

# Water Availability Analysis for River Basins Tributary to the Bay-Delta Estuary

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# Presentation Outline

- Proportional River Flows to the Bay-Delta Estuary
  - Board's Flow Determinations to Protect Public Trust Resources
  - Legal Theory for Implementation (the California Doctrine)
- Water Availability Analysis
  - Premises
  - Methods
  - Results
- Paths for Aligning Water Rights, Beneficial Uses and Proportional River Flows
  - Bay-Delta Plan Implementation
  - Fully-Appropriated Streams
  - Term 9I
  - Adjudication

# State Water Board Flow Determinations

- California Legislature directed the State Water Resources Control Board to prepare a report on Delta flow criteria that would “develop new flow criteria for the Delta ecosystem necessary to protect public trust resources” and in so doing “use the best available scientific information.”
- The Legislature directed the Board to gather the information as part of an “informational proceeding” rather than through an evidentiary hearing.
- And the Legislature charged the Board with including volume, quality and timing of water necessary for the Delta ecosystem under different conditions (California Water Code: Section 85086(c)).

# State Water Board Flow Determinations

- August 2010 - Board determines protective flows for the Bay-Delta Estuary watershed:
  - 75 percent of unimpaired Delta outflow from January through June.
  - 75 percent of unimpaired Sacramento River inflow from November through June.
  - 60 percent of unimpaired San Joaquin River inflow from February through June.
- Determinations represent tributary flows needed for recovery of Bay-Delta ecosystems and fish populations.

# State Water Board Flow Determinations

- State Water Board calls for proportional flow contributions from each river that is tributary in the Bay-Delta Estuary's watershed.

# California Doctrine in Water Law

<b>Legal Theory (California Doctrine)</b>	<b>Water Availability Analysis Elements</b>
Public Trust Doctrine	<ul style="list-style-type: none"> <li>• Unimpaired flow hydrology</li> <li>• State Board flow determinations (i.e., instream flows)</li> </ul>
Paramount riparians first—constrained by reasonable use and pro-rata allocation	Riparian water rights claims estimated from statements of diversion and use, adjudications
Appropriators next—when flows exceed riparians’ needs, “surplus” exists in	<ul style="list-style-type: none"> <li>• Senior pre-1914 claimants divert first</li> <li>• Junior post-1914 claimants divert later</li> </ul>



# Water Availability Analysis

- Method for determining water available for diversion and use in a river system.
- Used by State Water Board on specific water rights applications where streams may be fully appropriated.
- Planning level analysis needed for Bay-Delta Plan.

# Water Availability Analysis - Methods and Data

- Unimpaired hydrology (WYs 1922-2003 from DWR 2007, and for Trinity, from California Data Exchange Center).
  - Average, median, quartiles and deciles monthly, regulated period, and annually.
- Water rights *claims* data: riparian (e.g., SDUs), pre-1914 (e.g., SDUs and recorded notices), and post-1914 permits/licenses.
- Adjudication decrees.



# Water Availability Analysis - Estimating Yield of Claims

- Obverse of flow determinations = diversion cap:
  - 25% on Trinity and Sacramento
  - 40% on San Joaquin
- Water rights priorities apply under “diversion cap” which applies only during regulated period:
  - November through June (Trinity & Sac R’s)
  - February through June (San Joaquin R)
- Other yield estimating assumptions—see Appendix E of C-WIN Testimony.

# San Joaquin River Consumptive Water Rights Claims

**Table 1  
Consumptive (Irrigation) Water Rights Summary for San Joaquin River Basin**

Flows and Consumptive Water Rights	Thousands of Acre-Feet				
	Stanislaus River	Tuolumne River	Merced River	San Joaquin	Basin Total
Average Annual Unimpaired Flow	957	1,851	956	1,728	6,181
Total Consumptive Water Right Claims	5,318	11,015	5,495	10,828	32,656
Ratio of Total Claims to Unimpaired Flow	5.56	5.95	5.75	6.27	5.28
Total Riparian & Pre-1914 Claims	1,401	8,185	4,525	2,014	16,125
Ratio of Riparian & Pre-1914 Claims to Unimpaired Flow	1.46	4.42	4.73	1.17	2.61
Total Post-1914 Claims	3,917	2,831	970	8,814	16,532
Ratio of Post-1914 Claims to Unimpaired Flow	4.09	1.53	1.01	5.10	2.67

Sources: State Water Resources Control Board (e-WRIMS); Public Record Act responses from various public water and irrigation districts; California Water Impact Network. Sum of major tributaries' unimpaired flow does not equal Valley total due to omission of other watersheds from the table.

# Sacramento and Trinity River Consumptive Water Rights Claims

**Table 2**  
**Consumptive (Irrigation) Water Rights Claims**  
**Trinity and Sacramento River Basins**

Flows and Consumptive Water Rights	Thousands of Acre-Feet				
	Trinity River	Feather River	Yuba River	American River	Sacramento Valley Total
Average Annual Unimpaired Flow	1,283	4,370	2,287	2,621	21,619
Total Consumptive Water Right Claims	8,725	15,717	5,093	9,847	120,571
Ratio of Total Claims to Unimpaired Flow	6.80	3.60	2.23	3.76	5.58
Total Riparian & Pre-1914 Claims	134	3,855	92	286	47,883
Ratio of Riparian & Pre-1914 Claims to Unimpaired Flow	0.10	0.88	0.04	0.11	2.21
Total Post-1914 Claims	8,591	11,863	3,596	9,561	72,688
Ratio of Post-1914 Claims to Unimpaired Flow	6.70	2.71	1.57	3.65	3.36

Sources: California Department of Water Resources, 2007; State Water Resources Control Board (e-WRIMS); Public Record Act responses from various public water and irrigation districts; California Water Impact Network. Sum of major tributaries' unimpaired flow does not equal Valley total due to omission of other watersheds from the table. Trinity River is included because a large portion of its runoff is exported to the Sacramento River via federal Central Valley Project facilities.



# Water Availability Results

River Basin	Claimants Possessing Reliable Rights	Claimants Possessing Less Reliable Rights
San Joaquin River Basin	Riparians; and pre-1914 claims of Stanislaus River decree Oakdale and South San Joaquin IDs Turlock and Modesto IDs Merced ID, Gallo San Joaquin River Exchange Contractors Chowchilla WD, Tranquillity ID, James ID, Patterson ID	US Bureau of Reclamation City and County of San Francisco Merced ID (post-1914)
Trinity River Basin	Riparian, pre-1914, and US Bureau of Reclamation post-1914 claims	Bureau claims overstate what is naturally available from Trinity River.
Sacramento River Basin	Riparian, pre-1914 claims of Pit River decrees, east and west creeks' decrees, Joint Water Districts Western Canal WD; Browns Valley ID, Nevada ID, Yuba County WD, Camp Far West ID, Folsom, San Juan ID, El Dorado ID, Georgetown Yuba County Water Agency;	US Bureau of Reclamation (Shasta, Folsom, New Melones, Friant) DWR (Oroville) Yuba County Water Agency Nevada ID (post-1914) South Sutter WD Foresthill PUD



# Paths for Aligning Water Rights, Beneficial Uses and Proportional River Flows

- Water Quality Control Plan Implementation
  - Adopt flow determinations as flow objectives in the Bay-Delta Plan
  - Adopt flow determinations as flow objectives in implementing water rights decision.

# Paths for Aligning Water Rights, Beneficial Uses, and Proportional River Flows

- Fully-Appropriated Streams Declarations
  - Mandated by Legislature—last update in 1998.
  - Applies to streams where supply of water is fully devoted to *all beneficial uses*.
  - Board appears to construe the declaration as applying just to water rights.
  - Board's Delta flow determinations should be included—applies to all beneficial uses.



# Paths for Aligning Water Rights, Beneficial Uses, and Proportional River Flows

- After D-1485 (1978), Board conditioned post-1978 permits through WR D-1594 and Term 91:
- Curtails diversions when Delta conditions require SWP and CVP reservoir releases to meet Delta water quality objectives.

# Paths for Aligning Water Rights, Beneficial Uses, and Proportional River Flows

- Adjudication of water rights
  - Traditional seniority-based vetting and determination of water rights.
  - Defined watershed.

# Paths for Aligning Water Rights, Beneficial Uses, and Proportional River Flows

- Under State Water Board's 2010 public trust flow determinations, most riparian, pre-1914, and a few post-1914 water rights claimants can divert and use as before.
- Using the California Doctrine to establish proportional flow contributions from Delta tributaries would clarify whose water rights claims are least reliable through operation of water rights priorities.

Questions?

