NGO SCENARIO UNDER VARYING NORTH DELTA CONVEYANCE SIZES

DRAFT

March 29, 2012

Scenario 7A Analysis Overview

* “Scenario 6” Developed by Lead Agencies
* NGO team explored a range of alternative operations in Scenario 7A
  * South Delta Flow Refinements
  * Spring Proportional Watershed Flows
* This analysis explores the sensitivity of Scenario 7A with varying north delta conveyance capacities

Scenario 7A Assumptions

South Delta Channel Flows

* Started with Lead Agency Scenario 6
* Progressively added
  * Fall X2 (Scenario 6A)
  * Summer OMR flow requirements (6B)
  * Fall OMR flow requirements (6C)
  * Year-Round OMR flow requirements (6D)

Scenario 7A Minimum OMR Requirements (cfs)

WY	W	AN	BN	D	C
Oct[a]	-3500	-3500	-3500	-3500	-3500
Nov	-3500	-3500	-3500	-3500	-3500
Dec[b,c]	-2500	-2500	-2500	-2500	-2500
Jan	0	0	-1000	-1500	-1500
Feb	0	0	-1000	-1500	-1500
Mar	0	0	-1000	-1500	-1500
Apr[b]	0	0	-1000	-1500	-1500
May[b]	0	0	-1000	-1500	-1500
Jun[b]	0	0	-1000	-1500	-1500
Jul	-3500	-3500	-3500	-3500	-3500
Aug	-3500	-3500	-3500	-3500	-3500
Sep	-3500	-3500	-3500	-3500	-3500

Scenario 7A Assumptions

Proportionate Watershed Flows

* Springtime proportional flows (% of unimpaired) on Sacramento River, Feather River, and American River tied to inundation characteristics

Month	Release Percentage	Max Keswick Release[a]	Max Thermalito Release[a]	Max Nimbus Release[a]
February	60%	15,000	10,000	3,000
March	100%	15,000	10,000	3,000
April	100%	15,000	10,000	3,000
May	60%	15,000	10,000	3,000
June	40%	15,000	10,000	3,000

* Offramps to protect against low storage conditions

Storage Offramps

Reservoir Bypass Flow Caps (Shasta)					
	Cap1	Storage1	Cap2	Storage2	Cap3
Feb	15,000	2800	9,125	2400	3250
Mar	15,000	3000	9,125	2600	3250
Apr	15,000	3200	9,125	2800	3250
May	15,000	3000	9,125	2600	3250
Jun	15,000	2800	9,125	2400	3250

Reservoir Bypass Flow Caps (Oroville)					
	Cap1	Storage1	Cap2	Storage2	Cap3
Feb	10,000	2000	5,375	1300	750
Mar	10,000	2200	5,375	1500	750
Apr	10,000	2400	5,375	1700	750
May	10,000	2200	5,375	1500	750
Jun	10,000	2000	5,375	1300	750

Reservoir Bypass Flow Caps (Folsom)					
	Cap1	Storage1	Cap2	Storage2	Cap3
Feb	3,000	350	1,900	250	800
Mar	3,000	400	1,900	300	800
Apr	3,000	450	1,900	350	800
May	3,000	400	1,900	300	800
Jun	3,000	350	1,900	250	800

Scenario 7A Assumptions

North Delta Diversion Sizing Sensitivity

* Evaluated effects of varying north delta diversion facility diversion capacities
  * 3,000 cfs
  * 6,000 cfs
  * 9,000 cfs
  * 12,000 cfs
  * 15,000 cfs

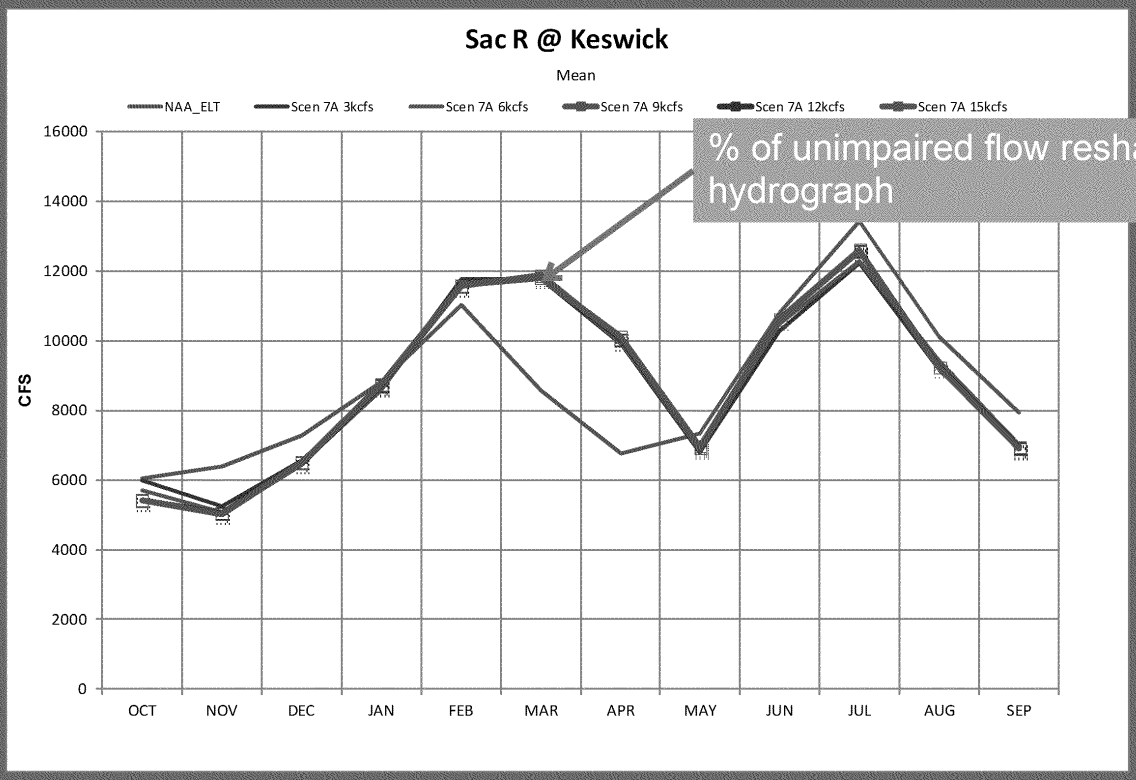
* Comparison of results to the No Action Alternative at Early Long-term
  * ~2025 conditions
  * Sea level rise and regional climate change

Results

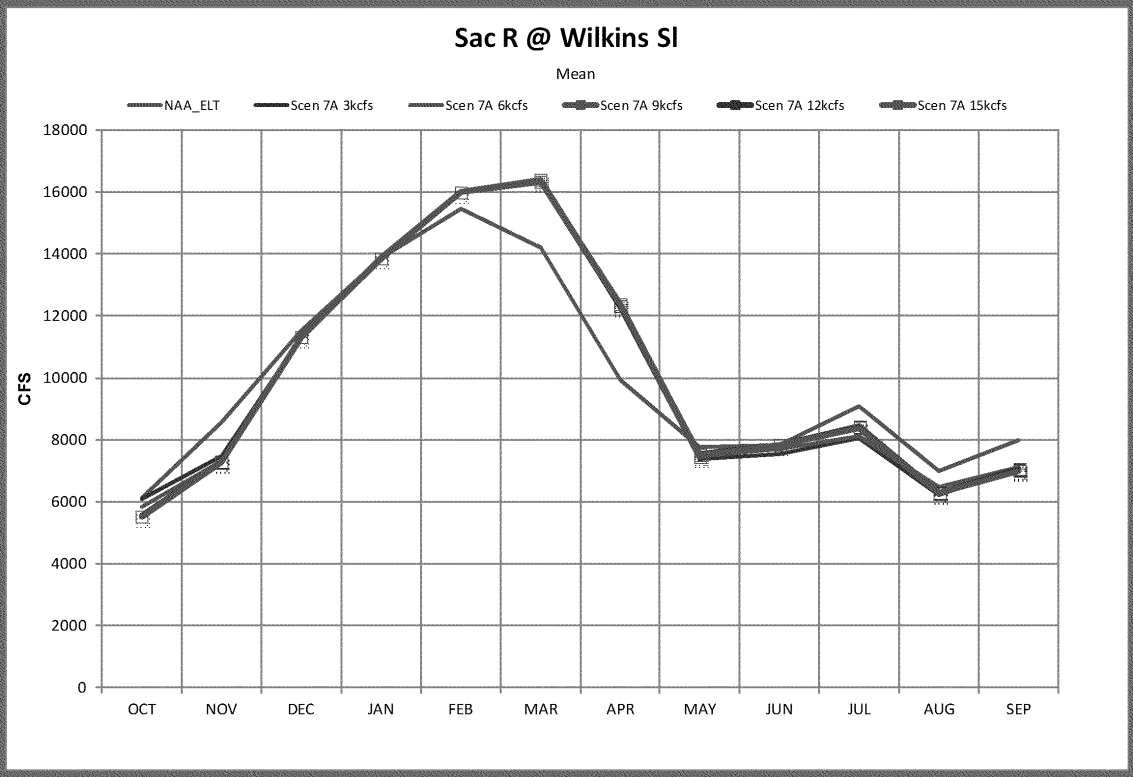
* Sacramento Valley river flows
* Delta outflow
* Old and Middle River flows
* SWP and CVP exports
* Storage conditions

Sacramento Valley River Flows

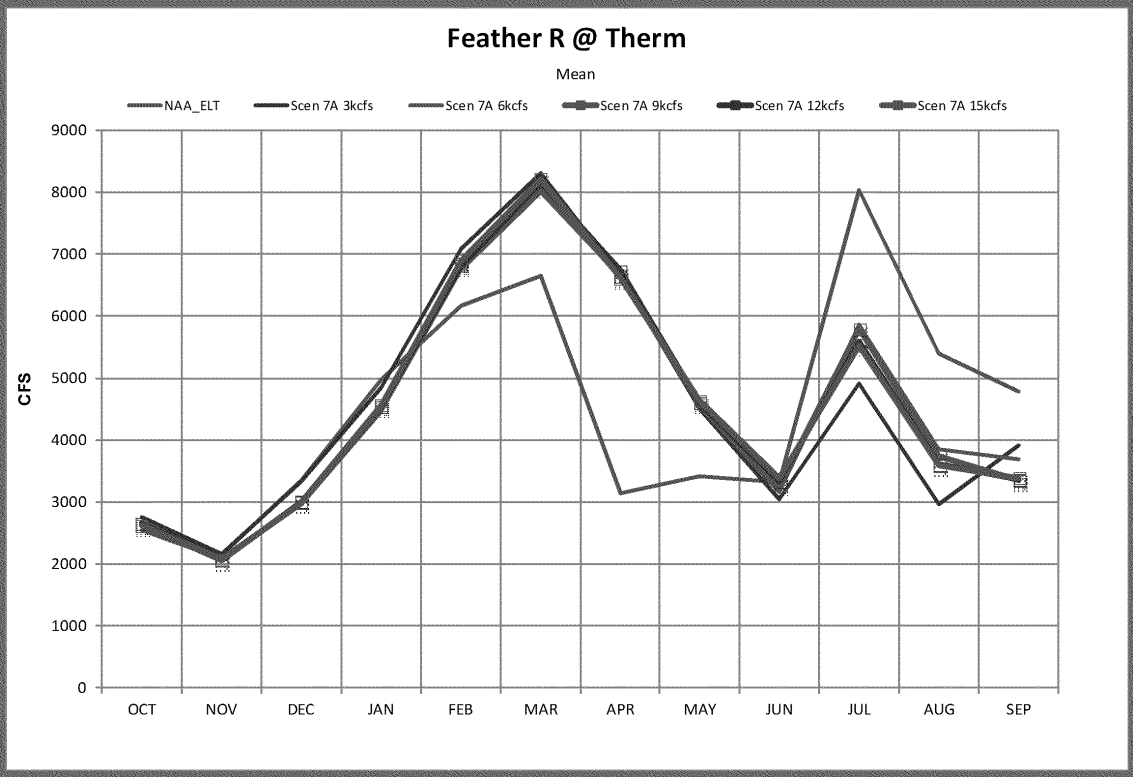
Sacramento River Flows - Keswick



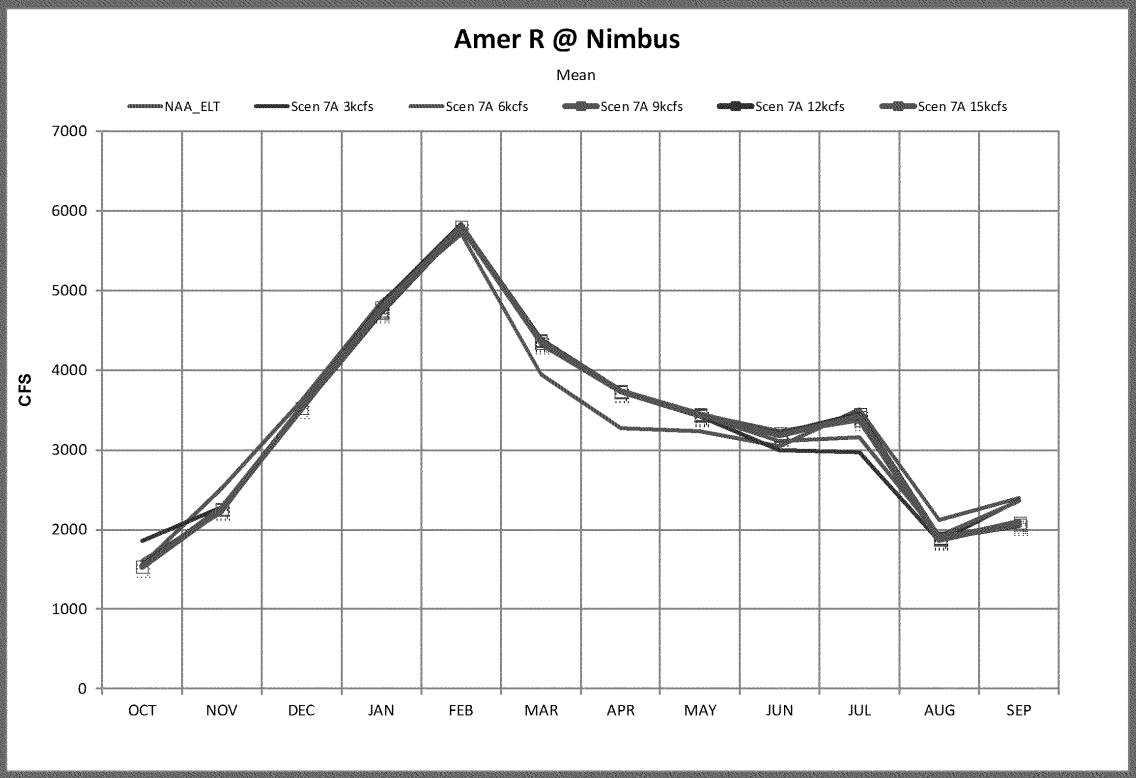
Sacramento River Flows – Wilkins Slough



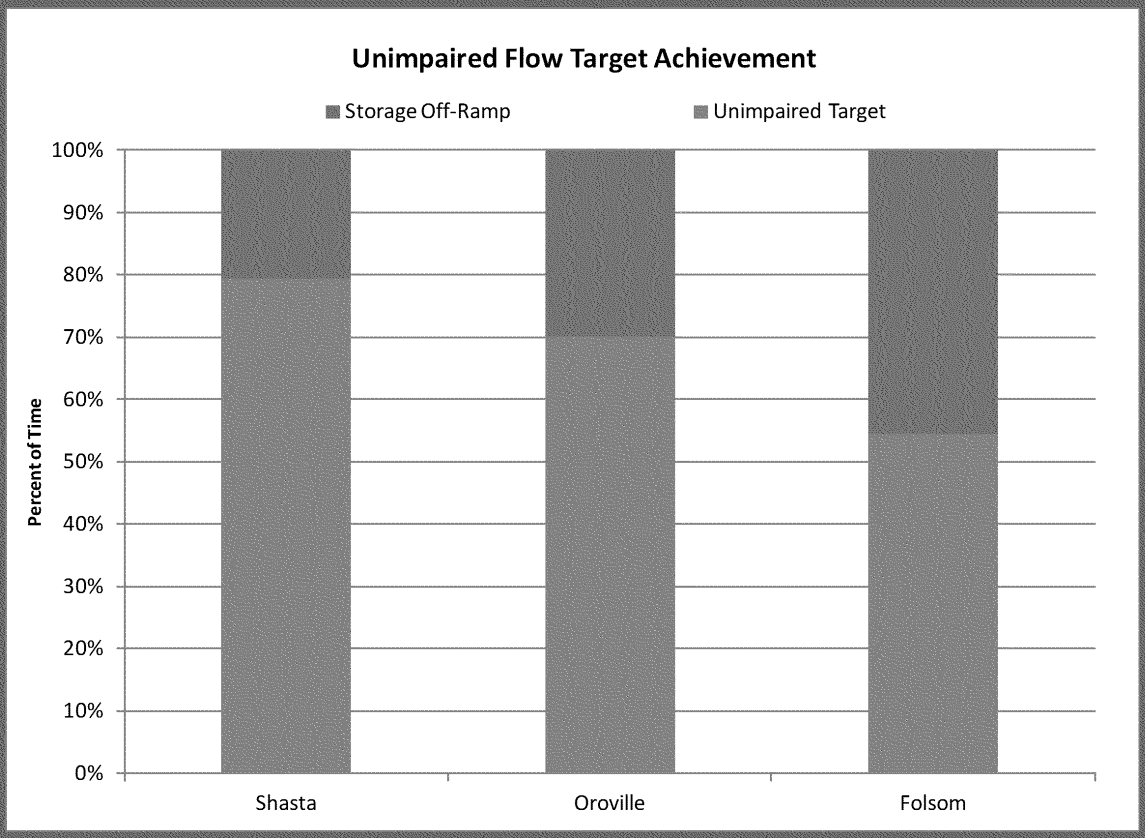
Feather River Flows - Thermalito



American River Flows - Nimbus

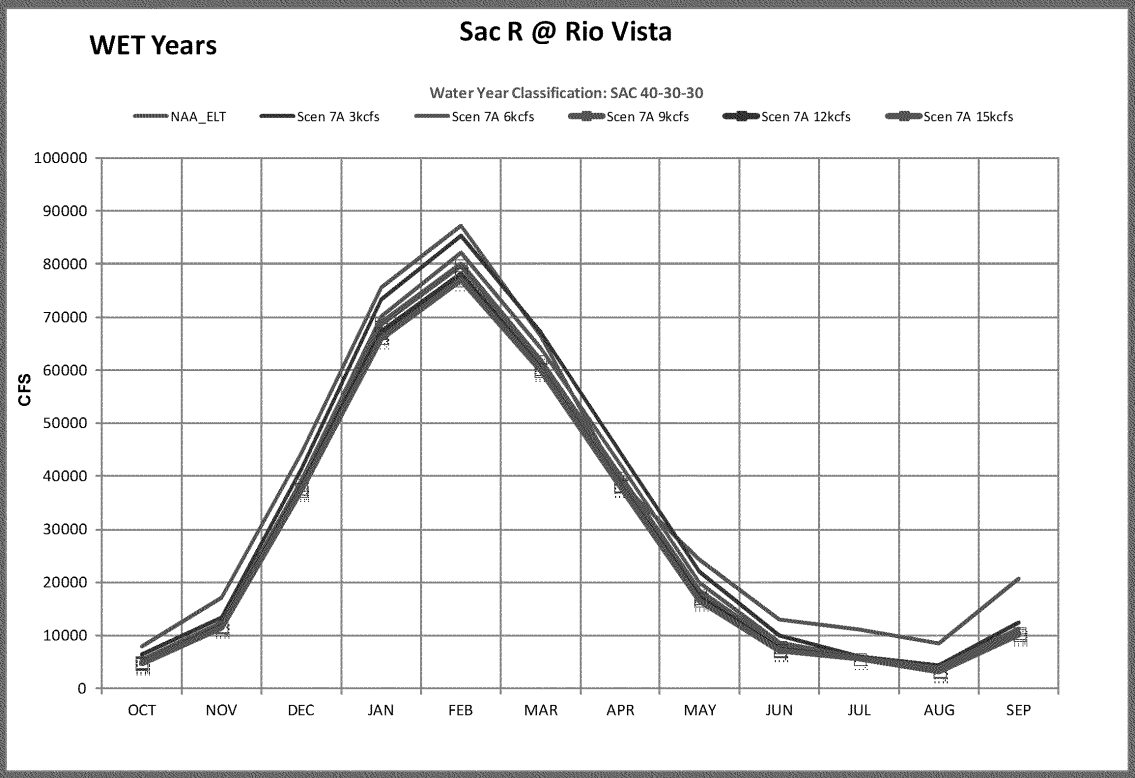


Unimpaired Flow Target Achievement

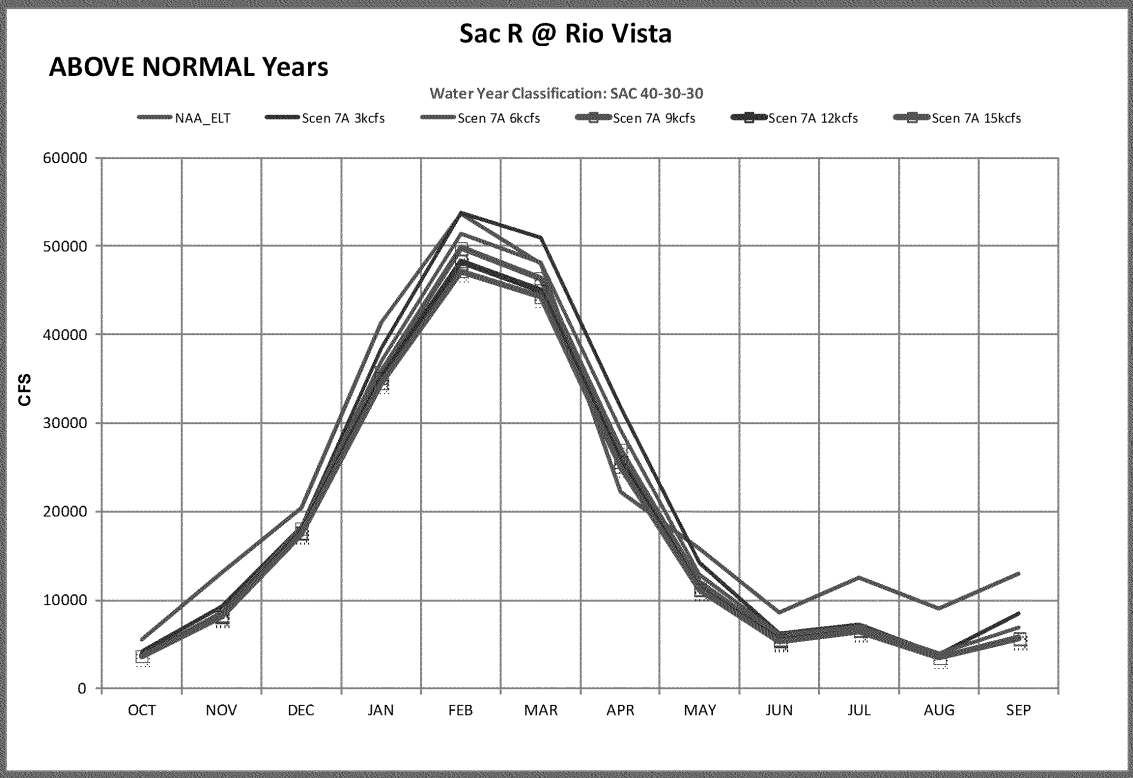


Delta Flows

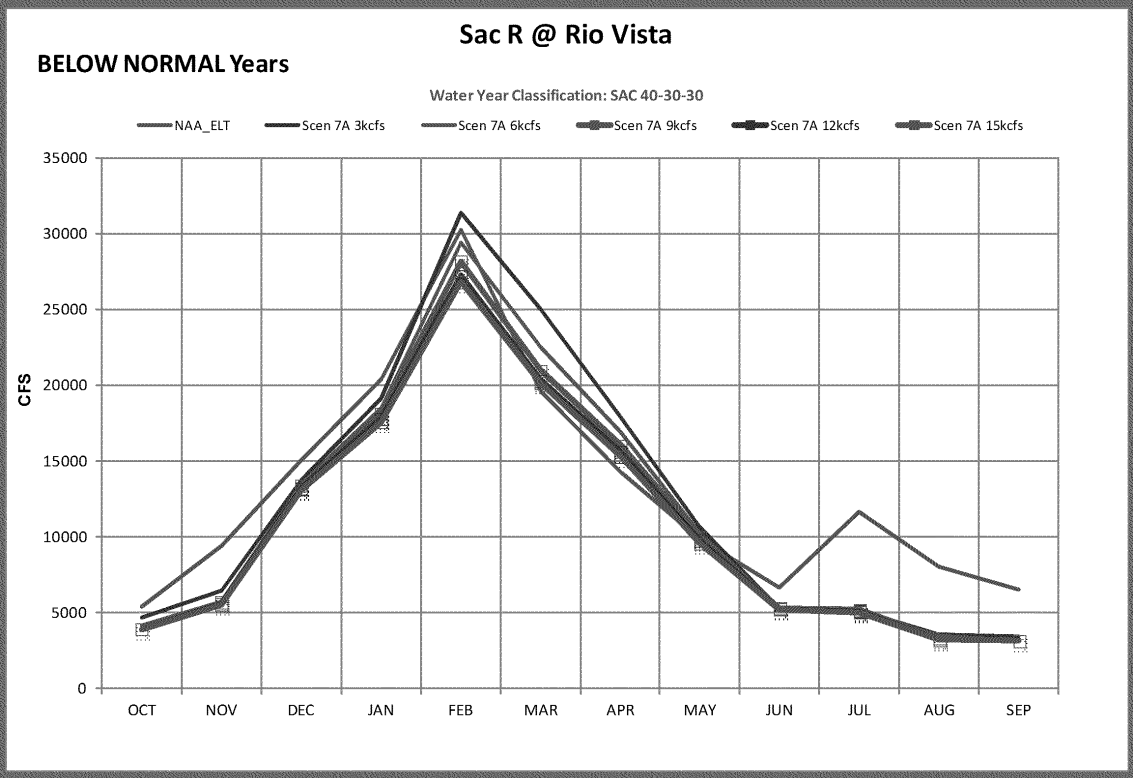
Sacramento River – Rio Vista
"Wet" Years



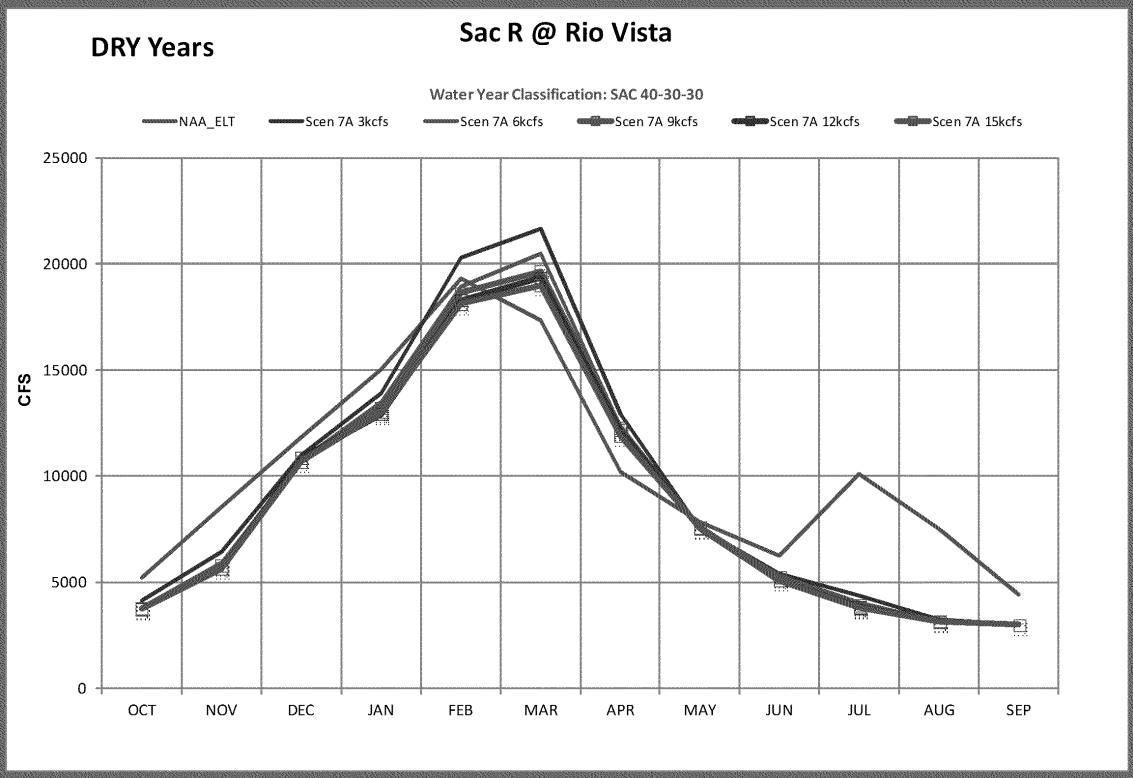
Sacramento River – Rio Vista
"Above Normal" Years



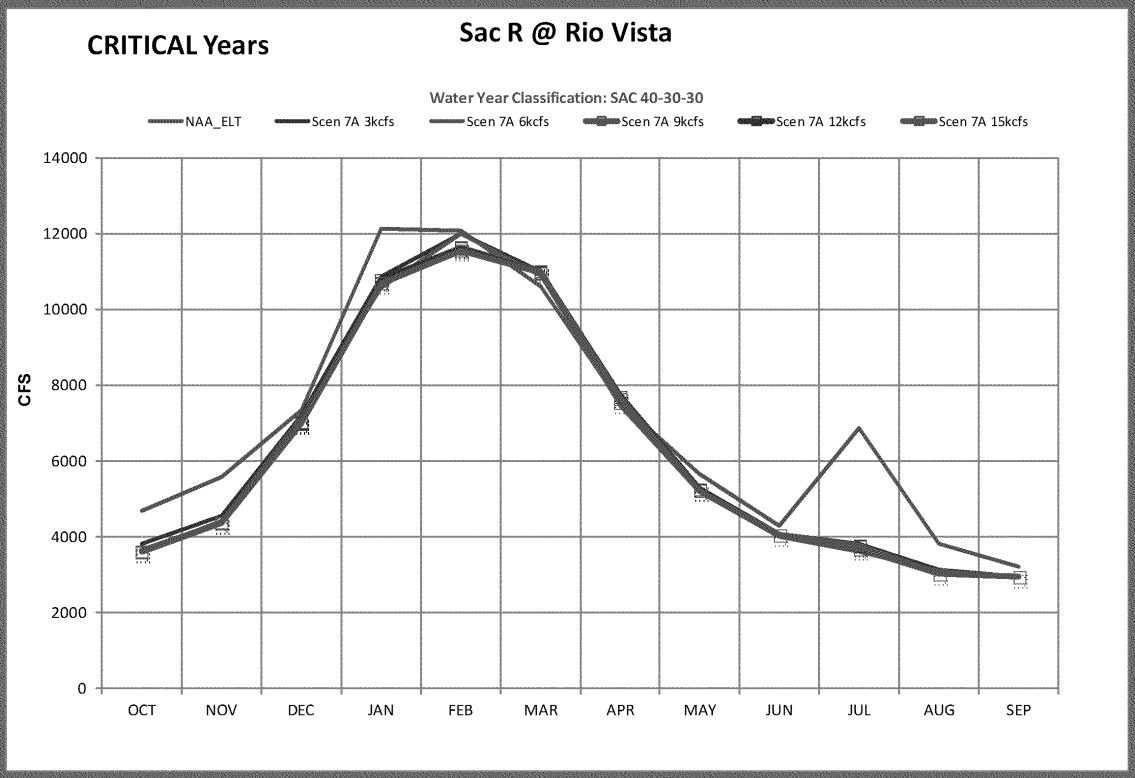
Sacramento River – Rio Vista
"Below Normal" Years



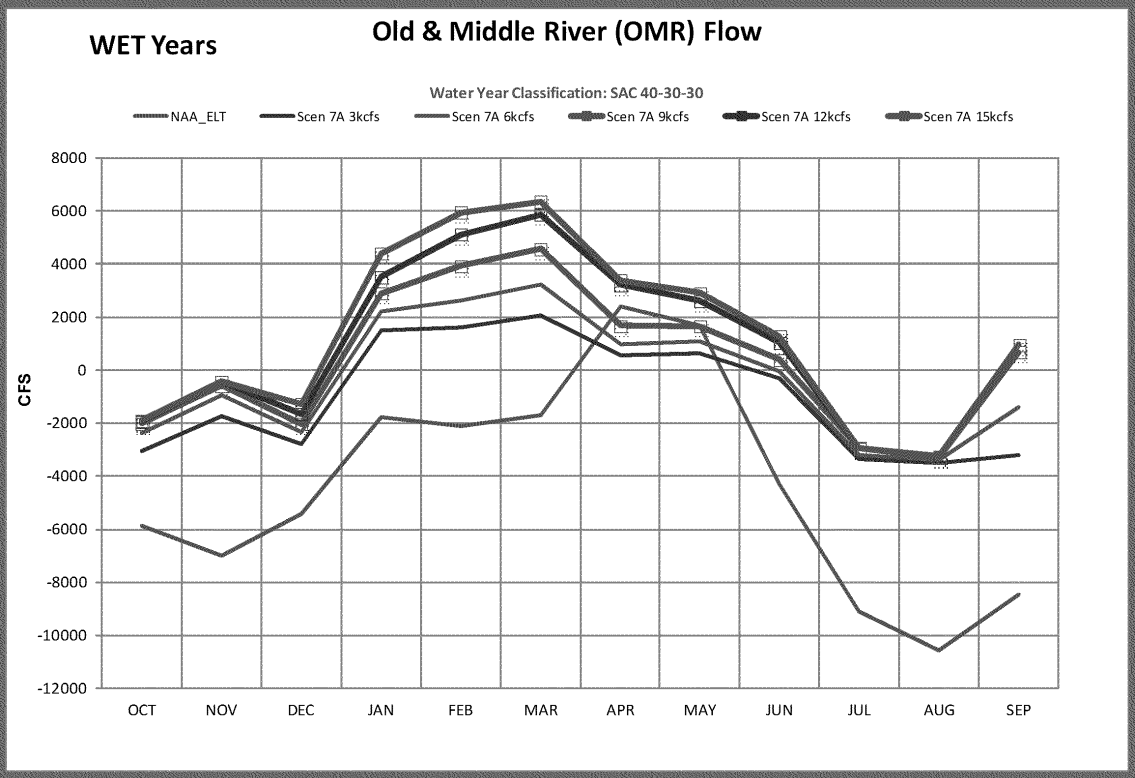
Sacramento River – Rio Vista
"Dry" Years



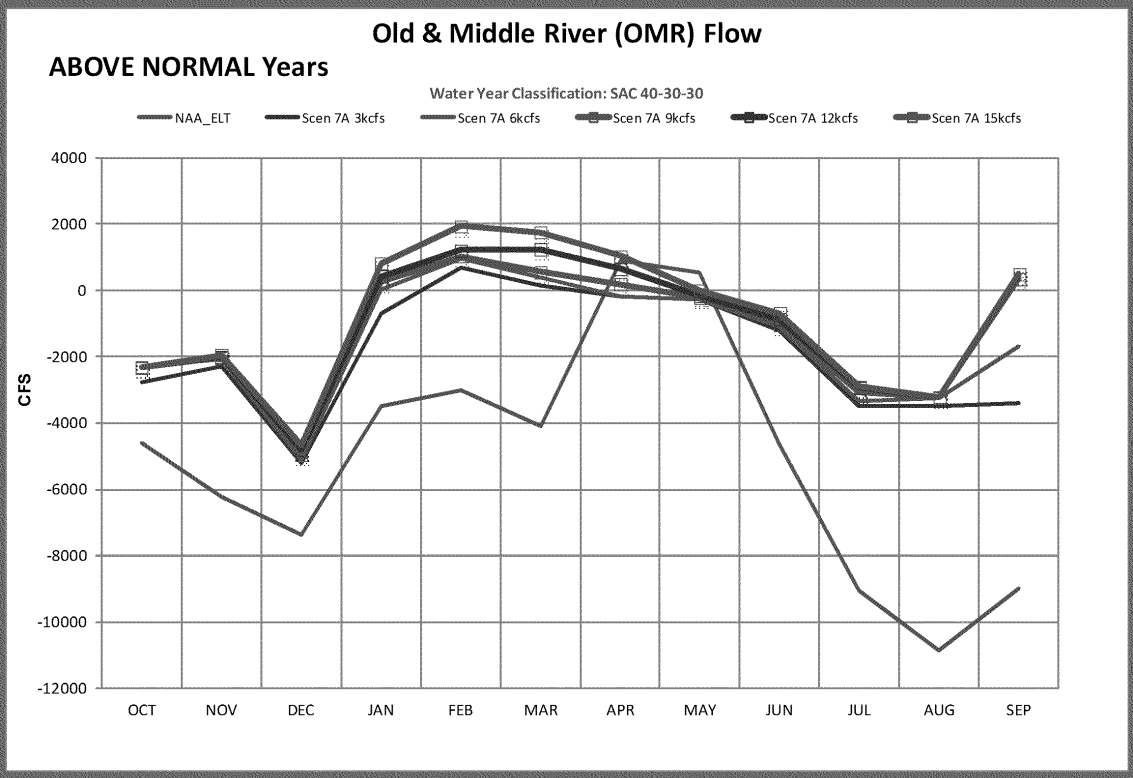
Sacramento River – Rio Vista
"Critical" Years



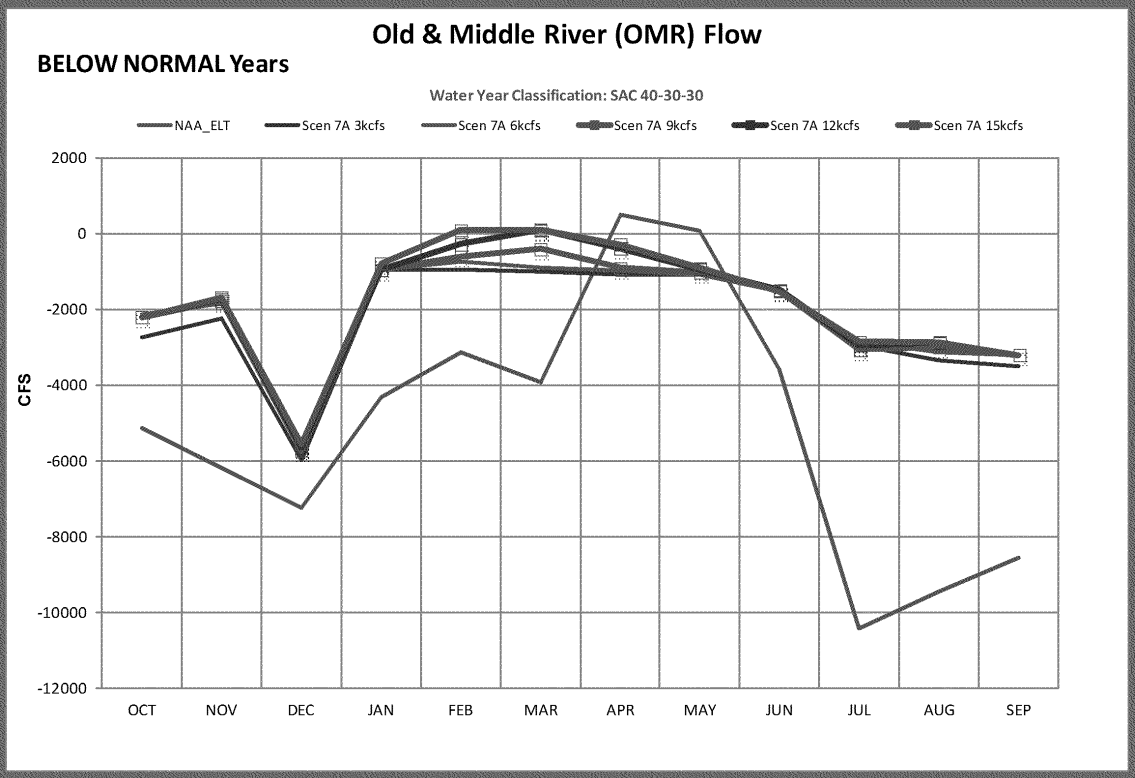
Old and Middle River Flows
"Wet" Years



Old and Middle River Flows
"Above Normal" Years years



Old and Middle River Flows
"Below Normal" Years



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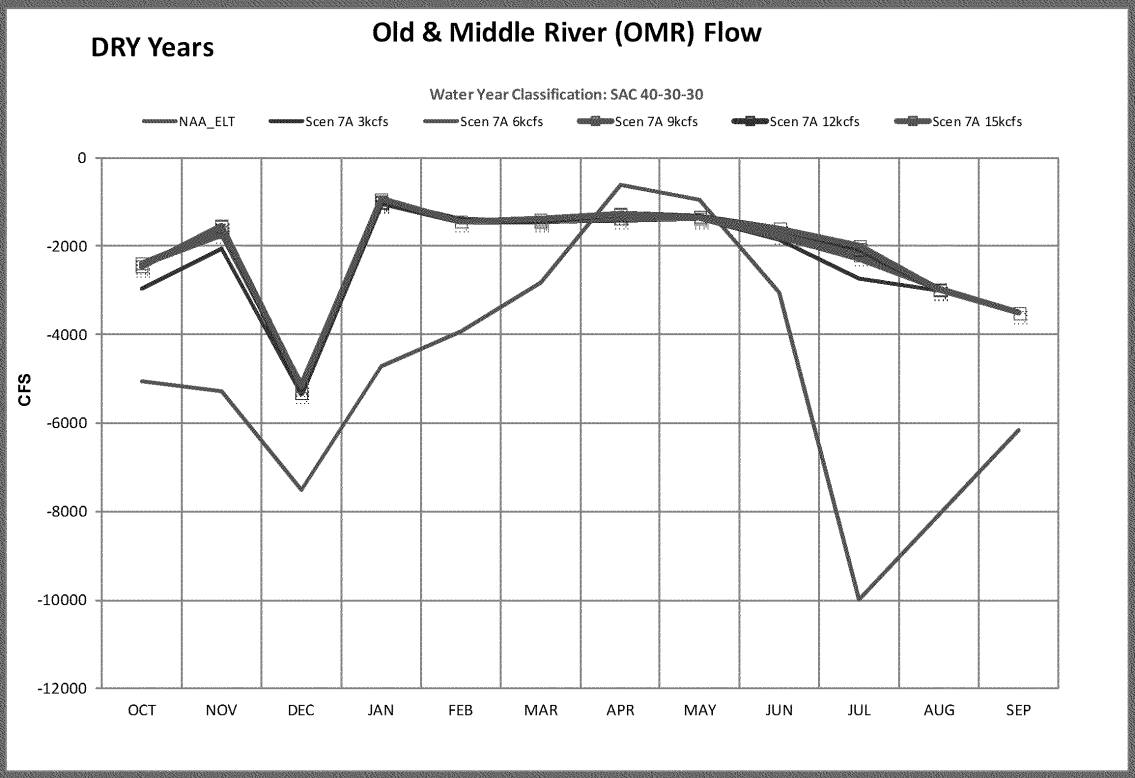

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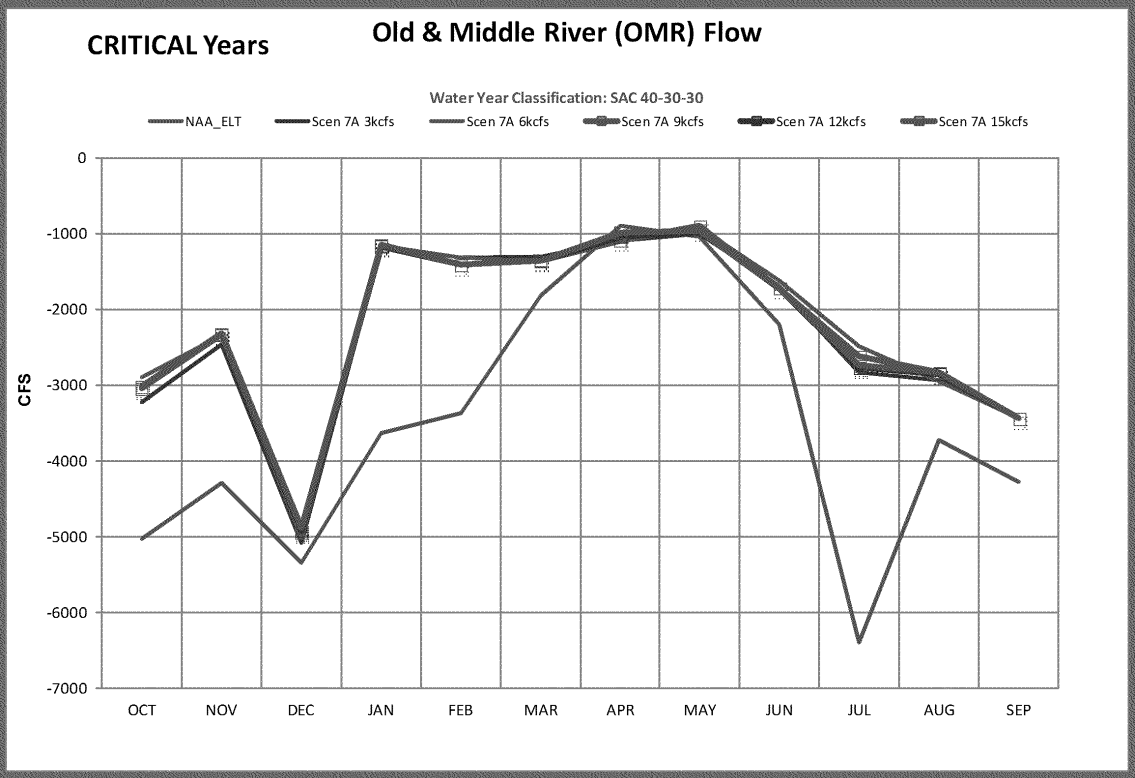
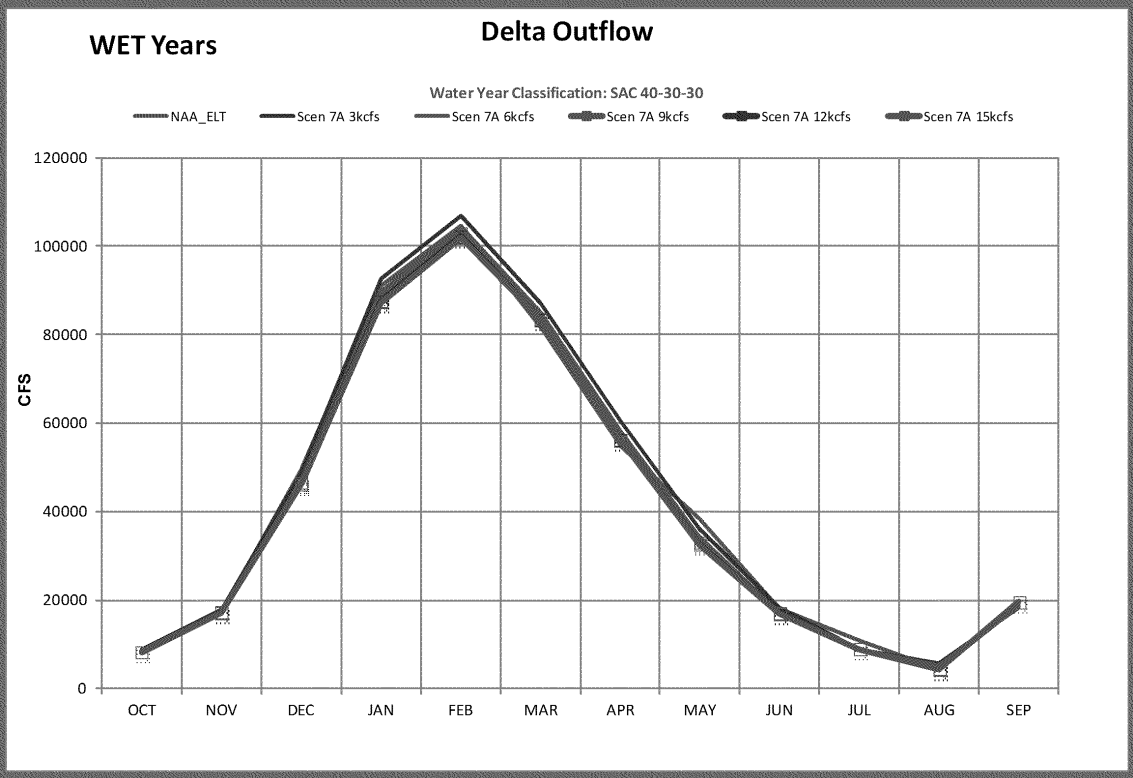
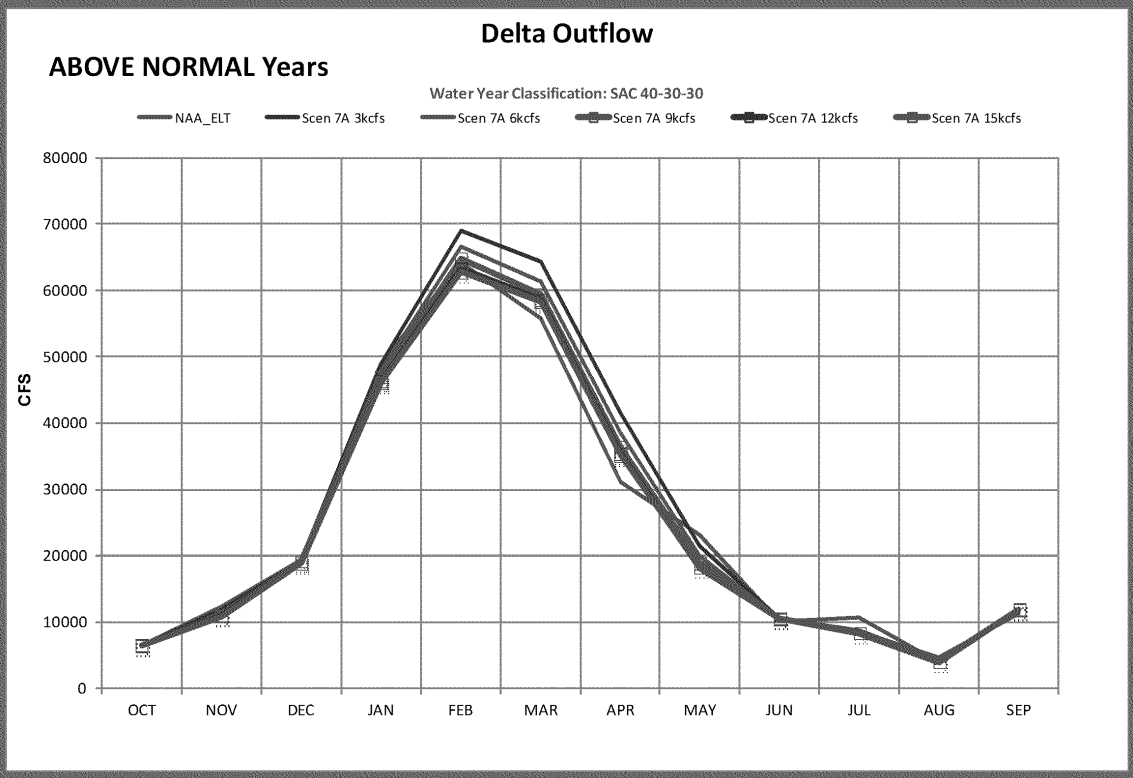


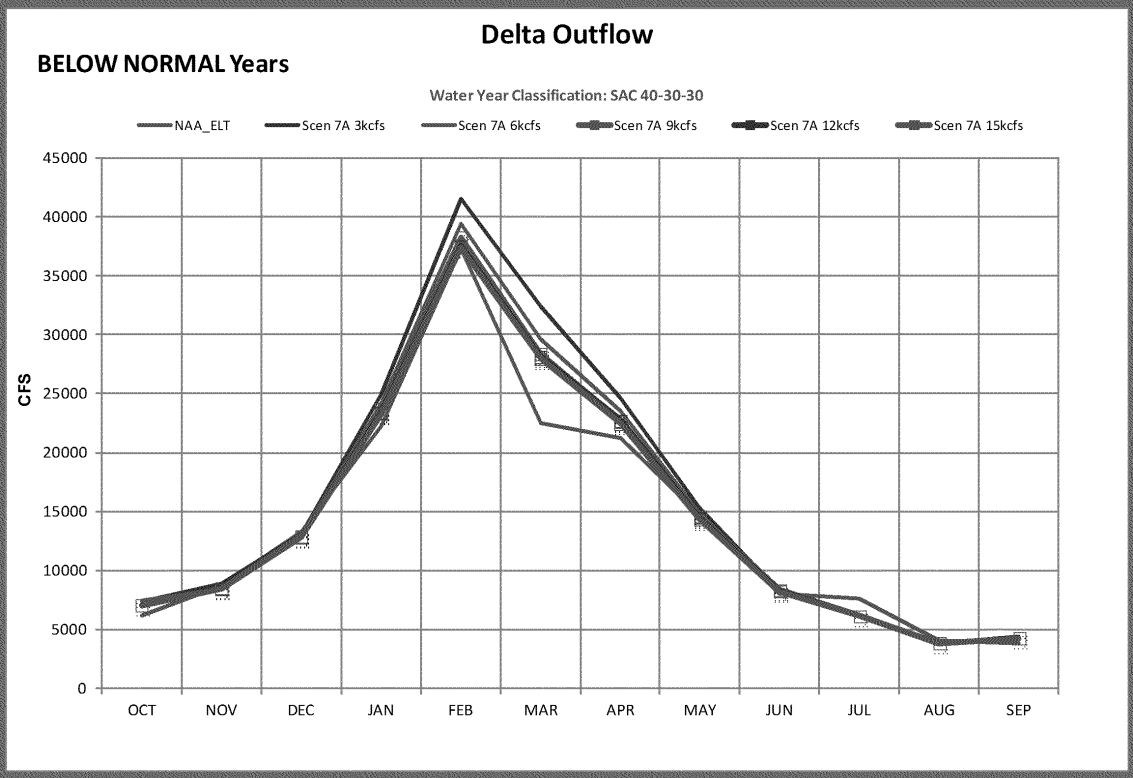
Delta Outflow
"Wet" Years



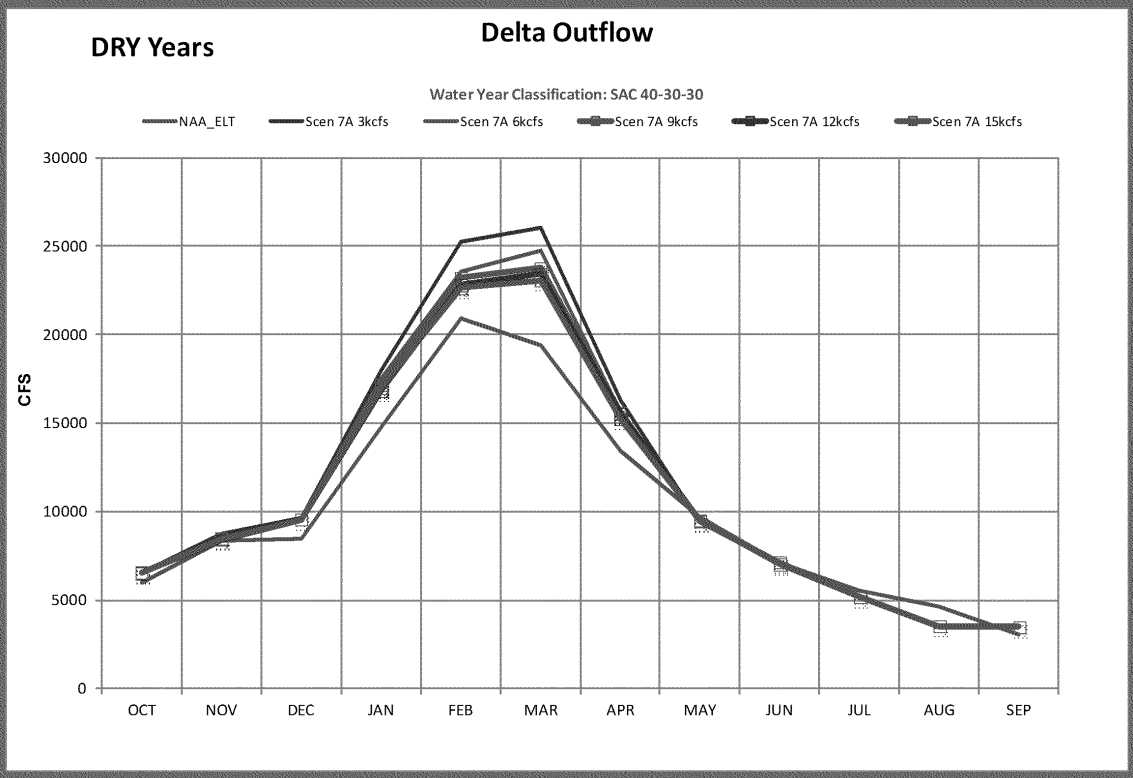
Delta Outflow
"Above Normal" Years years



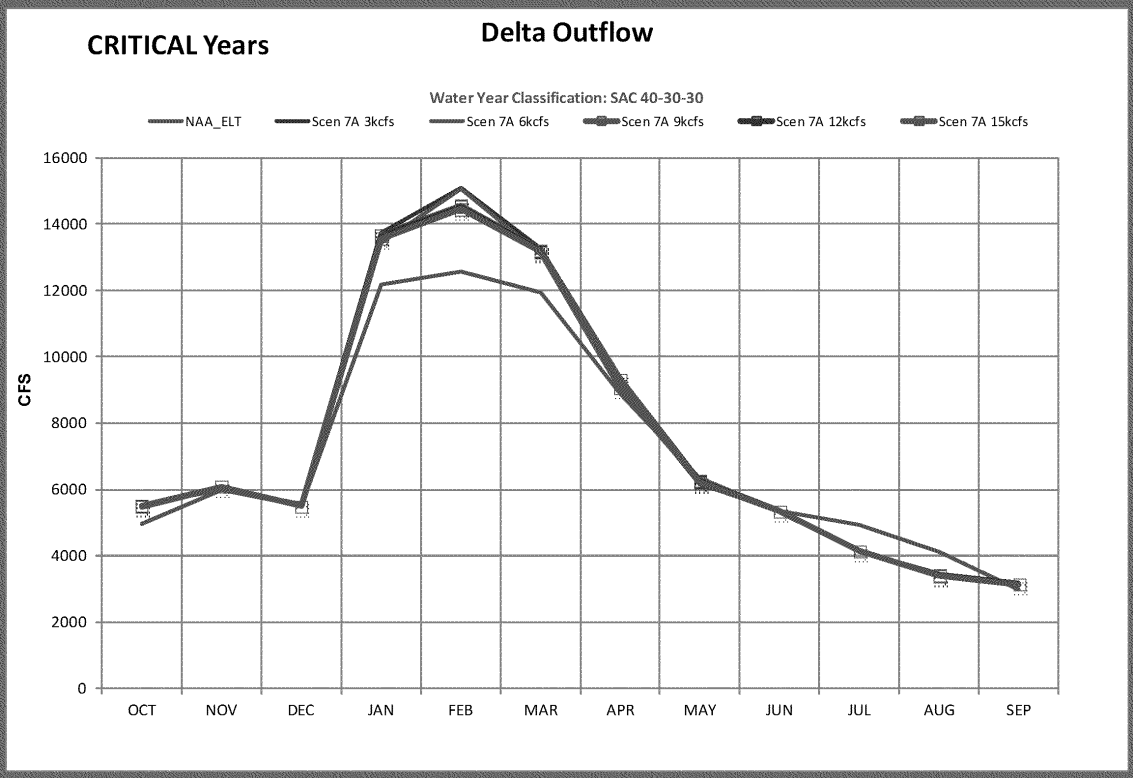
Delta Outflow
"Below Normal" Years



Delta Outflow
"Dry" Years

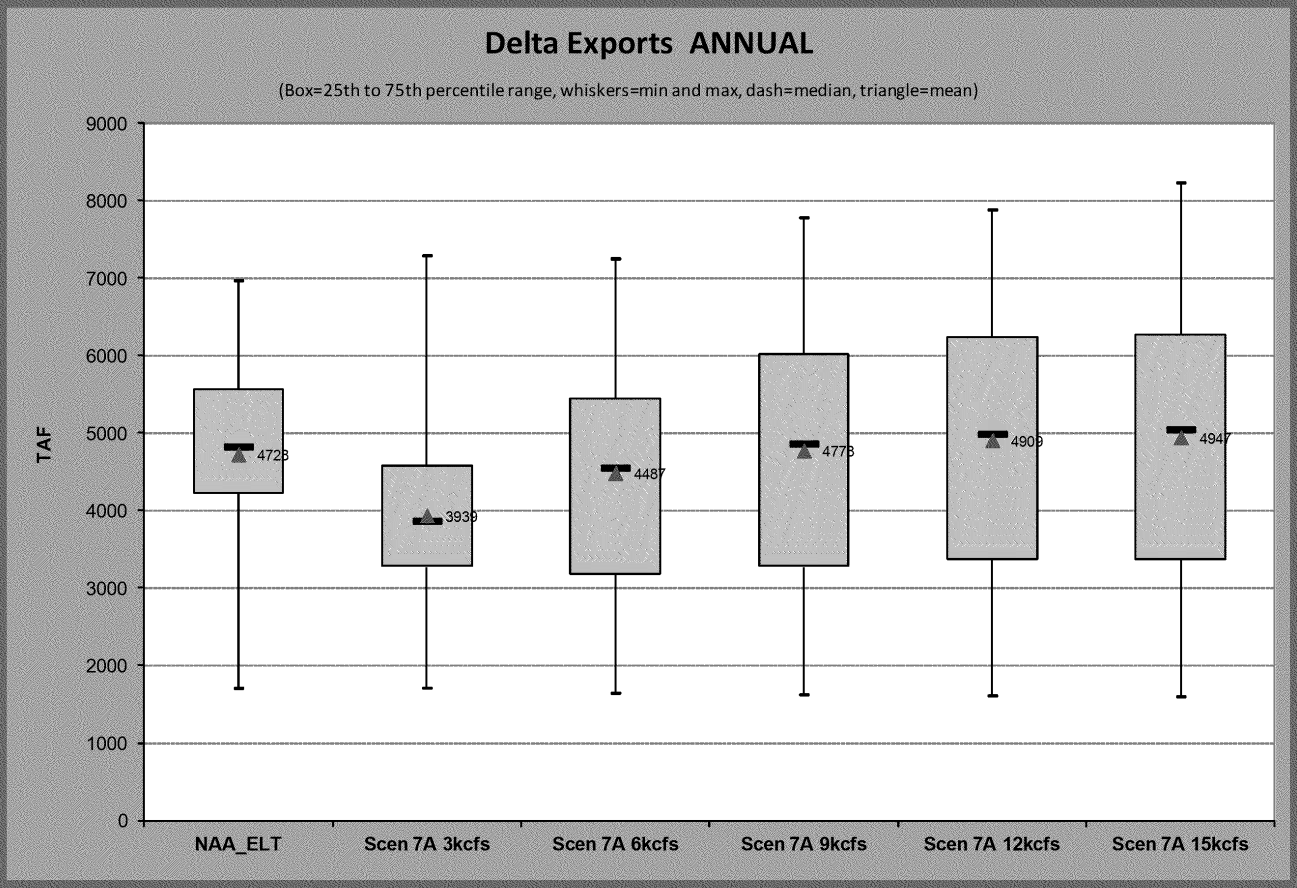


Delta Outflow
"Critical" Years

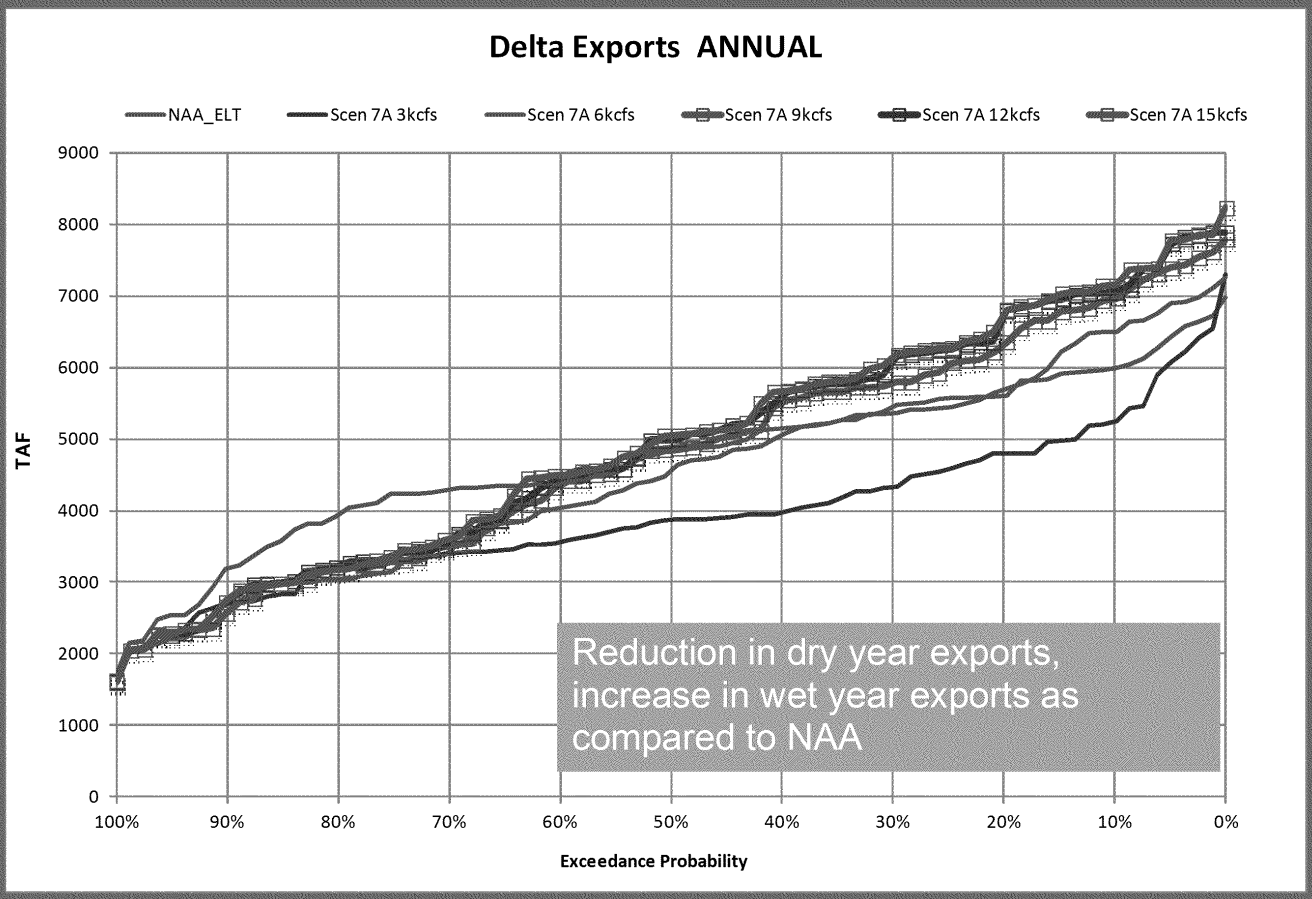


Delta Exports

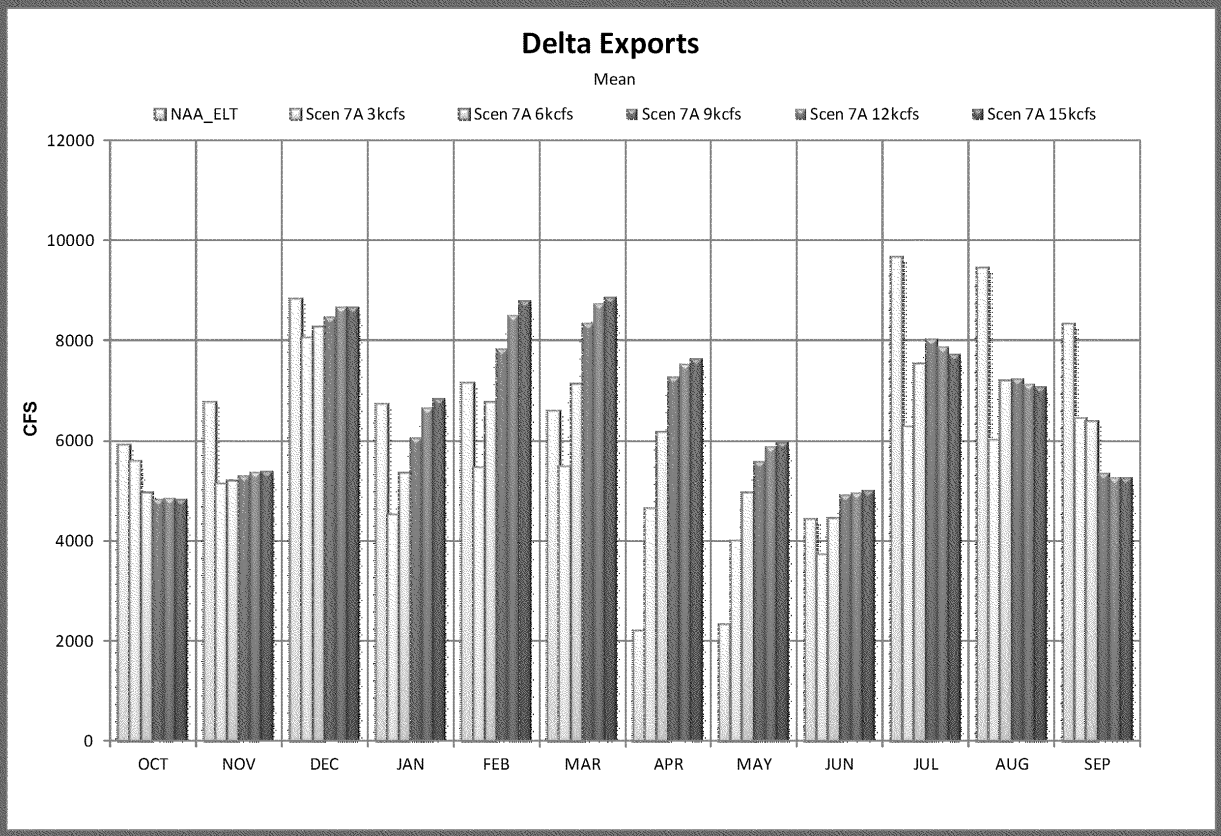
Range of Annual Delta Exports



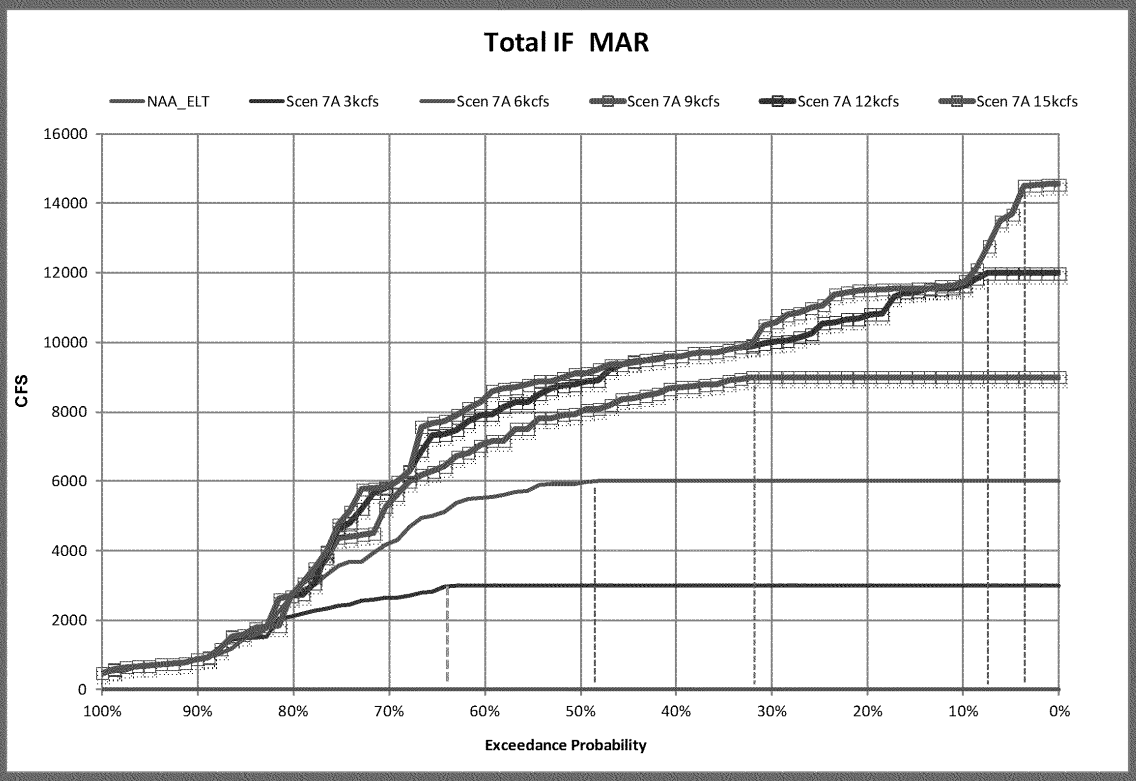
Annual Delta Export Reliability



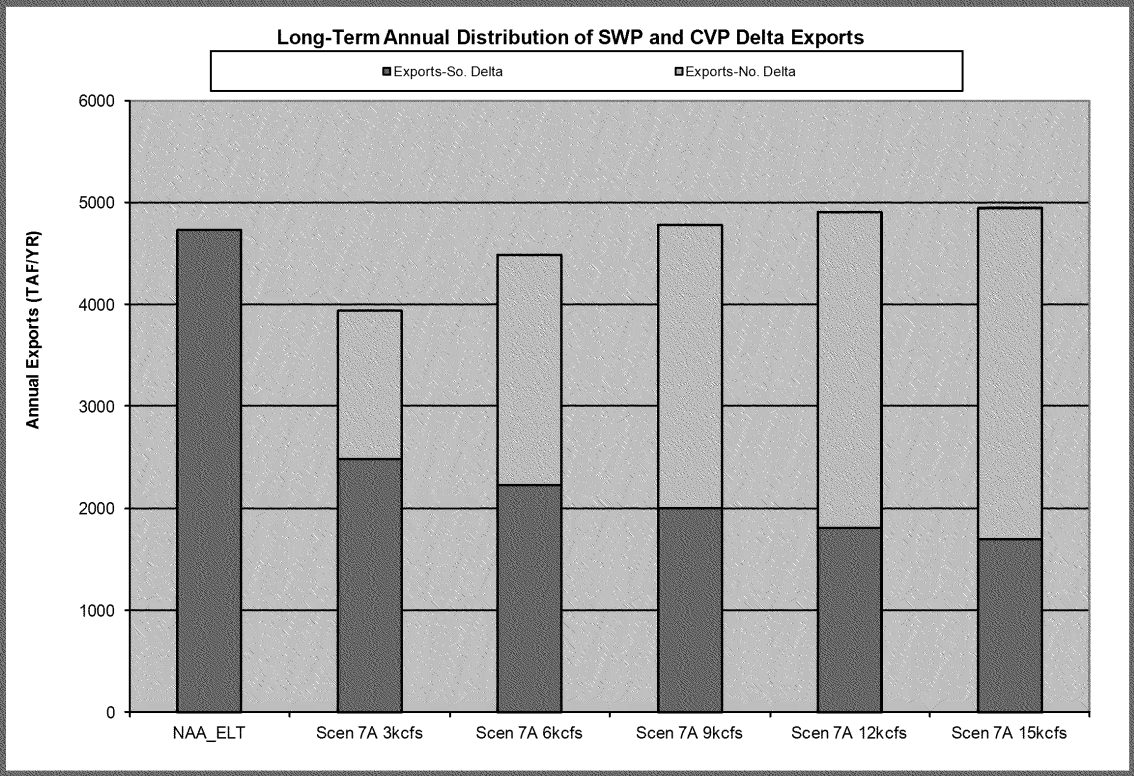
Monthly Exports



North Delta Conveyance Usage – Peak Month

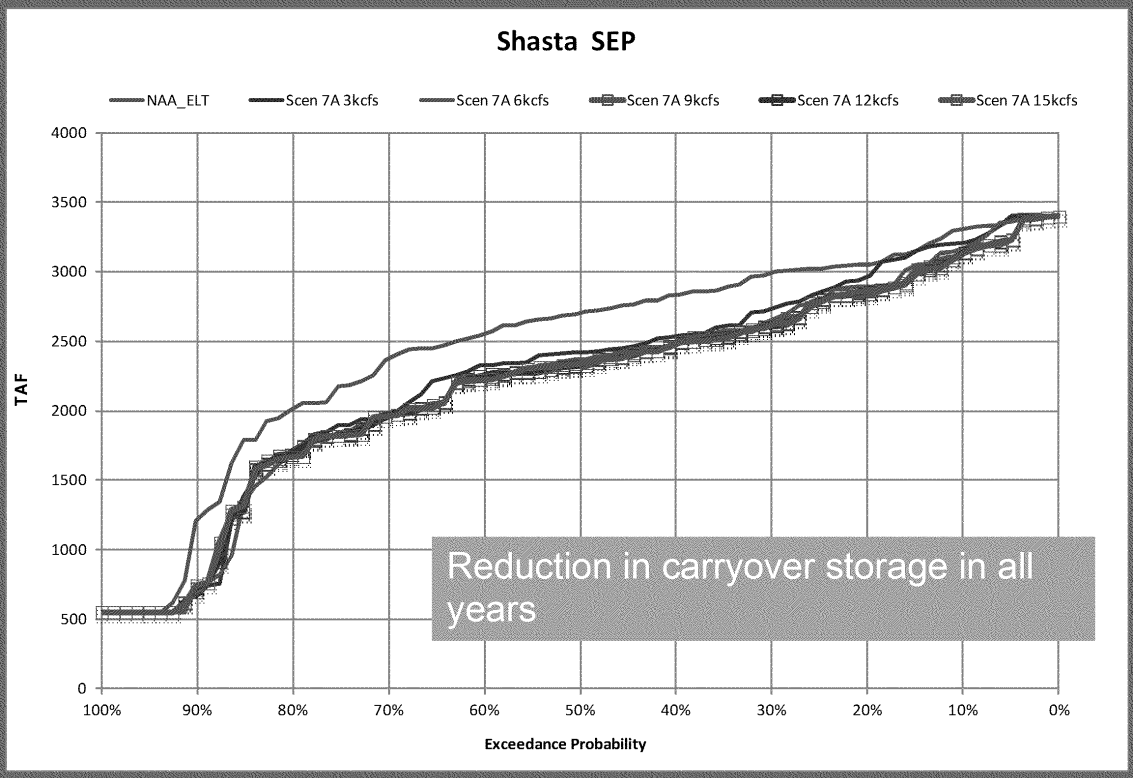


Distribution of Delta Exports

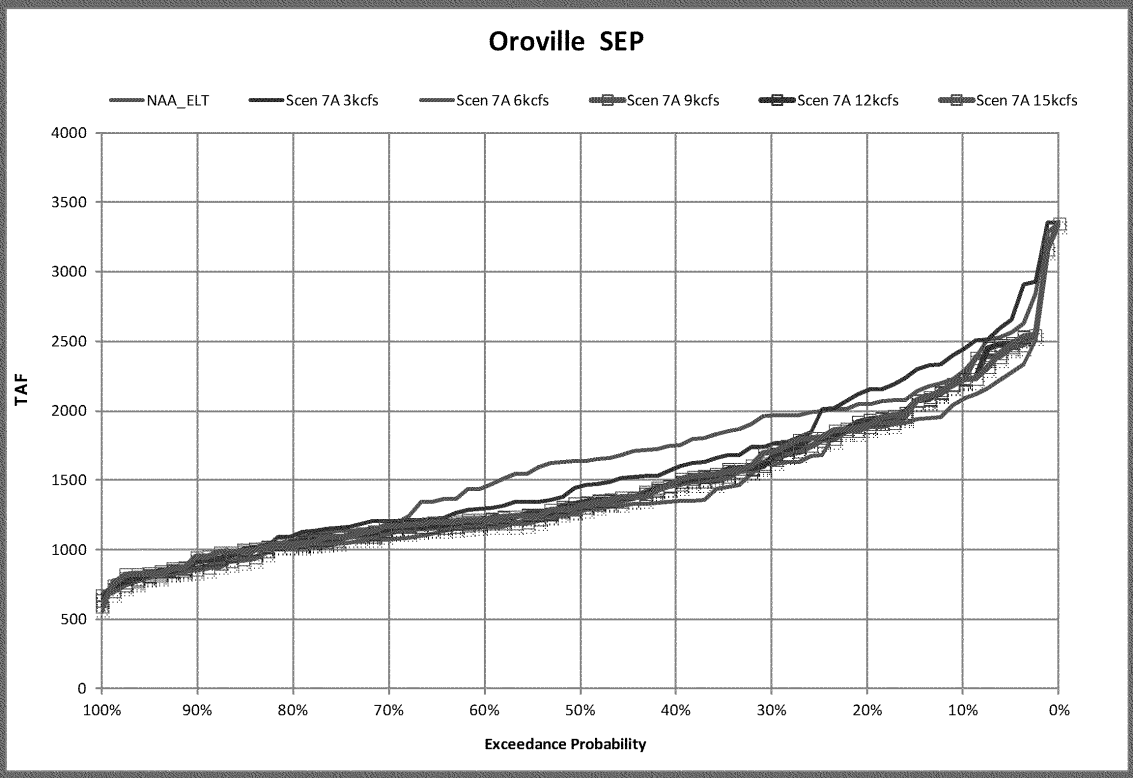


Storage Management

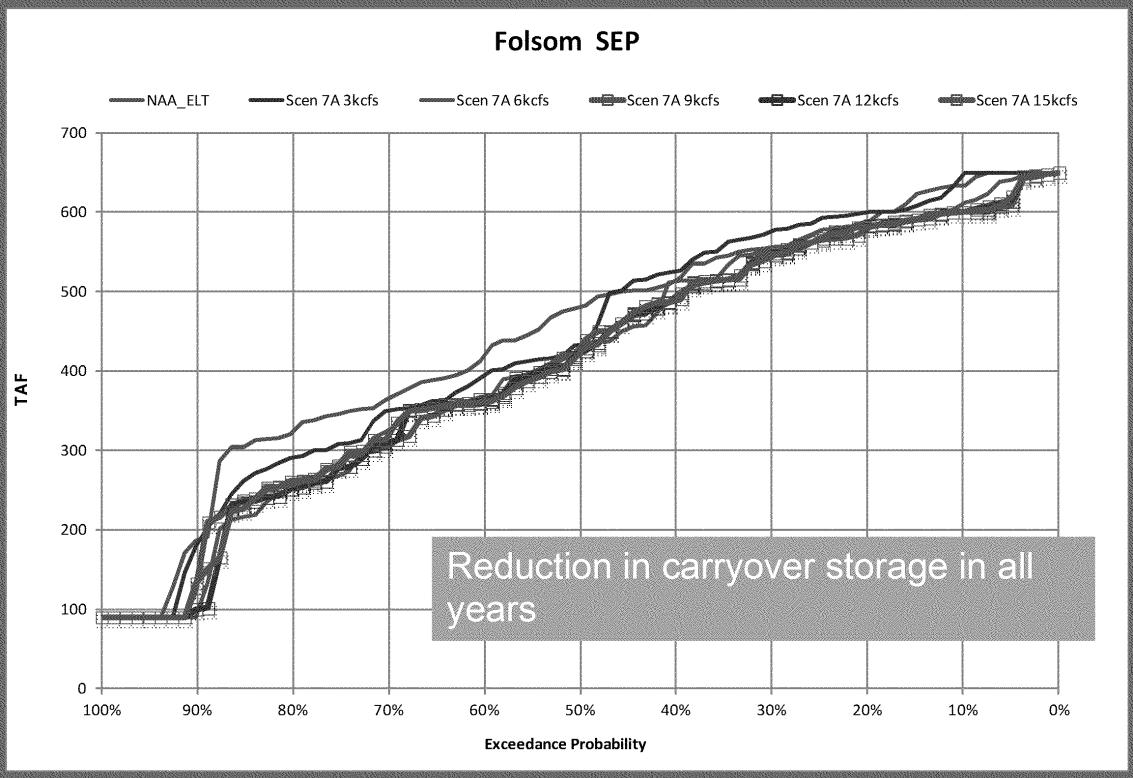
Shasta End of September Storage



Oroville End of September Storage



Folsom End of September Storage



Summary

* Scenario 7A produces spring river flow patterns that are similar to that of unimpaired
* Scenario 7A has significantly higher OMR flows and delta outflows during most months than the No Action
* Delta exports are significantly shifted from dry periods to wet periods
* Recovery of dry period export reductions only occurs with north delta diversion conveyance sizes above 9 kcfs
* Maximum SWP/CVP delta export improvement is around 220 TAF/YR as compared to the No Action
* Scenario 7A continues to demonstrate Shasta storage management challenges – this challenge is unaffected by conveyance size