San Joaquin River Salinity Management Model (SANMAN)

January 2005

Presentation Content

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Model Description

The purpose of the San Joaquin River Salinity Management Model (SANMAN) is to provide reconnaissance-level decision support in the development of a <u>San Joaquin River Salinity Management Plan</u> by:

- Identifying coordinated management strategies that meet the Vernalis salinity objective

- Estimating water costs of strategies

Model Description (cont'd)

- **Microsoft EXCEL**

- **Post-analysis of CALSIM Sequential Hydrology and CVP-SWP Operations**

  - **March 1922 thru September 1994**

  - **April - May: Half month time step**

- **<u>Prescribes</u> Action Levels (e.g. re-circulation volume) Necessary to Meet Vernalis Salinity Objective Given Pre-defined Action P<u>riorities</u>**
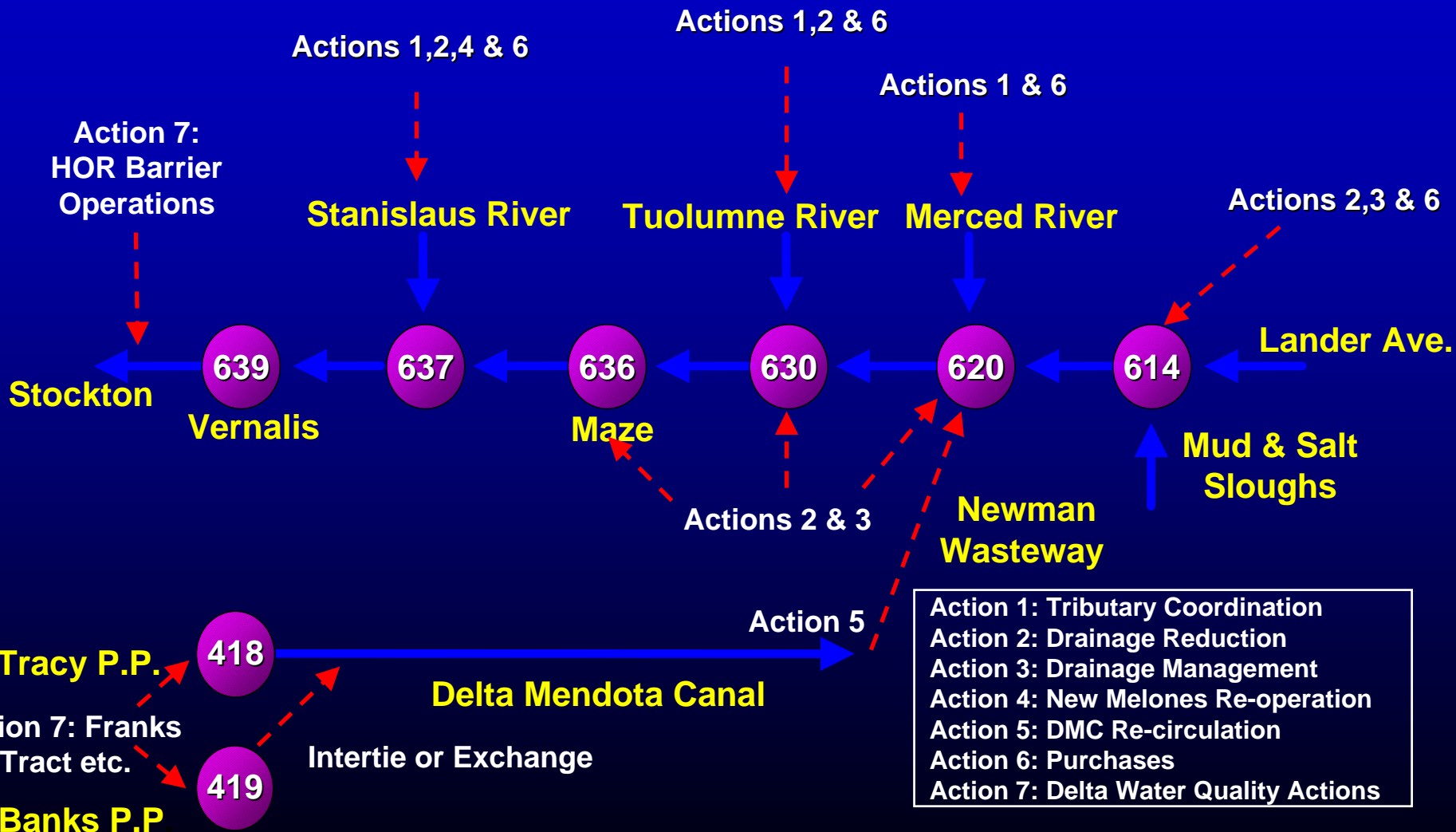
Salinity Management Actions

- **Coordinated Tributary Operations**

- **Drainage Reduction**

- **Drainage Management**

- **New Melones Releases**

- **DMC Re-circulation & Delta Actions**

- **Purchases**

Decreasing Action Priority

SANMAN Version 2.0 Schematic

SJR Salinity Management Model (SANMAN)   January 2005

Salinity Management Action: Coordinated Tributary Operations (Priority 1)

- Actions Applied to East Side Tributaries

- Action Levels Defined by Time Series Input

Salinity Management Action: Drainage Reduction (Priority 1)

- **Actions Applied to 9 Regions:**

  - **East Side (3 regions)**

  - **Upper DMC (3 regions)**

  - **Mud & Salt Sloughs (3 regions)**

- **Action Levels Defined by Time Series Input**

Salinity Management Action: Drainage Management (Priority 2)

- **Actions Applied to 6 Regions:**

  – **Upper DMC (3 regions)**

  – **Mud & Salt Sloughs (3 regions)**

- **Model-Prescribed Action Level**

- **User Specifications**

  – **Storage diversion period**

  – **Maximum storage volume**

  – **Maximum residence time**

Salinity Management Action: New Melones Releases (Priority 3)

- **Model-Prescribed Action Level**

  – **Baseline Water Quality Operation Removed**

- **User Specifications**

  – **Period of operation**

  – **Maximum annual release**

  – **Water quality**

Salinity Management Action: DMC Re-circulation (Priority 4)

- **Model-Prescribed Action Level**

- **Accomplished With Available Delta Pumping Capacity**

  - Tracy first, Banks second

  - Available summer capacity "lumped"

  - Available capacity limited by E/l ratio, B2-EWA restrictions and higher pumping priorities

Salinity Management Action: DMC Re-circulation (cont'd)

- **Tracy Pumping Priorities**

  – **CVP contract deliveries**

  – **Export of additional CVP stored water**

  – **CVP water transfers**

  – **SWP exports through JPOD**

  – **DMC re-circulation**

Salinity Management Action: DMC Re-circulation (cont'd)

- **Banks Pumping Priorities**

  - SWP contract deliveries (including 500 cfs Jul-Sep EWA reservation)

  - SWP water transfers

  - Additional EWA reservation

  - CVP exports through JPOD

  - DMC re-circulation

Salinity Management Action: DMC Re-circulation (cont'd)

- **User Specifications**

  - **Period of operation**

  - **Conveyance losses by month and water year type**

  - **Water quality changes by month and water year type resulting from Delta actions (e.g. Frank's Tract)**

- **Options**

  - **Upgrade priority**

  - **Increase availability by "paying" E/I cost**

 - **Address Stockton dissolved oxygen targets**

Salinity Management Action: Purchases (Priority 5)

- **Actions Applied to East Side Tributaries and Region Upstream of Merced River**

- **User Specifications**

  – **Period of operation**

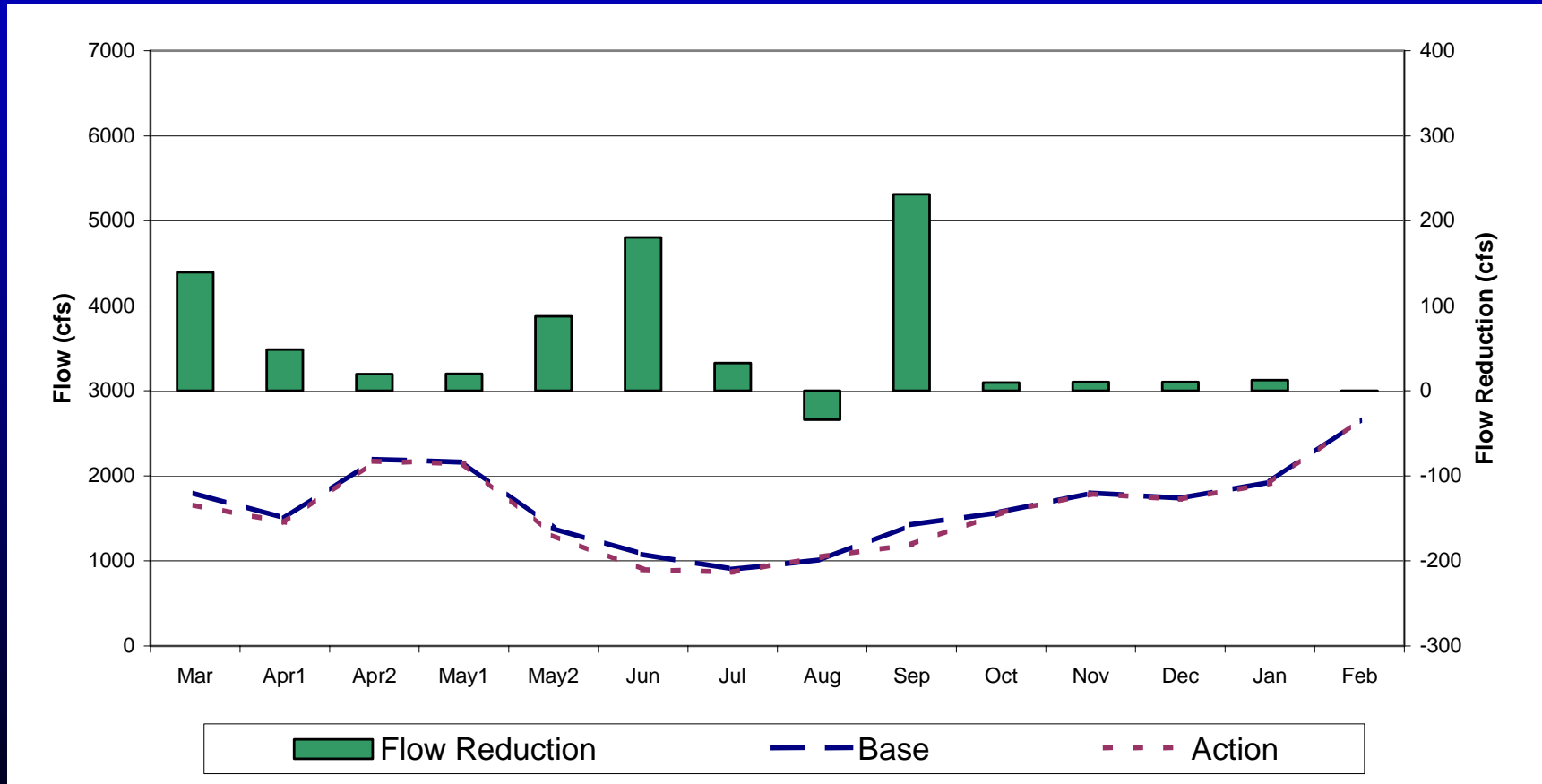 – **Maximum annual purchase**

  – **Water quality**

SJRWQMG Study Scenarios

| Scenario	Description
ISOLATED ACTION STUDIES	
IA1	No Action
IA2	SJR Improvement Project
IA3a	20% Drain Reduction: Exchanger Region
IA3b	50% Drain Reduction: Exchanger Region
IA3c	20% Drain Reduction: Upper DMC Regions
IA3d	50% Drain Reduction: Upper DMC Regions
IA4	SJRWQMG Refuge Return Flow Management
IA5a	Refuge Return Flow Storage Retention: 5 TAF
IA5b	Refuge Return Flow Storage Retention: 10 TAF
IA6	Mid-Priority DMC Re-circulation: Jul-Sep
IA7	High-Priority DMC Re-circulation: Jul-Sep
IA8	SJRWQMG Water Transfers: Reservoir Rule Curve
IA9	SJRWQMG Water Transfers: Every Year Water
COMPOSITE ACTION STUDIES	
CA1	IA2 + Targeted Re-circulation & New Melones
CA2	Refuge Retention + High-Priority Recirc: Jul-Sep
SENSITIVITY STUDIES	
S1	High-Priority DMC Re-circulation: Year Round
S2	High-Priority Recirc: Year Round w/ Flow Targets
S3	High-Priority Recirc: Jul-Sep w/o DO Releases
DRAFT PREFERRED ALTERNATIVE:	
	▪ Phased implementation of SJRIP (10-100%)
	▪ Strategic water transfers
	▪ DMC re-circulation
MP-10 thru MP-100	Mid priority re-circulation with modified Stanislaus DO compliance
HP-10 thru HP-100	High priority re-circulation with modified Stanislaus DO compliance
MP-10DO thru MP-100DO	Mid priority re-circulation with existing Stanislaus DO compliance
HP-10DO thru HP-100DO	High priority re-circulation with existing Stanislaus DO compliance

Vernalis Flow:
SJRWQMG Draft Preferred Alternative HP-20
Critical Year Average
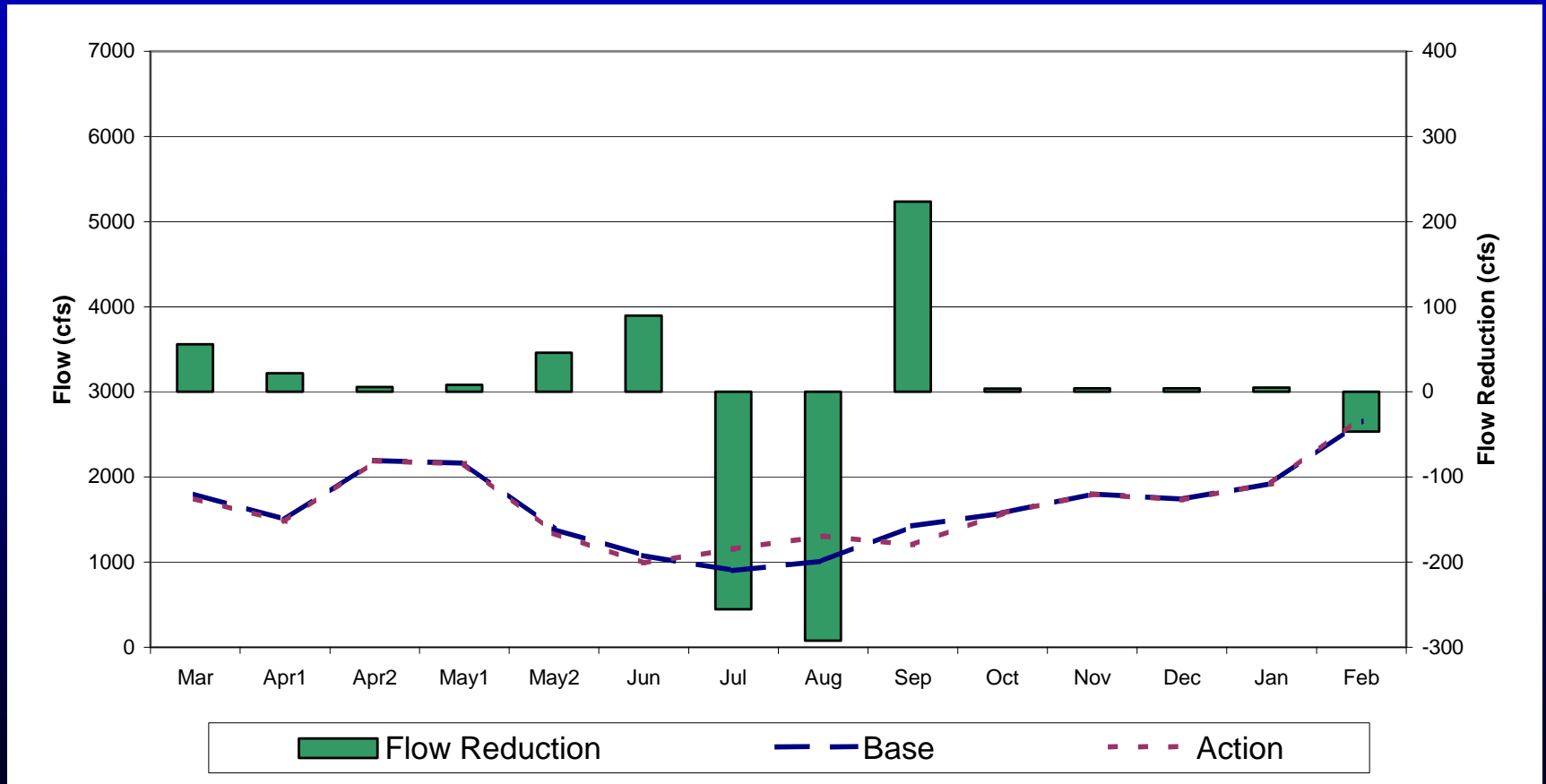
Vernalis Flow:
SJRWQMG Draft Preferred Alternative HP-50
Critical Year Average
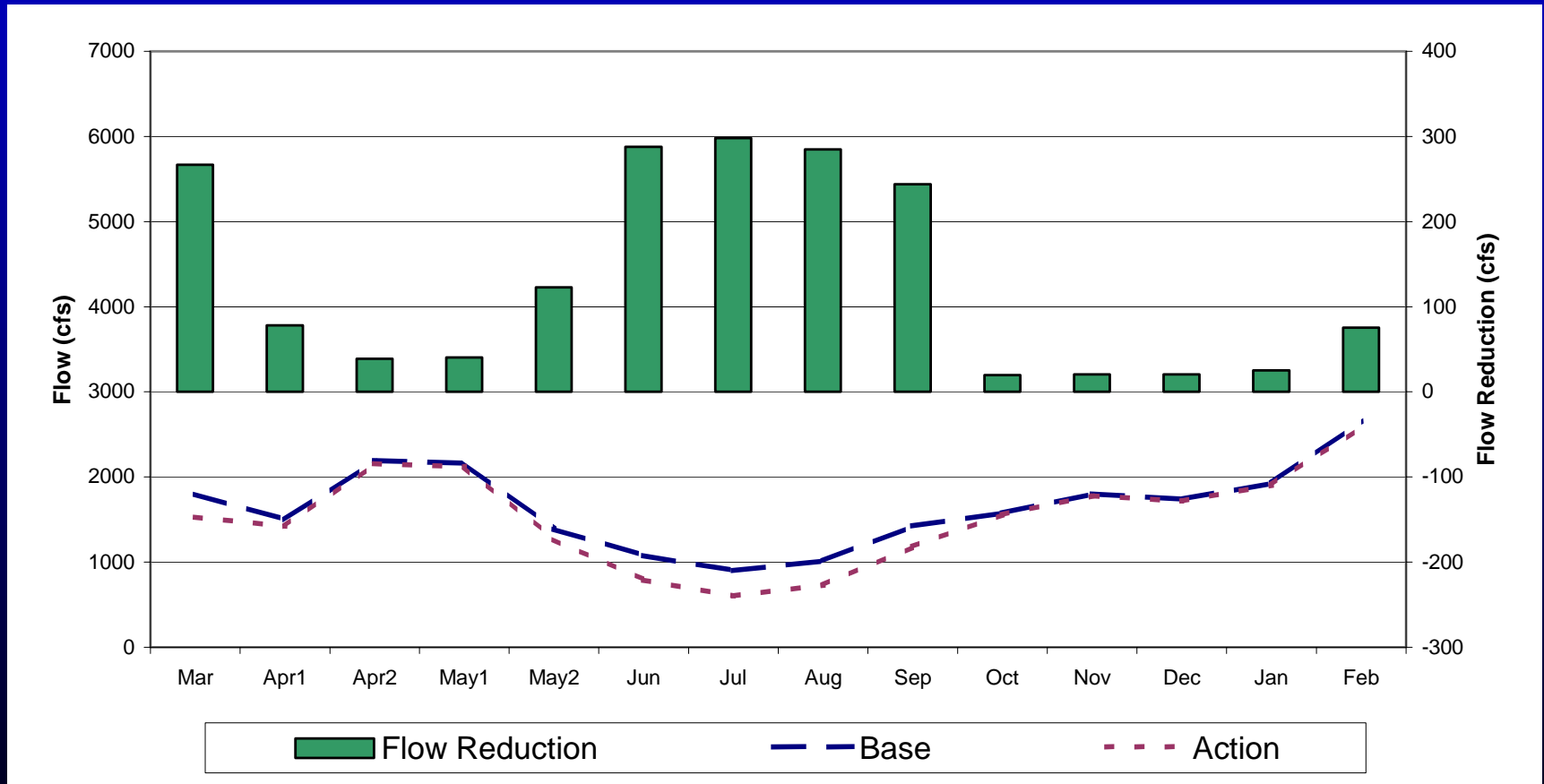
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