

State of California
Department of Water Resources

Summary of Recent, Historical, and Estimated Potential for Future Land Subsidence in California



2014

Executive Summary

Inelastic land subsidence (subsidence) caused by groundwater extraction is a major problem in California and is exacerbated by additional pressure on groundwater resources during periods of drought. The purpose of this document is to summarize recent and historical subsidence and estimate the potential for future subsidence. Specifically, the following documentation and associated maps are intended to be used as a screening tool to identify areas where the potential for subsidence due to groundwater extraction may persist and to act as a guide to focus future site-specific subsidence studies. The results of this study consist of a summary map (Figure ES-1) and data compilation (Appendix A) of recent, historical, and estimated potential for future subsidence within the DWR Bulletin 118-defined groundwater basins of California. This information is also available on an interactive web map (http://water.ca.gov/groundwater/GIC_MapApp_Intro.cfm).

The key findings are:

- In general, the areas with a higher estimated potential for future subsidence are in the southern San Joaquin, Antelope, Coachella, and western Sacramento Valleys. These areas match well with the areas of subsidence documented by Luhdorff & Scalmanini Consulting Engineers (LSCE), Borchers and Carpenter (2014).
- Most of the groundwater basins with a higher estimated potential for future subsidence are also ranked as high or medium priority by the CASGEM Basin Prioritization Process.
- Subsidence is occurring in many groundwater basins in the state especially in the southern San Joaquin River (4 subbasins) and Tulare Lake (7 subbasins) Hydrologic Regions. Subsidence is also occurring in the South Lahontan (5 basins), South Coast (4 basins), Sacramento River (3 subbasins), Central Coast (2 basins), and Colorado River (2 basins) Hydrologic Regions.
- Since spring 2008, groundwater levels are at all-time historical lows (for period of record) in most areas of the state especially in the southern San Joaquin Valley, portions of the Sacramento Valley, and portions of the San Francisco Bay, South Lahontan, and South Coast Hydrologic Regions – these areas exhibit groundwater levels more than 50 feet below previous historical lows experienced sometime prior to 2000. There are many areas of the San Joaquin Valley where recent groundwater levels are more than 100 feet below previous historical lows and correspond to areas of recent subsidence.
- In the Central Valley, groundwater levels in 36% of the long-term wells (216 of 599) in the Sacramento Valley and 55% of the long-term wells (1,718 of 3,124) in the San Joaquin Valley are at or below the historical spring low levels.

Gaps in groundwater and subsidence monitoring include:

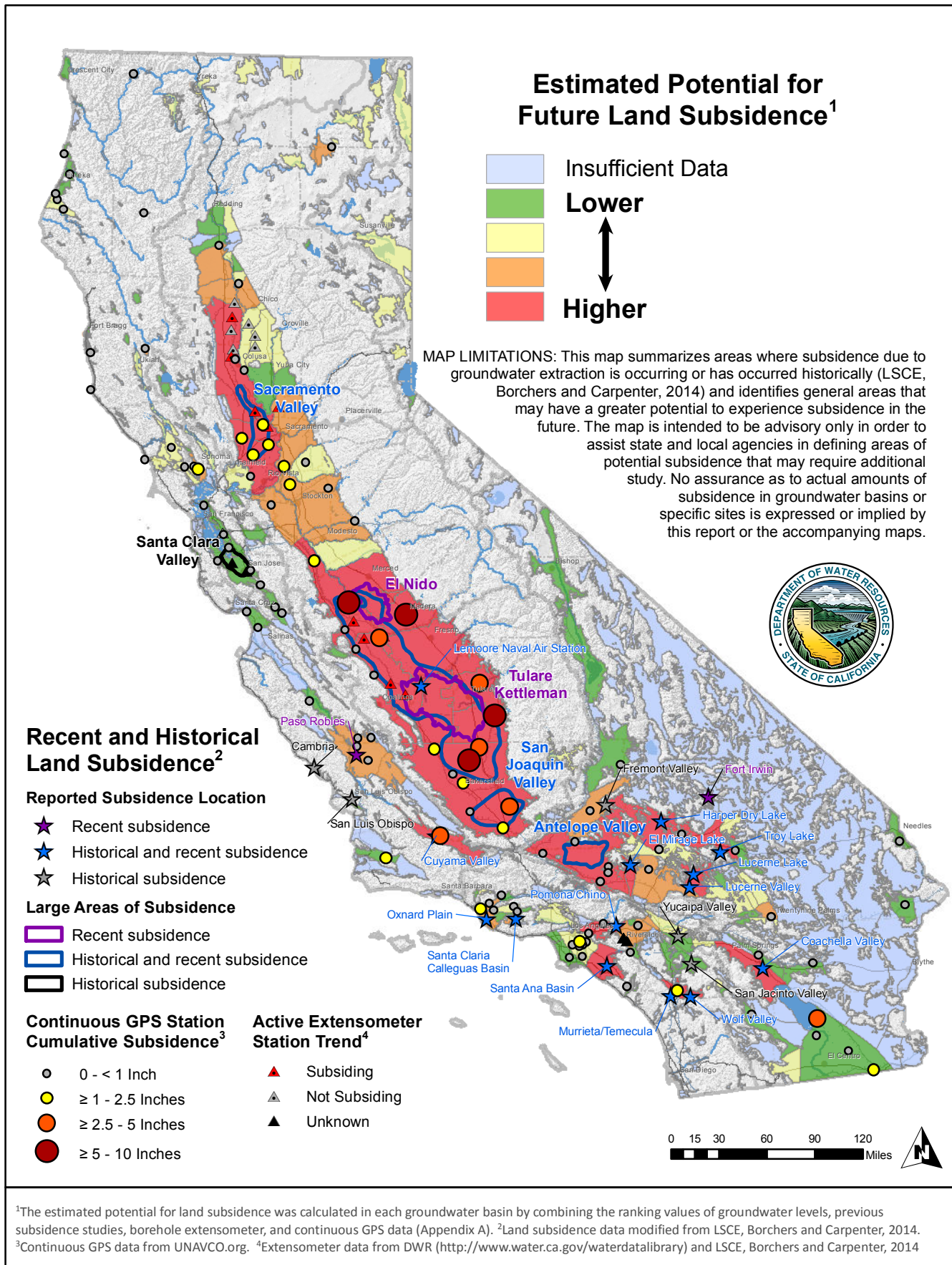
- Many high and medium priority basins do not have subsidence monitoring networks or long-term groundwater monitoring wells, most notably in the Central Coast Hydrologic Region.
- Large areas of recent subsidence in the San Joaquin Valley (El Nido and Tulare-Kettleman areas [LSCE, Borchers and Carpenter, 2014]) do not have continuous GPS or borehole extensometers in the areas of maximum subsidence.

Recommendations include:

- Future efforts should build off this initial work, incorporate the results of the planned NASA-JPL InSAR assessment of the Central Valley, integrate site-specific lithology data, and include updated groundwater level, extensometer, and continuous GPS data. The recommendations from the comprehensive review of subsidence completed by LSCE, Borchers and Carpenter (2014) should also be considered.

FIGURE ES-1

Summary of Recent, Historical, and Estimated Potential for Future Land Subsidence in California



Introduction

Inelastic land subsidence (subsidence) caused by groundwater extraction is a major problem in California and is exacerbated by additional pressure on groundwater resources during periods of drought. Subsidence has occurred historically and is continuing in many areas in California, most notably in the San Joaquin, Antelope, Coachella, and Sacramento Valleys (Luhdorff & Scalmanini Consulting Engineers (LSCE), Borchers and Carpenter, 2014).

Purpose

The purpose of this document is to summarize recent and historical subsidence and estimate the potential for future subsidence. Specifically, the following documentation and associated maps are intended to be used as a screening tool to identify areas where the potential for subsidence due to groundwater extraction may persist and to act as a guide to focus future site-specific subsidence studies.

This study included an assessment of groundwater levels, review of previous subsidence studies, and compilation of borehole extensometer and continuous GPS station information. The results of this study consist of a summary map (Figure ES-1) and data compilation (Appendix A) of recent, historical, and estimated potential for future subsidence within the DWR Bulletin 118-defined groundwater basins of California. This information is also available on an interactive web map (http://water.ca.gov/groundwater/GIC_MapApp_Intro.cfm).

In addition to this study, the Department of Water Resources (DWR) is also contracting with the National Aeronautics and Space Administration (NASA) Jet Propulsion Laboratory (JPL) to use satellite-based Interferometric Synthetic Aperture Radar (InSAR) to measure relative changes in land surface elevation in the Central Valley from 2007 through 2014; this analysis is expected to be completed by summer 2015. A test area along the California Aqueduct is also being evaluated using aircraft-based InSAR; this work is expected to be completed in winter 2014-15.

Future efforts should build off of this initial work, incorporate the results of the NASA-JPL InSAR assessment in the Central Valley, integrate site-specific lithology data, and include updated groundwater level, extensometer, and continuous GPS data.

Data Sources and Methodology

This study is based on the evaluation of groundwater levels in wells (regardless of well depth or well use) with supporting information from previous subsidence studies (LSCE, Borchers and Carpenter, 2014), and data from borehole extensometers and continuous GPS stations. A description of the each data source is described as follows.

Groundwater Levels

Declining groundwater levels, as a result of groundwater extraction, is a major cause of subsidence especially when they decline past historical lows (Sneed and Others, 2013).

Historical low groundwater level data, along with supporting information described below, were used to estimate the potential for future subsidence. Groundwater level data from wells were used only if the period of record was 10 years or more (long-term monitoring wells). Data from all types of wells (agricultural production, municipal and industrial production, and monitoring wells) regardless of depth were used. Groundwater level data were compiled and analyzed from the California Statewide Groundwater Elevation Monitoring (CASGEM) Program and the Water Data Library (WDL) groundwater level database as of May 19, 2014.

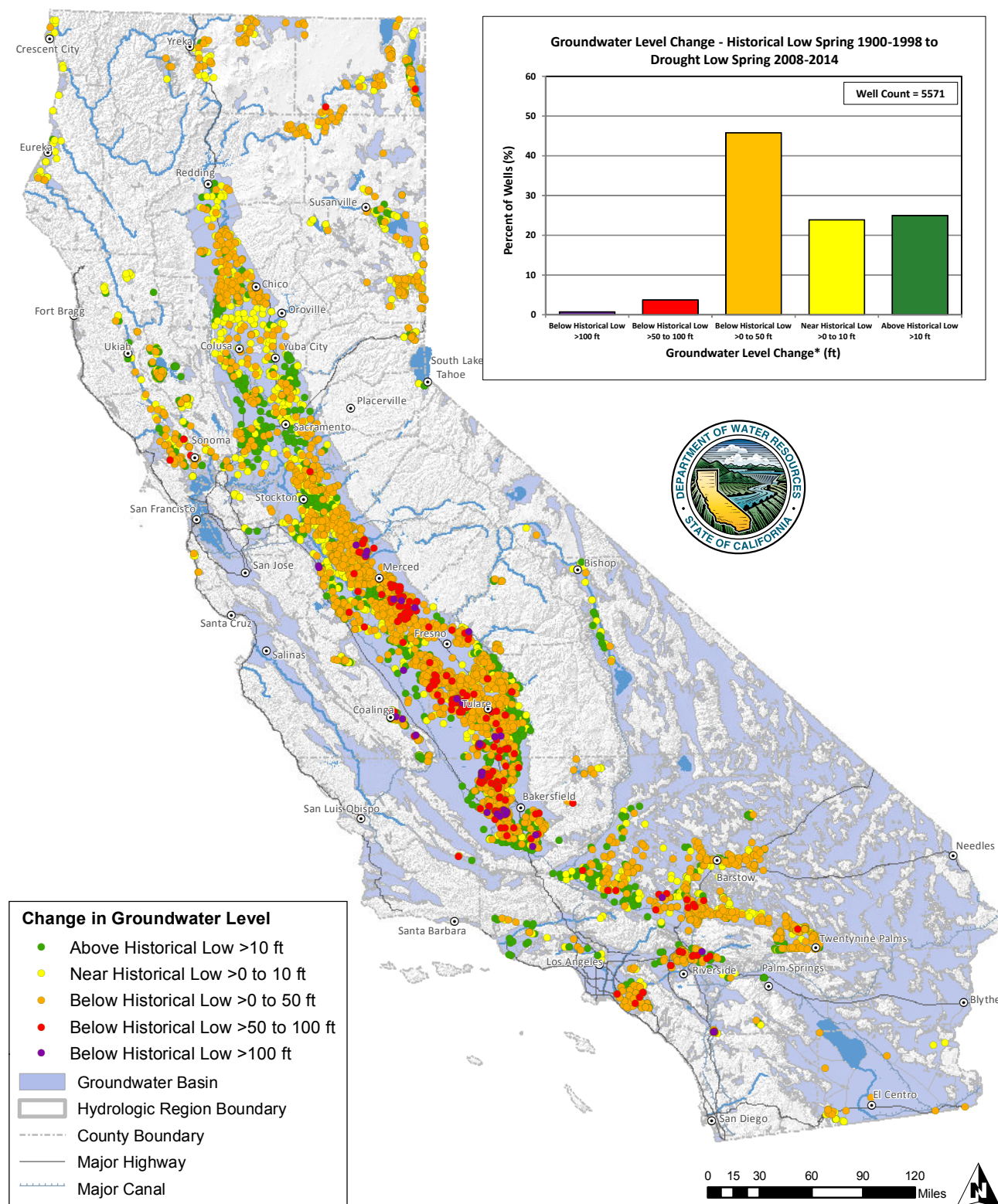
Plotting the difference between groundwater level measurements collected over a long time period at discrete locations is a simple way to depict changes in groundwater levels and evaluate long-term regional trends. These plots were used to estimate the potential for future subsidence. Figure 1 depicts the comparison of historical low spring groundwater levels between spring 1900 and 1998 to more recent low spring groundwater levels between spring 2008 and 2014.

Maximum groundwater level declines, and potential for subsidence, are more likely to occur in the summer and fall, however, spring groundwater level measurements were used because the fall 2014 data is currently not available, and in general, spring groundwater level measurements are more numerous and more consistent throughout the state. It should also be noted that groundwater levels from wells only represent site-specific information and do not necessarily represent the conditions in entire groundwater basins. This highlights the importance of having sufficient long-term groundwater monitoring wells and subsidence monitoring stations in each groundwater basin.

The percentage of wells with current groundwater levels (2008-2014) at or below historical low spring levels was calculated for each groundwater basin. This was accomplished by dividing the wells currently at or below historical lows to all long-term wells in the groundwater basin. The results, displayed on Figure 2 and in Appendix A, were categorized into five ranks;

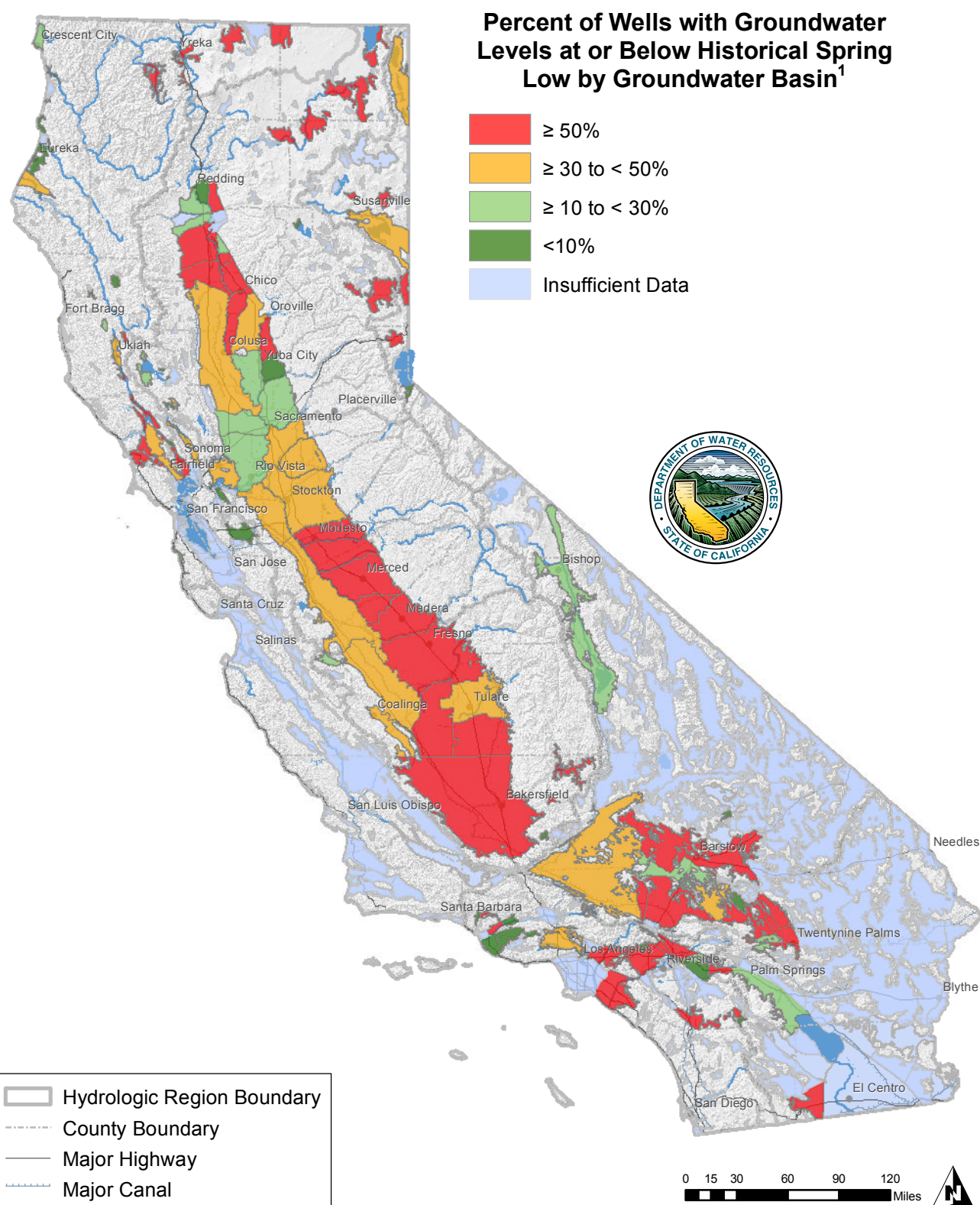
- $\geq 50\%$ of groundwater levels at or below historical lows - 4
- $\geq 30\%$ to $< 50\%$ of groundwater levels at or below historical lows - 3
- $\geq 10\%$ to $< 30\%$ of groundwater levels at or below historical lows - 2
- $< 10\%$ of groundwater levels at or below historical lows - 1
- Insufficient data - 0

FIGURE 1
Groundwater Level Change¹
Historical Low Spring 1900-1998 to Drought Low Spring 2008-2014



¹Groundwater level change determined from water level measurements in wells. Map and chart based on available data from the DWR Water Data Library as of 05/19/2014. Data subject to change without notice.

FIGURE 2
Percent of Wells with Groundwater Levels at or
Below Historical Spring Low by Groundwater Basin



¹Wells with greater than or equal to 10 years of record were used for this analysis. Percentage based on wells at historical Spring low in current drought period 2008-2014 divided by total number of wells in each groundwater basin. Map based on available data from the DWR Water Data Library (<http://www.water.ca.gov/waterdatalibrary>) as of 5/19/2014.

Basins without long-term groundwater monitoring wells or basins that have less than two wells per 100 square miles were classified as having insufficient data. Two wells per 100 square miles was used because that is the minimum monitoring well coverage recommended in the DWR Groundwater Elevation Monitoring Guidelines (DWR, 2010).

Previous Subsidence Studies

A comprehensive review of historical areas of subsidence as well as new areas experiencing subsidence was recently completed by LSCE, Borchers and Carpenter (2014). The information from this report was summarized by groundwater basin in Appendix A, and is displayed on Figure 3. Each groundwater basin was ranked based on information from previous studies;

- Recent and historical subsidence – 5
- Historical subsidence – 1
- No documented subsidence – 0
- Data gap – Blank

Borehole Extensometer Data

The approximate trends (subsiding or not subsiding) of 27 active extensometers, monitored by DWR, USGS, and local agencies, were summarized in Appendix A and are displayed on Figure 4. Borehole extensometer data in each groundwater basin was ranked as follows;

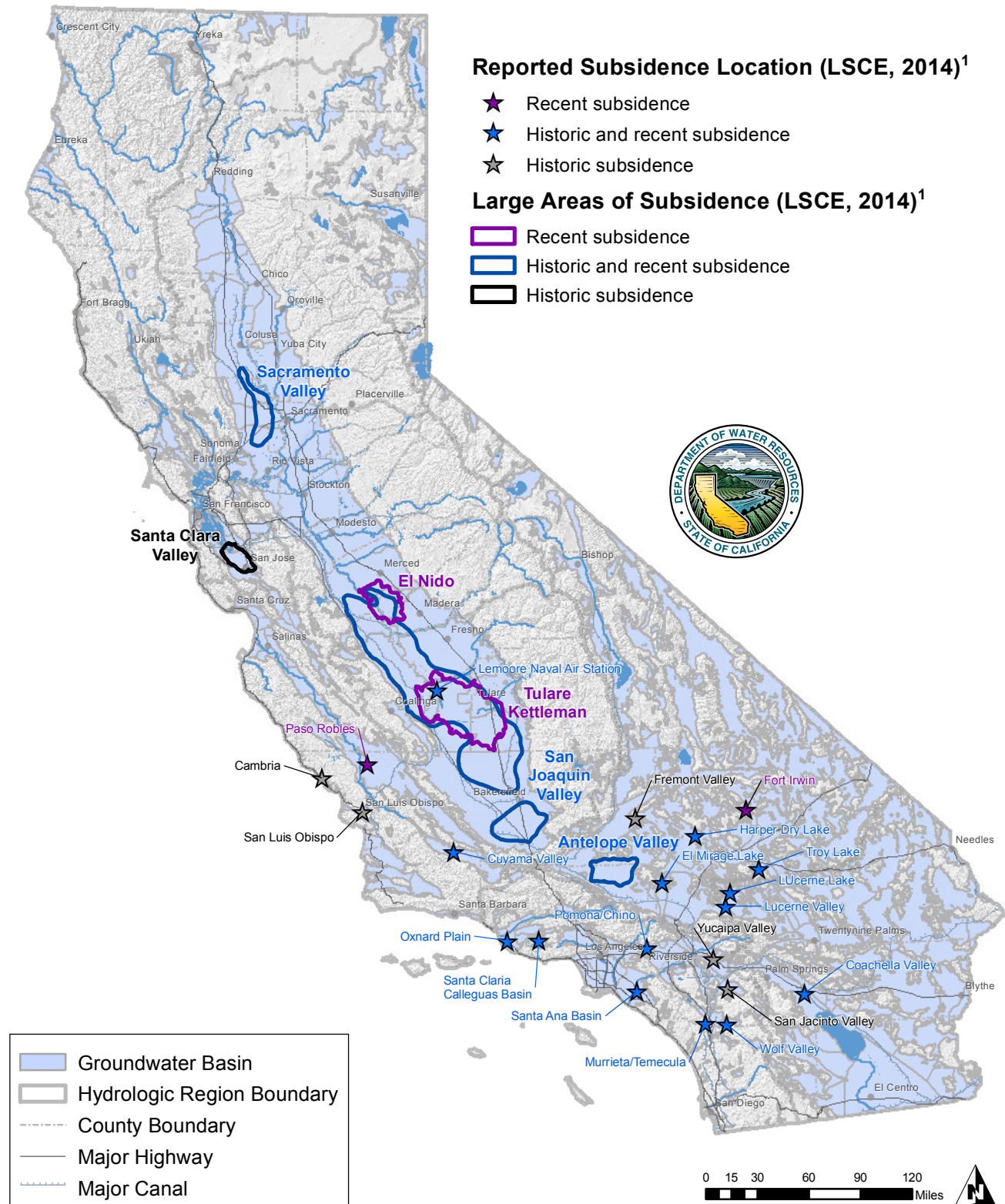
- Cumulative subsidence ≥ 0.1 feet (approximately 1 inch) – 2
- Cumulative subsidence < 0.1 feet (approximately 1 inch) – 1
- Cumulative subsidence unknown – 0
- Data gap - Blank

Continuous Global Positioning System (GPS) Data

Continuous GPS data from the UNAVCO (a non-profit university-governed consortium that facilitates geoscience research and education using geodesy) Plate Boundary Observatory (PBO) were used for this study. The approximate trend (subsiding or not subsiding) of the vertical displacement data from 319 continuous GPS stations within groundwater basins (Figure 4) were analyzed and summarized in Appendix A. (<http://pbo.unavco.org/>, accessed 4/30/2014). Figure 5 displays the cumulative subsidence at continuous GPS stations that have subsiding trends. Each groundwater basin with continuous GPS station(s) was ranked as follows;

- Cumulative subsidence ≥ 0.1 feet (approximately 1 inch) – 2
- Cumulative subsidence < 0.1 feet (approximately 1 inch) – 1
- No cumulative subsidence – 0
- Data gap - Blank

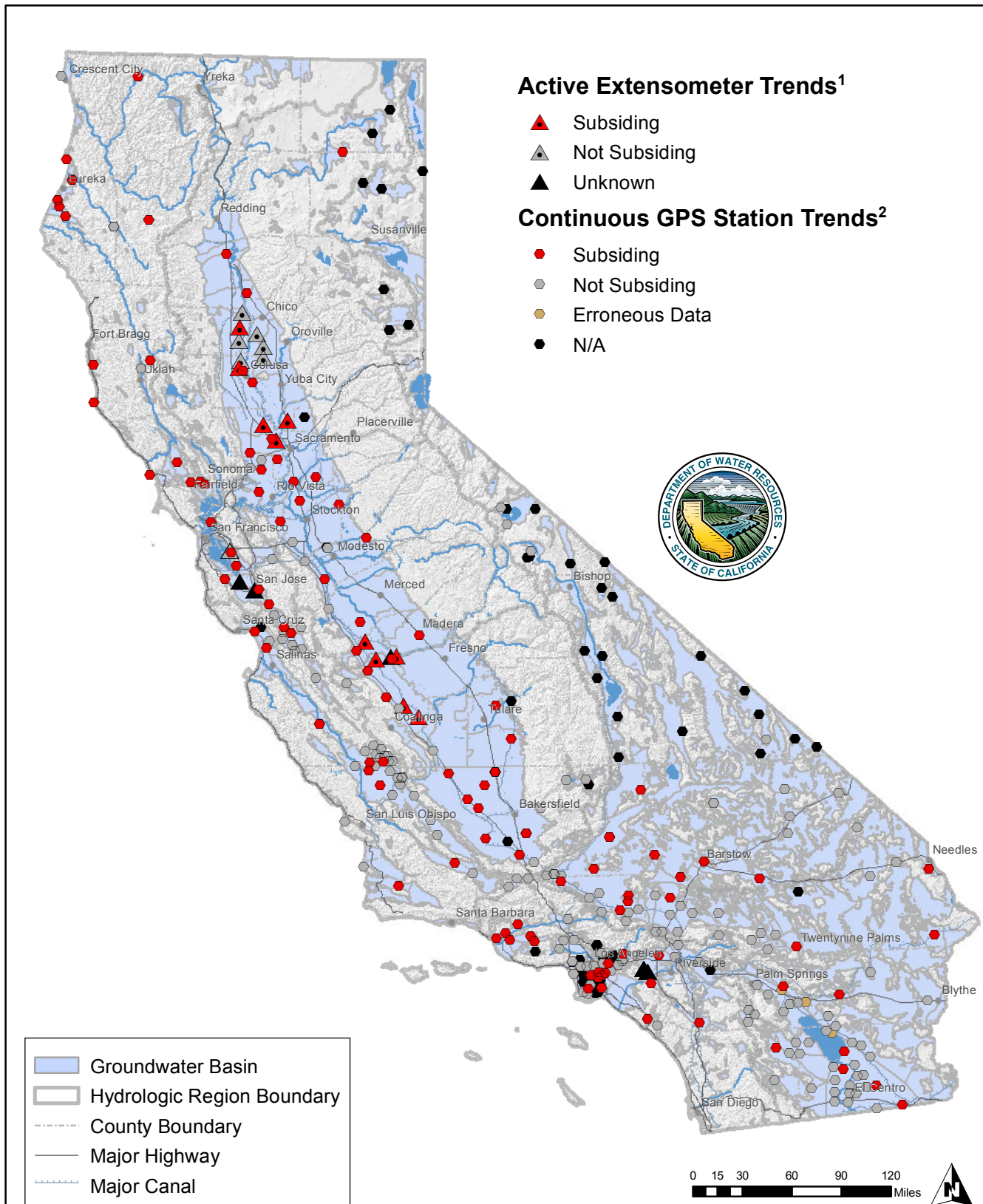
FIGURE 3
Land Subsidence from Groundwater Use in California
LSCE, Borchers and Carpenter, 2014¹



¹Land Subsidence data modified from LSCE, Borchers and Carpenter, 2014.

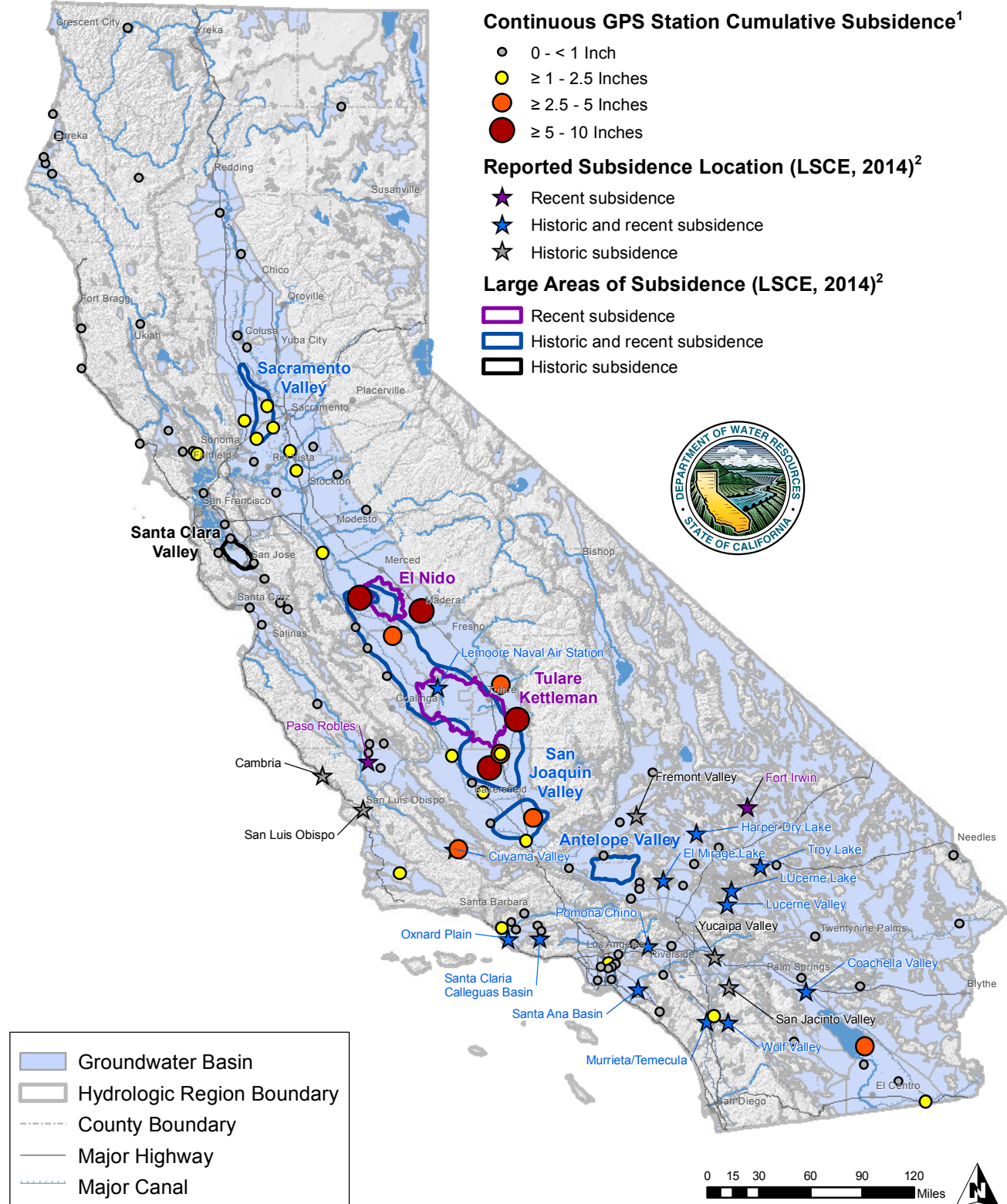
FIGURE 4

Active Extensometers and Continuous GPS Stations in California



¹Extensometer data from DWR (<http://www.water.ca.gov/waterdatalibrary>), USGS (<http://waterdata.usgs.gov/nwis>), and LSCE, Borchers and Carpenter, 2014. ²Continuous GPS data from UNAVCO.org.

FIGURE 5
Continuous GPS Station Cumulative Subsidence
Compared to Areas of Recent and Historical Land Subsidence



¹Continuous GPS data from UNAVCO.org. ²Areas of Land Subsidence Modified from LSCE, Borchers and Carpenter, 2014.

Findings

The estimated potential for future subsidence was calculated in each groundwater basin by combining groundwater level, information from previous subsidence studies, and borehole extensometer and continuous GPS data (Figure 6). In general, the areas with a higher estimated potential for future subsidence are in the southern San Joaquin, Antelope, Coachella, and western Sacramento Valleys. These areas match well with the areas of subsidence documented by LSCE, Borchers and Carpenter (2014) (Figure ES-1).

Most of the basins with a higher estimated potential for future subsidence are also ranked as high or medium priority by the CASGEM Basin Prioritization Process.

Groundwater Basins with Recent Subsidence – Previous Studies

Based on the comprehensive review of subsidence by LSCE, Borchers and Carpenter (2014) the following number of groundwater basins in seven hydrologic regions are currently experiencing subsidence (Appendix A):

- Subsidence is occurring in many groundwater basins in the state and especially in the southern San Joaquin River (4 basins) and Tulare Lake (7 basins) Hydrologic Regions. Subsidence is also occurring in the South Lahontan (5 basins), South Coast (4 basins), Sacramento River (3 subbasins), Central Coast (2 basins), and Colorado River (2 basins) Hydrologic Regions.

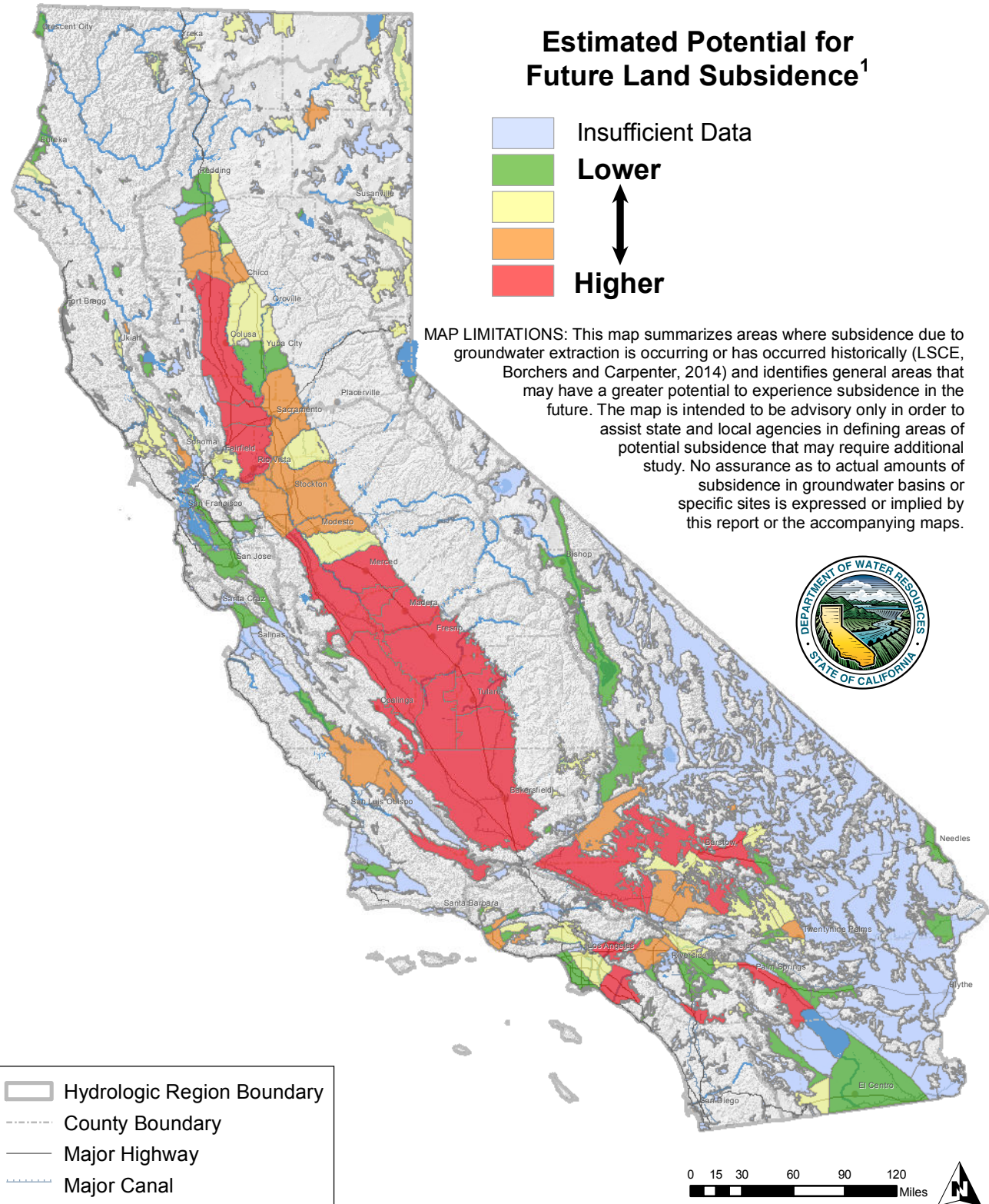
Groundwater Basins with Potential for Subsidence - Groundwater Level Data

Analysis of historical groundwater levels at discrete locations was completed to evaluate recent groundwater lows compared to historical lows. Figure 1 depicts the comparison of historical low spring levels between spring 1900 and 1998 to more recent low spring levels between spring 2008 and 2014. Since spring 2008, groundwater levels are at all-time historical lows (for the period of record) in most areas of the state especially in the southern San Joaquin Valley, portions of the Sacramento Valley, and portions of the San Francisco Bay, South Lahontan, and South Coast Hydrologic Regions – these areas exhibit groundwater levels more than 50 feet below previous historical lows experienced sometime prior to 2000. There are many areas of the San Joaquin Valley where recent groundwater levels are more than 100 feet below previous historical lows and correspond to areas of recent subsidence.

In the Central Valley, groundwater levels in 36% of the long-term wells (216 of 599) in the Sacramento Valley and 55% of the long-term wells (1,718 of 3,124) in the San Joaquin Valley are at or below the historical spring low levels.

FIGURE 6

Estimated Potential for Future Land Subsidence in California



¹The estimated potential for land subsidence was calculated in each groundwater basin by combining the ranking values of groundwater levels, previous subsidence studies, borehole extensometer, and continuous GPS data (Appendix A).

The percentage of wells with groundwater levels currently (2008-2014) at or below historical spring low levels was calculated for each groundwater basin (Figure 2 and Appendix A). The following number of groundwater basins in each hydrologic region have greater than 50% of groundwater levels at or below historical spring low levels:

- Sacramento River (18 basins), South Coast (10 basins), North Coast (11), Colorado River (9 basins), Tulare Lake (6 basins), San Joaquin River (5 basins), South Lahontan (5 basins), Central Coast (2 basins), North Lahontan (4 basins), and San Francisco Bay (2 Basins)

Gaps in Groundwater and Subsidence Monitoring

A groundwater level and subsidence monitoring gap is an informal term indicative of insufficient data to reasonably assess and interpret groundwater and subsidence conditions in a basin and these gaps exist throughout the state. There are two primary gaps that exist in groundwater level or subsidence monitoring data; spatial and temporal. Spatial data gaps exist where there is inadequate horizontal and/or vertical distribution of groundwater level or subsidence monitoring to accurately represent or assess conditions within an area of interest (groundwater basin).

Sufficient vertical distribution of data is important in groundwater basins having multiple aquifer systems at various depths, and that may also be characterized by varying levels of confinement (compressible clays and silts) or changing groundwater levels. A thorough understanding of a groundwater basin's hydrogeology is essential to assess whether or not the spatial distribution of groundwater level and subsidence monitoring data are adequate for a basin. Groundwater level and subsidence data collected at routine intervals can provide seasonal and long-term trends for a basin, which are essential for accurately estimating aquifer response and change in storage associated with changing hydrology, land use, total water supply, and effects of local groundwater management practices. Temporal data gaps exist when a consistent record of groundwater level and subsidence data, recorded over regular time intervals, is not available. Specific data gaps identified in this study include;

- Many high and medium priority basins do not have subsidence monitoring networks or long-term groundwater monitoring wells; this is most notable in the Central Coast Hydrologic Region.
- Large areas of recent subsidence in the San Joaquin Valley (El Nido and Tulare-Kettleman areas of LSCE, Borchers and Carpenter, 2014) do not have continuous GPS or borehole extensometers in the areas of maximum subsidence (Figure 5).

Usage and Limitations

This document and associated maps summarize areas where subsidence due to groundwater extraction is occurring or has occurred historically (LSCE, Borchers and Carpenter, 2014) and identifies general areas that may have a greater potential to experience subsidence in the future. The map is intended to be advisory only in order to assist state and local agencies in defining areas of potential subsidence that may require additional study. No assurance as to actual amounts of subsidence in groundwater basins or at specific sites is expressed or implied by this report or the accompanying maps.

Furthermore it is important to note the following:

- Maps do not provide a differentiation between the amounts of subsidence that is occurring (which can range from 0.1 feet to several feet).
- This analysis was completed on a groundwater basin scale, which could over or understate the potential for future subsidence on a more localized or site specific scale.
- The scope of this analysis was limited and relied on readily available high level published data. This analysis did not incorporate potentially available local knowledge and data to refine the areas of potential subsidence necessary to go from a groundwater basin scale to a more localized or site specific scale of subsidence.

Recommendations

Future efforts should build off of this initial work, incorporate the results of the NASA-JPL InSAR assessment in the Central Valley, integrate site-specific lithology data, and include updated groundwater level, extensometer, and continuous GPS data. Synthesis of this additional subsidence data should inform groundwater managers about areas of new or continuing subsidence that need site-specific monitoring data (CGPS and/or borehole extensometers). The recommendations from LSCE, Borchers and Carpenter, 2014 (see report for details) should also be considered in future subsidence work in California and include:

- Monitor land surface elevation changes and compaction
 - Remote surveillance and analysis: InSAR and continuous GPS
 - Ground surveillance and analysis: Surveying and borehole extensometry
- Characterize aquifer system and monitor groundwater levels
- Collect, store and disseminate data
- Evaluate and prioritize subsiding groundwater basins

References

- DWR, 2010, Department of Water Resources Groundwater Elevation Monitoring Guidelines, <http://www.water.ca.gov/groundwater/casgem/pdfs/CASGEM%20DWR%20GW%20Guidelines%20Final%20121510.pdf>
- LSCE, Borchers and Carpenter, 2014, Land Subsidence from Groundwater Use in California, report prepared by Luhdorff and Scalmanini consulting engineers with support by the California Water Foundation, http://www.californiawaterfoundation.org/uploads/1397858208-SUBSIDENCEFULLREPORT_FINAL.pdf
- Sneed, Michelle, Brandt, Justin, and Solt, Mike, 2013, Land subsidence along the Delta-Mendota Canal in the northern part of the San Joaquin Valley, California, 2003–10: U.S. Geological Survey Scientific Investigations Report 2013–5142, 87 p., <http://dx.doi.org/10.3133/sir20135142>

Appendix A. Summary of Recent, Historical, and Estimated Potential for Future Land Subsidence in California

Appendix A. Summary of Recent, Historical, and Estimated Potential for Future Land Subsidence in California

CASGEM Groundwater Basin Prioritization Results											CASGEM Overall Basin Priority Ranking	B-118-80 Overdraft Designation (Critical Overdraft, Special Problems, Evidence of Overdraft, Not Analyzed)	Potential for Land Subsidence Estimated From Long-Term Groundwater Level Data							Summary of Recent and Historical Land Subsidence															Documented Subsidence Data Ranking Value	Summary of Recent, Historical, and Estimated Potential for Future Subsidence Ranking Value	Overall Estimated Potential For Future Subsidence
Basin Number	Basin Name	Sub-Basin Name	Hydrologic Region	DWR Region Office	Basin Area		Irrigated Acreage (Acres)	Estimated Groundwater Use (AF)	Total Wells	2010 Population			Number of Wells At or Below Historical Low	Total Number of Wells with Longterm record (> 10 yrs)	Percent of Wells At or Below Historical Low	Number of Wells with Longterm record (> 10 yrs) per Sq. Mile	Estimated Potential for Subsidence From Groundwater Levels Rank	Estimated Potential for Land Subsidence	Long Term (> 10 yrs) Groundwater Level Trends	Documented Subsidence (Yes/No)	Documented Subsidence Ranking (0= None, 1= Historical, 5= Recent and Historical)	If Yes, during what period?	If Yes, maximum amount (feet)?	Active Extensometer Stations in Basin (Yes/No) and (#)	Period of record	Current station trend(s)? Max decrease (ft)	Borehole Extensometer Cumulative Subsidence Ranking (0= unknown, 1= Subsided < 0.1 ft, 2= Subsided > 0.1 ft)	Active Continuous GPS Stations in Basin (Yes/No) and (#)	Current station trend?	Continuous GPS Cumulative Subsidence Ranking (0= no subsidence or unknown, 1= subsided < 0.1 ft, 2= Subsided > 0.1 ft)	Max. Decrease (ft)	Max Increase (ft)	Longest CGPS Period of record	Land Subsidence Comments			
5-22.07	SAN JOAQUIN VALLEY	DELTA-MENDOTA	San Joaquin River	SCRO	746,697	1,166.7	470,500	509,687	7,132	107,879	High	Not Analyzed	84	189	44%	16	3	Medium-High	30 to 50% GWL at or below Historical Low	Yes ¹	5	1926-1970 (Ireland, 1984) and 2007 to 2011 (CWF, 2014)	1.0-1.5 (2007-2011), 28.0 (1926-1970)	Yes (2)	2012 to Present	Subsiding (1), 0.17 USGS 365325120391501	2	Yes (6)	Subsiding (4), Not Subsiding(2)	2	0.66	0.02	2005 to Present	¹ Subsidence has been documented in adjacent groundwater basins (Merced, Chowchilla, Madera, Kings);	9	12	High
5-21.67	SACRAMENTO VALLEY	YOLO	Sacramento River	NCRO	225,718	352.7	128,860	200,000	7,329	194,158	High	Not Analyzed	3	18	17%	5	2	Low-Medium	10 to 30% GWL at or below Historical Low	Yes	5	1926 to Present	0.40 (1992-Present), 5.4 (1926-1994)	Yes (1)	1992 to Present	Subsiding, 0.20 in one year	2	Yes (2)	Subsiding (2)	2	0.20	-	2004 to Present		9	11	High
5-22.06	SAN JOAQUIN VALLEY	MADERA	San Joaquin River	SCRO	393,429	614.7	238,070	375,800	9,100	116,919	High	Critical Overdraft	77	112	69%	18	4	High	>50% GWL at or below Historical Low	Yes ¹	5	1926-1970 (Ireland, 1984) and 2007 to 2011 (CWF, 2014)	0.5 - 1.0 (2007-2011), >1.0 (1926-1970)	No	-	-		Yes (1)	Subsiding	2	0.57	-	2005 Present	¹ Subsidence has been documented in adjacent groundwater basins (Chowchilla, Delta-Mendota, Kings)	7	11	High
5-22.09	SAN JOAQUIN VALLEY	WESTSIDE	Tulare Lake	SCRO	640,504	1,000.8	513,759	411,534	3,790	27,285	High	Not Analyzed	9	27	33%	3	3	Medium-High	30 to 50% GWL at or below Historical Low	Yes ¹	5	1926-1970 (Ireland, 1984) and 2007 to 2011 (CWF, 2014)	0.5-1.0 (2007-2011), 28.0 (1926-1970)	Yes (3)	2012 to Present	Subsiding (3), 0.25 ft USGS 361935120134501	2	Yes (4)	Subsiding (2), Not Subsiding (2)	1	0.08	0.03	2005 to Present	¹ Subsidence has been documented in adjacent groundwater basins (Delta-Mendota, Kings, Tulare Lake, Pleasant Valley)	8	11	High
5-22.13	SAN JOAQUIN VALLEY	TULE	Tulare Lake	SCRO	409,959	734.3	371,028	592,823	6,355	108,660	High	Critical Overdraft	109	207	53%	28	4	High	>50% GWL at or below Historical Low	Yes ¹	5	1926-1970 (Ireland, 1984) and 2007 to 2011 (CWF, 2014)	2.0 - 4.0 (2007-2011), >12.0 (1926-1970)	No	-	-		Yes (1)	Subsiding	2	0.82	-	2006 to Present	¹ Subsidence has been documented in adjacent groundwater basins (Tulare Lake, Kern County, Kaweah)	7	11	High
5-22.14	SAN JOAQUIN VALLEY	KERN COUNTY	Tulare Lake	SCRO	1,950,113	3,047.1	919,821	1,041,462	15,015	700,323	High	Critical Overdraft	299	587	51%	19	4	High	>50% GWL at or below Historical Low	Yes ¹	5	1926-1970 (Ireland, 1984) and 2007 to 2011 (CWF, 2014)	0-0.5 (2007-2011), 12.0 (1926-1970)	Yes (2)	Semiripps WSD 2010 to present, KWB 1994 to Present?	Unknown	0	Yes (12)	Subsiding (10), Not Subsiding (2)	2	0.44	0.07	2007 to Present	¹ Subsidence has been documented in adjacent groundwater basins (Tulare Lake, Tule, Pleasant Valley)	7	11	High
6-44	ANTELOPE VALLEY		South Lahontan	SRO	1,014,596	1,585.3	21	90,000	4,476	398,864	High	Evidence of Overdraft	56	151	37%	10	3	Medium-High	30 to 50% GWL at or below Historical Low	Yes ¹	5	1930s to Present	>6.0 (CWF, 2014)	Yes (3)	See CWF, 2014	See CWF, 2014	2	Yes (15)	Not Subsiding (10), Subsiding (5)	1	0.03	0.07	2004 to Present	¹ Subsidence has been documented in adjacent groundwater basin (El Mirage)	8	11	High
4-13	SAN GABRIEL VALLEY		South Coast	SRO	127,278	198.9	0	218,696	1,587	1,275,187	High	Not Analyzed	3	5	60%	3	4	High	>50% GWL at or below Historical Low	Yes ¹	5	Various (CWF, 2014)	Various (CWF, 2014)		-	-	-	Yes (6)	Not Subsiding (4), Subsiding (2)	1	0.08	0.07	2004 to Present	¹ Subsidence has been documented in adjacent groundwater basin (Chino)	6	10	High
5-21.52	SACRAMENTO VALLEY	COLUSA	Sacramento River	NRO	917,793	1,434.1	572,927	172,896	9,695	48,369	Medium	Not Analyzed	53	171	31%	12	3	Medium-High	30 to 50% GWL at or below Historical Low	Yes	5	1926 to Present	5.4 (CWF, 2014)	Yes (5)	1988 to Present	Subsiding (3), Not Subsiding (2)	1	Yes (2)	Subsiding (2)	1	0.07	-	2005 to Present	¹ Subsidence has been documented in adjacent groundwater basin (Chino)	7	10	High
5-22.11	SAN JOAQUIN VALLEY	KAWIAH	Tulare Lake	SCRO	446,283	697.3	380,311	453,226	12,092	271,700	High	Critical Overdraft	183	405	45%	58	3	Medium-High	30 to 50% GWL at or below Historical Low	Yes ¹	5	1926-1970 (Ireland, 1984) and 2007 to 2011 (CWF, 2014)	1.0 - 4.0 (2007-2011), >8.0 (1926-1970)	No	-	-		Yes (1)	Subsiding	2	0.33	-	2005 to Present	¹ Subsidence has been documented in adjacent groundwater basins (Tulare Lake, Kings, Tule)	7	10	High
6-40	LOWER MOJAVE RIVER VALLEY		South Lahontan	SRO	287,563	449.3	6,126	31,374	63	32,938	Medium	Evidence of Overdraft	69	123	56%	27	4	High	>50% GWL at or below Historical Low	Yes ¹	5	Various (CWF, 2014 and Sneed and others, 2003)	Various (CWF, 2014 and Sneed and others, 2003)	No	-	-		Yes (1)	Subsiding	1	0.03	-	2004 to Present	¹ Subsidence has been documented in adjacent groundwater basins (Harper Valley, Lanford Valley)	6	10	High
6-47	HARPER VALLEY		South Lahontan	SRO	411,827	643.5	813	10,000	95	1,634	Low	Evidence of Overdraft	13	23	57%	4	4	High	>50% GWL at or below Historical Low	Yes ¹	5	Various (CWF, 2014 and Sneed and others, 2003)	Various (CWF, 2014 and Sneed and others, 2003)	No	-	-		Yes (1)	Subsiding	1	0.02	-	2005 to Present	¹ Subsidence has been documented in adjacent groundwater basin (Antelope Valley)	6	10	High
5-21.66	SACRAMENTO VALLEY	SOLANO	Sacramento River	NCRO	424,832	663.8	258,208	69,149	6,790	119,263	Medium	Not Analyzed	16	65	25%	10	2	Low-Medium	10 to 30% GWL at or below Historical Low	Yes ²	5	1926 to Present	5.4 (1926-1994) CWF, 2014	No	-	-		Yes (5)	Subsiding (1), Not Subsiding (2)	2	0.13	0.02	2005 to Present	² Subsidence caused by oxidation of organic deposits has occurred	7	9	High
5-22.04	SAN JOAQUIN VALLEY	MERCED	San Joaquin River	SCRO	491,255	767.6	279,142	364,227	8,392	173,731	High	Not Analyzed	170	216	79%	28	4	High	>50% GWL at or below Historical Low	Yes	5	1926-1970 (Ireland, 1984) and 2007 to 2011 (CWF, 2014)	0.5-1.0 (2007-2011), 28.0 (1926-1970)	No	-	-		No	-	-	-	-	-	-	5	9	High
5-22.05	SAN JOAQUIN VALLEY	CHOWCHILLA	San Joaquin River	SCRO	159,319	248.9	153,038	210,976	2,203	15,820	High	Critical Overdraft	83	109	76%	44	4	High	>50% GWL at or below Historical Low	Yes	5	1926-1970 (Ireland, 1984) and 2007 to 2011 (CWF, 2014)	2.0 - 2.5 (2007-2011), >3.0 (1926-1970)	No	-	-		No	-	-	-	-	-	-	5	9	High
5-22.08	SAN JOAQUIN VALLEY	KINGS	Tulare Lake	SCRO	977,030	1,526.6	720,852	1,055,502	37,841	906,544	High	Critical Overdraft	229	368	62%	24	4	High	>50% GWL at or below Historical Low	Yes	5	1926-1970 (Ireland, 1984) and 2007 to 2011 (CWF, 2014)	1.0-2.0 (CWF, 2014)	No	-	-		No	-	-	-	-	-	-	5	9	High
5-22.12	SAN JOAQUIN VALLEY	TULARE LAKE	Tulare Lake	SCRO	524,539	819.6	332,240	504,271	5,345	125,701	High	Critical Overdraft	81	113	72%	14	4	High	>50% GWL at or below Historical Low	Yes	5	1926-1970 (Ireland, 1984) and 2007 to 2011 (CWF, 2014)	3.0-4.0 (2007-2011), >8.0 (1926-1970)	No	-	-		Yes (1)	Not Subsiding	0	-	0.02	2005 to Present	¹ Subsidence has been documented in adjacent groundwater basins (Westside, Kern County, Kaweah, Tule, Pleasant Valley)	5	9	High
6-43	EL MIRAGE VALLEY		South Lahontan	SRO	76,292	119.2	462	5,300	16	10,933	Medium	Not Analyzed	12	15	80%	13	4	High	>50% GWL at or below Historical Low	Yes ¹	5	Various (CWF, 2014 and Sneed and others, 2003)	Various (CWF, 2014 and Sneed and others, 2003)	No	-	-		Yes (1)	Not Subsiding	0	-	-	2008 to Present	¹ Subsidence has been documented in adjacent groundwater basins (Antelope Valley, Upper Mojave River Valley)	5	9	High
8-1	COASTAL PLAIN OF ORANGE		South Coast	SRO	223,223	348.8	0	342,000	8,534	3,309,966	Medium	Not Analyzed	53	97	55%	28	4	High	>50% GWL at or below Historical Low	Yes ¹	5	April 1998-May 1999 Barden	0.1 (CWF, 2014)	No	-	-	-	No	-	-	-	-	-	-	5	9	High
5-22.10	SAN JOAQUIN VALLEY	PLEASANT VALLEY	Tulare Lake	SCRO																																	

1-10	EEL RIVER VALLEY		North Coast	NRO	73,701	115.2	33,309	55,000	763	21,558	Medium	Not Analyzed	3	8	38%	7	3	Medium-High	30 to 50% GWL at or below Historical Low	No	0	-	-	No	-	-	-	Yes (2)	Subsiding (2)	1	0.05	-	2005 to Present	1	4	Medium to Low
1-2.01	KLAMATH RIVER VALLEY	TULELAKE	North Coast	NRO	85,934	134.3	56,139	75,000	164	2,261	Medium	Not Analyzed	4	4	100%	3	4	High	>50% GWL at or below Historical Low	No	0	-	-	No	-	-	-	No	-	-	-	-	-	0	4	Medium to Low
1-3	BUTTE VALLEY		North Coast	NRO	79,689	124.5	29,324	72,403	417	1,464	Medium	Not Analyzed	16	19	84%	15	4	High	>50% GWL at or below Historical Low	No	0	-	-	No	-	-	-	No	-	-	-	-	-	0	4	Medium to Low
1-4	SHASTA VALLEY	SHASTA VALLEY	North Coast	NRO	52,589	82.2	26,842	55,000	750	5,333	Medium	Not Analyzed	4	8	50%	10	4	High	>50% GWL at or below Historical Low	No	0	-	-	No	-	-	-	No	-	-	-	-	-	0	4	Medium to Low
1-5	SCOTTY RIVER VALLEY		North Coast	NRO	69,780	99.7	34,540	50,285	885	3,520	Medium	Not Analyzed	4	5	80%	5	4	High	>50% GWL at or below Historical Low	No	0	-	-	No	-	-	-	No	-	-	-	-	-	0	4	Medium to Low
1-53	SAMEL VALLEY		North Coast	NCRD	5,568	8.7	2,258	1,247	104	698	Very Low	Not Analyzed	1	1	100%	11	4	High	>50% GWL at or below Historical Low	No	0	-	-	No	-	-	-	No	-	-	-	-	-	0	4	Medium to Low
1-54.01	ALEXANDER VALLEY	ALEXANDER AREA	North Coast	NCRD	24,464	38.2	9,636	642	1,099	2,098	Very Low	Not Analyzed	4	6	67%	16	4	High	>50% GWL at or below Historical Low	No	0	-	-	No	-	-	-	No	-	-	-	-	-	0	4	Medium to Low
1-54.02	ALEXANDER VALLEY	CLOVERDALE AREA	North Coast	NCRD	6,525	10.2	2,339	759	592	8,297	Very Low	Not Analyzed	1	2	50%	20	4	High	>50% GWL at or below Historical Low	No	0	-	-	No	-	-	-	No	-	-	-	-	-	0	4	Medium to Low
1-55.01	SANTA ROSA VALLEY	SANTA ROSA PLAIN	North Coast	NCRD	80,059	125.1	17,727	13,698	10,983	250,375	Medium	Not Analyzed	9	22	41%	18	3	Medium-High	30 to 50% GWL at or below Historical Low	No	0	-	-	No	-	-	-	Yes (1)	Subsiding	1	0.02	-	2005 to Present	1	4	Medium to Low
1-55.02	SANTA ROSA VALLEY	HEADSBURG AREA	North Coast	NCRD	15,400	24.1	7,973	3,281	1,383	10,515	Very Low	Not Analyzed	2	4	50%	17	4	High	>50% GWL at or below Historical Low	No	0	-	-	No	-	-	-	No	-	-	-	-	-	0	4	Medium to Low
1-55.03	SANTA ROSA VALLEY	RINCON VALLEY	North Coast	NCRD	5,549	8.7	67	577	919	21,787	Very Low	Not Analyzed	1	2	50%	23	4	High	>50% GWL at or below Historical Low	No	0	-	-	No	-	-	-	No	-	-	-	-	-	0	4	Medium to Low
1-59	WILSON GROVE FORMATION HIGHLANDS		North Coast	NCRD	86,400	135.0	10,404	3,417	8,422	37,799	Very Low	Not Analyzed	7	9	78%	7	4	High	>50% GWL at or below Historical Low	No	0	-	-	No	-	-	-	No	-	-	-	-	-	0	4	Medium to Low
2-1	PETALUMA VALLEY		San Francisco Bay	NCRD	46,043	71.9	9,270	2,689	1,870	49,915	Medium	Not Analyzed	7	15	47%	21	3	Medium-High	30 to 50% GWL at or below Historical Low	No	0	-	-	No	-	-	-	Yes (1)	Subsiding	1	0.07	-	2004 to Present	1	4	Medium to Low
2-24	SAN GREGORIO VALLEY		San Francisco Bay	NCRD	1,074	1.7	247	0	14	66	Very Low	Not Analyzed	1	1	100%	60	4	High	>50% GWL at or below Historical Low	No	0	-	-	No	-	-	-	No	-	-	-	-	-	0	4	Medium to Low
4-1	UPPER OJAI VALLEY		South Coast	SRO	5,815	6.0	1,043	13	7	656	Very Low	Not Analyzed	1	2	50%	34	4	High	>50% GWL at or below Historical Low	No	0	-	-	No	-	-	-	No	-	-	-	-	-	0	4	Medium to Low
4-2	OJAI VALLEY		South Coast	SRO	6,851	10.7	2,614	5,873	50	8,268	Medium	Not Analyzed	1	1	100%	9	4	High	>50% GWL at or below Historical Low	No	0	-	-	No	-	-	-	No	-	-	-	-	-	0	4	Medium to Low
5-01	GOOSE LAKE		Sacramento River	NRO	35,366	56.2	14,360	8,512	86	57	Very Low	Not Analyzed	10	10	100%	18	4	High	>50% GWL at or below Historical Low	No	0	-	-	No	-	-	-	No	-	-	-	-	-	0	4	Medium to Low
5-1.02	GOOSE LAKE	FANDANGO VALLEY	Sacramento River	NRO	18,419	28.8	6,830	4,025	73	124	Very Low	Not Analyzed	2	3	67%	10	4	High	>50% GWL at or below Historical Low	No	0	-	-	No	-	-	-	No	-	-	-	-	-	0	4	Medium to Low
5-11	MOHAWK VALLEY		Sacramento River	NRO	18,987	29.7	1,469	607	344	1,375	Very Low	Not Analyzed	1	1	100%	3	4	High	>50% GWL at or below Historical Low	No	0	-	-	No	-	-	-	No	-	-	-	-	-	0	4	Medium to Low
5-12.01	SIERRA VALLEY	SIERRA VALLEY	Sacramento River	NRO	117,680	183.9	81,465	68,188	361	2,196	Medium	Special Problems	29	38	76%	21	4	High	>50% GWL at or below Historical Low	No	0	-	-	No	-	-	-	No	-	-	-	-	-	0	4	Medium to Low
5-12.02	SIERRA VALLEY	CHILCOOT	Sacramento River	NRO	7,551	11.8	2,059	308	125	306	Very Low	Not Analyzed	4	8	50%	68	4	High	>50% GWL at or below Historical Low	No	0	-	-	No	-	-	-	No	-	-	-	-	-	0	4	Medium to Low
5-2.01	ALTURA AREA	SOUTH FORK FITT RIVER	Sacramento River	NRO	114,144	178.4	35,874	13,260	714	4,429	Low	Not Analyzed	7	12	58%	7	4	High	>50% GWL at or below Historical Low	No	0	-	-	No	-	-	-	No	-	-	-	-	-	0	4	Medium to Low
5-2.02	ALTURA AREA	WARM SPRINGS VALLEY	Sacramento River	NRO	68,009	106.3	15,365	8,097	257	964	Low	Not Analyzed	4	7	57%	7	4	High	>50% GWL at or below Historical Low	No	0	-	-	No	-	-	-	No	-	-	-	-	-	0	4	Medium to Low
5-21.54	SACRAMENTO VALLEY	ANTELOPE	Sacramento River	NRO	18,696	29.2	8,770	20,000	979	6,124	Medium	Not Analyzed	10	13	77%	45	4	High	>50% GWL at or below Historical Low	No	0	-	-	No	-	-	-	No	-	-	-	-	-	0	4	Medium to Low
5-21.56	SACRAMENTO VALLEY	LOS MOUNDS	Sacramento River	NRO	33,148	51.8	6,204	5,000	489	2,220	Medium	Not Analyzed	2	3	67%	6	4	High	>50% GWL at or below Historical Low	No	0	-	-	No	-	-	-	No	-	-	-	-	-	0	4	Medium to Low
5-21.58	SACRAMENTO VALLEY	WEST BUTTE	Sacramento River	NRO	181,479	283.6	116,582	150,000	3,660	36,152	High	Not Analyzed	19	28	68%	10	4	High	>50% GWL at or below Historical Low	No	0	-	-	Yes (1)	2005 to Present	Not Subsiding	0	No	-	-	-	-	-	0	4	Medium to Low
5-21.59	SACRAMENTO VALLEY	EAST BUTTE	Sacramento River	NRO	265,312	414.6	144,305	186,000	4,436	38,465	Medium	Not Analyzed	16	48	33%	12	3	Medium-High	30 to 50% GWL at or below Historical Low	No	0	-	-	Yes (2)	2005 to Present	Not Subsiding (2), 0.030	1	No	-	-	-	-	1	4	Medium to Low	
5-21.60	SACRAMENTO VALLEY	NORTH YUBA	Sacramento River	NCRD	103,152	161.2	53,387	70,000	1,334	14,667	Medium	Not Analyzed	4	8	50%	5	4	High	>50% GWL at or below Historical Low	No	0	-	-	No	-	-	-	No	-	-	-	-	-	0	4	Medium to Low
5-22.03	SAN JOAQUIN VALLEY	TURLOCK	San Joaquin River	SCRO	347,446	542.4	250,852	450,000	9,758	197,605	High	Not Analyzed	130	156	66%	36	4	High	>50% GWL at or below Historical Low	No	0	-	-	No	-	-	-	No	-	-	-	-	-	0	4	Medium to Low
5-22.16	SAN JOAQUIN VALLEY	COJUMMES	San Joaquin River	NCRD	280,490	438.3	83,534	155,475	5,539	59,583	Medium	Not Analyzed	17	38	45%	9	3	Medium-High	30 to 50% GWL at or below Historical Low	No	0	-	-	No	-	-	-	Yes (1)	Subsiding	1	0.07	-	2006 to Present	1	4	Medium to Low
5-25	KERN RIVER VALLEY		Tulare Lake	SCRO	79,678	124.5	2,391	6,068	843	10,364	Very Low	Not Analyzed	6	10	60%	8	4	High	>50% GWL at or below Historical Low	No	0	-	-	No	-	-	-	Yes (2)	Not Subsiding (2)	0	-	0.02	2004 to Present	0	4	Medium to Low
5-26	WALKER BASIN CREEK VALLEY		Tulare Lake	SCRO	7,693	12.0	348	3	134	249	Very Low	Not Analyzed	3	5	60%	42	4	High	>50% GWL at or below Historical Low	No	0	-	-	No	-	-	-	No	-	-	-	-	-	0	4	Medium to Low
5-36	ROUND VALLEY		Sacramento River	NRO	7,266	11.4	2,981	2,813	33	27	Very Low	Not Analyzed	2	2	100%	18	4	High	>50% GWL at or below Historical Low	No	0	-	-	No	-	-	-	No	-	-	-	-	-	0	4	Medium to Low
5-5	FALL RIVER VALLEY		Sacramento River	NRO	54,803	85.6	31,850	22,722	659	1,629	Low	Not Analyzed	13	15	87%	18	4	High	>50% GWL at or below Historical Low	No	0	-	-	No	-	-	-	No	-	-	-	-	-	0	4	Medium to Low
5-6.05	REDDING AREA	MILLVILLE	Sacramento River	NRO	65,226	101.9	6,548	6,842	807	2,640	Very Low	Not Analyzed	2	4	50%	4	4	High	>50% GWL at or below Historical Low	No	0	-	-	No	-	-	-	No	-	-	-	-	-	0	4	Medium to Low
6-100	SECRET VALLEY		North Lahontan	NRO	33,680	52.6	2,813	5,406	31	26	Very Low	Not Analyzed	1	2	50%	4	4	High	>50% GWL at or below Historical Low	No	0	-	-	No	-	-	-	No	-	-	-	-	-	0	4	Medium to Low
6-104	LONG VALLEY		North Lahontan	NRO	46,836	73.2	1,085	423	128	141	Very Low	Special Problems	17	26	65%	36	4	High	>50% GWL at or below Historical Low	No	0	-	-	No	-	-	-	No	-	-	-	-	-	0	4	Medium to Low
6-3	WILLOW CREEK VALLEY		North Lahontan	NRO	11,698	18.3	4,946	6,914	48	62	Very Low	Not Analyzed	3	5	60%	27	4	High	>50% GWL at or below Historical Low	No	0	-	-	No	-	-	-	No	-	-	-	-	-	0	4	Medium to Low
6-38	CAVES CANYON VALLEY		South Lahontan	SRO	75,542	114.9	0	0	2	88	Very Low	Not Analyzed	3	4	75%	3	4	High	>50% GWL at or below Historical Low	No	0	-	-	No	-	-	-	No	-	-	-	-	-	0	4	Medium to Low
6-67	MARTIS VALLEY		North Lahontan	NCRD	36,381	56.8	0	9,300	686	14,743	Medium	Not Analyzed	14	24	58%	42	4	High	>50% GWL at or below Historical Low	No	0	-	-	No	-	-	-	No	-	-	-	-	-	0	4	Medium to Low
7-13.01	DEADMAN VALLEY	DEADMAN LAKE	Colorado River	SRO	89,793	140.3	0	4	12	22	Very Low	Not Analyzed	18	32	56%	23	4	High	>50% GWL at or below Historical Low	No	0	-	-	No	-	-	-	No	-	-	-	-	-	0	4	Medium to Low
7-13.02	DEADMAN VALLEY	SURPRISE SPRING	Colorado River	SRO	29,507	46.1	0	31	0	179	Very Low	Not Analyzed	23	27	85%	59	4	High	>50% GWL at or below Historical Low	No	0	-	-	No	-	-	-	Yes (1)	Not Subsiding	0	-	0.03	2004 to Present	0	4	Medium to Low
7-16	AMES VALLEY		Colorado River	SRO	108,340	170.8	0	713	26	4,540	Very Low	Not Analyzed	24	26	92%	15	4	High	>50% GWL at or below Historical Low	No	0	-	-	No	-	-	-	Yes (2)	Not Subsiding	0	-	0.05	2004 to Present	0	4	Medium to Low
7-17	MEANS VALLEY		Colorado River	SRO	15,061	23.5	0	26	0	46	Very Low	Not Analyzed	1	1	100%	4	4	High	>50% GWL at or below Historical Low	No	0	-	-	No	-	-	-	No	-	-	-	-	-	0	4	Medium to Low
7-18.01	JOHNSON VALLEY	SOGGY LAKE	Colorado River	SRO	77,865	121.7	0	248	4	354	Very Low	Not Analyzed	7	14	50%	12	4	High	>50% GWL at or below Historical Low	No ¹	0	-	-	No	-	-	-	No	-	-	-	-	-	0	4	Medium to Low
7-21.04	COACHELLA VALLEY	SAN GORGONIO PASS	Colorado River	SRO	38,823	60.7	138	15,909	31	29,540	Medium	Evidence of Overdraft	1	2	50%	3	4	High	>50% GWL at or below Historical Low	No	0	-	-	No	-	-	-	No	-	-	-	-	-	0	4	Medium to Low
7-29	COYOTE WELLS VALLEY		Colorado River	SRO	147,088	228.8	0																													

2-6	YGNACIO VALLEY		San Francisco Bay	NCRO	15,459	24.2	6	131	1,607	107,878	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
2-7	SAN RAMON VALLEY		San Francisco Bay	NCRO	7,053	11.0	26	33	351	30,132	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
2-8	CANON VALLEY		San Francisco Bay	NCRO	1,821	2.8	0	39	244	24,486	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
3-1	SOQUEL VALLEY		Central Coast	SCRO	2,515	3.9	26	6,890	172	18,634	High	Critical Overdraft	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
3-12	SANTA MARIA		Central Coast	SRO	184,248	287.9	115,386	138,510	1,234	201,759	High	Evidence of Overdraft	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
3-15	SANTA YNEZ RIVER VALLEY		Central Coast	SRO	204,442	319.8	18,342	77,114	1,854	75,460	Medium	Evidence of Overdraft	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
3-16	GOLTA		Central Coast	SRO	9,229	14.4	1,083	3,000	366	47,252	Medium	Evidence of Overdraft	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
3-17	SANTA BARBARA		Central Coast	SRO	6,173	9.6	23	1,162	425	63,966	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
3-18	CAMPANA		Central Coast	SRO	6,140	9.6	4,565	1,867	96	14,561	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
3-19	CARRIZO PLAIN		Central Coast	SRO	230,896	325.5	18,500	75	18	480	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
3-20	ANO NUEVO AREA		Central Coast	SCRO	2,030	3.2	989	100	12	46	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
3-21	SANTA CRUZ PUEBLO FORMATION		Central Coast	SCRO	40,166	62.8	531	15,000	1,399	17,693	Medium	Critical Overdraft	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
3-22	SANTA ANA VALLEY		Central Coast	SCRO	2,724	4.3	1,486	1,623	25	76	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
3-23	UPPER SANTA ANA VALLEY		Central Coast	SCRO	1,431	2.2	0	2	0	5	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
3-24	QUEEN SAGE VALLEY		Central Coast	SCRO	3,706	7.4	1,142	1	0	3	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
3-25	THREE PINOS VALLEY		Central Coast	SCRO	3,385	5.3	1,319	1,806	34	48	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
3-26	WEST SANTA CRUZ TERRACE		Central Coast	SCRO	7,863	12.3	221	4,036	419	70,336	Medium	Critical Overdraft	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
3-27	SCOTT'S VALLEY		Central Coast	SCRO	773	1.2	0	385	337	3,875	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
3-28	SAN BENITO RIVER VALLEY		Central Coast	SCRO	24,223	37.8	755	946	46	101	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
3-29	DRY LAKE VALLEY		Central Coast	SCRO	1,418	2.2	125	205	0	8	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
3-3-03	GILROY-HOLLISTER VALLEY	HOLLISTER AREA	Central Coast	SCRO	32,729	51.1	14,342	14,299	731	22,033	Medium	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
3-3-04	GILROY-HOLLISTER VALLEY		Central Coast	SCRO	74,305	116.1	11,313	12,510	290	26,150	Medium	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
3-30	BITTER WATER VALLEY		Central Coast	SCRO	32,222	50.3	2,557	3,023	18	38	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
3-31	HERNANDEZ VALLEY		Central Coast	SCRO	2,865	4.5	0	0	10	3	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
3-32	TRACH TREE VALLEY		Central Coast	SCRO	9,793	15.3	1,193	762	3	7	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
3-33	SAN CARLOS VALLEY		Central Coast	SRO	1,054	1.6	0	0	0	4	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
3-34	ARROYO DE LA CRUZ VALLEY		Central Coast	SRO	2,028	3.6	252	0	0	0	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
3-35	SAN SIMON VALLEY		Central Coast	SRO	560	0.9	158	1,010	0	6	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
3-37	VILLA VALLEY		Central Coast	SRO	1,358	2.1	461	0	0	21	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
3-38	CAVILLO VALLEY		Central Coast	SRO	136	0.5	15	0	0	15	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
3-39	OLD VALLEY		Central Coast	SRO	1,179	1.8	58	0	0	217	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
3-4-01	SALINAS VALLEY	180/900 FOOT AQUIFER	Central Coast	SCRO	84,321	131.8	57,746	130,000	2,443	55,740	High	Evidence of Overdraft	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
3-4-02	SALINAS VALLEY		Central Coast	SCRO	57,452	89.8	35,445	86,000	1,587	128,646	High	Evidence of Overdraft	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
3-4-04	SALINAS VALLEY		Central Coast	SCRO	94,025	146.9	60,146	160,000	935	43,867	Medium	Evidence of Overdraft	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
3-4-08	SALINAS VALLEY		Central Coast	SCRO	25,903	40.5	758	11,135	902	65,899	Medium	Evidence of Overdraft	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
3-4-09	SALINAS VALLEY	LANGLAY AREA	Central Coast	SCRO	15,344	24.0	2,084	13,000	1,136	9,833	Medium	Evidence of Overdraft	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
3-4-10	SALINAS VALLEY		Central Coast	SCRO	22,274	34.8	0	10,000	449	7,831	Medium	Evidence of Overdraft	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
3-40	TORO VALLEY		Central Coast	SRO	722	1.1	166	0	0	8	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
3-41	MORRO VALLEY		Central Coast	SRO	646	1.0	749	0	0	399	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
3-42	CHINO VALLEY		Central Coast	SRO	1,547	2.4	1,123	0	0	247	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
3-43	RINCONADA VALLEY		Central Coast	SRO	2,579	4.0	973	2	0	11	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
3-44	POZO VALLEY		Central Coast	SRO	8,832	10.7	504	11	0	52	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
3-45	HUASNA VALLEY		Central Coast	SRO	4,706	7.4	580	14	0	35	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
3-46	RAFAEL VALLEY		Central Coast	SRO	2,798	4.7	0	0	0	0	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
3-47	BIG SPRING AREA		Central Coast	SRO	7,332	11.5	1,435	0	0	0	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
3-48	MONTECITO		Central Coast	SRO	6,286	9.8	236	303	476	9,885	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
3-5	CHOLAND VALLEY		Central Coast	SCRO	29,847	42.3	5,543	6,013	32	32	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
3-50	FELTON AREA		Central Coast	SCRO	1,155	1.8	0	165	41	3,024	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
3-51	MAJORS CREEK		Central Coast	SCRO	364	0.6	229	200	2	53	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
3-52	MEADOWS CREEK		Central Coast	SCRO	479	0.7	283	200	33	49	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
3-53	FOOTHILL		Central Coast	SRO	1,123	4.9	1	1,293																												

5-84	CUDJOY VALLEY		Tulare Lake	SCRO	3,474	5.4	0	0	186	38	178	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
5-85	MIL POTRERO AREA		Tulare Lake	SCRO	2,314	3.6	0	0	307	13	229	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
5-86	JOSEPH CREEK		Sacramento River	NRO	4,458	7.0	1,074	0	1,103	22	13	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
5-87	MIDDLE FORK FEATHER RIVER		Sacramento River	NRO	4,342	6.8	132	0	68	101	177	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
5-88	STONY GORGES RESERVOIR		Sacramento River	NRO	1,065	1.7	310	0	10	0	0	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
5-89	SQUAW FLAT		Sacramento River	NRO	1,256	2.0	0	0	0	0	0	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
5-9	INDIAN VALLEY		Sacramento River	NRO	29,413	46.0	11,535	0	100	487	1,718	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
5-90	FUNKS CREEK		Sacramento River	NRO	3,012	4.7	109	0	0	4	0	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
5-91	ANTELOPE CREEK		Sacramento River	NRO	2,040	3.2	389	0	1	3	3	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
5-92	BLANCHARD VALLEY		Sacramento River	NRO	2,231	3.5	138	0	1	2	0	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
5-93	NORTH FORK CACHE CREEK		Sacramento River	NRO	1,476	5.4	0	0	0	1	0	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
5-94	MIDDLE CREEK		Sacramento River	NRO	705	1.1	96	0	402	16	10	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
5-95	MEADOW VALLEY		Sacramento River	NRO	5,734	9.0	344	148	176	387		Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
6-10	ADOBE LAKE VALLEY		South Lahontan	SRO	39,978	62.5	0	200	2	4		Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
6-101	BUILL FLAT		North Lahontan	NRO	18,151	28.4	0	0	0	0	2	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
6-102	BUILL FLAT		North Lahontan	NRO	18,151	28.4	0	0	0	0	2	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
6-105	SUNKARD VALLEY		North Lahontan	NCRD	4,517	7.1	0	0	0	0	0	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
6-106	LITTLE ANTELOPE VALLEY		North Lahontan	NCRD	2,451	3.9	658	0	3	0		Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
6-107	SWIFTWATER FLAT		North Lahontan	NCRD	4,747	7.4	89	0	0	0		Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
6-108	OLYMPIC VALLEY		North Lahontan	NCRD	705	1.1	0	8	0	471		Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
6-11	LONG VALLEY		South Lahontan	SRO	72,028	112.5	6,898	87	20	800		Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
6-13	BLACK SPRINGS VALLEY		South Lahontan	SRO	30,911	48.3	0	0	0	3	0	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
6-14	FISH LAKE VALLEY		South Lahontan	SRO	48,333	75.5	3,487	10	10	10		Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
6-15	DEEP SPRINGS VALLEY		South Lahontan	SRO	30,048	47.0	149	912	1	5		Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
6-16	EUREKA VALLEY		South Lahontan	SRO	129,329	202.1	0	0	0	10		Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
6-17	SALINE VALLEY		South Lahontan	SRO	146,890	219.0	0	0	0	0		Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
6-18	DEATH VALLEY		South Lahontan	SRO	856,496	1,457.7	17	1,050	52	390		Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
6-19	WINGATE VALLEY		South Lahontan	SRO	71,795	112.1	0	0	0	0		Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
6-2	MADLINE PLAINS		North Lahontan	NRO	156,152	244.0	25,052	42,400	231	151		Low	Not Analyzed	1	1	100%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
6-20	MIDDLE AMARGOSA VALLEY		South Lahontan	SRO	192,882	311.8	0	44	120	64		Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
6-21	LOWER KINGSTON VALLEY		South Lahontan	SRO	241,892	378.0	0	0	0	0		Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
6-22	UPPER KINGSTON VALLEY		South Lahontan	SRO	178,533	279.0	0	87	26	37		Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
6-23	WINGS VALLEY		South Lahontan	SRO	48,274	73.0	0	0	0	0		Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
6-24	RED PASS VALLEY		South Lahontan	SRO	97,088	151.7	0	0	0	0		Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
6-25	BICYCLE VALLEY		South Lahontan	SRO	90,100	140.8	0	0	2	0		Very Low	Not Analyzed	1	2	50%	1	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
6-26	AVAWATZ VALLEY		South Lahontan	SRO	27,826	43.5	0	0	0	0		Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
6-27	LEON VALLEY		South Lahontan	SRO	41,620	66.3	0	0	0	0		Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
6-28	PAHRUMP VALLEY		South Lahontan	SRO	93,747	146.5	0	103	55	99		Very Low	Evidence of Overdraft	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
6-29	MESQUITE VALLEY		South Lahontan	SRO	89,012	139.1	1,626	1,675	58	64		Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
6-30	WAPAH VALLEY		South Lahontan	SRO	20,155	312.7	0	89	54	40		Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
6-31	WILSON VALLEY		South Lahontan	SRO	212,279	402.0	0	81	16	0		Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
6-32	BROADWELL VALLEY		South Lahontan	SRO	92,688	144.8	0	65	30	8		Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
6-33	SODA LAKE VALLEY		South Lahontan	SRO	383,560	599.3	0	94	159	750		Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
6-34	SILVER LAKE VALLEY		South Lahontan	SRO	25,519	41.5	0	0	2	0		Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
6-35	CHONISE VALLEY		South Lahontan	SRO	127,133	198.9	0	0	4	2		Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
6-36.01	LANGFORD VALLEY	LANGFORD WELL LAKE	South Lahontan	SRO	19,457	30.4	0	0	0	0		Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
6-37	LYONS LAKE VALLEY		South Lahontan	SRO	86,795	138.6	0	102	3	86		Very Low	Not Analyzed	1	1	100%	1	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
6-45	TEANICHAN VALLEY EAST		South Lahontan	SRO	29,095	47.6	686	103	228	0		Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
6-48	GOLDSTONE VALLEY		South Lahontan	SRO	28,287	44.2	0	0	6	0		Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
6-49	SUPERIOR VALLEY		South Lahontan	SRO	121,084	189.2	0	0	1	0		Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	0	0	Insufficient Data
6-5.02	TANDE VALLEY	TANDE WEST	North Lahontan	NCRD	5,173	8.6	0	593	208		Very Low																										

7-59	MASON VALLEY		Colorado River	SRD	5,567	8.7	0	19	6	23	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	-	-	-	0	0	Insufficient Data	
7-6	PINTO VALLEY		Colorado River	SRD	184,377	288.1	0	0	2	7	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	-	-	-	0	0	Insufficient Data	
7-61	DAVIES VALLEY		Colorado River	SRD	3,600	5.6	0	0	0	0	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	-	-	-	0	0	Insufficient Data	
7-63	VANDERVENTER FLAT		Colorado River	SRD	6,797	10.6	0	16	6	30	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	-	-	-	0	0	Insufficient Data	
7-7	CAJON VALLEY		Colorado River	SRD	272,931	426.5	0	58	6	10	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	-	-	-	0	0	Insufficient Data	
7-8	BROSTON VALLEY		Colorado River	SRD	501,894	784.1	943	5,000	63	27	Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	-	-	-	0	0	Insufficient Data	
7-9	DALE VALLEY		Colorado River	SRD	234,650	335.4	18	1,500	178	1,197	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	-	-	-	0	0	Insufficient Data	
9-2.03	UPPER SANTA ANA VALLEY	RIVERSIDE-ARLINGTON	South Coast	SRD	58,903	92.0	3,583	49,148	1,397	336,884	High	Not Analyzed	1	1	100%	1	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	-	-	-	0	0	Insufficient Data	
9-2.05	UPPER SANTA ANA VALLEY	CAJON	South Coast	SRD	23,306	36.4	60	33	68	320	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	-	-	-	0	0	Insufficient Data	
8-4	ELISNORE		South Coast	SRD	25,873	40.4	286	5,872	375	60,946	High	Evidence of Overdraft	0	0	0%	0	0	Insufficient Data	Insufficient Data	No ¹	0	-	-	-	-	No	-	-	-	-	-	-	-	-	-	-	-	0	0	Insufficient Data
8-6	HEMET LAKE VALLEY		South Coast	SRD	16,811	26.3	84	5	47	464	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	-	-	-	0	0	Insufficient Data	
8-7	BIG MEADOWS VALLEY		South Coast	SRD	14,263	22.3	0	9	23	51	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	-	-	-	0	0	Insufficient Data	
8-8	SEVEN OAKS VALLEY		South Coast	SRD	4,103	6.4	0	0	0	7	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	-	-	-	0	0	Insufficient Data	
8-9	BEAR VALLEY		South Coast	SRD	19,667	30.7	0	3,500	496	16,866	Medium	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	-	-	-	0	0	Insufficient Data	
9-10	SAN PASCUAL VALLEY		South Coast	SRD	6,943	7.1	1,363	8,800	110	96	Medium	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	-	-	-	0	0	Insufficient Data	
9-11	SANTA MARIA VALLEY		South Coast	SRD	12,379	19.3	624	4	542	16,095	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	-	-	-	0	0	Insufficient Data	
9-12	SAN DIEGUITO CREEK		South Coast	SRD	3,578	5.6	976	1	89	3,135	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	-	-	-	0	0	Insufficient Data	
9-13	POWAY VALLEY		South Coast	SRD	2,485	3.9	3	4	89	16,450	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	-	-	-	0	0	Insufficient Data	
9-14	MISSION VALLEY		South Coast	SRD	7,387	11.5	0	9	207	37,566	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	-	-	-	0	0	Insufficient Data	
9-15	SAN DIEGO RIVER VALLEY		South Coast	SRD	9,944	15.5	215	4,000	339	45,800	Medium	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	-	-	-	0	0	Insufficient Data	
9-16	EL CAJON VALLEY		South Coast	SRD	7,203	11.3	11	25	369	92,314	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	-	-	-	0	0	Insufficient Data	
9-17	SWEETWATER VALLEY		South Coast	SRD	6,949	9.3	0	5	509	35,277	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	-	-	-	0	0	Insufficient Data	
9-18	OTAY VALLEY		South Coast	SRD	6,869	10.7	83	10	204	39,591	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	-	-	-	0	0	Insufficient Data	
9-19	TIAJUANA		South Coast	SRD	7,448	11.6	305	14	87	50,694	Very Low	Evidence of Overdraft	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	-	-	-	0	0	Insufficient Data	
9-2	SAN MATEO VALLEY		South Coast	SRD	3,009	4.7	515	0	21	554	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	-	-	-	0	0	Insufficient Data	
9-22	BATOLIQUES LAGOON VALLEY		South Coast	SRD	745	1.2	6	0	5	2,109	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	-	-	-	0	0	Insufficient Data	
9-23	SAN LUIS VALLEY		South Coast	SRD	888	1.4	8	0	25	1,125	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	-	-	-	0	0	Insufficient Data	
9-24	PALMO VALLEY		South Coast	SRD	1,514	2.4	0	0	0	0	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	-	-	-	0	0	Insufficient Data	
9-25	RANCHOTA TOWN AREA		South Coast	SRD	3,146	4.9	29	0	78	168	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	-	-	-	0	0	Insufficient Data	
9-27	COTTONWOOD VALLEY		South Coast	SRD	3,873	6.0	148	0	17	44	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	-	-	-	0	0	Insufficient Data	
9-28	CAMPO VALLEY		South Coast	SRD	3,569	5.6	330	0	55	985	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	-	-	-	0	0	Insufficient Data	
9-29	POTRERO VALLEY		South Coast	SRD	2,035	3.2	131	0	62	475	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	-	-	-	0	0	Insufficient Data	
9-3	SAN ONOFRE VALLEY		South Coast	SRD	1,261	2.0	0	1	2	3,133	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	-	-	-	0	0	Insufficient Data	
9-32	SAN MARCOS AREA		South Coast	SRD	2,144	3.3	0	4	52	15,096	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	-	-	-	0	0	Insufficient Data	
9-4	SANTA MARGARITA VALLEY		South Coast	SRD	7,998	12.5	157	5,800	111	4,121	Medium	Evidence of Overdraft	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	-	-	-	0	0	Insufficient Data	
9-7	SAN LUIS RY VALLEY		South Coast	SRD	20,865	46.7	7,830	14,600	500	43,942	Medium	Evidence of Overdraft	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	-	-	-	0	0	Insufficient Data	
9-8	WARNER VALLEY		South Coast	SRD	24,150	37.7	0	72	0	185	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	-	-	-	0	0	Insufficient Data	
9-9	ESCONDIDO VALLEY		South Coast	SRD	2,906	4.5	40	10	221	38,593	Very Low	Not Analyzed	0	0	0%	0	0	Insufficient Data	Insufficient Data	No	0	-	-	-	-	No	-	-	-	-	-	-	-	-	-	-	0	0	Insufficient Data	