

**Delta-Mendota Subbasin  
Coordination – Technical Working Group**

**Tuesday, January 15, 2019, 10:00 AM  
842 6th Street, Los Banos, CA  
Call-in Number: (866) 661-7061; Code: 9811738464**

**AGENDA**

1. Introductions
2. Meeting Minutes Review
3. Application of Climate Change Factors to Projected Water Budgets
  - Confirmation of proposed methodology
4. Current Status of Management Areas
  - Who is using them, where and for what indicators
5. Defining Gaining/Losing SJR Reaches and Estimating Gains/Losses
6. Coordinated Activities and Milestones
7. Water Quality Sustainability Indicators
  - For what constituents
  - Basin-wide mapping of constituents (for Groundwater Conditions Section of Common Chapter)
  - Current status
  - Methodology
8. Subsidence Sustainability Indicators (if time allows)
  - Methodology for Development
  - Parameters for Monitoring
9. Next Steps

### Delta-Mendota Technical Working Group Sign-In Sheet

Date: 1/15/19

Name	Affiliation	Initials
Adam Scheuber	Del Puerto WD	AS
Alejandro Paolini	Henry Miller Reclamation District	
Amanda Peisch	DWR	
Andrew Francia	LSCE	AF
Andrew Garcia	SLDMWA	AG
Anthea Hansen	Del Puerto WD	
Ben Fenters	SLWD	BF
Bobby Pierce	West Stanislaus ID	
Breanne Ramos	Merced County Farm Bureau	
Briana Seapy	California Fish and Wildlife	
Cheri Worthly	SLDMWA	
Chris Olvera	DWR	
Christina Guzman	Fresno County	CO
Diane Cannon	LSCE	
Diane Rathmann	SLDMWA	
Don Wright	Waterwrights	
Ellen Wehr	Grassland WD	
Frances Mizuno	SLDMWA	
Glenn Allen	Fresno County	
Jarrett Martin	CCID	AM
Jason Dean	Meyers	
Jim Stilwell	Farmers WD	JSD
Joe Hopkins	Provost & Pritchard	
Joe McGahan	Summers Engineering	
John Beam	JAB Environmental	
Ken Swanson	Grassland WD	
Lacey Kiriakou	Merced County	
Larry Harris	Turner Island WD	

Name	Affiliation	Initials
Leslie Dumas	Woodard & Curran/SLDMWA	LD
Linda Harris	Murdoc	
Linda Sloan	Provost & Pritchard	
Lon Martin	San Luis WD	
Palmer McCoy	Henry Miller Reclamation District #2131; San Luis Canal Company	
Rebecca Akroyd	SLDMWA	
Ricardo Ortega	Grassland WD	RBO
Rick Iger	Provost & Pritchard	
Steve Chedester	SJR Exchange Contractors	
Valerie Kincaid	O'Laughlin & Paris LLP	
Vince Lucchesi	Patterson Irrigation District	
Will Halligan	LSCE	
Zachary Roy	SLDMWA	
Caitie Howard	Mivus PMP/SLDMWA	CH
Augustine C Ramirez	Fresno County	
Kyle Hill	CCID	
Chris Rogers	CCID	CR
Kait Palya	P&P	
Juan Cadena	PANOCHÉ WD	JC

Delta-Mendota Subbasin  
Technical Working Group Meeting

Tuesday, January 15, 2019, 10:00 AM  
842 6<sup>th</sup> Street, Los Banos, CA

Meeting Minutes

**Voluntary Technical Working Group Representatives in Attendance**

Adam Scheuber (Del Puerto WD)  
Will Halligan (LSCE; by phone)  
Andrew Francis (LSCE)  
Ben Fenters (San Luis WD)  
Christina Guzman (Fresno County)  
Jarrett Martin (Central California Irrigation District/SJREC)  
Joe Hopkins (Provost & Pritchard/Aliso WD)  
Augustine Ramirez (Fresno County)  
Kyle Hill (CCID)  
Chris Rogers (CCID)  
Kait Palys (Provost & Pritchard/Aliso WD)  
Jim Stilwell (Farmers WD)  
Ken Swanson (Grassland WD)  
Ric Ortega (Grassland WD)  
Rick Iger (Provost & Pritchard/Grassland WD)  
Keasha Blew (Provost & Pritchard/Grassland WD)  
Juan Cadena (Panoche WD)

**Authority Representatives Present**

Andrew Garcia  
Claire Howard

**Others in Attendance**

Leslie Dumas (Woodard & Curran)  
Reza Namvar (Woodard & Curran; by phone)

1. Introductions

Leslie Dumas/Woodard & Curran called the meeting to order at approximately 2:05 PM.

2. Discuss Subbasin-wide development of monitoring protocols

Leslie noted that part of the Monitoring section of the GSP is the development and presentation of monitoring protocols. Given that all the GSP groups will have to do this, she asked if there was a preference to develop one coordinated set of monitoring protocols for use by all, or if each GSP group preferred to draft their own protocols.

Will Halligan noted that the Fresno & Farmers GSPs had already drafted a simple version of this section and were currently circulating it for review. Ric Ortega/Grassland noted that they had a different hydrologic period than everyone else as a result of their wetlands management and will need to incorporate their specific requirements into this section. Jarrett Martin/SJREC noted they are developing their monitoring protocols section based on the BMPs but keeping it rather high level. Leslie Dumas/Woodard & Curran noted that they are doing something similar, basing their section off work already done by other GSP groups in her office. Keasha Blew/Provost & Pritchard asked what were the specific requirements of the basin-wide monitoring program as it related to development of these protocols; more specifically what needs to be coordinated.

The group decided to identify specifically what needs to be coordinated and then to take this subject up further in subsequent meetings.

3. Confirm subsurface boundary flows for historic and current water budgets

The following summarizes the status of adjacent GSP areas relative to comparing boundary flows and finalizing their historic and current water budgets:

Fresno/Farmers – done

Farmers/Aliso – currently have a meeting scheduled for 12/27/18. Flow is between 1500 and 3800 AF/year from Farmers to Aliso

Farmers/SJREC – This is basically done

SJREC/Aliso - ?????

SJREC/Grassland – this will be done by January 7<sup>th</sup>. The lower aquifer boundary flows appear to be approximately 1,000 to 3,000 AFY with upper aquifer boundary flows on the order of 13000 AFY from SJREC to Grassland. There is some boundary flow from Grassland to the Northern-Central (N-C) region, but this has been included in the SJREC numbers.

N-C/SJREC – this is almost done; just need to confirm final numbers. This should be done by December 31<sup>st</sup>.

N-C/Fresno – Tranquillity Irrigation District (TID) has both upper and lower aquifer pumping. The N-C GSP Region has very little data from which to calculate boundary flows. LSCE has made adjustments to their model to reflect this flow. Generally, the model shows the appropriate flow direction; however, the magnitude may change.

Jarrett Martin/SJREC noted that he has calculated boundary flows between their region and the Westland's region and has estimated an upper aquifer boundary flow of -11,000 AFY from Westland's to SJREC, and -9,000 AFY of lower aquifer boundary flow from SJREC to Westland. They (SJREC) have also calculated boundary flows between their

region and the Turlock Subbasin, Merced Subbasin (done except for a stretch of Grassland boundary), Chowchilla Subbasin and Madera Subbasin (done except for the boundary with Aliso).

For the basin-wide subbasin, we will need to 'sum up' the water budgets and change in storage. The plan is to compare the summed change in storage with an estimate from 2003-2013 per Ken Schmidt water surface elevation mapping as a cross-check. The GSP groups agreed to have the historic and current water budgets completed by January 7<sup>th</sup>; final water budgets should be sent to Leslie Dumas/Woodard & Curran for compilation. Leslie will prepare an EXCEL workbook for use and tracking of submittals.

4. Confirm status of historic and current Subbasin water budget results

See #3, above.

5. Discuss methodology for establishing subsurface boundary flows in projected water budgets

Leslie Dumas/Woodard & Curran proposed a methodology for using historic subsurface flows as representative of projected subsurface flows by Water Year type. Specifically, using 2011 for wet years, 2010 for above normal years, 2009 for below normal years, 2012 for dry years and 2013 for critical years. Jarrett Martin/SJREC noted that he has already run projected water budgets by water year type assuming 3 categories (wet, normal [for above and below normal] and dry [for dry and critical]) and found that their area maintains 'status quo' in the future. Joe said that the same has happened with the Aliso water budgets.

Leslie will document and circulate options for establishing subsurface boundary flows in projected water budgets for consideration by the Working Group. Anyone with a proposed approach should send it to Leslie.

6. Discuss proposed coordinated work efforts for tandem completion

This item was tabled due to lack of time.

7. Next Steps and Schedule

Due to the upcoming holidays, the Technical Working Group calls on December 24<sup>th</sup> and 31<sup>st</sup> will be cancelled.

Action Items from the meeting are as follows:

- Leslie & Andrew will identify and summarize what is required to be included in the basin-wide monitoring program (vs the individual GSPs)
- All GSPs will complete their historic and current water budgets (including agreements with neighboring GSPs re: boundary flows) by January 7<sup>th</sup>. Copies of the final budgets will be sent to Leslie for compilation.
- Leslie will develop an EXCEL workbook to compile and track GSP-specific water budget results
- Andrew will send recently-received Westland's groundwater elevation data to Provost & Pritchard for use in estimating changes in storage.
- Provost & Pritchard will update the WSE mapping and estimate change in basin storage between 2003 and 2013.

- Each GSP member will send their options for subsurface boundary flows in projected water budgets for compilation and circulation by Leslie.

Leslie Dumas/Woodard & Curran adjourned the Technical Working Group meeting at approximately 4:15 PM.

Technical Coordination – List of Requirements per SGMA Regulations,  
Coordination Agreement, Common Chapter, and Technical Memorandums

**COMMON CHAPTER**

- 1) *General Information*
  - a. *Decision Making and Governance*
- 2) *Plan Area / Description*
  - a. *Compile Individual GSP Physical Settings and Characteristics*
  - b. *Communication Section and Outreach Discussion*

**OUTREACH REQUIREMENTS OF THE REGS OR IMPLEMENTED TOOLS**

- A. *Communication Section of GSP Regs (Section 354.10)*
    - *An explanation of the decision making process (Coordination Committee, maybe include decision tree / flow chart **under development January 2019**)*
    - *Identification of opportunities for public engagement and discussion of how public input was/will be used*
      - o *Delta-Mendota Subbasin public workshops*
        - *May 2018*
        - *October 2018*
        - *February 2019*
        - *Spring 2019*
        - *Summer 2019 – confirm: based on timing of public draft release*
        - *Fall 2019*
      - o *Additional public meetings/workshops*
    - *Method GSA (or Committee) shall follow to inform the public about progress implementing the Plan, including status of actions*
  - B. *Public Workshops – Compile Agendas, describe noticing, dates, and participation*
  - C. *Subbasin-Wide website*
  - D. *Monthly Newsletter; Describe purpose, structure, and distribution*
  - E. *Consider Beneficial Uses and users of groundwater when describing undesirable results, thresholds, projects and actions (GSP Prep Section 10727.8 and 10723.3)*
    - *Public Notice of Proposed Adoption (Adopting Common Section(s)) (Section 10728.4)*
- 3) *Cost and Funding*
    - a. *Cost Sharing Agreement and Coordinated Expenses (Executed 12/12/18)*

**BASIN SETTING**

- 1) *Hydrogeologic Conceptual Model Development*
  - a. *Visual (Maps) and Narrative Description*
    - i. *High-level Basin Description – discuss general basin boundaries, primary aquifers and Corcoran Clay, bottom of basin, presence of A-Clay in southern portion of basin*
    - ii. *Recharge and Discharge Areas*



- iii. *Water Level Contour Maps*
  - b. *Cross Sections*
  - c. *Lateral Boundaries and Definable Bottom*
  - d. *Summary of Aquifer Properties and Groundwater Conditions*
  - e. *Identification of Subbasin-wide (Coordinated) Management Areas, if any*
- 2) *Water Budgets (Section 10727.2)*
  - a. *Historic, Current, and Projected Timeframes*
  - b. *Wet, Dry, Normal year designations*
  - c. *Methodology*
  - d. *Assumptions*
  - e. *Confirm Boundary Flows and Change in Storage*
  - f. *Datasets*
    - i. *Land Surface Budget*
      - 1. *Inflows*
        - a. *Precipitation*
        - b. *Surface Water Inflows*
        - c. *Applied Water – Groundwater*
        - d. *Applied Water – Imported Surface Water*
        - e. *Other Direct Recharge*
      - 2. *Outflows*
        - a. *Runoff*
        - b. *Evapotranspiration*
        - c. *Surface Water Outflows*
        - d. *Deep Percolation*
    - ii. *Groundwater Budget*
      - 1. *Inflows*
        - a. *Deep Percolation*
          - i. *Precipitation Infiltration*
          - ii. *Surface Water Infiltration*
          - iii. *Applied Water Infiltration*
        - b. *Subsurface Groundwater Inflows*
          - i. *Upper Aquifer*
          - ii. *Lower Aquifer*
        - c. *Other Direct Recharge*
      - 2. *Outflows*
        - a. *Groundwater Extraction from Upper Aquifer*
        - b. *Groundwater Extraction from Lower Aquifer*
        - c. *Subsurface Groundwater Outflows*
          - i. *Upper Aquifer*
          - ii. *Lower Aquifer*
    - g. *Well Inventory*
    - h. *Cross-Check (Subbasin wide contouring)*
  - 3) *Management Areas*
    - a. *Common Terminology*

## **SUSTAINABLE MANAGEMENT CRITERIA**

- 1) *Sustainability Indicators at Representative Monitoring Sites*
  - a. *Determination of Subbasin Management Areas and;*
    - i. *Indicators/Minimum Thresholds (sum of the parts?)*
    - ii. *Interim Milestone*
    - iii. *Undesirable Results*
    - iv. *Sustainability Goals (2040 goal and 5-year interim goals)*

## **MONITORING NETWORKS**

- 1) *Determination of Subbasin Monitoring Network*
  - a. *Locations, Depths, Frequency, type, completion report, screened intervals, aquifer info, reference point elevation*
  - b. *Compilation of all relevant data for Representative Monitoring Sites*
    - i. *Coordination of Criteria*
  - c. *Data Gaps Assessment, Identification and Improvements/Timeframes to fill*
  - d. *Describe how network is capable of collecting data to demonstrate short term, Seasonal Highs & Lows, long-term trends in gw and sw conditions, and yield representative info about conditions necessary to evaluate plans*
  - e. *Indicators for network for WL/WQ/Subsidence/Surface Water/change in storage*
  - f. *Objectives, Protocols, Data Reporting Requirement*
    - i. *If Management Areas are used, description of level of monitoring and analysis appropriate for each management area*

## **MANAGEMENT ACTIONS AND PROJECTS**

- 1) *Development and Review of Individual GSP Group Projects and Management Actions*
- 2) *Discussion and Development of Coordinated Projects and Management Actions*
- 3) *Common Section Development*
- 4) *Permitting, Legal Authority, Cost, and Management*

## **PLAN IMPLEMENTATION**

- 1) *Annual Report Standard Format*
- 2) *Management Structure supporting GSP Implementation (not required but necessary)*
- 3) *Determine Coordination, Cost, and Schedule of Implementation*
- 4) *Funding Sources Identification*

## **COORDINATED DATA MANAGEMENT SYSTEM DEVELOPMENT**

- 1) *Coordinated Data Management System (Coordination Agreement Section 11)*
  - a. *Data Compilation with description of sources, types, management*
  - b. *QA/QC of data to support GSP*
  - c. *DMS Setup*
  - d. *Coordinate Data Management System*

- a. *Compile Data Management System*
- 2) *Capable of storing and reporting information relevant to reporting requirements and/or implementation of the GSPs and monitoring network of the Subbasin*
- 3) *Must ensure annual reporting requirements to DWR are met (11.2)*

## **SUBBASIN COORDINATION**

- 1) *Intrabasin Coordination (Required, Section 357.4)*
  - a. *Determine other 'Plans' to be submitted in the subbasin*
  - b. *Establish a 'Submitting Agency' to be single point of contact with DWR*
  - c. *Develop Coordination Agreement, Executed Coordination Agreement 12/12/2018*
  - d. *Develop Cost Sharing Mechanism, Executed Cost Sharing Agreement 12/12/2018*
- 2) *Interbasin Coordination (Optional, but advised Section 357.2) (lower priority; document as occurred)*
  - a. *Stantec Facilitation and GSP Group participation*
    - i. *Meet and compare results with all neighboring subbasins*
    - ii. *Meet and develop Dispute Resolution language, as necessary*
    - iii. *Create Data Sharing Agreements, as necessary*

## **DEVELOP TECHNICAL MEMORANDUMS**

- 1) *Technical Memorandum on "data and methodologies" (Coordination Agreement Section 8.3)*
  - a. *Common Methodologies for GSP Development / Coordination*
  - b. *Subbasin Wide Monitoring Network (Coordination Agreement Section 9)*
    - i. *Objectives, Protocols, and Data Reporting Requirements specific to enumerated sustainability indicators (Coordination Agreement Section 9.1)*
  - c. *Coordinated Water Budget (Coordination Agreement Section 10)*
    - i. *Total Annual Volume (inflow/outflow), including historical, current, projected water budget conditions, and change in storage, and safe/**sustainable** yield for differing aquifers (10.1)*
  - d. *Coordinated Data Management System (Coordination Agreement Section 11)*
    - i. *Capable of storing and reporting information relevant to reporting requirements and/or implementation of the GSPs and monitoring network of the Subbasin*
    - ii. *Must ensure annual reporting requirements to DWR are met (11.2)*
  - e. *Description of how respective GSPs implemented together satisfy requirements of SGMA and are in substantial compliance of SGMA*
    - i. *Description of Physical Setting and Characteristics of the separate aquifer systems within the Subbasin,*
    - ii. *Sustainability Goal (supported by locally-defined minimum thresholds and undesirable results)*
    - iii. *Measurable Objectives for each such GSP*
    - iv. *Interim Milestones*
    - v. *Monitoring Protocols*
- 2) *All Technical Memoranda are subject to the unanimous approval of the Coordination Committee (Coordination Agreement Section 8.3)*

- a. *Together these are to provide a detailed description of how the Basin as a whole will be sustainably managed*

## **COMPILE FINAL GSP SECTIONS**

- 1) *Distribute draft GSP to basin stakeholders (CWC Section 10728.4)*
- 2) *Release public draft and 90-Day public review*
- 3) *Hold public hearing(s) to adopt Plan(s) at least 90 days after providing notice to a city or county within the area of the proposed plan, to receive feedback and revise (if necessary)*
- 4) *Submit all plans and common sections / plan to DWR after which DWR is to establish a period of at least 60 days to receive comments on the adopted Plan (23 –CCR Section 355.2)*

## Water Budget Evaluation

- Quantify Water Budget Components (Inflows/Outflows)
  - Provide Description of Individual GSP Group Water Budget Components
- Identify Boundary Type and Locations
- Calculate Change in Storage
- Quantify Overdraft over average conditions
- Estimate Sustainable Yield
- Comparison amongst GSP Groups

## **GSP Group to Provide Datasets to be Coordinated: (Tabulated in a common format)**

- Grower Data Source(s)
- Groundwater Extraction Data
- ET Values and Data Source(s)
- Inflow by source type (precip., applied water, canals, rivers, inflow) and Data Sources
  - Recharge Rates and Data Source(s)
  - Stream Flow Recharge Contribution
  - Boundary inflow from other subbasins
- Gaging Station, Estimated Losses, Allocation, etc.
  - Water Year Type (San Joaquin Valley Designation)
  - Aquifer Characteristics/Properties; Transmissivity, Storage Coefficient, etc.
  - Description of Total Surface Water entering or leaving by water source type
  - Water Use info (County Users for example)

## **Parameters to be Coordinated:**

- Compare Seasonal Contour/Water Level Map(s); Upper and Lower Aquifer as data permits
  - Spring 2003: Upper Aquifer (above the Corcoran Clay)
  - Spring 2013: Upper Aquifer (above the Corcoran Clay)
  - Intervening years as data permits
- Agree on Ten Year Water Budget Information Period – [WY 2003 to WY 2012] *Agreed 7/16/18*
- Agree on Year Designating “Current Water Conditions” – [2013] *Agreed on 8/8/18*

- Compare Boundary Flows (Inflow/Outflow Map(s))
- Determine by year type (Dry, Average, and Wet); each GSP region decides on representative year(s) for each WY type based on available data. Use San Joaquin River Index but consider Shasta Critical Index for surface water deliveries
- Calculate Change in Storage between seasonal highs (WY2003-2013) for Upper Aquifer (insufficient data for Lower Aquifer calcs): *Ongoing-Jan2019*
- Calculate change in storage in Lower Aquifer as a result of inelastic land subsidence
- Defining Bottom of Usable Basin: *Completed*
- Corcoran Clay Map(s); Depth and thickness: *Completed*
- If overdraft occurs, quantify overdraft over a period of years during which water year and water supply conditions approximate average conditions.
- GSP Groups to provide evaluation of accuracy and uncertainty associated with individual water budget components.
- Determine if those adjacent to other subbasins will be drafting "Interbasin" agreements (as time allows)
- Share information re: how coordinating agencies (across the San Joaquin River, for example) have taken steps to ensure each GSP developer utilized similar data and compatible methodologies for applicable budget components (as time allows)



Item No.	GSP Coordination and Development		2018												2019												2020			Comments
	Task	Due	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	
1	Coordinated Activities	1/9/2019																												
47	<b>Common Section Development</b>	7/1/2019																			X									
48	<b>Permitting, Legal Authority, Cost, and Management</b>	Ongoing																			X									
49	<b>Plan Implementation</b>	6/24/2019																												
50	<b>Annual Report Standard Format</b>	5/10/2019																												
51	<b>Determine Coordination, Cost, and Schedule of Implementation</b>	6/24/2019																			X									
52	<b>Funding Sources Identification</b>	12/12/2018												X																
53	<b>Coordinated Data Management System (Required, § 352.6)</b>	6/30/2019																												
54	<b>Development of Coordinated DMS</b>	6/30/2019																			X									
55	a. Data Compilation with description of sources, type, managemnet	3/1/2019															X													
56	b. QA/CQ of data to support GSP	4/1/2019																X												
57	c. DMS Setup	5/1/2019																	X											
58	d. Coordinate DMS Permissions, Pages, Capabilities	5/30/2019																		X										
59	e. Ensure Annual Reporting Requirements can be met	6/30/2019																		X										
60	<b>Subbasin Coordination</b>	2/1/2020																												
61	<b>Intrabasin Coordination (Required, § 357.4)</b>	12/12/2018												X																
62	a. Determine other Plans to be submitted	2/1/2018		X																										
63	b. Establish a submitting agency to be single point of contact and report submittal to DWR	6/1/2018					X																							
64	c. Develop Coordination Agreement	12/12/2018												X																
65	d. Develop Cost Sharing Mechanism	12/12/2018												X																
66	<b>Interbasin Coordination (Optional but advised, § 357.2)</b>																													
67	a. Meet and Compare Results	7/1/2019																			X									
68	b. Develop Dispute Resolution Processes	2/1/2020																										X		
69	c. Develop Data Sharing Agreements, as necessary	2/1/2020																										X		
70	<b>Development of Technical Memorandums</b>	7/1/2019																												
71	<b>Development of 5 Coordinated Technical Memorandums</b>	6/15/2019																			X									
72	a. Common Methodologies for GSP Development	5/1/2019																		X										
73	b. Subbasin Wide Monitoring Network	6/1/2019																			X									
74	c. Coordinated Water Budget	4/1/2019																X												
75	d. Coordinated Data Management System	6/1/2019																			X									
76	e. Description of how respective GSPs implemented together will meet the requirements of SGMA	6/15/2019																			X									
77	<b>Review and Unanimous Approval of Technical Memorandums by Coordination Committee</b>	7/1/2019																			X	X							Accounts for revisions	
78	<b>Compile Final GSP Sections</b>	8/15/2019																											Accounting for Public Review Draft	
79	<b>Distribute draft GSP to basin stakeholders (Section 10728.4)</b>	8/15/2019																				X							Public Draft	
80	<b>90-Day Public Review Period</b>																												Public Draft	
81	<b>Finalize GSPs and distribute for final review</b>																													
82	<b>Hold Public Hearing to adopt plan(s) at least 90 days after notice to city/county to receive feedback</b>																												Adoption	
83	<b>Submit all plans and Common sections / plan to DWR</b>	1/31/2020																									X			



# Memorandum

TO: Delta-Mendota Subbasin Technical Working Group Members

FROM: Andrew Garcia, Senior Civil Engineer

DATE: January 15, 2019

RE: Subbasin Common Chapter and GSP Approval Process

---

## **SUMMARY OF ISSUE**

GSP Regulations Section 354.12, "Introduction to Basin Setting," explains that information pursuant to Basin Setting within GSPs "shall be prepared by or under the direction of a professional geologist or professional engineer." Leslie Dumas (Woodard & Curran) discussed this requirement with DWR and the State Board of Professional Engineers and shared this requirement with the Delta-Mendota Subbasin Technical Working Group and Coordination Committee in April 2018.

The six GSPs within the Delta-Mendota Subbasin will be submitted to DWR along with a Common Chapter. The Delta-Mendota Subbasin Technical Working Group discussed the Common Chapter and the required professional approval of the Basin Setting portions of the GSPs in the April 17, 2018 meeting. During this meeting, the Technical Working Group determined that the best approach to address this requirement would be to include a separate signature page for the Common Chapter containing a disclosure as well as a stamp/signature section for each preparer of the coordinated GSPs. The group also decided that each individual GSP would also contain a separate signature page and stamp section for the respective preparer of each GSP.

## **RECOMMENDATION**

Based on previous discussions, the Authority recommends the Technical Working Group confirm the approach outlined during the April meeting and begin discussions or agree on the specific disclosure language. The Technical Working Group shall take a poll to report the results back to the Coordination Committee prior to action being taken per the Coordination Agreement.



Note: Authority cited: Section 10733.2, Water Code.

Reference: Sections 10723.2, 10727.8, 10728.4, and 10733.2, Water Code

## **SUBARTICLE 2. Basin Setting**

### **§ 354.12. Introduction to Basin Setting**

This Subarticle describes the information about the physical setting and characteristics of the basin and current conditions of the basin that shall be part of each Plan, including the identification of data gaps and levels of uncertainty, which comprise the basin setting that serves as the basis for defining and assessing reasonable sustainable management criteria and projects and management actions. Information provided pursuant to this Subarticle shall be prepared by or under the direction of a professional geologist or professional engineer.

Note: Authority cited: Section 10733.2, Water Code.

Reference: Section 10733.2, Water Code.

### **§ 354.14. Hydrogeologic Conceptual Model**

(a) Each Plan shall include a descriptive hydrogeologic conceptual model of the basin based on technical studies and qualified maps that characterizes the physical components and interaction of the surface water and groundwater systems in the basin.

(b) The hydrogeologic conceptual model shall be summarized in a written description that includes the following:

- (1) The regional geologic and structural setting of the basin including the immediate surrounding area, as necessary for geologic consistency.
- (2) Lateral basin boundaries, including major geologic features that significantly affect groundwater flow.
- (3) The definable bottom of the basin.
- (4) Principal aquifers and aquitards, including the following information:
  - (A) Formation names, if defined.
  - (B) Physical properties of aquifers and aquitards, including the vertical and lateral extent, hydraulic conductivity, and storativity, which may be based on existing technical studies or other best available information.
  - (C) Structural properties of the basin that restrict groundwater flow within the principal aquifers, including information regarding stratigraphic changes, truncation of units, or other features.
  - (D) General water quality of the principal aquifers, which may be based on information derived from existing technical studies or regulatory programs.
  - (E) Identification of the primary use or uses of each aquifer, such as domestic, irrigation, or municipal water supply.

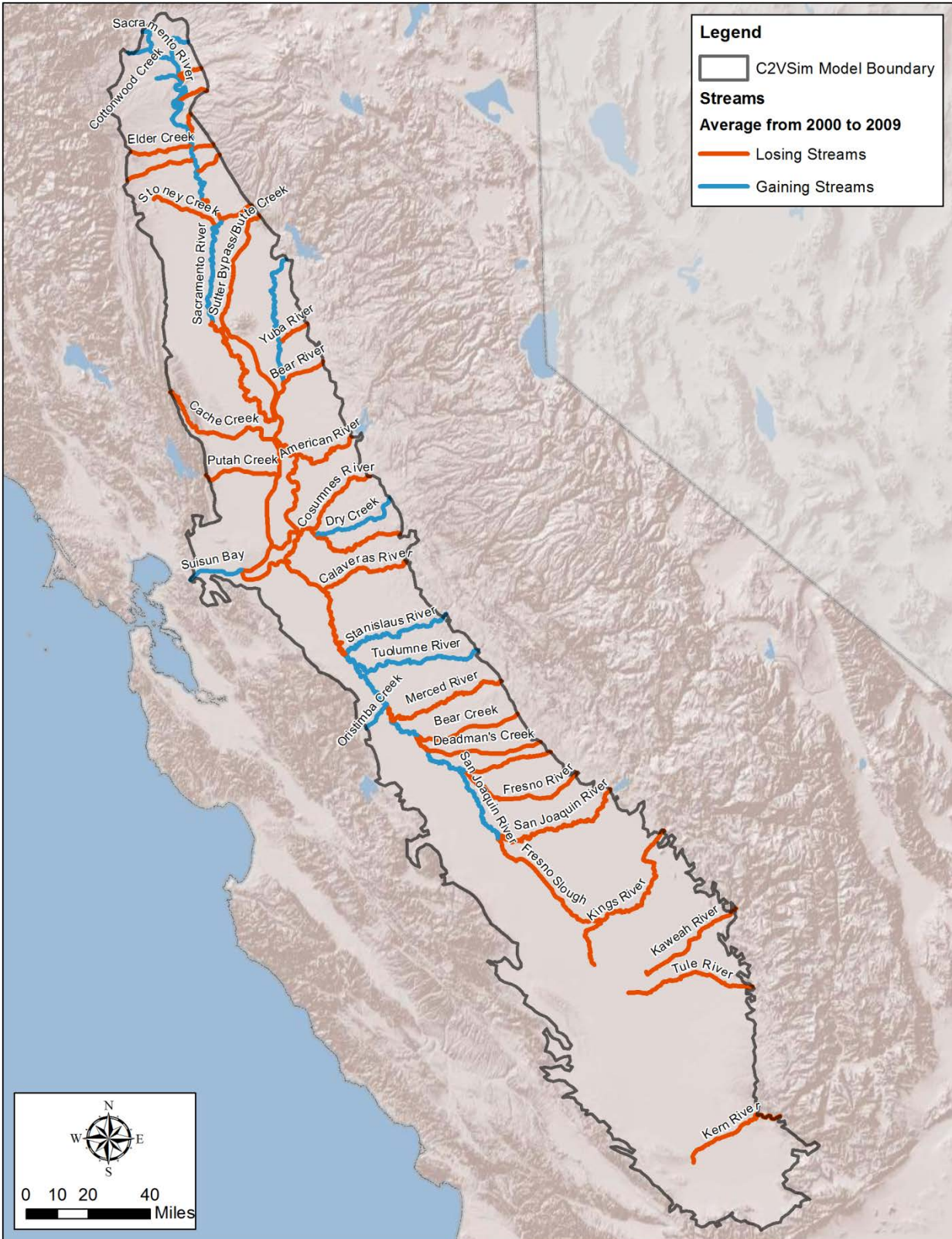


Figure 49 - Average Stream Gain Loss - 2000's

Delta-Mendota Subbasin  
Technical Working Group Meeting

Tuesday, January 15, 2019, 10:00 AM  
842 6<sup>th</sup> Street, Los Banos, CA

Meeting Minutes

**Voluntary Technical Working Group Representatives in Attendance**

Adam Scheuber (Del Puerto WD)  
Will Halligan (LSCE; by phone)  
Andrew Francis (LSCE)  
Ben Fenters (San Luis WD)  
Christina Guzman (Fresno County)  
Jarrett Martin (Central California Irrigation District/SJREC)  
Joe Hopkins (Provost & Pritchard/Aliso WD)  
Augustine Ramirez (Fresno County)  
Kyle Hill (CCID)  
Chris Rogers (CCID)  
Kait Palys (Provost & Pritchard/Aliso WD)  
Jim Stilwell (Farmers WD)  
Ken Swanson (Grassland WD)  
Ric Ortega (Grassland WD)  
Rick Iger (Provost & Pritchard/Grassland WD)  
Juan Cadena (Panoche WD)

**Authority Representatives Present**

Andrew Garcia  
Claire Howard

**Others in Attendance**

Leslie Dumas (Woodard & Curran)  
Reza Namvar (Woodard & Curran; by phone)

1. Introductions

Leslie Dumas/Woodard & Curran called the meeting to order at approximately 10:10 AM.

2. Meeting Minutes Review

There were no comments on the draft meeting minutes from December 19, 2019 Technical Working Group Meeting; Working Group members have until close of business on January 16, 2019 to send comments to Leslie. The minutes will then be finalized.

3. Application of Climate Change Factors to Projected Water Budgets

The goal at this time is to confirm the proposed methodology for applying the climate change factors in the projected water budget. Jarrett Martin/CCID had discussion with DWR regarding what to do in the intervening years between the 2030 climate change period and the 2070 climate change period and was told to pick representative years. Jarrett then proposed the following representative years:

- For years 1 through 4 on our projected water budgets (WY 2014-2017), use actual data. Do not add a climate change factor for these years since you have actual data.
- For years 38 – 43 (repeated WY 2012-2017), the DWR modeling did not establish Precipitation/ET climate change factors. For this reason, DWR suggested using surrogate years' climate change factors for the projection. The following climate change factors for ET and Precipitation were selected:

WY2012	Use 2001 2070 CCF
WY2013	Use 1992 2070 CCF
WY2014	Use 1976 2070 CCF
WY2015	Use 1977 2070 CCF
WY2016	Use 2002 2070 CCF
WY2017	Use 2011 2070 CCF

- For years 30 – 43 (repeated WY 2004-2017), the DWR modeling did not establish streamflow climate change factors. For this reason, DWR suggested to use surrogate years' climate change factors for the projection. The following climate change factors were selected for streamflows:

WY 2004	Use 2002 2030 CCF
WY 2005	Use 2002 2030 CCF
WY 2006	Use 1998 2030 CCF
WY 2007	Use 1992 2070 CCF
WY 2008	Use 1992 2070 CCF
WY 2009	Use 2002 2070 CCF
WY 2010	Use 2003 2070 CCF
WY 2011	Use 1997 2070 CCF
WY 2012	Use 1992 2070 CCF

WY 2013	Use 1992 2070 CCF
WY 2014	Use 1976 2070 CCF
WY 2015	Use 1977 2070 CCF
WY 2016	Use 2002 2070 CCF
WY 2017	Use 1998 2070 CCF

All representatives of the Technical Working Group in attendance agreed to use the climate change factors provided by DWR as augmented above in their projected water budgets. They also agreed that, in the upcoming January 28<sup>th</sup> water budget meeting, that projected water budgets with climate change factors will be compared. Leslie Dumas agreed to send out projected water budget cheatsheet that she developed for this prior to the meeting.

Leslie Dumas then asked how each GSP group is planning to address upcoming legislation/programs that have the potential to change surface water deliveries and/or stream flows. For projected change in surface water deliveries as a result of possible projects, most GSP regions plan on addressing this element qualitatively and only capturing projects in place in their projected water budgets.

#### 4. Current Status of Management Areas

Leslie Dumas inquired as to which GSP areas are planning to use management areas and for what sustainability indicators. She understands that this is preliminary for most GSP areas but is trying to gauge what's being done in the subbasin. The following updates were provided by each GSP region regarding preliminary Management Area (MA) identification:

- SJREC – using 11 MAs for all sustainability indicators when applicable
- Northern & Central – For subsidence, Tranquillity ID will be a MA; For water levels and change in storage, *de minimis* and shallow groundwater are the preliminary MAs
- Grassland – White areas without reliable surface water supply will be a separate management area for all Sustainability Indicators. Habitat areas with and without reliable surface water supply will also be a separate management area
- Fresno/Farmers – both have management areas for water quality (Spreckles and western saline front) and surface water-groundwater interaction
- Aliso – considering MAs but not locked in on them; will most likely establish MA for surface water-groundwater interaction

Discussion then turned to the Common Chapter and its required content (which includes a discussion of MAs). The Common Chapter content will include a compilation/roll-up of all 6 GSPs in the Delta-Mendota Subbasin with the exception of the Hydrogeologic Conceptual Model (HCM) and Groundwater Conditions sections, which will be developed in a coordinated fashion from existing documentation (such as GARs, CASGEM, and AB 3030 workplan).

The Common Chapter will include the following sections:

- Introduction
- Governance/Administration
- Basin Setting

- Monitoring
- Data Management System (DMS)
- Executive Summaries from the GSPs

Each preparer of the GSP will stamp their respective GSP executive summaries. Woodard & Curran will prepare the Introduction, Administration, Monitoring and DMS sections. The Basin Setting section will be composed of the following subsections:

- HCM
- Groundwater Conditions, including cross-sections, hydrographs, groundwater contour maps for current year seasonal high and low, GDE mapping, gains, losses in the San Joaquin River (SJR) and bottom of basin
- Water Budgets, including change in storage
- Management Areas

Woodard & Curran will prepare the HCM and groundwater conditions from existing documents. For the groundwater conditions section, USGS documents will be used for the required cross-sections, each GSP will be required to provide their hydrographs for their representative monitoring sites. The Subbasin-wide GDE mapping and groundwater contour maps currently being prepared will also be included. The bottom of the basin mapping, as previously agreed upon by the Working Group will be included. SJR gains/losses will be developed individually for each GSP region bordering the river and provided to Woodard & Curran to 'roll-up'. Water budgets and management areas will also be 'rolled up' to the Subbasin level for inclusion in this chapter. The rolled-up change in storage for the Upper Aquifer will be compared against a change in storage using changes in Upper Aquifer groundwater elevations between 2003 and 2013, calculated with GSP-specific specific yield numbers and areas. Change in storage in the Lower Aquifer will be compared against loss of storage from inelastic land subsidence as calculated using change in land surface elevation times area.

Lower Aquifer potentiometric head data are scarce – 37 wells in Spring 2013 and 48 wells in Fall 2013, with most wells being linear along the Delta-Mendota Canal. Because of the sparse data, change in Lower Aquifer storage from decrease head will not be calculated. These data will be used to develop Lower Aquifer contour maps, however, as required by GSP regulations and will be augmented with approximated contour lines in wide intervals as data allows and as estimated from past mapping available from the SJR Exchange Contractors for 'typical' water year types. The Technical Working Group also discussed determining the current water year seasonal high and seasonal low boundaries for the 2013 contour maps. The group agreed that the timeframe would begin with February – April 2013 for Spring, and September – October 2013 for Fall. If necessary, the timeframes could be expanded to capture more data for the seasonal high and seasonal low of 2013.

This approach was agreed upon by the Technical Working Group for approval by the Delta-Mendota Coordination Committee.

As part of the discussion regarding the development of Lower Aquifer groundwater contours, the Working Group discussed whether to consider the lack of monitoring points in that aquifer as a data gap or not. Concerns were expressed about labeling potential data gaps with the expectation that actions would need to be initiated to fill them. It was also

noted that some GSP areas have data gaps where others don't. Jarrett Martin/CCID then proposed that the Technical Working Group recommend to the Coordination Committee that each GSP group be required to identify data gaps within their respective boundaries and provide solutions and financing for data deficiencies that lie within their respective GSP boundaries.

5. Defining Gaining/Losing SJR Reaches and Estimating Gains/Losses

Ken Schmidt looked at San Joaquin River Restoration Program (SJRRP) data and identified reaches as gaining, losing, or interconnected. The north end of the SJREC area has been mapped by Ken Schmidt. It was agreed that SJRRP mapping would be used to identify gaining and losing reaches by each GSP region along with other available data. A table will be developed showing which SJR reaches are within each GSP region, whether those reaches are gaining or losing, and what the volumes of gains and losses are. Each GSP region will provide these numbers to Leslie Dumas by the next Technical Working Group call.

6. Coordinated Activities and Milestones

A coordinated milestone schedule has been prepared and comments are due back to Leslie Dumas by Wednesday, January 23<sup>rd</sup>. Representatives are able to download the milestone schedule via Google Drive.

7. Water Quality Sustainability Indicators

Due to time constraints, this agenda item was tabled until the next Technical Working Group call.

8. Subsidence Sustainability Indicators (if time allows)

Due to time constraints, this agenda item was tabled until the next Technical Working Group call.

9. Next Steps

Leslie Dumas/Woodard & Curran adjourned the Technical Working Group meeting at approximately 12:40 PM.

## January 15, 2019 Technical Working Group – Documentation of Common Chapter Structure and Assignments

### Common Chapter Outline

ES-1 Introduction – Woodard & Curran will prepare

ES-2 Subbasin Governance – Woodard & Curran will prepare

- Description of basin coordination and governance, include Coordination Committee, Technical Working Group, and Communications Working Group

ES-3 Subbasin Setting – stamped by Woodard & Curran with disclaimer

- HCM – Woodard & Curran will prepare independent of individual GSPs
- Groundwater conditions – Woodard & Curran will prepare independent of individual GSPs
- Water budget: sum of parts (table and graph)
- Cross-sections (at least two required): pull from USGS (Page and Croft) – Woodard & Curran will prepare from USGS documents
- Management actions: sum of parts
- Hydrographs – sum of the parts. Individual GSP hydrographs provided by GSP groups and summed for representative monitoring points once available
- Basin contour maps using 2013 seasonal high and low by principal aquifer
  - Seasonal high: spring 2013 (February – April 2013)
  - Seasonal low: fall 2013 (September – October 2013)
  - Principal aquifers: upper aquifer and lower aquifer
- GDE mapping: Use basin level mapping; to be finalized
- Change in storage calculation
  - Upper aquifer: calculated from 2013-2003 WSE maps x Specific yield as provided by GSP region x area. Compare against change in storage provided by GSP in historic-current water budgets
  - Lower aquifer: calculated from change in land surface (inelastic land subsidence) and local subsidence values x areas
- Gains and losses along San Joaquin River: sum of parts

ES-4 Subbasin-wide Monitoring Program: sum of parts

ES-5 Subbasin Data Management System: sum of parts

ES-6 The GSPs: Executive summary from each GSP group – extracted from each GSP and stamped/signed by respective GSP group preparer

Appendices: Common TMs and signed coordination agreement

Notes: Sum of the parts = compilation of individual GSP sections to the subbasin level