Use of Unimpaired Flow Requirements to Protect San Joaquin River Fish and Wildlife

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State Water Resources Control Board
Division of Water Rights

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State Water Board

- State Water Resources Control Board's mission:

  to preserve, enhance and restore the quality of California's water resources, and ensure their proper allocation and efficient use for the benefit of present and future generations.

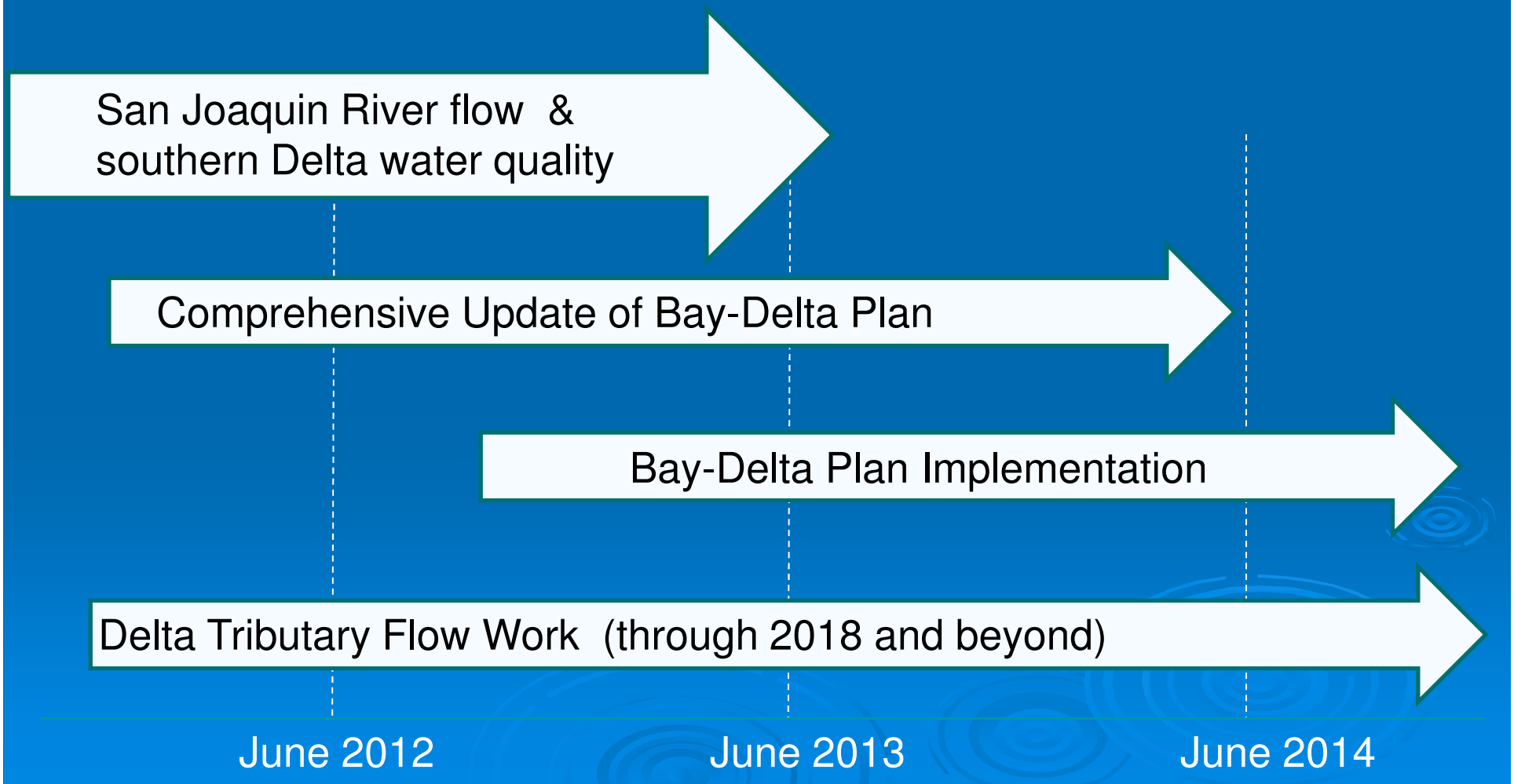
- The Bay-Delta

  Statewide water quality and water resource allocation issues converge

Water Quality Control Planning

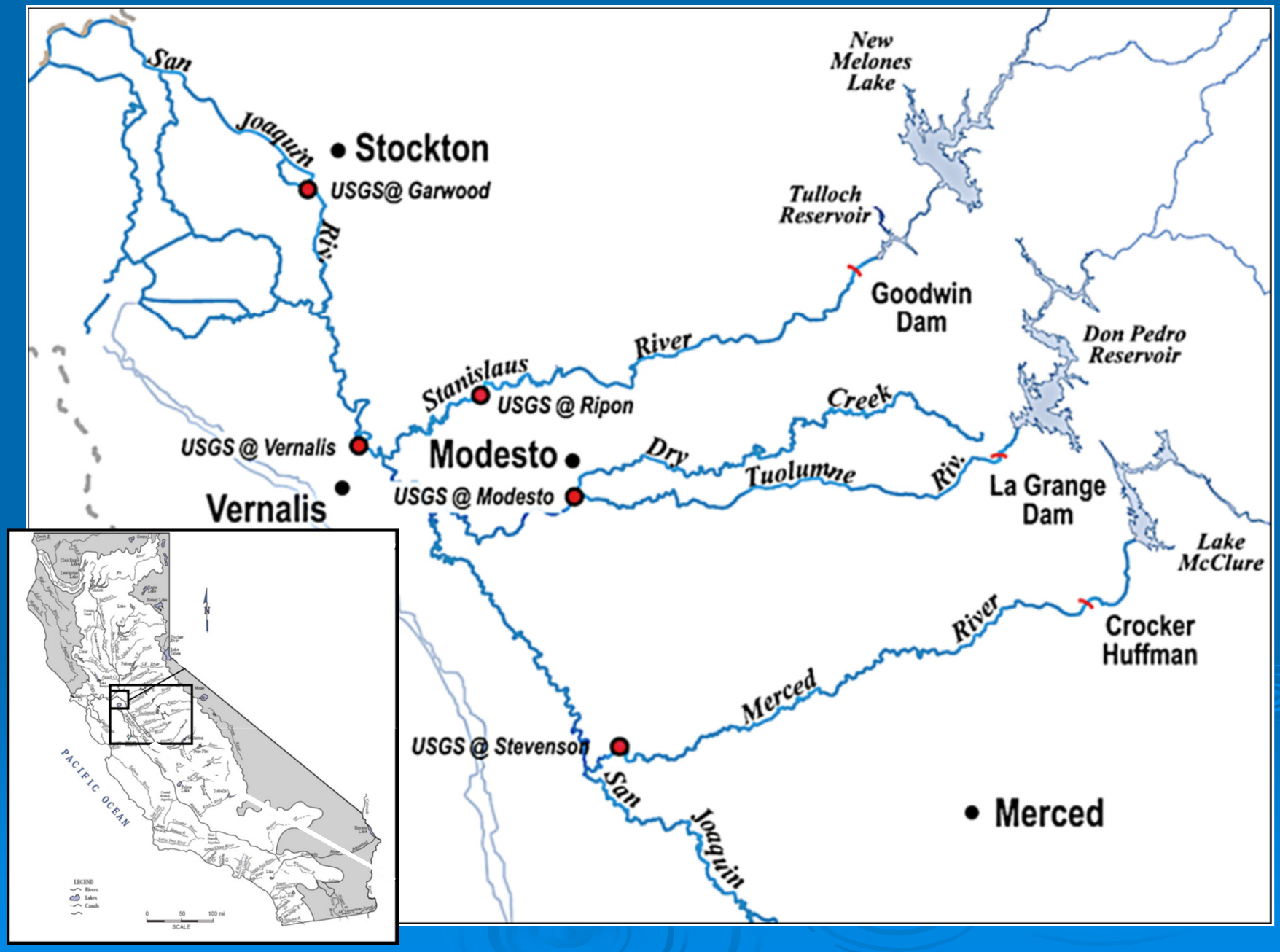
- Water Quality Control Plans
- The Bay-Delta Plan or the…
  - Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary
- Beneficial uses, objectives, program of implementation, and monitoring
- Updated periodically
- Not self-implementing

Bay-Delta Planning Activities



Process and Product History

- 2006: Bay-Delta Plan Update
- 2008: Strategic Workplan
- 2010: Delta Flow Criteria (2009 Delta Reform Act)
- October 2011: “Technical Report”
- December 2012: Environmental Documents and Proposed Regulation


San
Joaquin
Stockton
USGS@ Garwood
Riv.
New
Melones
Lake
Tulloch
Reservoir
Goodwin
Dam
River
Stanislaus
USGS @ Ripon
Creek
Dry
Tuolumne
Riv.
Don Pedro
Reservoir
La Grange
Dam
Lake
McClure
USGS @ Vernalis
Modesto
USGS @ Modesto
Vernalis
Crocker
Huffman
River
Merced
USGS @ Stevenson
San
Joaquin
Merced
PACIFIC OCEAN
LEGEND
Rivers
Lakes
Canals
SCALE

Current SJR Flow Objectives

Water Year Type	Time Period	Minimum monthly average flow (cfs)*
W,AN	Feb to Apr 14	2,130 or 3,420
BN,D	and	1,420 or 2,280
C	May 16 through June	710 or 1,140
W	Apr 15 to May 15	7,330 or 8,620
AN		5,730 or 7,020
BN		4,620 or 5,480
D		4,020 or 4,880
C		3,110 or 3,540

* The higher flow objective applies when the 2-ppt isohaline is required to be at or west of Chipps Island.

Interim SJR Flows (The VAMP*)

Existing Flow (cfs)	Target flow (cfs)
0 - 1,999	2,000
2,000 - 3,199	3,200
3,200 - 4,449	4,450
4,450 - 5,699	5,700
5,700 - 6,999	7,000
7,000 or greater	Existing Flow

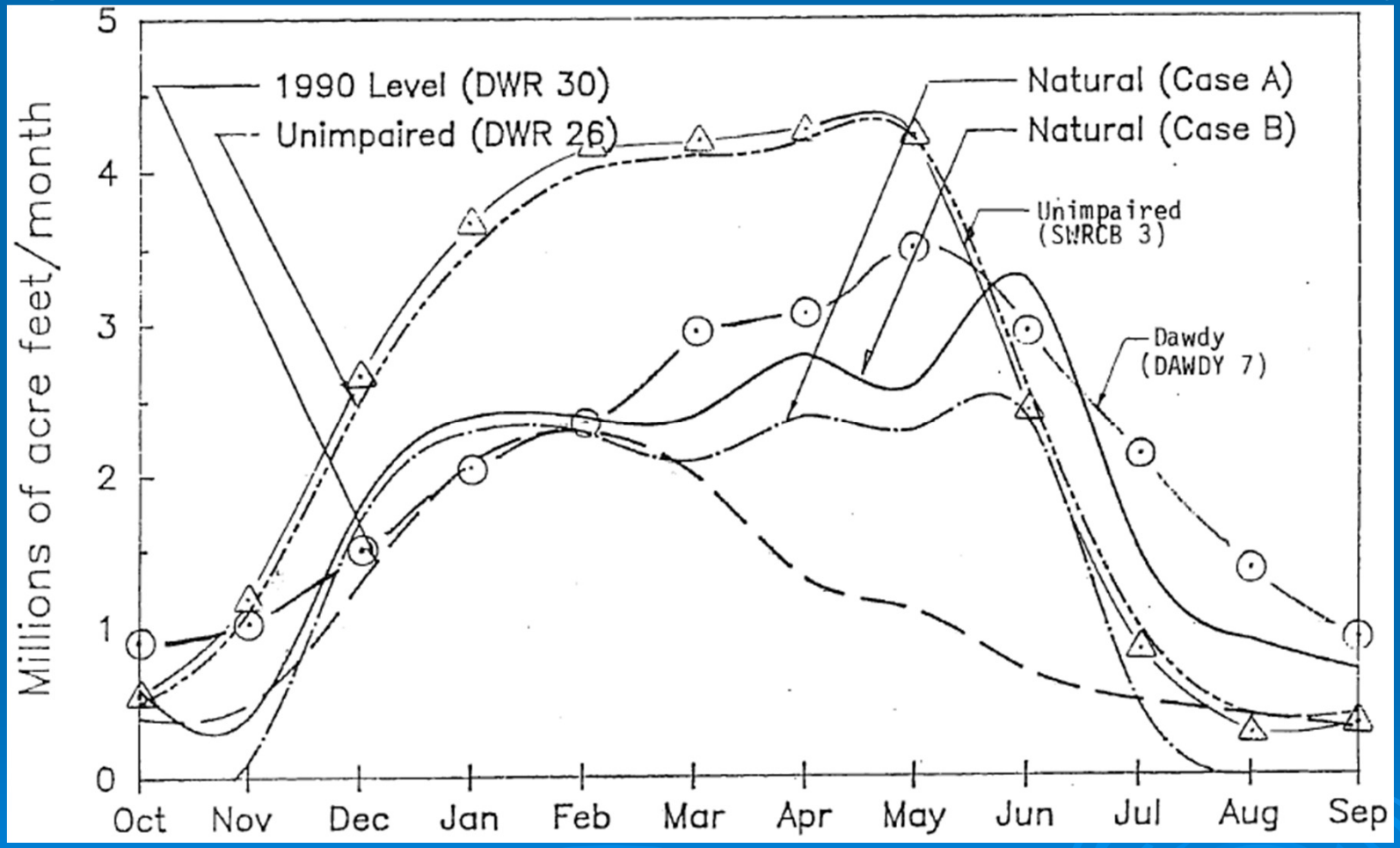
* The VAMP (Vernalis Adaptive Management Plan) was designed to evaluate the effects of varying SJR April/May pulse flows, SWP and CVP project exports, and barrier operation, on survival of salmon migrating through the Delta.

Scientific Basis for Alternative SJR Flow Objectives

- Salmon outmigration is critical lifecycle stage
- More flow of a more natural pattern will benefit native fish
- Provides lateral (habitat) and longitudinal (transport) connectivity
- Other factors, including habitat and temperature are also important, but do not obviate need for improved flow

Not a New Idea

Figure 3.5.3-1 from Draft 1988 WQCP for Salinity



	DWR UF	SWRCB UF	SWC NF	DAWDY NF	DWR 1990 LOD
MAF/Year	28	28	16-22	25	14

Proposed Narrative Objective

"Maintain flow conditions from the San Joaquin River Watershed to the Delta at Vernalis, together with other reasonably controllable measures in the San Joaquin River Watershed, sufficient to support and maintain the natural production of viable native San Joaquin River watershed fish populations migrating through the Delta….

Proposed Narrative Objective

"Flow conditions that reasonably contribute toward maintaining viable native migratory San Joaquin River fish populations include, but may not be limited to, flows that mimic the natural hydrographic conditions to which native fish species are adapted, including the relative magnitude, duration, timing, and spatial extent of flows as they would naturally occur. Indicators of viability include abundance, spatial extent or distribution, genetic and life history diversity, migratory pathways, and productivity."

Program of Implementation

- February through June: 35 percent of unimpaired flow from the salmon bearing tributaries (the Merced, Tuolumne, and Stanislaus Rivers) on a 14-day running average unless otherwise approved by State Water Board through adaptive management…
- Notes:
  - not to exceed flood control levels
  - 1,000 cfs minimum base flow at Vernalis

Program of Implementation

- Calls for establishing an implementation workgroup with expertise in fisheries management, unimpaired flows, and tributary operations to make recommendations for measures to best achieve flows and minimize water supply costs
- Calls for establishing a Coordinated Operation Group (COG) to develop procedures for an adaptive management process

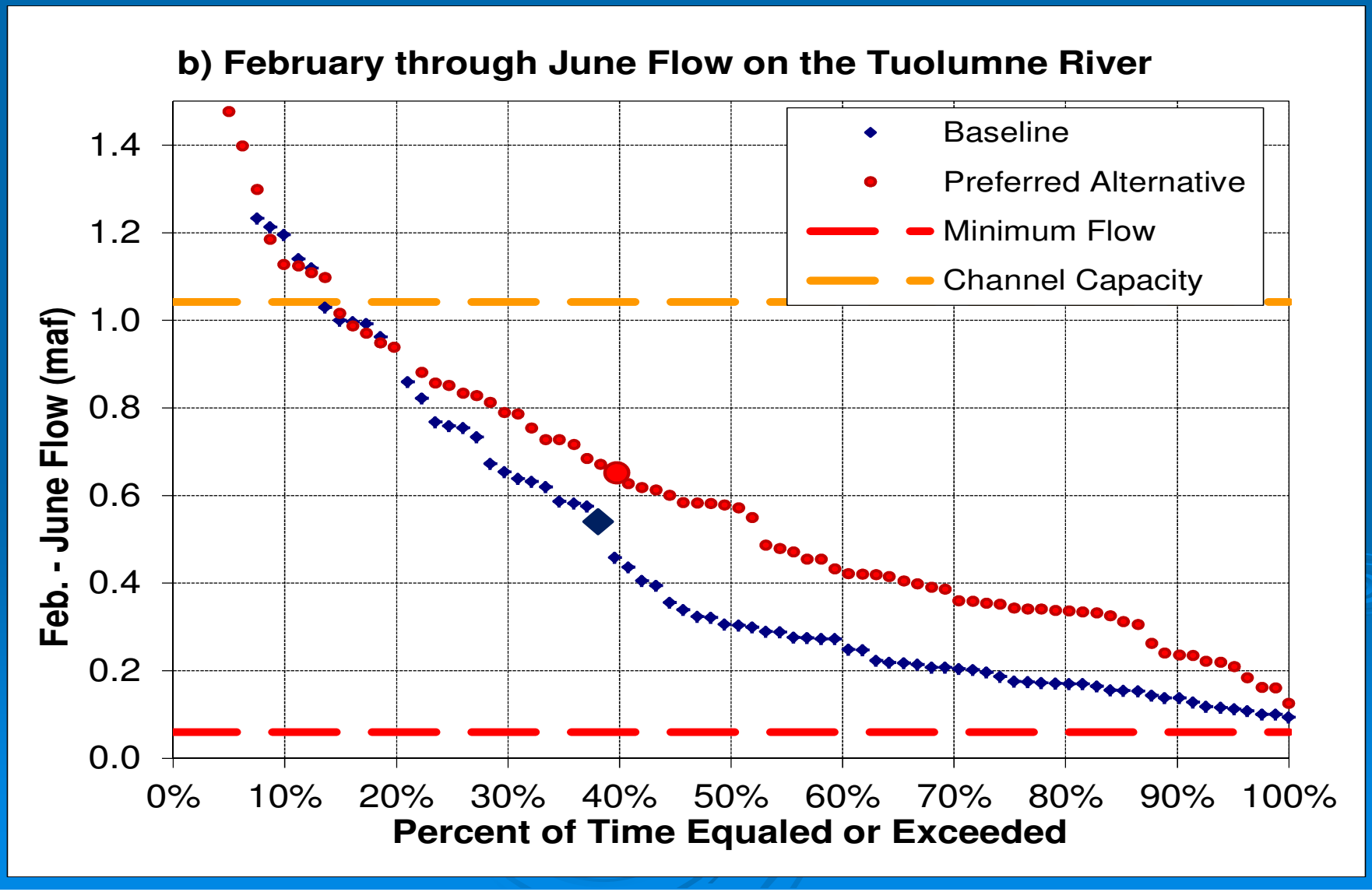
Adaptive Management

- Encourages adaptive management, not rigid adherence to a specific flow to:
  - Optimize fishery protection
  - Minimize water supply costs
- Allows for adaptive range from 25 to 45%
- Allows shifting in time to achieve, for example, higher pulse flows
- Provides parameters under which adaptive management may occur

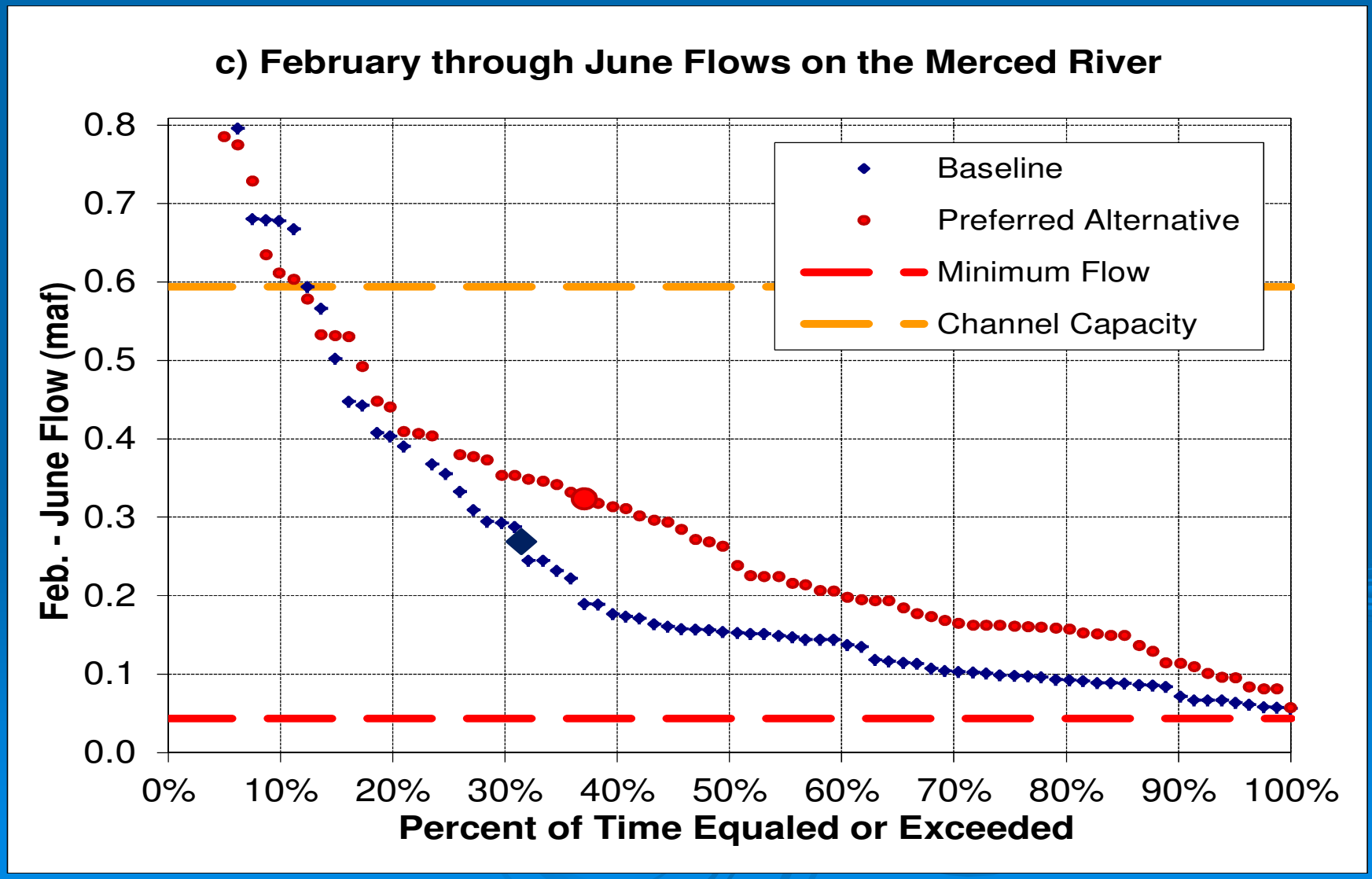
Key Elements of the Proposal

- Requires tributary flows, not just Vernalis
- Narrative objectives implemented by percent of unimpaired flow
- Flows may be adaptively managed within established bounds and framework process
- Adaptive management does not require a Bay-Delta Plan update

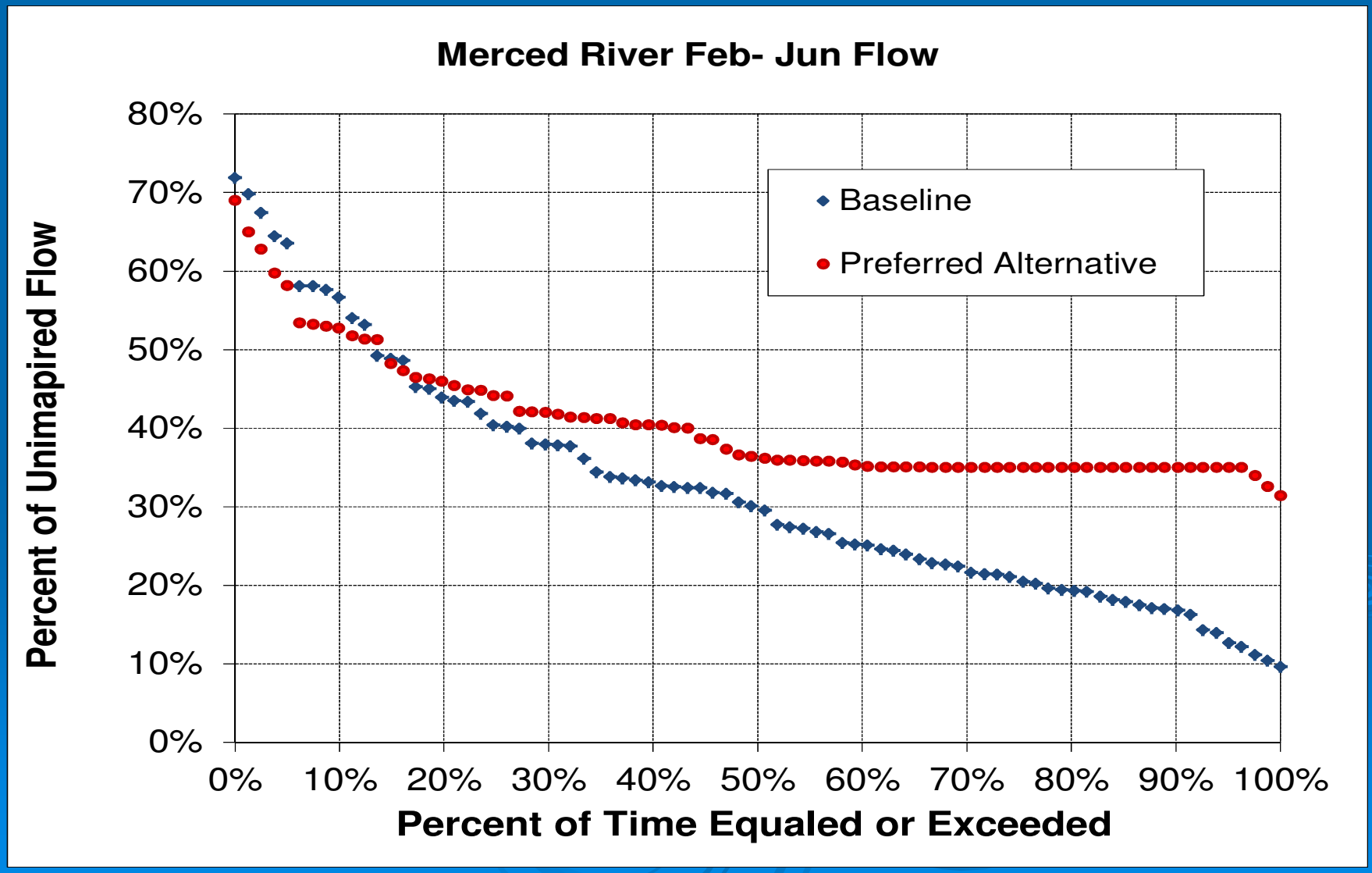
Tuolumne River Exceedence



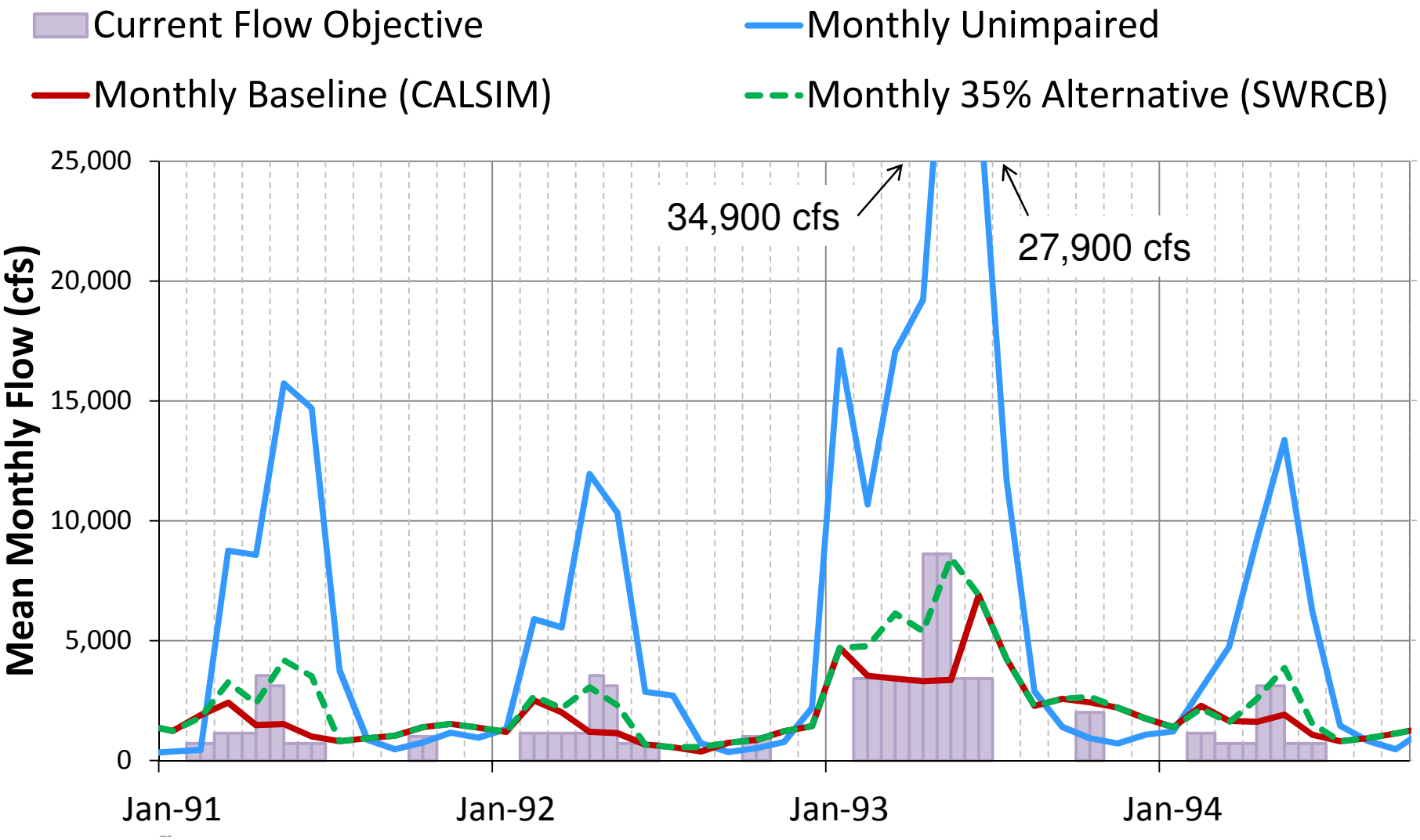
Merced River Exceedence



Merced River % UF

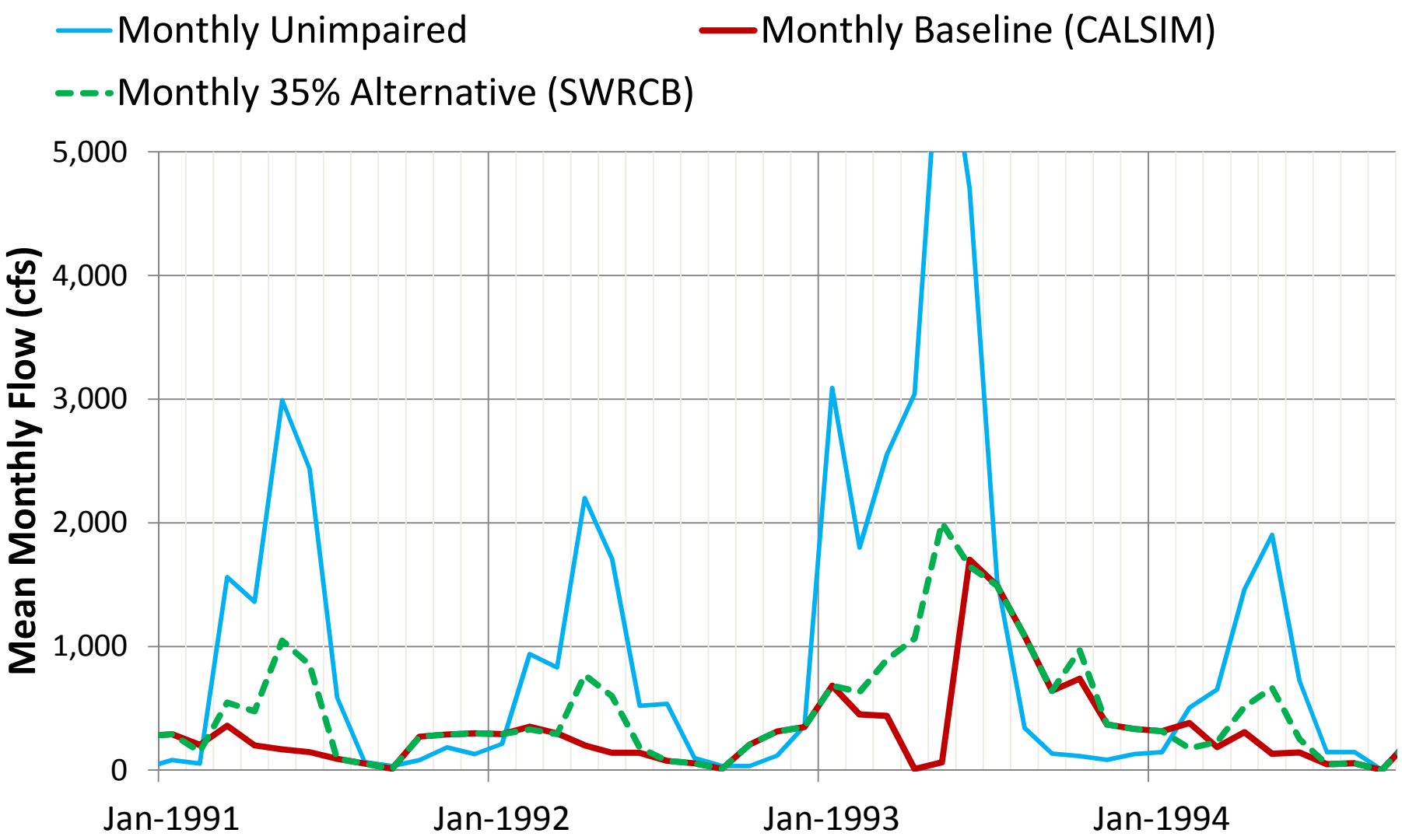


San Joaquin near Vernalis



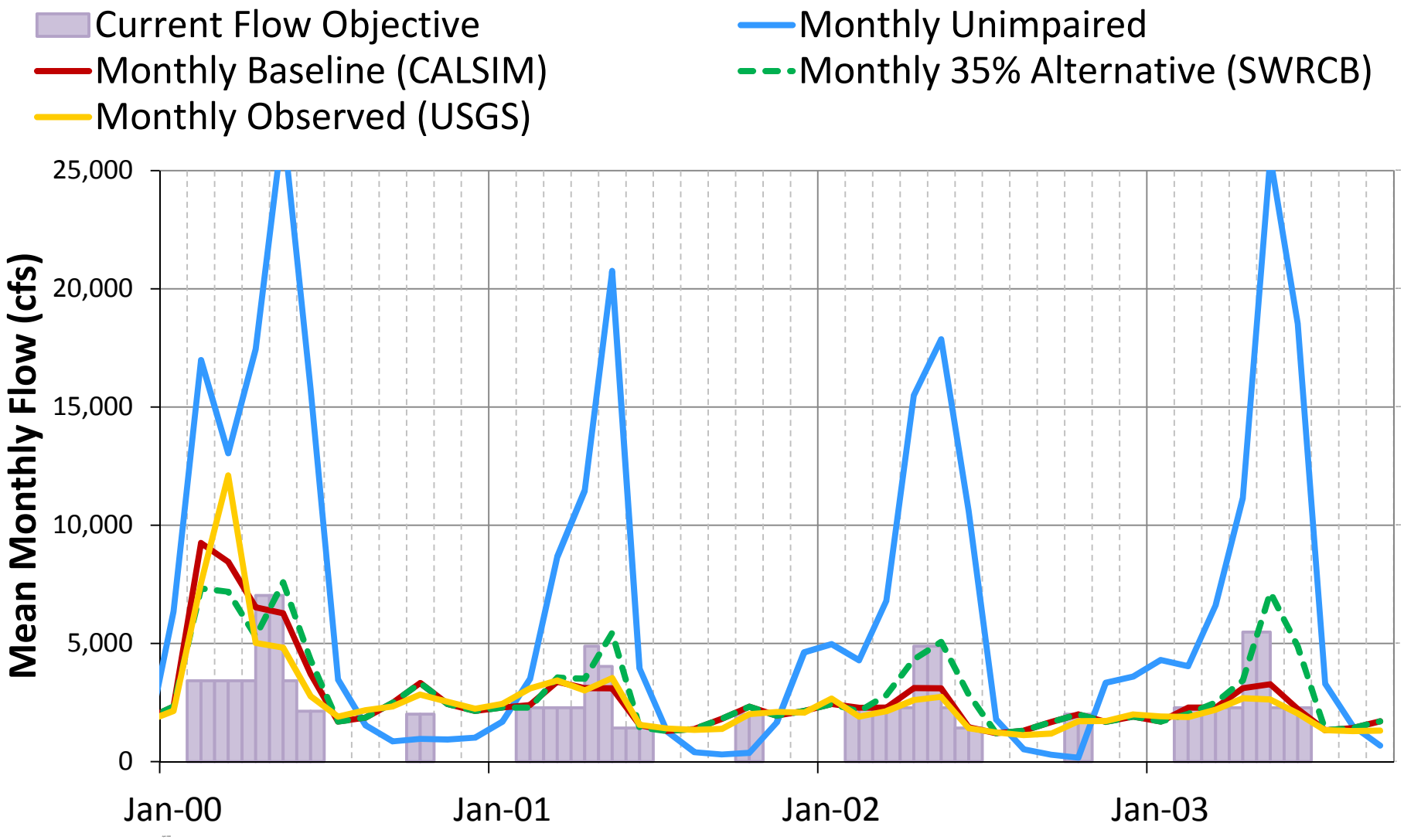
San Joaquin 60-20-20 Year Type:	C	C	W	C

Merced at Stevinson



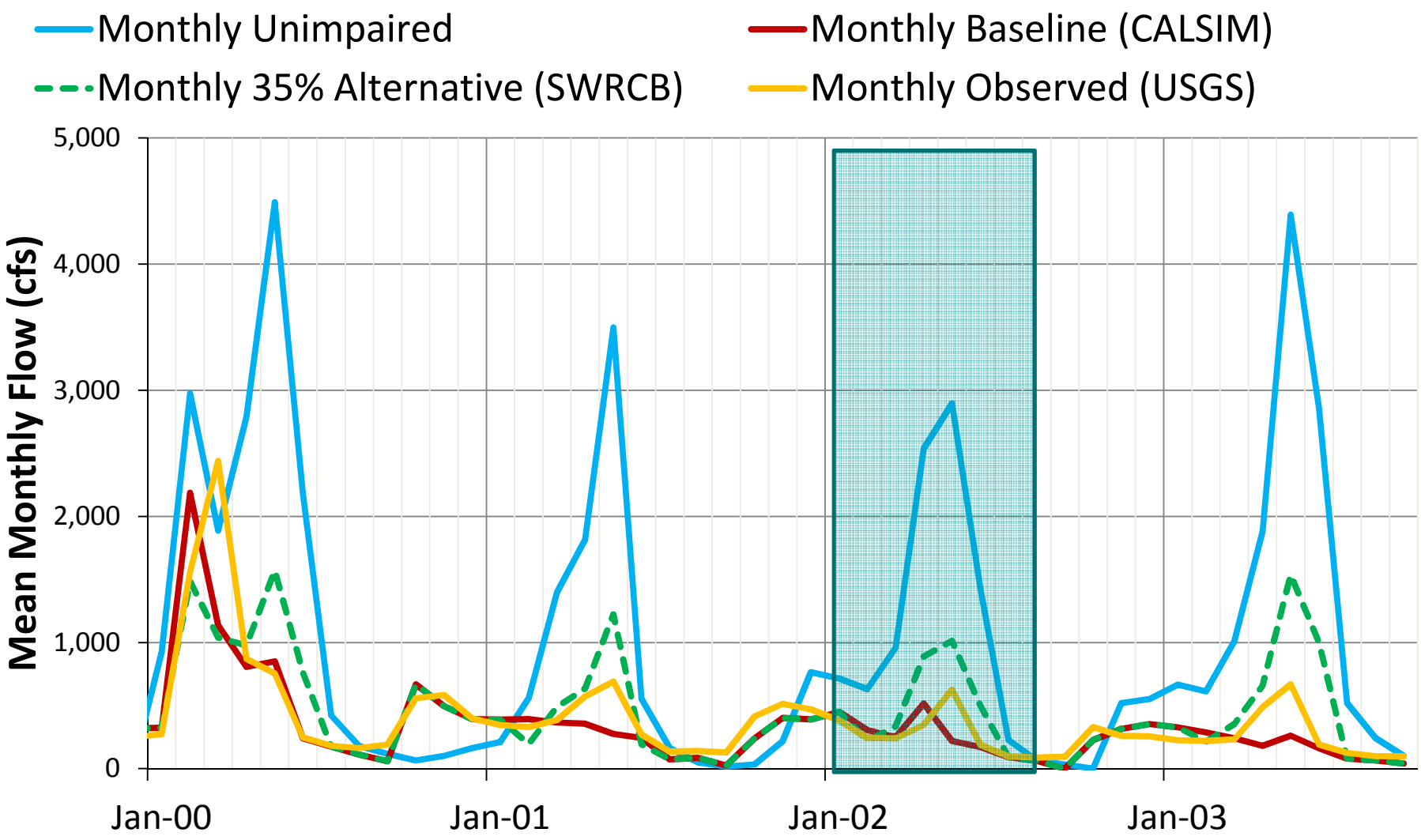
San Joaquin 60-20-20 Year Type:	C	C	W	C

San Joaquin near Vernalis



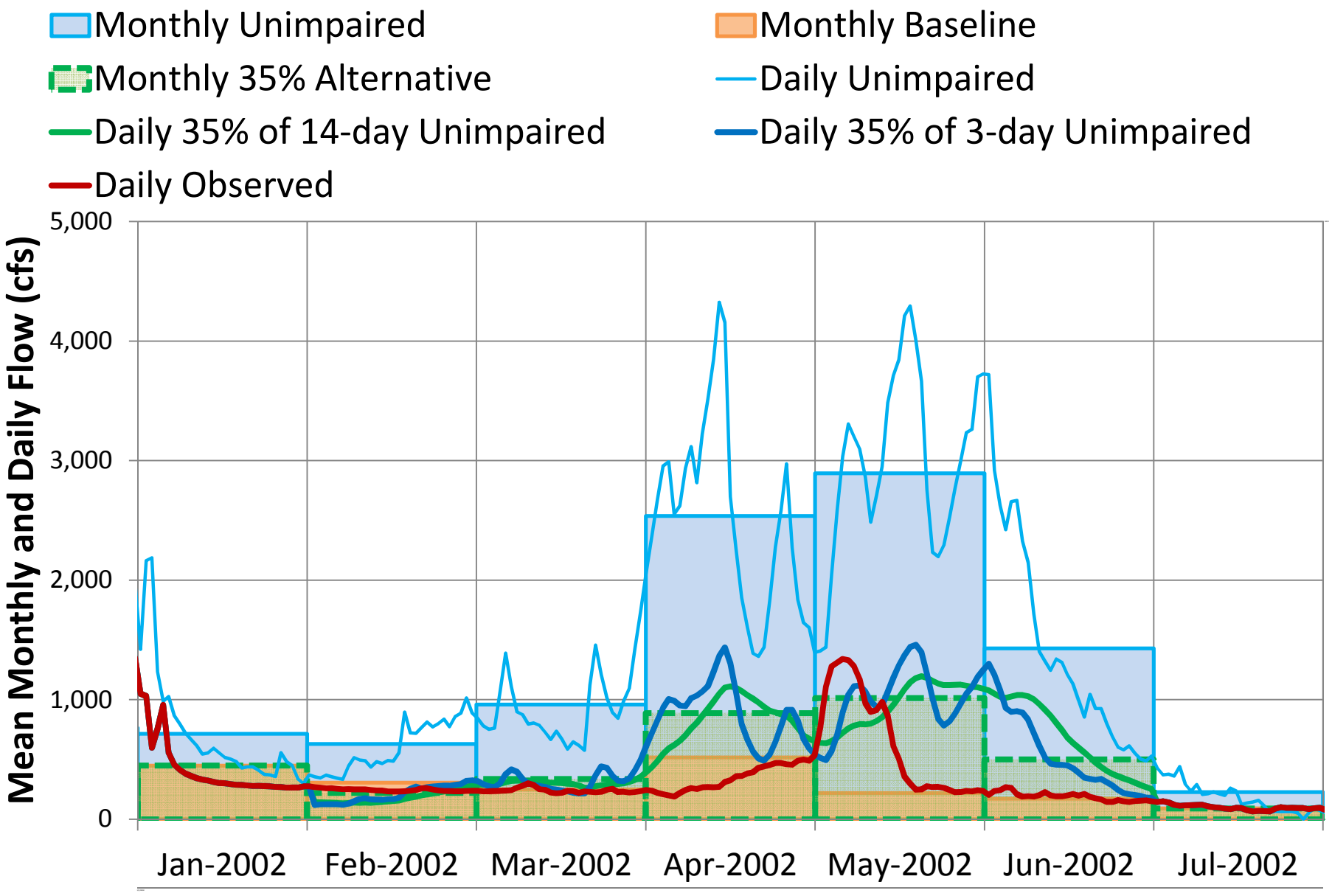
San Joaquin 60-20-20 Year Type:	**AN**	**D**	**D**	**BN**

Merced at Stevinson

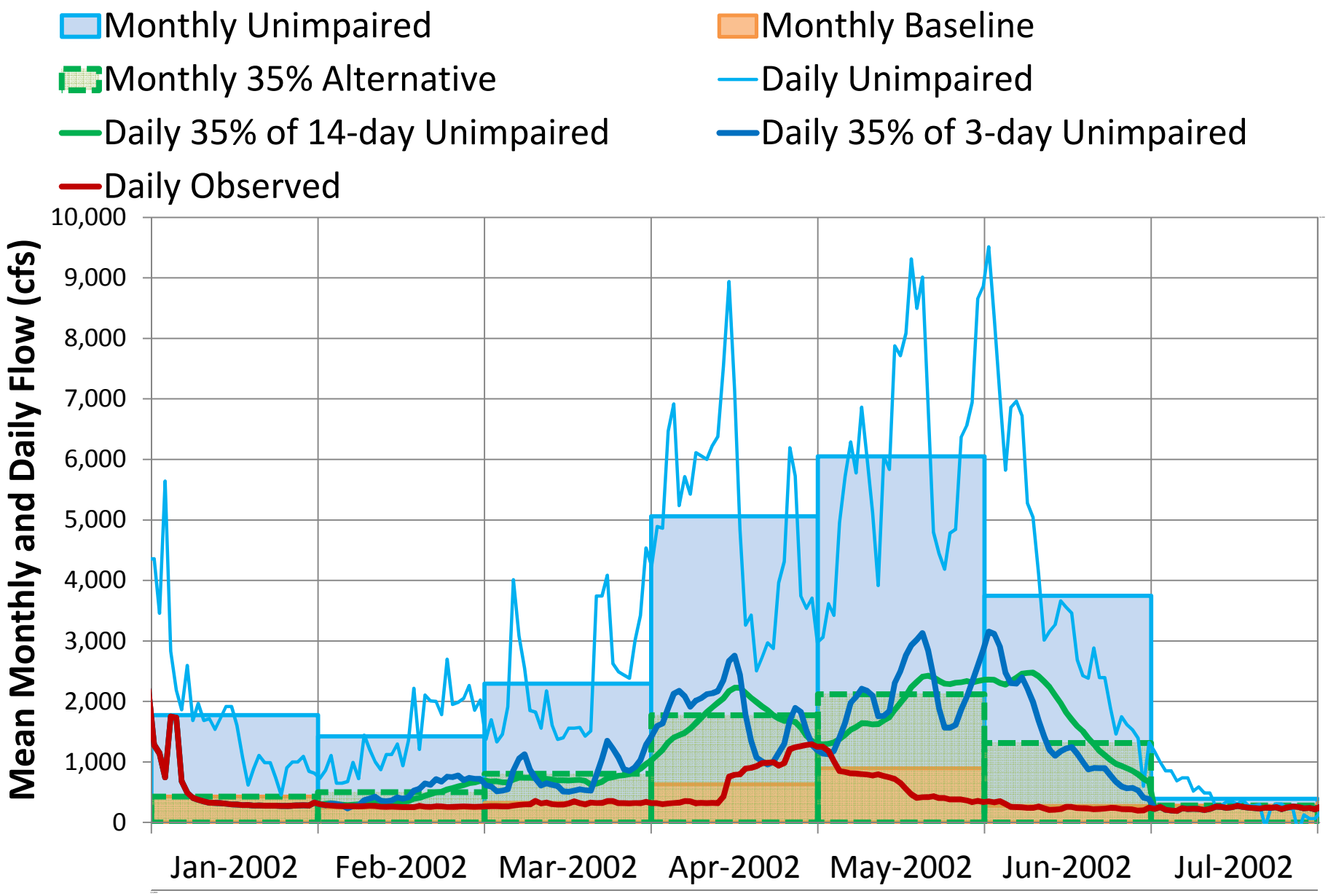


San Joaquin 60-20-20 Year Type:	AN	D	D	BN

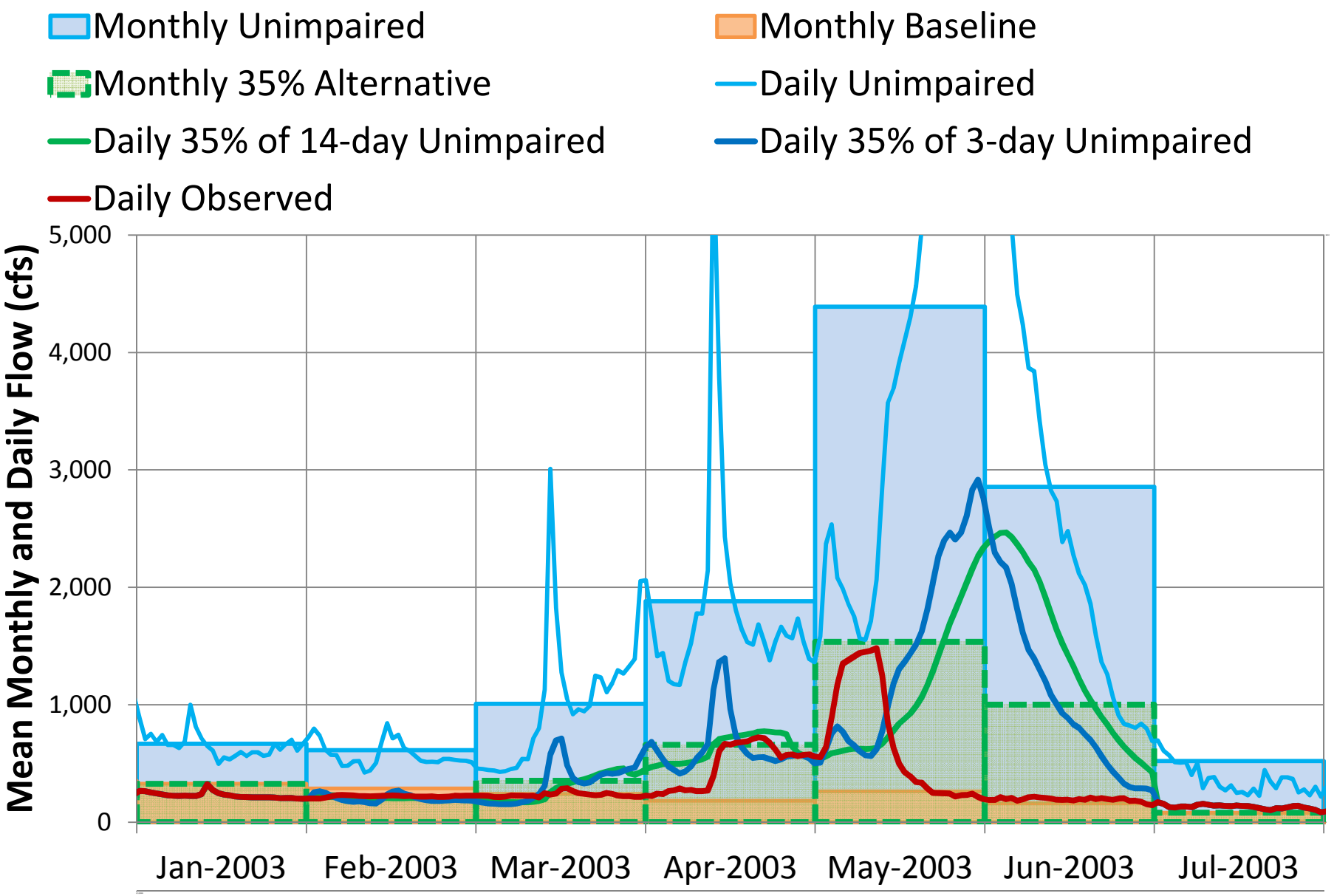
Merced at Stevinson



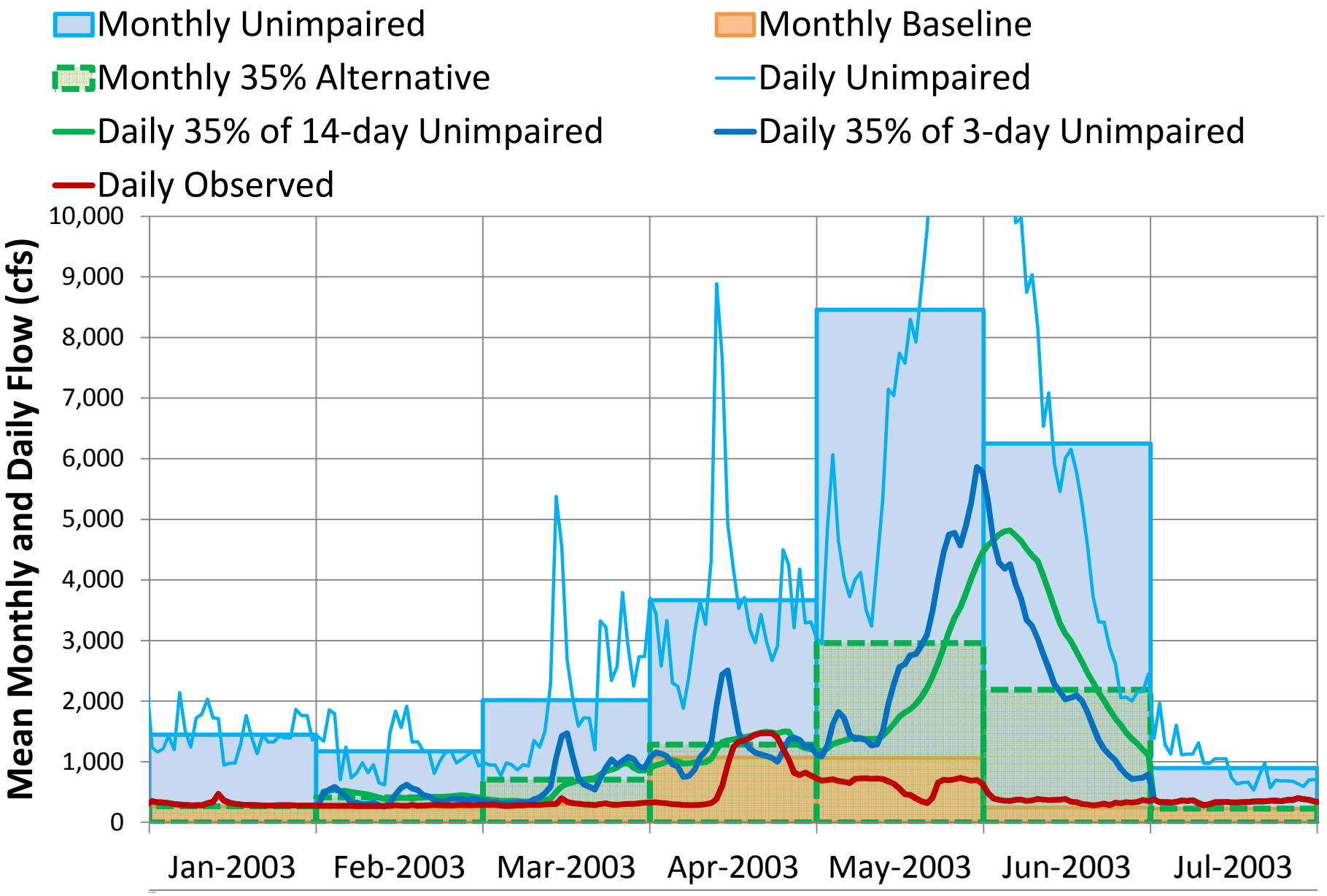
Tuolumne at Modesto



Merced at Stevinson



Tuolumne at Modesto

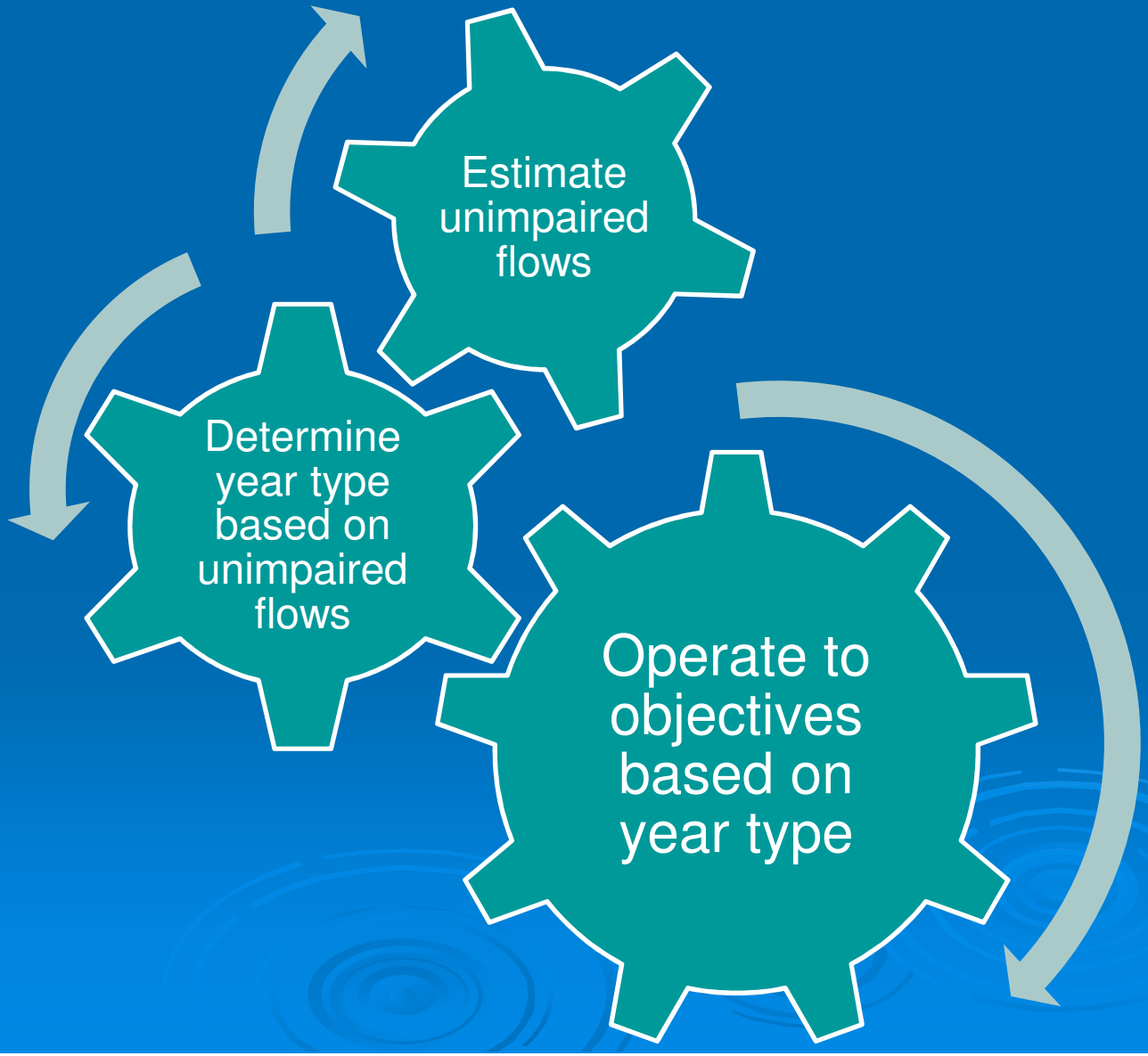


February through June Tributary Flows (Table ES-7 in SED)

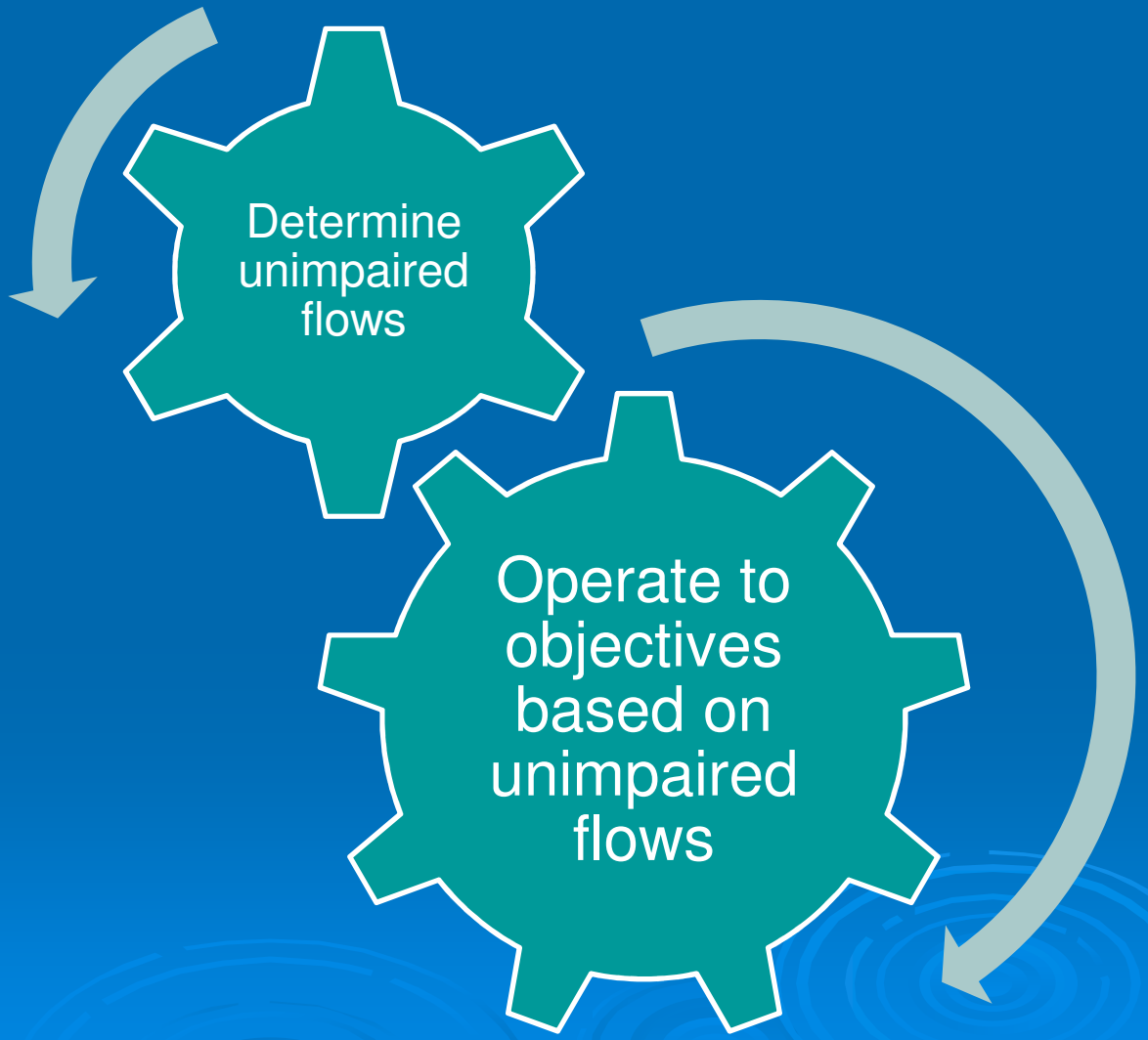
River	Alternative	Average (TAF)	Difference From Baseline (TAF) (%)	10th Percentile (TAF)	50th Percentile (TAF)	90th Percentile (TAF)
Stanislaus	Baseline	335	-24 (-7%)	167	325	531
	35% Alternative	331		182	311	485
Tuolumne	Baseline	540	+111 (+21%)	137	304	1,189
	35% Alternative	651		236	575	1,127
Merced	Baseline	270	+54 (+20%)	74	154	678
	35% Alternative	324		115	252	611
Vernalis	Baseline	1,804	+141 (+8%)	507	1,162	3,624
	35% Alternative	1,945		649	1,577	3,633

TAF = Thousand Acre Feet

Current SJR Flow Objectives



Proposed SJR Flow Objectives



Questions?