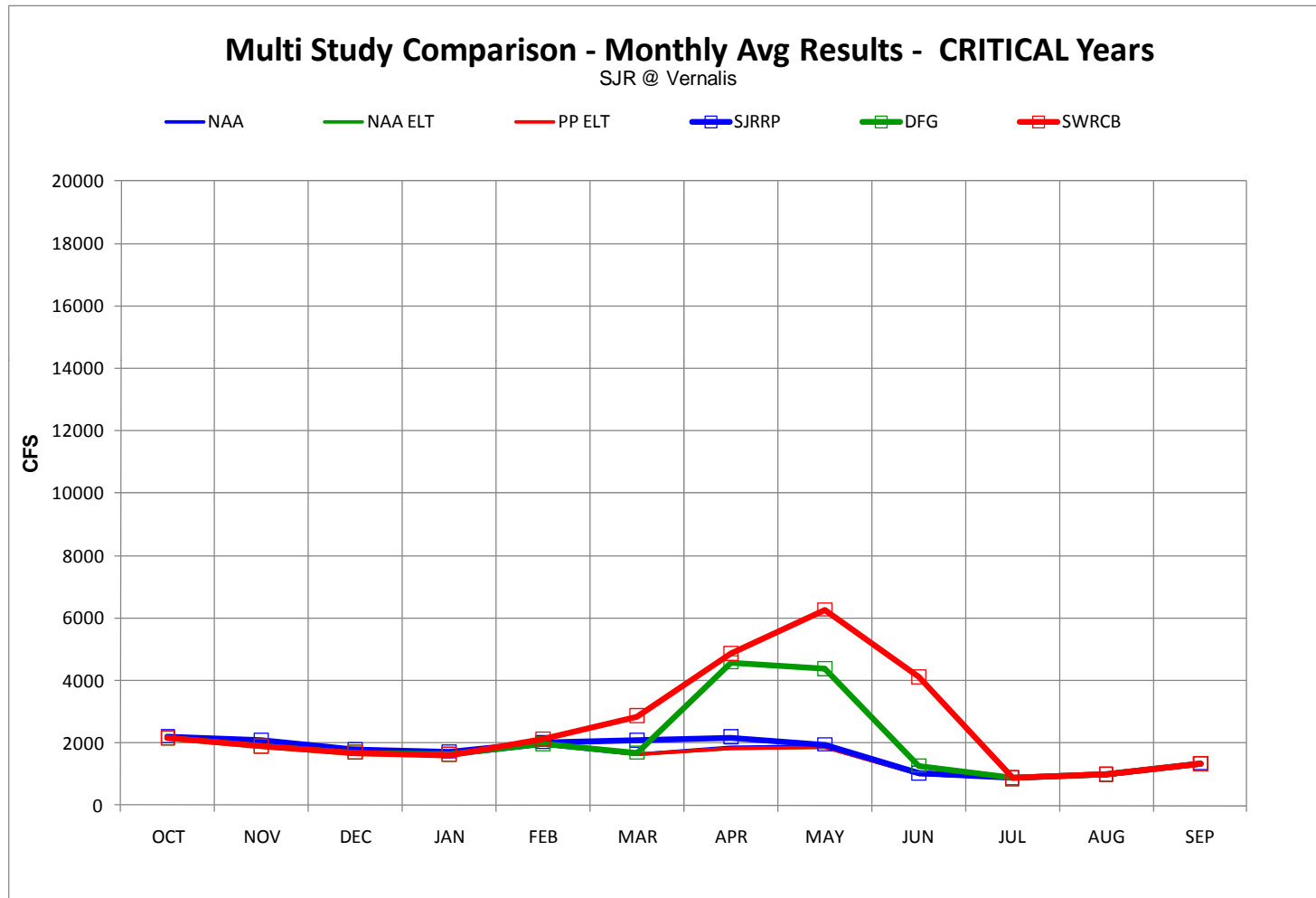
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SJR Vernalis Flow Comparison (D Years)



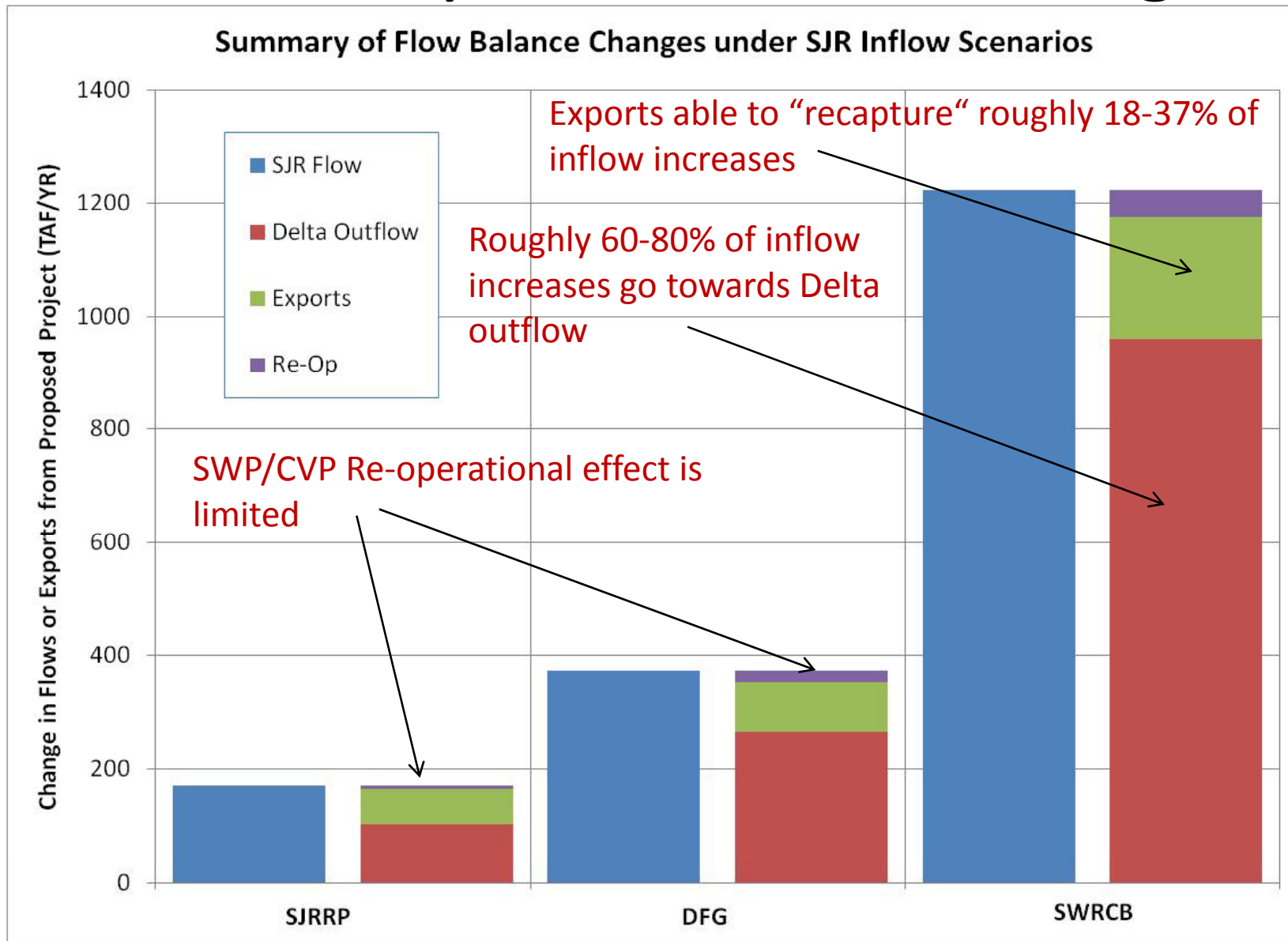
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SJR Vernalis Flow Comparison (C Years)



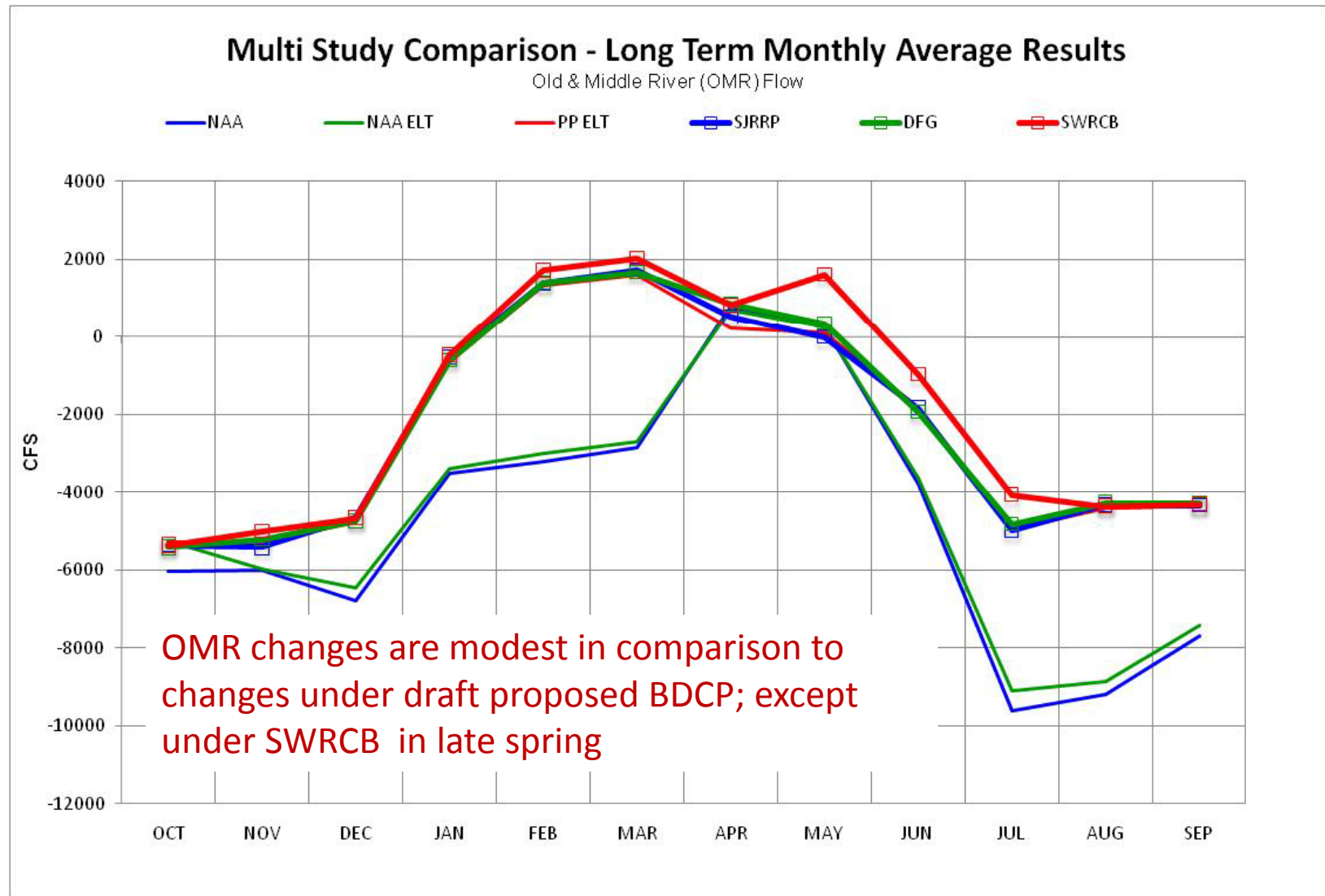
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Summary of Delta Flow Changes



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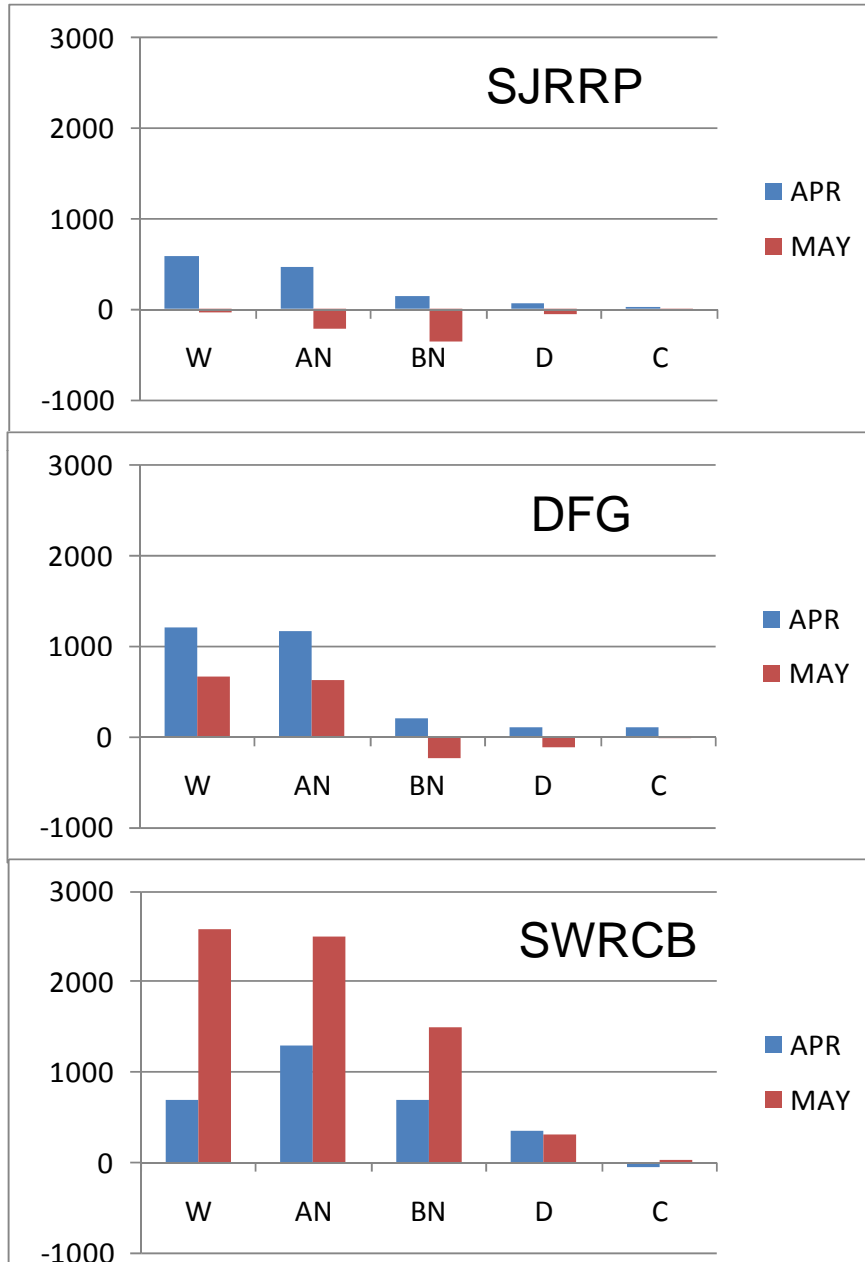
Old and Middle River Flow Changes



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Old and Middle River Flow Changes

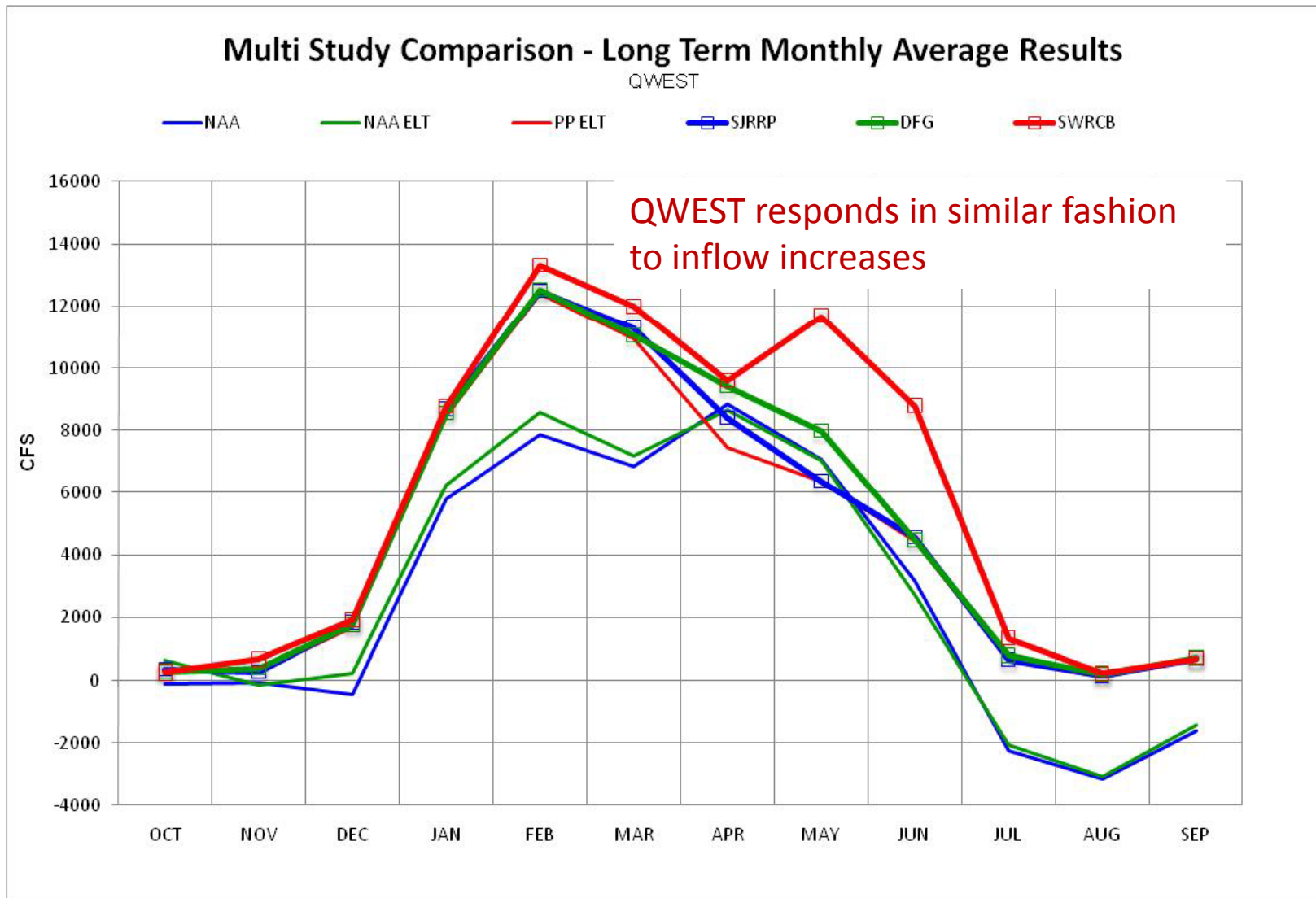
Change in April-May OMR Flows (cfs)
Compared to Proposed Project



Little change in OMR during drier year types

Wetter year types experience larger OMR increases

QWEST Flow Changes



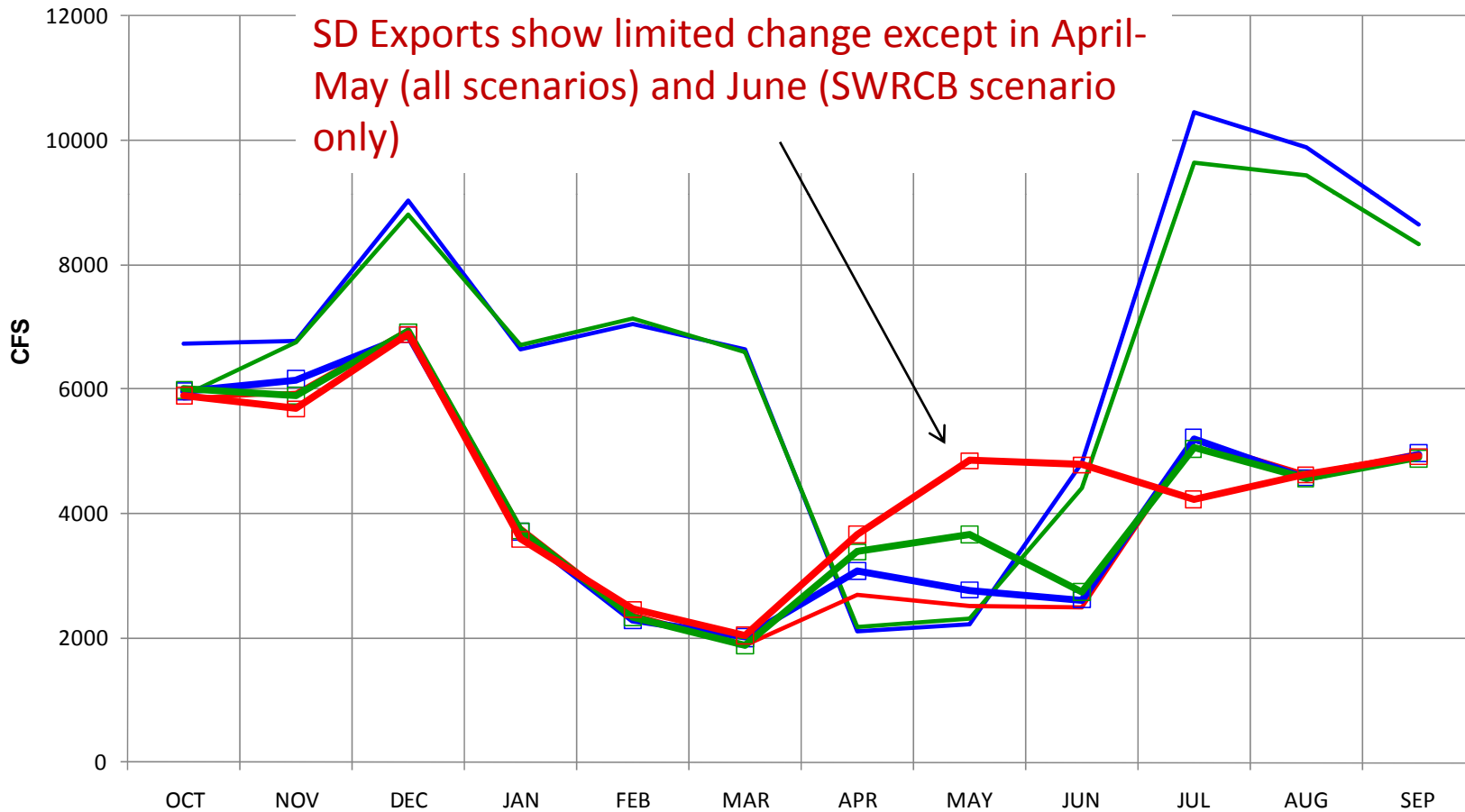
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South Delta Export Changes

Multi Study Comparison - Long Term Monthly Average Results

Total South Delta Exports

NAA NAA ELT PP ELT SJRRP DFG SWRCB



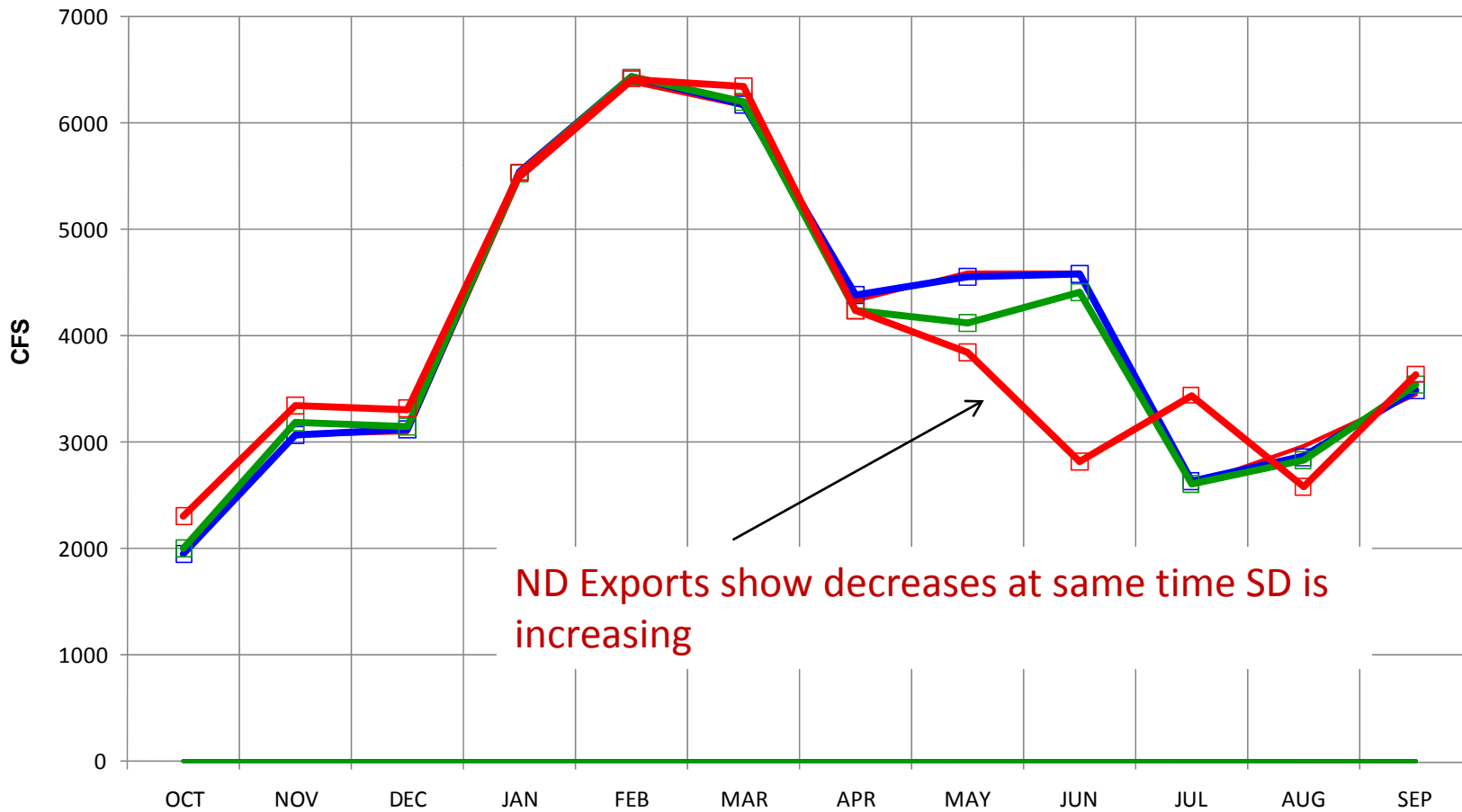
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North Delta Export Changes

Multi Study Comparison - Long Term Monthly Average Results

Total IF

NAA NAA ELT PP ELT SJRRP DFG SWRCB



ND Exports show decreases at same time SD is increasing

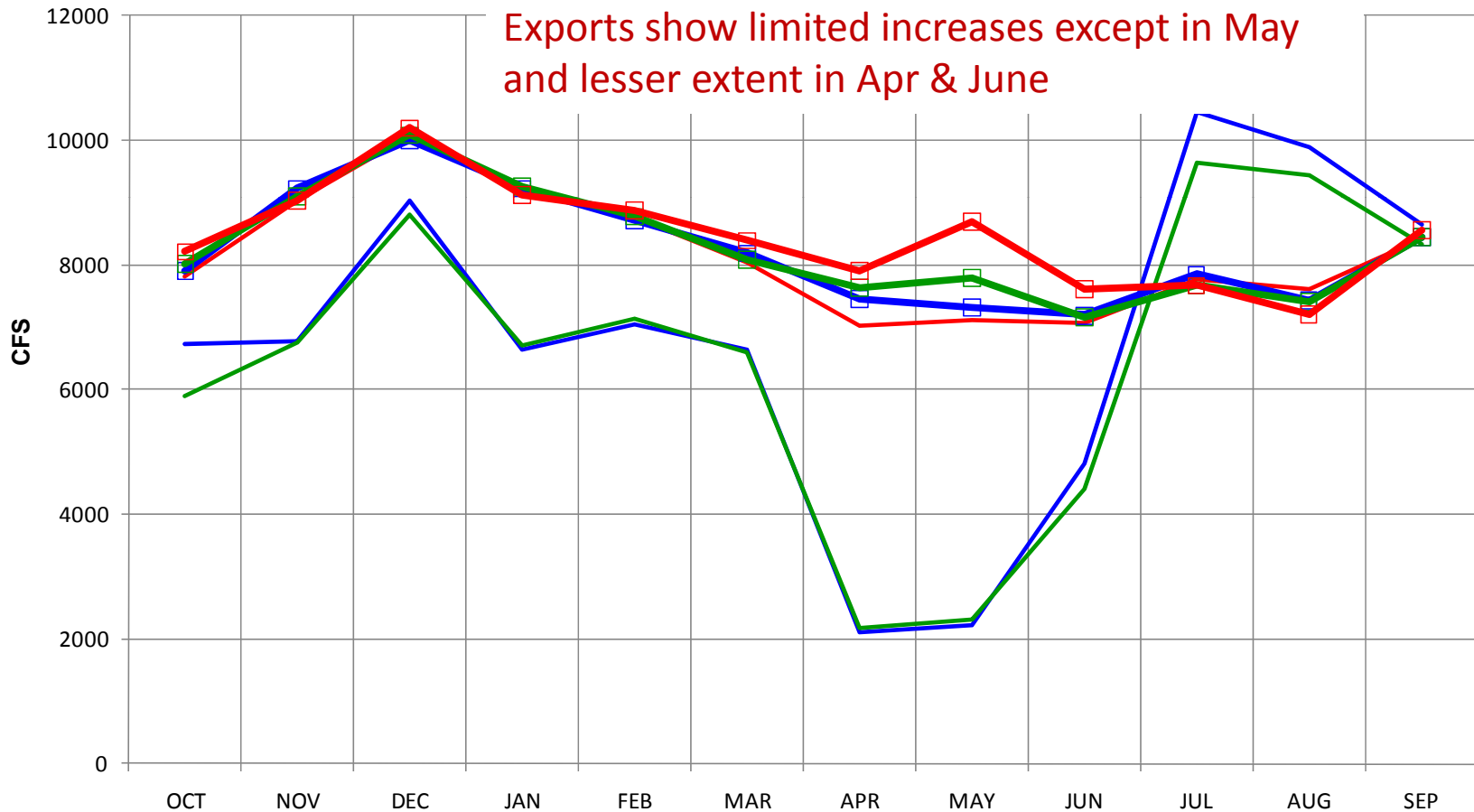
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Total SWP/CVP Delta Export Changes

Multi Study Comparison - Long Term Monthly Average Results

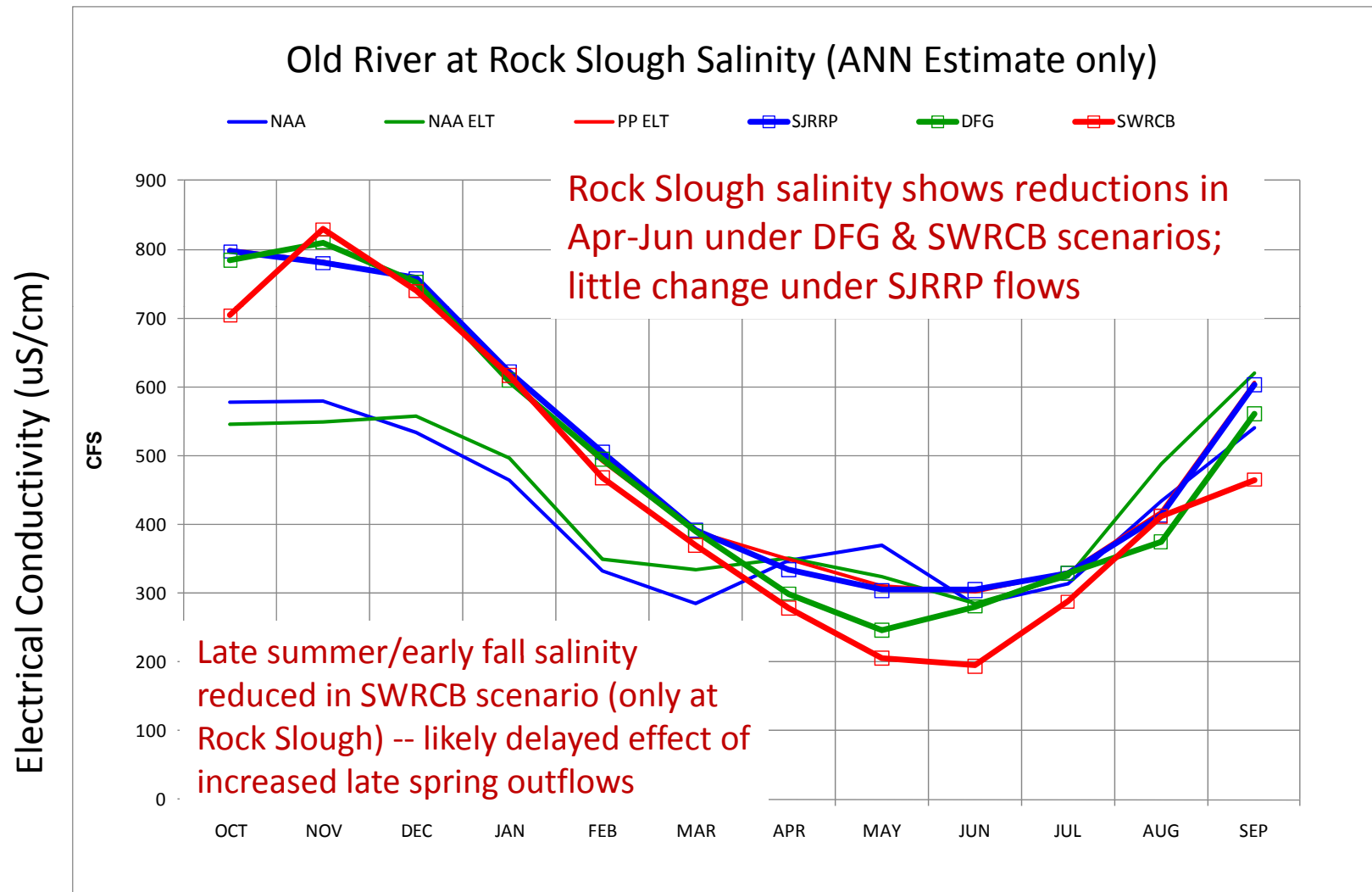
Delta Exports

NAA NAA ELT PP ELT SJRRP DFG SWRCB



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Seasonal Changes in Southern Delta Salinity



Summary

- Scenarios suggest most inflow increases will go towards outflow (60-80%) and lesser extent toward exports (18-37%)
- SWP/CVP upstream re-operation is limited
- OMR and QWEST show increases largely during April-June; usually when the draft proposed BDCP flows are anticipated to be positive
- Modest changes in most Delta parameters with SJRPP
- SWRCB flows (tied to unimpaired) suggest shift in peaks toward May-Jun with corresponding effects to Delta flows
- Salinity effects are limited to the south Delta and April-Jun; except for SWRCB flows which show lingering effect through late summer
- No substantial risks to draft proposed BDCP operations noted from this analysis – trends are consistent with south delta flow trajectory of the draft proposed BDCP