Lower San Joaquin River Committee

Agenda Lower San Joaquin River Committee Meeting

Stanislaus County Ag Center
3800 Cornucopia Way, Modesto, California 95358-9492
Rooms "H" and "I" (Ag Commissioner's Conference Room)

Teleconference available (712) 432-0360 Participant Code: 927571#

Thursday, October 10, 2013 1:30 PM to 3:30 PM

1. **Welcome, Introductions, Agenda Revisions/Approval, Notes, Announcements (All, 10 min)**
    a. Introductions Room/Phone
    b. Review/revise/approve agenda
    c. Review/revise/approve Notes from September 9, 2013
    d. Review status of Action Items from August meeting
        i. Draft letter for State Board management requesting coordination with State Board in setting of objectives
        ii. Revise Salinity Problem Statement document for final acceptance
        iii. Review basin description document and provide strikeout of current Basin Plan language
        iv. Check Basin Description against description provided in Appendix 41 of the Basin Plan
        v. Send Appendix 41 to the LSJRC
        vi. Incorporate comments from D. Cory and K. Harrigfeld into Background document (comments to be received by September 30)
        vii. D. Cory will contact Daniel Cozad about engaging CV SALTS Executive Committee and TAC on AGR issues
        viii. Update LWA kickoff meeting with phone participants
        ix. LWA team to check constituent list of database to be developed to ensure that all necessary constituents are included (see criteria documents)
        x. Draft letter for CV SALTS Exec Committee MUN discussion and circulate for comment
        xi. Explore definitions of the term "intermittent" use
        xii. Complete draft questionnaire for users of water from SJR for irrigation (carryover from August action items)
    e. Announcements/Updates
        i. Aquatic Life Criteria document – to be released shortly (will circulate upon release)

2. **Update on SWRCB Vernalis Salinity Objectives (Gowdy, 10 minutes)**
    a. Request to State Board for formal coordination with LSJRC activities

3. **Review Status of Workplan Elements (Johnson, 10 min)** - The purpose of this agenda item is to discuss and finalize the documents that constitute the first sections of the BPA.
    a. Problem statement
    b. Basin description
        - Basin description (Red Line Version)

4. **Technical Services Update (Ashby, 10 min)**
    a. LWA team activities

5. **Salt and Boron TMDL & Real Time Management (Mosley/Quinn, 20 min)**

6. **Update on Water District Questionnaire (Brownell, Anderson, 10 min)**
    a. MEMO: Impact of Salinity in the San Joaquin River on Agriculture

7. **Demonstration of the San Joaquin River Portal – (Klassen, 20 min)**

8. **Discussion of policy questions - (LSJRC, 20 min)**
    a. AGR letter to CV SALTS Executive Committee – progress on discussions
    b. Moving forward with MUN interpretation

9. **Review Action Items, items for Executive Committee and Future Agenda Items (All, 5 min)**

10. **LSJR Committee Adjourns**

Lower San Joaquin River Committee

Minutes from September 9, 2013 Meeting of the CV-SALTS Lower San Joaquin River Committee

1. **Welcome, Introductions, Agenda Revisions/Approval, Notes**
   - Meeting called to order by Committee Manager, Mike Johnson, at 1:30 PM**.** Meeting was then managed by Karna Harrigfeld, Co-Chair.
   - 9/9 participants are listed on the 2013 Attendance Roster.
   - David Cory moved, and Peter Rietkerk seconded, and by general acclamation the 08/01/13 minutes were approved.
   - The committee reviewed the status of August action items and Announcements/Updates
     - REMINDER: The November meeting will be held at the Stanislaus County Farm Bureau
     - Mike Johnson will put together a presentation for the San Joaquin River Forum and send out to committee members for review.

2. **Update on SWRCB Decisions on Vernalis Salinity Objectives**
   - Mark Gowdy was not in attendance. A pre-release draft is still expected toward the end of the year.

   Action: Mike Johnson will draft a letter to the State Board requesting formal coordination with LSJRC activities and circulate to committee members for feedback.

3. **Review Status of Workplan Elements**
   - Committee members discussed revisions they still felt needed to be made to the Problem Statement, Basin Description and Basin History documents. Dennis Westcot advised the committee a redline version of the Basin Description should be done to indicate the specific edits to the basin plan language.
   - After discussion David Cory moved, and Dennis Westcot seconded, and by general acclamation the Basin Description document was accepted by the committee.
   - Dennis Westcot reminded the committee that the Basin History document does not go into the basin plan amendment, but was intended primarily as a background document for committee use only, and does not require formal committee approval.

   Action: Mike Johnson will
   - Incorporate 3 minor edits from Karna Harrigfeld into the Problem Statement.
   - Distribute Appendix 41 to the committee, and review for consistency.
   - Provide red-line version of current basin plan language being edited for new version

   Committee members who wish to submit additional redline/comments on the Basin History document should forward to Mike Johnson no later than 9/30/13.

4. **Technical Services Contract Update**
   - Karen Ashby summarized the status of Tasks 8a (Beneficial uses) and 2a (Compilation of Data).
     - 8a-A draft of the beneficial use review document is estimated for mid-late October.
     - 2A-A meeting is scheduled for 9/20/13 to review metadata needs.
   - The committee discussed the need to coordinate the LSJR policy recommendations with those of the CV-SALTS Executive Committee.

   Action: David Cory will contact Daniel Cozad to discuss the coordination of the LSJRC and Executive Committee policy recommendations, and meeting schedules, for the remainder of 2013.

   Daphne Orzalli will forward the list of 8/12/13 (Kickoff Meeting) phone participants to Karen Ashby.

Karen Ashby will check the list of constituents in the developing database to make sure all constituents that are needed are included in the database

5. **Salt and Boron TMDL & Real Time Management**
   - Michael Mosley provided the update for the project. Expect to receive comments on the framework document from the Westside coalition by next month. The framework document will be presented to the LSJRC in October, when committee members will have an opportunity to review and comment.

6. **Update on Water District Questionnaire**
   - Committee members discussed revisions still needed to the draft of the district questionnaire. The committee agreed the questionnaire was too general and some questions would not be applicable in the various districts.

   Action: Mike Johnson will revise the questionnaire based on committee input and re-distribute for comments.

7. **Discussion of Policy Questions**
   - The committee reviewed three 2012 Executive Committee consensus documents and strawman proposals.

   Action: Mike Johnson will draft a letter summarizing the LSJRC policy recommendations for the issues to be considered before the 9/26 Executive Committee, and submit for consideration at the 9/26 Policy Session.

8. **Review Action Items: Items for Executive Committee and Future Agenda Items**

9. **LSJR Committee Adjourned**

LSJR Committee Members		2013 Meeting Dates									
Name	Stakeholder Group	17-Jan	14-Feb	18-Mar	9-May	13-Jun	1-Aug	9-Sep	10-Oct	15-Nov	13-Dec
John Beam	Grassland WD/RCD	✓	✓	✓	✓		✓	✓			
Sherman Boone	East Stanislaus RCD	✓	✓	✓	✓						
Jamie Meek	East Stanislaus RCD	✓	✓	✓	✓		✓	✓			
Shawn Carmo	Grassland Water District										
Jeanne Chilcott	CV-RWQCB	✓		✓	✓	✓					
David Cory	San Joaquin Valley Drainage Authority	✓	✓	✓	✓	✓	✓	✓			
Daniel Cozad	CV-SALTS										
Jose Faria	Calif Department of Water Resources				✓						
Mark Gowdy	State Water Resources Control Board		✓	✓	✓						
Karna Harrigfeld	Stockton East Water District	✓	✓			✓	✓	✓			
John Herrick	South Delta Water Agency		✓				✓				
Jamil Ibrahim	MWH Americas, Inc		✓								
Jobaid Kabir	US Bureau of Reclamation										
Parry Klassen	East San Joaquin Water Quality Coalition	✓		✓	✓						
Roberta Larson	Wastewater Association										
Tess Dunham	Wastewater Association/Ag industry										
Debra Liebersbach	Turlock Irrigation District	✓	✓	✓		✓	✓	✓			
Jim Brownell	CV-RWQCB		✓	✓	✓		✓	✓			
Richard Meyerhoff	CDM Smith										
Brandon Nakagawa	San Joaquin County										
Ric Ortega	Grassland Water District				✓						
Nigel Quinn	LBNL - USBR		✓	✓	✓	✓	✓				
Rudy Schnagl	CV-RWQCB										
Mona Shulman	Pacific Coast Producers										
Roberta Tassey	US Bureau of Reclamation				✓						
Ernest Taylor	Calif Department of Water Resources	✓	✓	✓	✓	✓	✓				
Diana Waller	USDA - NRCS	✓						✓			
Debbie Webster	Central Valley Clean Water Association						✓	✓			
Dennis Westcot	San Joaquin River Group Authority							✓			
Amanda Carvajal	Merced County Farm Bureau					✓					
Michael Mosley	USBR	✓	✓	✓	✓	✓		✓			
Craig Moyle	MWH Americas, Inc										
Andy Safford	EKI										
Roberta Howe	Calif Department of Water Resources										
Lisa Beutler	MWH Americas, Inc										
Chester Anderson	ESRCD/WSRCD	✓			✓			✓			
Tom Orvis	Stanislaus Farm Bureau						✓				
Mike Johnson	LSJR Committee Manager			✓	✓	✓	✓	✓			
Karen Ashby	LWA				✓		✓	✓			
Bobby Pierce	West Stanislaus Irrigation District				✓		✓				
Peter Rietkerk	Patterson Irrigation District				✓	✓	✓	✓			
Daron McDaniel	US Rep. Jeff Denham						✓				
Kevin Padway	US Rep. Jeff Denham						✓				
Brooke Bradshaw	US Rep. Jeff Denham						✓				
Tom Grovhoug	LWA						✓				
Gail Cismowski								✓			
Rachel MacNeal	Calif Dept. Fish & Wildlife							✓			

Salinity Problems on the Lower San Joaquin River

Water supply and irrigation development in the San Joaquin Valley and the hydrologic and geologic characteristics of the Lower San Joaquin River (LSJR) are the principal reasons this section of the river struggles with salinity management. Salinity in the LSJR has degraded significantly since the late 1940s. In the 1920s municipalities and water districts built large scale storage projects on all three of the major tributaries to the LSJR (Stanislaus, Tuolumne and Merced). Even though this reduced flows in the LSJR, the quality remained good. In the late 1940s, the U. S. Bureau of Reclamation constructed Friant Dam on the main-stream San Joaquin River upstream of the LSJR as part of the Central Valley Project (CVP). Friant Dam diverted almost all of the high quality upstream San Joaquin River flow south into the Tulare Lake Basin and north to Madera County. As part of the CVP, water users along the western side of the LSJR exchanged their existing San Joaquin River water rights for water supplied via the Delta through the Delta-Mendota Canal, a major component of the CVP.

The CVP upstream diversion and water exchange with Westside water users led to the salinity issues now facing the LSJR. Part of the LSJR salinity increase resulted from the exchange of high-quality water from the San Joaquin River for more reliable, but higher salinity water imported from the Delta. The present hydrologic conditions in the Delta result in a large percentage of the flow and salt in the LSJR being re-exported to the San Joaquin River Basin via the CVP Pumps. The second impact on salinity in the LSJR came from the intensification of irrigation on the western side of the San Joaquin River. This intensified irrigation quickly led to high water tables and soil salinity issues in both the new lands being brought under irrigation and the lands previously supplied with San Joaquin River water as the western side of the San Joaquin Valley is underlain by a noncontiguous shallow clay layer that obstructs vertical movement of applied water and the dissolved salts this water carries. In many cases this intensification of irrigation was conducted on salty soils that predominate on the Westside of the San Joaquin River Basin. This salty water is removed by constructed subsurface drains and is ultimately returned to the LSJR. Because of the diversion of upstream San Joaquin River water by the CVP, salty drainage water from the Westside land was being discharged to the LSJR without the benefit of any upstream dilution water.

These actions occurring simultaneously resulted in a significant degradation of the LSJR in less than a decade and prompted a declaration by the California Legislature in 1961 that the LSJR was impaired (California Water Code § 12230 – 12232). In the 1975 Basin Plan, water quality degradation in the LSJR was identified and the LSJR was classified as a Water Quality Limited Segment. At that time, it was

envisioned that a Valley-wide Drain would be developed and the subsurface drainage water flows would then be discharged outside the Basin, thus improving river water quality. It is unlikely that this will occur in the near future.

The State Water Board in 2000 concluded in D-1641 that salinity management in the LSJR needed to improve and that the actions of the CVP are the principle cause of the salinity concentrations exceeding the Vernalis water quality objective as they had 1) cut off high quality flows at Friant Dam, 2) had provided higher salinity water to the west-side lands in lieu of the upstream higher quality flows and 3) had not provided drainage water management for the subsurface drainage flows from the CVP entering the LSJR. High salinity concentrations contribute to impacts to Southern Delta agriculture. The State Water Board directed the Central Valley Regional Board to proceed with development of salinity water quality objectives in the LSJR and develop, if needed, a TMDL for meeting these objectives and the Vernalis salinity objective established as part of the State Water Board review of the Bay-Delta Water Quality Control Plan. In 2005, the Central Valley Board adopted a salt and boron TMDL for meeting the Vernalis objective. The control program under this TMDL is phased to allow for implementation actions to meet the Vernalis salinity objective as well as any future objectives on the LSJR.

Both the State and Regional Water Boards recognize that with the absence of a drain, increasing groundwater accretions along the river, and continued development in the basin, that the LSJR remains the only presently viable option for salt export from the basin. The basin plan policy allows this use provided that beneficial uses are protected both in the LSJR and downstream as higher salinity water has contributed to impacts to agriculture both in-basin and in the southern Delta downstream . Beneficial use protection must be the center piece of developing a salt management policy for the LSJR. To ensure all beneficial uses are defined and water quality objectives established to protect those uses, there needs to be a review of the Basin Plan and changes made, where needed. In addition, the Basin Plan review needs to consider ways to a) reduce or eliminate the intentional use of water to dilute salt as this water is needed for other beneficial uses; b) reduce salt imported into the basin and c) export excess salt out of the basin while still protecting beneficial uses.

To conduct the review of beneficial uses and water quality objectives on the LSJR, CV-SALTS has established the Lower San Joaquin River Committee as a stakeholder effort to conduct this review and

recommend changes to the Basin Plan, where needed, that will enable the Board to use its regulatory tools to maximize protection of beneficial uses and promote salt management in the basin.

The following changes are recommended for the Basin Description in the Introduction Chapter of the Basin Plan for the Sacramento River and San Joaquin River Basins. The basin description referred to here is contained on pages I-1.00 to I-4.00 in the 10 September 2004 version of the Basin Plan.

INTRODUCTION

BASIN DESCRIPTION

This Basin Plan covers the entire area included in the Sacramento and San Joaquin River drainage basins[1]. The basins are bound by the crests of the Sierra Nevada on the east and the Coast Range and Klamath Mountains on the west. They extend some 400 miles from the California - Oregon border southward to the headwaters of the San Joaquin River.

The Sacramento River and San Joaquin River Basins cover about one fourth of the total area of the State and over 30% of the State's irrigable land. The Sacramento and San Joaquin Rivers furnish roughly 51% of the State's water supply. Surface water from the two drainage basins meet and form the Delta, which ultimately drains to San Francisco Bay. Two major water projects, the Federal Central Valley Project and the State Water Project, deliver water from the Delta to Southern California, the San Joaquin Valley, Tulare Lake Basin, the San Francisco Bay area, as well as within the Delta boundaries.

The Delta is a maze of river channels and leveed islands covering roughly 1,150 square miles, including 78 square miles of water area. The legal boundary of the Delta is described in Section 12220 of the Water Code (also see Figure III-1 of this Basin Plan).

Ground water is defined as subsurface water that occurs beneath the ground surface in fully saturated zones within soils and other geologic formations. Where ground water occurs in a saturated geologic unit that contains sufficient permeability and thickness to yield significant quantities of water to wells or springs, it can be defined as an aquifer (USGS, Water Supply Paper 1988, 1972). A groundwater basin is defined as a hydrogeologic unit containing one large aquifer or several connected and interrelated aquifers (Todd, *Groundwater Hydrology*, 1980).

Major ground water basins underlie both valley floors, and there are scattered smaller basins in the foothill areas and mountain valleys. In many parts of the Region, usable groundwaters occur outside of these currently identified basins. There are water- bearing geologic units within groundwater basins in the Region that do not

[1] The planning boundary between the San Joaquin River Basin and the Tulare Lake Basin follows the southern watershed boundaries of the Little Panoche Creek, Moreno Gulch, and Capita Canyon to boundary of the Westlands Water District. From here, the boundary follows the northern edge of the Westlands Water District until its intersection with the Firebuagh Canal Company's Main Lift Canal. The basin boundary then follows the Main Lift Canal to the Mendota Pool and continues eastward along the channel of the San Joaquin River to Millerton Lake in the Sierra Nevada foothills, and then follows along the southern boundary of the San Joaquin River drainage.

meet the definition of an aquifer. Therefore, for basin planning and regulatory purposes, the term "groundwater" includes all subsurface waters that occur in fully saturated zones and fractures within soils and other geologic formations, whether or not these waters meet the definition of an aquifer or occur within identified groundwater basins.

Sacramento River Basin

The Sacramento River Basin covers 27,210 square miles and includes the entire area drained by the Sacramento River. For planning purposes, this includes all watersheds tributary to the Sacramento River that are north of the Cosumnes River watershed. It also includes the closed basin of Goose Lake and drainage sub-basins of Cache and Putah Creeks.

The principal streams are the Sacramento River and its larger tributaries: the Pit, Feather, Yuba, Bear, and American Rivers to the east; and Cottonwood, Stony, Cache, and Putah Creeks to the west. Major reservoirs and lakes include Shasta, Oroville, Folsom, Clear Lake, and Lake Berryessa.

DWR Bulletin 118-80 identifies 63 ground water basins in the Sacramento watershed area. The Sacramento Valley floor is divided into 2 groundwater basins. Other basins are in the foothills or mountain valleys. There are areas other than those identified in the DWR Bulletin with groundwaters that have beneficial uses.

San Joaquin River Basin

The San Joaquin River Basin covers 15,880 square miles and includes the entire area drained by the San Joaquin River. It includes all watersheds tributary to the San Joaquin River and the Delta south of the Sacramento River and south of the American River watershed. The southern planning boundary is described in the first paragraph of this page.

The principal streams in the basin are the San Joaquin River and its larger tributaries: the Cosumnes, Mokelumne, Calaveras, Stanislaus, Tuolumne, Merced, Chowchilla, and Fresno Rivers. Major reservoirs and lakes include Pardee, New Hogan, Millerton, McClure, Don Pedro, and New Melones.

DWR Bulletin 118-80 identifies 39 groundwater basins in the San Joaquin watershed area. The San Joaquin Valley floor is divided into 15 separate groundwater basins, largely based on political considerations. Other basins are in the foothills or mountain valleys. There are areas other than those identified in the DWR Bulletin with groundwaters that have beneficial uses.

Lower San Joaquin River Watershed and Subareas

Technical descriptions of the Lower San Joaquin River (LSJR) and its component subareas are contained in Appendix 41. General descriptions follow: The LSJR watershed encompasses approximately 4,580 square miles in Merced County and portions of Fresno, Madera, San Joaquin, and Stanislaus counties. For planning purposes, the LSJR watershed is defined as the area draining to the San Joaquin River downstream of the Mendota Dam and upstream of the Airport Way Bridge near Vernalis, excluding the areas upstream of dams on the major Eastside reservoirs: New Don Pedro, New Melones, Lake McClure, and similar Eastside reservoirs in the LSJR system. The LSJR watershed excludes all lands within Calaveras, Tuolumne, San Benito, and Mariposa Counties. The LSJR watershed has been subdivided into seven major sub areas. In some cases major subareas have been further subdivided into minor subareas to facilitate more effective and focused water quality planning (Table I-1).

Table I-1 Lower San Joaquin River Subareas

Major Subareas		Minor Subareas	
1	LSJR upstream of Salt Slough	1a	Bear Creek
		1b	Fresno-Chowchilla
2	Grassland	-- --	
3	East Valley Floor	3a	Northeast Bank
		3b	North Stanislaus
		3c	Stevinson
		3d	Turlock Area
4	Northwest Side	4a	Greater Orestimba
		4b	Westside Creeks
		4c	Vernalis North
5	Merced River	-- --	
6	Tuolumne River	-- --	
7	Stanislaus River	-- --	

1. Lower San Joaquin River upstream of Salt Slough

This subarea drains approximately 1,480 square miles on the east side of the LSJR upstream of the Salt Slough confluence. The subarea includes the portions of the Bear Creek, Chowchilla River and Fresno River watersheds that are contained within Merced and Madera Counties. The northern boundary of the subarea generally abuts the Merced River Watershed. The western and southern boundaries follow the San Joaquin River from the Lander Avenue Bridge to Friant, except for the lands within the Columbia Canal Company, which are excluded. Columbia Canal Company lands are included in the Grassland Subarea. This subarea is composed of the following drainage areas:

1a. Bear Creek (effective drainage area)

This minor subarea is a 620 square mile subset of lands within the LSJR upstream of Salt Slough Subarea. The Bear Creek Minor Subarea is predominantly comprised of the portion of the Bear Creek Watershed that is contained within Merced County.

1b. Fresno-Chowchilla

The Fresno-Chowchilla Minor Subarea is comprised of approximately 860 square miles of land within the southern portion of the LSJR upstream of Salt Slough Subarea. This minor subarea is located in southeastern Merced County and western Madera County and contains the land area that drains into the LSJR between Sack Dam and the Bear Creek confluence, including the drainages of the Fresno and Chowchilla Rivers.

2. Grassland

The Grassland Subarea drains approximately 1,370 square miles on the west side of the LSJR in portions of Merced, Stanislaus, and Fresno Counties. The portion of the watershed for which agricultural subsurface drainage policies and regulations apply covers an area of approximately 370,000 acres and is bounded on the north by the alluvial fan of Orestimba Creek and by the Tulare Lake Basin to the south. This subarea includes the Mud Slough, Salt Slough, and Los Banos Creek watersheds. The eastern boundary of this subarea is generally formed by the LSJR between the Merced River confluence and the Mendota Dam. The Grassland Subarea extends across the LSJR, into the east side of the San Joaquin Valley, to include the lands within the Columbia Canal Company. The western boundary of the subarea generally follows the crest of the Coast Range with the exception of lands within San Benito County, which are excluded.

The hydrology of the watershed is presently determined by the primary land uses; managed wetlands and agriculture. The wetlands are important habitat for migratory waterfowl using the Pacific Flyway. The alluvial fans of the western and southern portions of the watershed contain salts and selenium which can be mobilized through irrigation practices and can impact beneficial uses of surface waters and groundwater if not properly regulated.

3. East Valley Floor

This subarea includes approximately 413 square miles of land on the east side of the LSJR that drains directly to the LSJR between the Airport Way Bridge near Vernalis and the Salt Slough confluence. The subarea is largely comprised of the land between the major east-side drainages of the Tuolumne, Stanislaus, and Merced Rivers. This subarea lies within central Stanislaus County and north-central Merced County. Numerous drainage canals and natural drainages are found in this subarea. The subarea is comprised of the following minor subareas:

3a. Northeast Bank

This minor subarea of the East Valley Floor contains all of the land draining the east side of the San Joaquin River between the Maze Boulevard Bridge and the Crows Landing Road Bridge, except for the Tuolumne River subarea. The Northeast Bank covers approximately 123 square miles in central Stanislaus County.

3b. North Stanislaus

The North Stanislaus minor subarea is a subset of lands within the East Valley Floor Subarea. This minor subarea drains approximately 68 square miles of land between the Stanislaus and Tuolumne River watersheds that flows into the San Joaquin River between the Airport Way Bridge near Vernalis and the Maze Boulevard Bridge.

3c. Stevinson

This minor subarea of the East Valley Floor contains all of the land draining to the LSJR between the Merced River confluence and the Lander Avenue (Highway 165) Bridge. The Stevinson Minor Subarea occupies approximately 44 square miles in north-central Merced County.

3d. Turlock Area

This minor subarea of the East Valley Floor contains all of the land draining to the LSJR between the Crows Landing Road Bridge and the Merced River confluence. The Turlock Area Minor Subarea occupies approximately 178 square miles in south-central Stanislaus County and northern Merced County.

4. Northwest Side

This 574 square mile area generally includes the lands on the West side of the LSJR between the Airport Way Bridge near Vernalis and the Newman Waste way confluence. This subarea includes the entire drainage area of Orestimba, Del Puerto, and Hospital/Ingram Creeks. The subarea is primarily located in Western Stanislaus County except for a small area that extends into Merced County near the town of Newman and the Central California Irrigation District Main Canal.

4a. Greater Orestimba

The Greater Orestimba Minor Subarea is a 285 square mile subset of the Northwest Side Subarea located in southwest Stanislaus County and a small portion of western Merced County. It contains the entire Orestimba Creek watershed and the remaining area that drains into the LSJR from the west between the Crows Landing Road Bridge and the confluence of the Merced River, including Little Salad and Crow Creeks.

4b. Westside Creeks

This Minor Subarea is comprised of 277 square miles of the Northwest Side Subarea in western Stanislaus County. It consists of the areas that drain into the west side of the San Joaquin River between Maze Boulevard and Crows Landing Road, including the drainages of Del Puerto, Hospital, and Ingram Creeks.

4c. Vernalis North

The Vernalis North Minor Subarea is a 12 square mile subset of land within the most northern portion of the Northwest Side Subarea. It contains the land draining to the San Joaquin River from the west between the Maze Boulevard Bridge and the Airport Way Bridge near Vernalis.

5. Merced River

This 294 square mile subarea is comprised of the Merced River watershed downstream of the Merced- Mariposa county line and upstream of the River Road Bridge. The Merced River subarea includes a 13- square-mile "island" of land (located between the East Valley Floor and the Tuolumne River Subareas) that is hydrologically connected to the Merced River by the Highline Canal.

6. Tuolumne River

This 294 square mile subarea is comprised of the Tuolumne River watershed downstream of the Stanislaus-Tuolumne county line, including the drainage of Turlock Lake, and upstream of the Shiloh Road Bridge.

7. Stanislaus River

This 157 square mile subarea is comprised of the Stanislaus River watershed downstream of the Stanislaus-Calaveras county line and upstream of Caswell State Park.

The following changes are recommended for the Basin Description in the Introduction Chapter of the Basin Plan for the Sacramento River and San Joaquin River Basins. The basin description referred to here is contained on pages I-1.00 to I-4.00 in the 10 September 2004 version of the Basin Plan. The recommended changes are shown below and on the following pages in strikeouts and underlines that are highlighted in red:

INTRODUCTION

BASIN DESCRIPTION

This Basin Plan covers the entire area included in the Sacramento and San Joaquin River drainage basins[1]. The basins are bound by the crests of the Sierra Nevada on the east and the Coast Range and Klamath Mountains on the west. They extend some 400 miles from the California - Oregon border southward to the headwaters of the San Joaquin River.

The Sacramento River and San Joaquin River Basins cover about one fourth of the total area of the State and over 30% of the State's irrigable land. The Sacramento and San Joaquin Rivers furnish roughly 51% of the State's water supply. Surface water from the two drainage basins meet and form the Delta, which ultimately drains to San Francisco Bay. Two major water projects, the Federal Central Valley Project and the State Water Project, deliver water from the Delta to Southern California, the San Joaquin Valley, Tulare Lake Basin, the San Francisco Bay area, as well as within the Delta boundaries.

The Delta is a maze of river channels and ~~diked~~ leveed islands covering roughly 1,150 square miles, including 78 square miles of water area. The legal boundary of the Delta is described in Section 12220 of the Water Code (also see Figure III-1 of this Basin Plan).

Ground water is defined as subsurface water that occurs beneath the ground surface in fully saturated zones within soils and other geologic formations. Where ground water occurs in a saturated geologic unit that contains sufficient permeability and thickness to yield significant quantities of water to wells or springs, it can be defined as an aquifer (USGS, Water Supply Paper 1988, 1972). A ground-water basin is defined as a hydrogeologic unit containing one large aquifer or several connected and interrelated aquifers (Todd, *Groundwater Hydrology*, 1980).

[1] The planning boundary between the San Joaquin River Basin and the Tulare Lake Basin follows the southern watershed boundaries of the Little Panoche Creek, Moreno Gulch, and Capita Canyon to boundary of the Westlands Water District. From here, the boundary follows the northern edge of the Westlands Water District until its intersection with the Firebuagh Canal Company's Main Lift Canal. The basin boundary then follows the Main Lift Canal to the Mendota Pool and continues eastward along the channel of the San Joaquin River to Millerton Lake in the Sierra Nevada foothills, and then follows along the southern boundary of the San Joaquin River drainage.

Major ground water basins underlie both valley floors, and there are scattered smaller basins in the foothill areas and mountain valleys. In many parts of the Region, usable ground-waters occur outside of these currently identified basins. There are water- bearing geologic units within ground-water basins in the Region that do not meet the definition of an aquifer. Therefore, for basin planning and regulatory purposes, the term "ground-water" includes all subsurface waters that occur in fully saturated zones and fractures within soils and other geologic formations, whether or not these waters meet the definition of an aquifer or occur within identified ground-water basins.

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The Sacramento River Basin covers 27,210 square miles and includes the entire area drained by the Sacramento River. For planning purposes, this includes all watersheds tributary to the Sacramento River that are north of the Cosumnes River watershed. It also includes the closed basin of Goose Lake and drainage sub-basins of Cache and Putah Creeks.

The principal streams are the Sacramento River and its larger tributaries: the Pit, Feather, Yuba, Bear, and American Rivers to the east; and Cottonwood, Stony, Cache, and Putah Creeks to the west. Major reservoirs and lakes include Shasta, Oroville, Folsom, Clear Lake, and Lake Berryessa.

DWR Bulletin 118-80 identifies 63 ground water basins in the Sacramento watershed area. The Sacramento Valley floor is divided into 2 ground-water basins. Other basins are in the foothills or mountain valleys. There are areas other than those identified in the DWR Bulletin with ground-waters that have beneficial uses.

San Joaquin River Basin

The San Joaquin River Basin covers 15,880 square miles and includes the entire area drained by the San Joaquin River. It includes all watersheds tributary to the San Joaquin River and the Delta south of the Sacramento River and south of the American River watershed. The southern planning boundary is described in the first paragraph of this page.

The principal streams in the basin are the San Joaquin River and its larger tributaries: the Cosumnes, Mokelumne, Calaveras, Stanislaus, Tuolumne, Merced, Chowchilla, and Fresno Rivers. Major reservoirs and lakes include Pardee, New Hogan, Millerton, McClure, Don Pedro, and New Melones.

DWR Bulletin 118-80 identifies 39 ground-water basins in the San Joaquin watershed area. The San Joaquin Valley floor is divided into 15 separate ground-water basins, largely based on political considerations. Other basins are in the foothills or mountain valleys. There are areas other than those identified in the DWR Bulletin with ground-waters that have beneficial uses.

~~Grassland Watershed~~

~~The Grassland watershed is a valley floor sub-basin of the San Joaquin River Basin. The portion of the watershed for which agricultural subsurface drainage policies and regulations apply covers an area of approximately 370,000 acres and is bounded on the north by the alluvial fan of Orestimba Creek and by the Tulare Lake Basin to the south. The San Joaquin River forms the eastern boundary and Interstate Highway 5 forms the approximate western boundary. The San Joaquin River forms a wide flood plain in the region of the Grassland watershed.~~

~~The hydrology of the watershed has been irreversibly altered due to water projects and is presently governed by land uses. These uses are primarily, managed wetlands and agriculture. The wetlands form important waterfowl habitat for migratory waterfowl using the Pacific Flyway. The alluvial fans of the western and southern portions of the watershed contain salts and selenium which can be mobilized through irrigation practices and can impact beneficial uses of surface waters, and wetlands, and groundwater if not properly regulated.~~

Lower San Joaquin River Watershed and Subareas

Technical descriptions of the Lower San Joaquin River (LSJR) and its component subareas are contained in Appendix 41. General descriptions follow: The LSJR watershed encompasses approximately 4,580 square miles in Merced County and portions of Fresno, Madera, San Joaquin, and Stanislaus counties. For planning purposes, the LSJR watershed is defined as the area draining to the San Joaquin River downstream of the Mendota Dam and upstream of the Airport Way Bridge near Vernalis, excluding the areas upstream of dams on the major Eastside reservoirs: New Don Pedro, New Melones, Lake McClure, and similar Eastside reservoirs in the LSJR system. The LSJR watershed excludes all lands within Calaveras, Tuolumne, San Benito, and Mariposa Counties. The LSJR watershed has been subdivided into seven major sub areas. In some cases major subareas have been further subdivided into minor subareas to facilitate more effective and focused water quality planning (Table I-1).

Table I-1 Lower San Joaquin River Subareas

Major Subareas		Minor Subareas	
1	LSJR upstream of Salt Slough	1a	Bear Creek
		1b	Fresno-Chowchilla
2	Grassland	--	--

3	East Valley Floor	3a	Northeast Bank
		3b	North Stanislaus
		3c	Stevinson
		3d	Turlock Area
4	Northwest Side	4a	Greater Orestimba
		4b	Westside Creeks
		4c	Vernalis North
5	Merced River	--	--
6	Tuolumne River	--	--
7	Stanislaus River	--	--

1. Lower San Joaquin River upstream of Salt Slough

This subarea drains approximately 1,480 square miles on the east side of the LSJR upstream of the Salt Slough confluence. The subarea includes the portions of the Bear Creek, Chowchilla River and Fresno River watersheds that are contained within Merced and Madera Counties. The northern boundary of the subarea generally abuts the Merced River Watershed. The western and southern boundaries follow the San Joaquin River from the Lander Avenue Bridge to Friant, except for the lands within the Columbia Canal Company, which are excluded. Columbia Canal Company lands are included in the Grassland Subarea. This subarea is composed of the following drainage areas:

1a. Bear Creek (effective drainage area)

This minor subarea is a 620 square mile subset of lands within the LSJR upstream of Salt Slough Subarea. The Bear Creek Minor Subarea is predominantly comprised of the portion of the Bear Creek Watershed that is contained within Merced County.

1b. Fresno-Chowchilla

The Fresno-Chowchilla Minor Subarea is comprised of approximately 860 square miles of land within the southern portion of the LSJR upstream of Salt Slough Subarea. This minor subarea is located in southeastern Merced County and western Madera County and contains the land area that drains into the LSJR between Sack Dam and the Bear Creek confluence, including the drainages of the Fresno and Chowchilla Rivers.

2. Grassland

The Grassland Subarea drains approximately 1,370 square miles on the west side of the LSJR in portions of Merced, Stanislaus, and Fresno Counties. The portion of the watershed for which agricultural subsurface drainage policies and regulations apply covers an area of approximately 370,000 acres and is bounded on the north by the alluvial fan of Orestimba Creek and by the Tulare Lake Basin to the south. This subarea includes the Mud Slough, Salt

Slough, and Los Banos Creek watersheds. The eastern boundary of this subarea is generally formed by the LSJR between the Merced River confluence and the Mendota Dam. The Grassland Subarea extends across the LSJR, into the east side of the San Joaquin Valley, to include the lands within the Columbia Canal Company. The western boundary of the subarea generally follows the crest of the Coast Range with the exception of lands within San Benito County, which are excluded.

The hydrology of the watershed is presently determined by the primary land uses; managed wetlands and agriculture. The wetlands are important habitat for migratory waterfowl using the Pacific Flyway. The alluvial fans of the western and southern portions of the watershed contain salts and selenium which can be mobilized through irrigation practices and can impact beneficial uses of surface waters and groundwater if not properly regulated.

3. East Valley Floor

This subarea includes approximately 413 square miles of land on the east side of the LSJR that drains directly to the LSJR between the Airport Way Bridge near Vernalis and the Salt Slough confluence. The subarea is largely comprised of the land between the major east-side drainages of the Tuolumne, Stanislaus, and Merced Rivers. This subarea lies within central Stanislaus County and north-central Merced County. Numerous drainage canals~~,~~ ~~including the Harding Drain~~ and natural drainages~~, drain~~ are found in this subarea. The subarea is comprised of the following minor subareas:

3a. Northeast Bank

This minor subarea of the East Valley Floor contains all of the land draining the east side of the San Joaquin River between the Maze Boulevard Bridge and the Crows Landing Road Bridge, except for the Tuolumne River subarea. The Northeast Bank covers approximately 123 square miles in central Stanislaus County.

3b. North Stanislaus

The North Stanislaus minor subarea is a subset of lands within the East Valley Floor Subarea. This minor subarea drains approximately 68 square miles of land between the Stanislaus and Tuolumne River watersheds that flows into the San Joaquin River between the Airport Way Bridge near Vernalis and the Maze Boulevard Bridge.

3c. Stevinson

This minor subarea of the East Valley Floor contains all of the land draining to the LSJR between the Merced River confluence and the Lander Avenue (Highway 165) Bridge. The Stevinson Minor Subarea occupies approximately 44 square miles in north-central Merced County.

3d. Turlock Area

This minor subarea of the East Valley Floor contains all of the land draining to the LSJR between the Crows Landing Road Bridge and the Merced River confluence. The Turlock Area Minor Subarea occupies approximately 178 square miles in south-central Stanislaus County and northern Merced County.

4. Northwest Side

This 574 square mile area generally includes the lands on the West side of the LSJR between the Airport Way Bridge near Vernalis and the Newman Waste way confluence. This subarea includes the entire drainage area of Orestimba, Del Puerto, and Hospital/Ingram Creeks. The subarea is primarily located in Western Stanislaus County except for a small area that extends into Merced County near the town of Newman and the Central California Irrigation District Main Canal.

4a. Greater Orestimba

The Greater Orestimba Minor Subarea is a 285 square mile subset of the Northwest Side Subarea located in southwest Stanislaus County and a small portion of western Merced County. It contains the entire Orestimba Creek watershed and the remaining area that drains into the LSJR from the west between the Crows Landing Road Bridge and the confluence of the Merced River, including Little Salad and Crow Creeks.

4b. Westside Creeks

This Minor Subarea is comprised of 277 square miles of the Northwest Side Subarea in western Stanislaus County. It consists of the areas that drain into the west side of the San Joaquin River between Maze Boulevard and Crows Landing Road, including the drainages of Del Puerto, Hospital, and Ingram Creeks.

4c. Vernalis North

The Vernalis North Minor Subarea is a 12 square mile subset of land within the most northern portion of the Northwest Side Subarea. It contains the land draining to the San Joaquin River from the west between the Maze Boulevard Bridge and the Airport Way Bridge near Vernalis.

5. Merced River

This 294 square mile subarea is comprised of the Merced River watershed downstream of the Merced- Mariposa county line and upstream of the River Road Bridge. The Merced River subarea includes a 13- square-mile “island” of land (located between the East Valley Floor and the Tuolumne River Subareas) that is hydrologically connected to the Merced River by the Highline Canal.

6. Tuolumne River

This 294 square mile subarea is comprised of the Tuolumne River watershed downstream of the Stanislaus-Tuolumne county line, including the drainage of Turlock Lake, and upstream of the Shiloh Road Bridge.

7. Stanislaus River

This 157 square mile subarea is comprised of the Stanislaus River watershed downstream of the Stanislaus-Calaveras county line and upstream of Caswell State Park.

Agricultural Water Use Survey in the Lower San Joaquin River Basin

1. Approximately, how many irrigable acres does the District service?

   _____ *acres*

2. What sources of water does the District use to serve its agriculture customers?

   SJR DMC Merced R Tuolumne R Stanislaus R groundwater other _____

3. What is the make-up of delivered water to agricultural customers:

   In a typical year?
   SJR ___ % DMC ___ % Sierra water ___ % groundwater ___ % other ___ %

   In a dry year?
   SJR ___ % DMC ___ % Sierra water ___ % groundwater ___ % other ___ %

   In a wet year?
   SJR ___ % DMC ___ % Sierra water ___ % groundwater ___ % other ___ %

4. Does the salinity of the District's water sources vary with time of year, and if so, how?

   yes no Brief description of how: _____

5. Does the District blend lower San Joaquin River water with other waters to control salinity of irrigation water?

   yes no If yes, would you elaborate? _____

6. Do District's customers blend lower San Joaquin River water with other waters to control salinity of irrigation water?

   yes no If yes, would you elaborate? _____

7. Do District customers avoid irrigation with San Joaquin River water during crop germination?

   yes no If yes, which crops? _____

8. Does the District have the ability to offer water of varying salinity to its customers?

   yes no If yes, would you elaborate? _____

9. Does the District know if its customer's crop choices are influenced by the salinity of water?

   yes no Examples? _____

10. Approximately how many acres within the District are utilized for permanent crops?

    Currently ____ acres

    About 10 years ago _____acres

    About 20 years ago _____acres

11. What are the District customer's most salt sensitive crops?

    In the last 10 years or so: _____

    Greater than 10 years ago: _____

12. What can the District tell us about its customers leaching for salinity control?

    _____

13. Approximately how much water is used for pre-irrigation?
14. Does the District have guidance or incentives regarding pre-irrigation? Are growers responsive?
15. Has the cropping pattern changed in the District in the last 5-10 years?
16. Are there any industrial water users or dischargers?

17. Is industrial supply water discharged to District channels? If so, how is the discharger regulated and what is their salinity objective.
18. Does the District deliver a specified amount of water for a public trust resource? Do the deliveries address any salinity issue? If so, how much water is used?
19. Is the water quality of return flows from public trust resources (e.g. wetlands) a concern for the District?
20. Does the District currently have a reversible or irreversible land subsidence issue? If so, is the District required to take action to slow or reverse subsidence? If so, do the actions impact the District's ability to manage salt?
21. Does the District engage in aquifer recharge? If so, how much water is used to recharge?
22. Does the District participate in a regional groundwater management program?
23. Is the salinity of the water used for recharge higher or lower salinity than the groundwater being recharged?
24. How much water is lost by the District through seepage and by inefficient irrigation practices? What is the salinity of the water lost to seepage? To inefficient irrigation practices?
25. Does the District attempt to minimize losses through active means such as piping or subsidizing efficient irrigation systems for their customers?
26. Is the District responsible for flood control? If so, how much water is released from impoundments in wet years and dry years?

MEMO

To: Lower San Joaquin River Committee

From: Chester Anderson, Watershed Coordinator, Middle San Joaquin River Watershed

Date: 10/8/2013

Subject: Impact of Salinity in the San Joaquin River on Agriculture Questionnaire

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In order to better understand the impacts of salinity on agriculture and along with my other outreach efforts regarding water quality issues, I asked a few growers and crop advisors about the impact of salinity on crops, the sources of salinity and how growers deal with salinity in irrigation water. What I learned is that growers utilize leaching, acid, gypsum, mechanical methods and other means to deal with the salinity – all dependent on soil test results, the desired crops and the availability of different sources of irrigation water.

My understanding is that the LSJRC needs to: 1) quantify what the impact salinity in the San Joaquin River has on agriculture, 2) how growers and Irrigation Districts mitigate the effects of the salinity, and 3) quantify what the costs of saline water in the San Joaquin River from the Merced River to Vernalis is on agriculture. To obtain this information I suggest that we interview growers and crop advisors *as well as* Irrigation and Water Districts.

Using the questionnaire and information gathered to date as a starting point I suggest that the LSJRC interview a select number of growers and crop advisors to better tailor the questionnaire and to better understand what information is available to the LSJRC in order to: quantify the impacts of salinity on agriculture, identify exactly what the salinity issues are for growers, identify what data and information is available to the LSJRC, better quantify the issue, identify how to obtain and compile the necessary information, and better identify what the relevant questions are.

To accomplish this task I will bring a list of suggested entities to the next (October) meeting for the LSJRC to pre-interview in order to refine the existing questionnaire. To finish the rest of the task I anticipate it will take about 3 hours to better understand what the LSJRC wants from the questionnaire, 16 hours to talk to identified growers and crop advisors, 4 hours compiling results of the interviews, and 4 hours revising the existing questionnaire based on the results of the interviews. Then I will report back to the LSJRC (or a subcommittee prior to the meeting?) at the November meeting with suggestions for how to move forward with the questionnaire and to make sure that the needs of the LSJRC are met with the final questionnaire and/or with other approaches designed to gather the necessary information.

Chester Anderson
East and West Stanislaus Resource Conservation Districts
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CV-SALTS Meeting Calendar

2013

1 January

	Sun	Mon	Tue	Wed	Thu	Fri	Sat
1			1	2	3	4	5
2	6	7	8	9	10	11	12
3	13	14	15	16	**17**	18	19
4	20	21	22	23	24	25	26
5	27	28	29	30	31		

2 February

	Sun	Mon	Tue	Wed	Thu	Fri	Sat
5						1	2
6	3	4	5	6	7	8	9
7	10	11	12	13	**14**	15	16
8	17	18	19	20	21	22	23
9	24	25	26	27	28		

3 March

	Sun	Mon	Tue	Wed	Thu	Fri	Sat
9						1	2
10	3	4	5	6	7	8	9
11	10	11	12	13	14	15	16
12	17	**18**	19	20	21	22	23
13	24	25	26	27	28	29	30
14	31						

4 April

	Sun	Mon	Tue	Wed	Thu	Fri	Sat
14		1	2	3	4	5	6
15	7	8	9	10	11	12	13
16	14	15	16	17	18	19	20
17	21	22	23	24	25	26	27
18	28	29	30				

5 May

	Sun	Mon	Tue	Wed	Thu	Fri	Sat
18				1	2	3	4
19	5	6	7	8	**9**	10	11
20	12	13	14	15	16	**17**	18
21	19	20	21	22	23	24	25
22	26	27	28	29	30	31	

6 June

	Sun	Mon	Tue	Wed	Thu	Fri	Sat
22							1
23	2	3	4	5	6	7	8
24	9	10	11	12	**13**	14	15
25	16	17	18	**19**	20	21	22
26	23	24	25	26	27	28	29
27	30						

7 July

	Sun	Mon	Tue	Wed	Thu	Fri	Sat
27		1	2	3	4	5	6
28	7	8	9	10	11	12	13
29	14	15	16	17	**18**	19	20
30	21	22	23	24	25	26	27
31	28	29	30	31			

8 August

	Sun	Mon	Tue	Wed	Thu	Fri	Sat
31					**1**	2	3
32	4	5	6	7	8	9	10
33	11	12	13	14	15	16	17
34	18	19	20	21	22	23	24
35	25	26	27	28	29	30	31

9 September

	Sun	Mon	Tue	Wed	Thu	Fri	Sat
36	1	2	3	4	5	6	7
37	8	**9**	10	11	12	13	14
38	15	16	17	18	19	20	21
39	22	23	24	25	26	27	28
40	29	30					

10 October

	Sun	Mon	Tue	Wed	Thu	Fri	Sat
40			1	2	3	4	5
41	6	7	8	9	**10**	11	12
42	13	14	15	16	17	18	19
43	20	21	22	23	24	25	26
44	27	28	29	30	31		

11 November

	Sun	Mon	Tue	Wed	Thu	Fri	Sat
44						1	2
45	3	4	5	6	7	8	9
46	10	11	12	13	14	**15**	16
47	17	18	19	20	21	22	23
48	24	25	26	27	28	29	30

12 December

	Sun	Mon	Tue	Wed	Thu	Fri	Sat
49	1	2	3	4	***5***	***6***	7
50	8	9	10	11	12	**13**	14
51	15	16	***17***	18	19	20	21
52	22	23	24	25	26	27	28
53	29	30	31				

Notes

2nd or 3rd Thursdays

Dark Green Exec Comm Policy

RWQCB Update ***Bold Underline***

2nd or 3rd Tuesdays

Lt. Green Hatch Exec Comm Admin

First Monday except conflicts

Yellow Salty 5

Lower San Jaquin River Committee

Light Red conflicts

TAC Meeting

Third Thursday Exceptions

January 7, 2014 State Board Presentation

Dark in July & December for Policy

Nov 14 vs 21 due to Thanksgiving