USGS
science for a changing world

CALIFORNIA
Water Boards

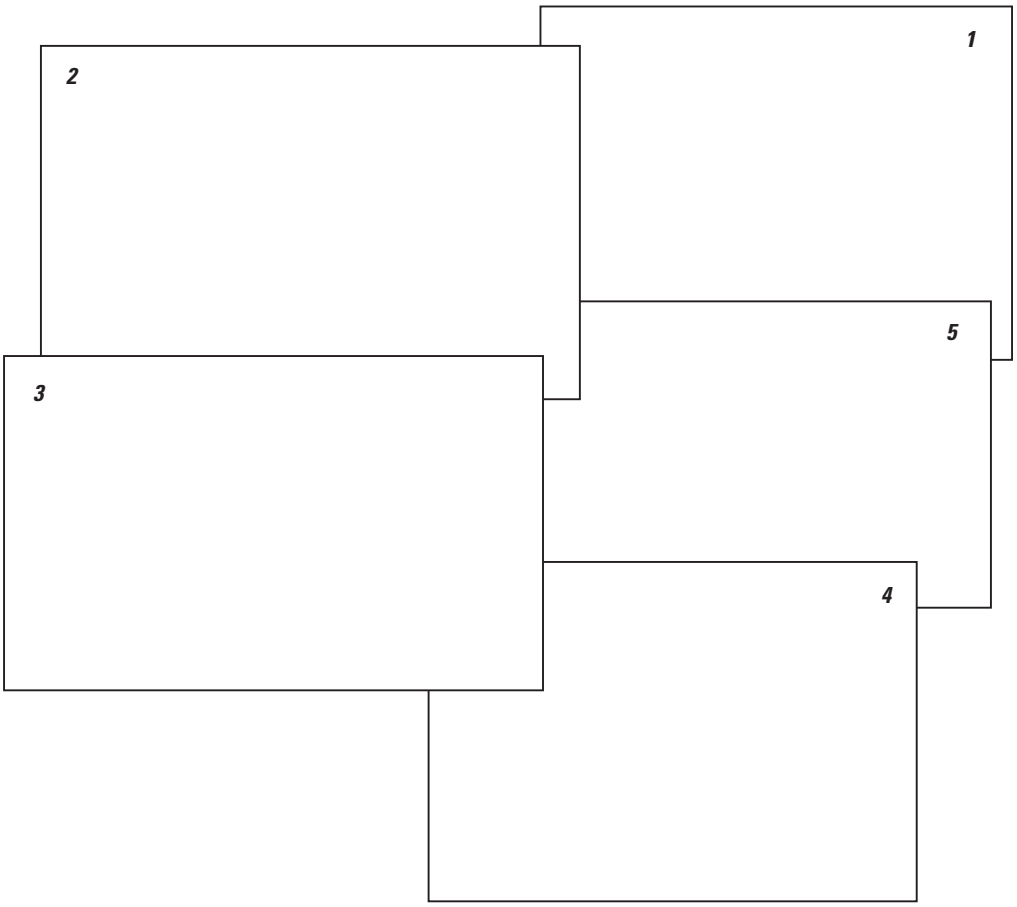
Prepared in cooperation with the California State Water Resources Control Board
A product of the California Groundwater Ambient Monitoring and Assessment (GAMA) Program

Groundwater Quality Data in 15 GAMA Study Units: Results from the 2006–10 Initial Sampling and the 2009–13 Resampling of Wells, California GAMA Priority Basin Project

Data Series 919

U.S. Department of the Interior
U.S. Geological Survey

Cover photographs



Cover. **1.** Fields of rice near Williams, California. (Photograph taken by Cathy Munday, U.S. Geological Survey.)

2. Alfalfa field, Five Points, California. (Photograph taken by Tyler Johnson, U.S. Geological Survey.)

3. Owens Valley, California, 2006. (Photograph taken by Cathy Munday, U.S. Geological Survey.)

4. Irrigation well on golf course used for sampling near Indio, California. (Photograph taken by Timothy Mathany, U.S. Geological Survey.)

5. Refinery in Long Beach, California. (Photograph taken by Dara Goldrath, U.S. Geological Survey.)

Groundwater Quality Data in 15 GAMA Study Units: Results from the 2006–10 Initial Sampling and the 2009–13 Resampling of Wells, California GAMA Priority Basin Project

By Robert Kent

A product of the California Groundwater Ambient Monitoring and Assessment (GAMA) Program

Prepared in cooperation with the California State Water Resources Control Board

Data Series 919

U.S. Department of the Interior
U.S. Geological Survey

U.S. Department of the Interior
SALLY JEWELL, Secretary

U.S. Geological Survey
Suzette M. Kimball, Acting Director

U.S. Geological Survey, Reston, Virginia: 2015

For more information on the USGS—the Federal source for science about the Earth, its natural and living resources, natural hazards, and the environment—visit *http://www.usgs.gov* or call 1–888–ASK–USGS.

For an overview of USGS information products, including maps, imagery, and publications, visit *http://www.usgs.gov/pubprod/*.

Suggested citation:
Kent, Robert, 2015, Groundwater quality data in 15 GAMA study units: Results from the 2006–10 initial sampling and the 2009–13 resampling of wells, California GAMA Priority Basin Project: U.S. Geological Survey Data Series 919, 219 p., *http://dx.doi.org/10.3133/ds919*.

ISSN 2327-638X (online)

Contents

Contents—Continued

Figures

Figures—Continued

Tables

Tables—Continued

Conversion Factors, Datums, and Abbreviations and Acronyms

Conversion Factors

Inch/foot/mile to SI

Multiply	By	To obtain
	Length	
inch (in.)	2.54	centimeter (cm)
inch (in.)	25.4	millimeter (mm)
foot (ft)	0.3048	meter (m)
mile (mi)	1.609	kilometer (km)
	Area	
square foot (ft^2)	0.09290	square meter (m^2)
square mile (mi^2)	2.590	square kilometer (km^2)
	Radioactivity	
picocurie per liter (pCi/L)	0.037	Becquerel per liter (Bq/L)

Temperature in degrees Celsius (°C) may be converted to degrees Fahrenheit (°F) as follows:

°F=(1.8×°C)+32

Temperature in degrees Fahrenheit (°F) may be converted to degrees Celsius (°C) as follows:

°C=(°F-32)/1.8

Specific conductance is given in microsiemens per centimeter at 25 degrees Celsius (µS/cm at 25 °C).

Concentrations of chemical constituents in water are given either in milligrams per liter (mg/L) or micrograms per liter (µg/L); 1 milligram per liter is equivalent to 1 part per million (ppm); 1

Conversion Factors—Continued

microgram per liter is equivalent to 1 part per billion (ppb).

Isotopic constituents are given in delta notation ($\delta^{i}E$) as the ratio of a heavier isotope of an element (^{i}E) relative to the more common lighter isotope of that element, relative to a standard reference material, expressed as per mil; 1 per mil is equivalent to 1 part per thousand.

Datums

Vertical coordinate information is referenced to the North American Vertical Datum of 1988 (NAVD 88).

Horizontal coordinate information is referenced to the North American Datum of 1983 (NAD 83).

Abbreviations and Acronyms

AL-US	U.S. Environmental Protection Agency action level
BQS	Branch of Quality Systems (USGS)
$CaCO_3$	calcium carbonate
CDPH	California Department of Public Health
CDPR	California Department of Pesticide Regulation
CDWR	California Department of Water Resources
CO_3^{2-}	carbonate
CSU	combined standard uncertainty
DBCP	1,2-dibromo-3-chloropropane
E	estimated or having a high degree of uncertainty
EDB	1,2-dibromoethane
EPA	U.S. Environmental Protection Agency
GAMA	Groundwater Ambient Monitoring and Assessment Program
GPS	global positioning system
H_2O	water
HAL-US	U.S. Environmental Protection Agency lifetime health advisory level
HCl	hydrochloric acid
HCO_3^-	bicarbonate
LLNL	Lawrence Livermore National Laboratory, Livermore, California
LRL	laboratory reporting level
LT-MDL	long-term method detection level
MCL-CA	California Department of Public Health maximum contaminant level
MCL-US	U.S. Environmental Protection Agency maximum contaminant level

Abbreviations and Acronyms—Continued

MDL	method detection limit
MRL	minimum reporting level
MTBE	methyl *tert*-butyl ether
MWH	Montgomery Watson Harza Laboratory
NAWQA	National Water-Quality Assessment Program (USGS)
NDMA	*N*-nitrosodimethylamine
NELAP	National Environmental Laboratory Accreditation Program
NFM	National Field Manual (USGS)
NFQA	National Field Quality Assurance Program (USGS)
NL-CA	California Department of Public Health notification level
NRP	National Research Program (USGS)
NWIS	National Water Information System (USGS)
NWQL	National Water Quality Laboratory, Denver, Colorado (USGS)
PBP	Priority Basin Project
PCE	perchloroethene, tetrachloroethene
PCFF	Personal Computer Field Form program designed for USGS sampling
pmc	percent modern carbon
QA	quality assurance
QC	quality control
RL	reporting level
RSD	relative standard deviation
RSD5-US	U.S. Environmental Protection Agency risk-specific dose at a risk factor of 10^{-5}
SMCL-CA	California Department of Public Health secondary maximum contaminant level
SMCL-US	U.S. Environmental Protection Agency secondary maximum contaminant level
SRL	study reporting level
ssL_c	sample-specific critical level
SWRCB	State Water Resources Control Board (California)
TCE	trichloroethene
1,2,3-TCP	1,2,3-trichloropropane
TDS	total dissolved solids
TML	Trace Metal Laboratory, Boulder, Colorado (USGS)
USGS	U.S. Geological Survey
VOC	volatile organic compound
Weck	Weck Laboratories, Inc., City of Industry, California

Acknowledgments

The author thanks the following cooperators for their support: the California State Water Resources Control Board, California Department of Public Health, California Department of Water Resources, and Lawrence Livermore National Laboratory. In addition, we especially thank the well owners and water purveyors for allowing the U.S. Geological Survey to collect samples from their wells. Funding for this work was provided by State of California bonds authorized by Proposition 50 and administered by the California State Water Resources Control Board.

x

Groundwater Quality Data in 15 GAMA Study Units: Results from the 2006–10 Initial Sampling and the 2009–13 Resampling of Wells, California GAMA Priority Basin Project

By Robert Kent

Abstract

The Priority Basin Project (PBP) of the Groundwater Ambient Monitoring and Assessment (GAMA) program was developed in response to the Groundwater Quality Monitoring Act of 2001 and is being conducted by the U.S. Geological Survey (USGS) in cooperation with the California State Water Resources Control Board (SWRCB). From May 2004 to March 2012, the GAMA-PBP collected samples from more than 2,300 wells in 35 study units across the State. Selected wells in each study unit were sampled again approximately 3 years after initial sampling as part of an assessment of temporal trends in water quality by the GAMA-PBP. This triennial (every 3 years) trend sampling of GAMA-PBP study units concluded in December 2013. Fifteen of the study units, initially sampled between January 2006 and June 2010 and sampled a second time between April 2009 and April 2013 to assess temporal trends, are the subject of this report.

The initial sampling was designed to provide a spatially unbiased assessment of the quality of untreated groundwater used for public water supplies in the 15 study units. In these study units, 730 wells were selected by using a spatially distributed, randomized grid-based method to provide statistical representation of the areas assessed (grid wells, also called "status wells"). Approximately 3 years after the initial sampling, 93 of the previously sampled status wells (approximately 10 percent in each study unit) were randomly selected for trend sampling ("trend wells"). The 15 study units sampled for trends were distributed among 4 hydrogeologic provinces: Central Valley, Basin and Range, Desert, and Transverse and selected Peninsular Ranges.

The total number of status wells sampled, along with those sampled again for trends, varied by study unit. In the Central Valley hydrogeologic province, the numbers of status wells and trend wells in each study unit were as follows:

- Kern County subbasin study unit—47 status wells, 5 trend wells
- Central Eastside San Joaquin Basin study unit—58 status wells, 6 trend wells
- Middle Sacramento Valley study unit—71 status wells, 8 trend wells
- Northern Sacramento Valley study unit—43 status wells, 4 trend wells
- Madera–Chowchilla study unit—30 status wells, 4 trend wells
- Western San Joaquin Valley study unit—39 status wells, 4 trend wells.

The Basin and Range hydrogeologic province had only one study unit:

- Owens and Indian Wells Valleys study unit—53 status wells, 6 trend wells.

In the Desert hydrogeologic province, the numbers of wells were as follows:

- Coachella Valley study unit—19 status wells 4 trend wells
- Colorado River study unit—20 status wells, 3 trend wells
- Antelope Valley study unit—56 status wells, 6 trend wells
- Mojave study unit—52 status wells, 7 trend wells
- Borrego Valley, Central Desert and Low-Use Basins of the Mojave and Sonoran Deserts study unit—49 status wells, 6 trend wells.

In the Transverse and Selected Peninsular Ranges hydrogeologic province, the numbers of wells were as follows:

- Coastal Los Angeles Basin study unit—61 status wells, 8 trend wells
- Upper Santa Ana Watershed study unit—90 status wells, 16 trend wells
- Santa Clara River Valley study unit—42 status wells, 6 trend wells.

The groundwater samples were analyzed for a number of synthetic organic constituents (volatile organic compounds, pesticides, and pesticide degradates), constituents of special interest (perchlorate, *N*-nitrosodimethylamine [NDMA], and 1,2,3-trichloropropane [1,2,3-TCP]), and naturally occurring inorganic constituents (nutrients, major and minor ions, and trace elements). Naturally occurring isotopes (tritium, carbon-14, and stable isotopes of hydrogen and oxygen in water) also were measured to help identify processes affecting groundwater quality and the sources and ages of the sampled groundwater. More than 200 constituents and water-quality indicators were investigated.

Quality-control samples (blanks, replicates, or samples for matrix spikes) were collected at 34 percent of the trend wells, and the results for these samples were used to evaluate the quality of the data for the groundwater samples. On the basis of detections in laboratory and field blanks in samples from GAMA-PBP study units, including the study units presented here, some groundwater results were adjusted in this report. Differences between replicate samples were mostly within acceptable ranges, indicating acceptably low variability in analytical results. Median matrix-spike recoveries were within the acceptable range (70 to 130 percent) for 189 of the 224 compounds for which matrix spikes were analyzed (84 percent).

This study did not attempt to evaluate the quality of water delivered to consumers. After withdrawal, groundwater used for drinking water typically is treated, disinfected, and blended with other waters to attain acceptable water quality. The benchmarks used in this report apply to treated water that is served to the consumer, not to untreated groundwater. To provide some context for the results, however, concentrations of constituents measured in these groundwater samples were compared with benchmarks established by the U.S. Environmental Protection Agency and California Department of Public Health. Comparisons between data collected for this study and benchmarks for drinking-water quality are for illustrative purposes only and are not indicative of compliance or non-compliance with those benchmarks.

Most constituents that were detected in groundwater samples from the trend wells were found at concentrations less than drinking-water benchmarks. Two volatile organic compounds (VOCs)—tetrachloroethene and trichloroethene—were detected in samples from one or more wells at concentrations greater than their health-based benchmarks, and three VOCs—chloroform, tetrachloroethene, and trichloroethene—were detected in at least 10 percent of the trend-well samples from the initial sampling period and the later trend sampling period. No pesticides were detected at concentrations near or greater than their health-based benchmarks. Three pesticide constituents—atrazine, deethylatrazine, and simazine—were detected in more than 10 percent of the trend-well samples in both sampling periods. Perchlorate, a constituent of special interest, was detected at a concentration greater than its health-based benchmark in samples from one trend well in the initial sampling and trend sampling periods, and in an additional trend well sample only in the trend sampling period. Most detections of nutrients, major and minor ions, and trace elements in samples from trend wells were less than health-based benchmarks in both sampling periods. Exceptions included nitrate, fluoride, arsenic, boron, molybdenum, strontium, and uranium; these were all detected at concentrations greater than their health-based benchmarks in at least one well sample in both sampling periods. Lead and vanadium were detected above their health-based benchmarks in one sample each collected in the initial sampling period only. The isotopic ratios of oxygen and hydrogen in water and the activities of tritium and carbon-14 generally changed little between sampling periods.

Introduction

About one-half of the water used for public and domestic drinking-water supply in California is groundwater (Kenny and others, 2009). To assess the quality of ambient groundwater in aquifers used for public drinking-water supply and to establish a baseline groundwater-quality monitoring program, the California State Water Resources Control Board (SWRCB), in cooperation with the U.S. Geological Survey (USGS) and Lawrence Livermore National Laboratory (LLNL), implemented the Groundwater Ambient Monitoring and Assessment (GAMA) Program in 2000 (California State Water Resources Control Board, 2013, website at *http://www.waterboards.ca.gov/gama/*). The GAMA Program was later expanded by the Groundwater Quality Monitoring Act of 2001 (State of California, 2001a, b; Sections 10780–10782.3 of the California Water Code, Assembly Bill 599). The main goals of the GAMA Program are to improve groundwater monitoring and to increase the availability of groundwater-quality data to the public. The GAMA Program currently consists of four projects: (1) the GAMA Priority Basin Project (PBP) conducted by the USGS (U.S. Geological Survey, 2011, California Water Science Center website at *http://ca.water.usgs.gov/gama/*), (2) the GAMA Domestic Well Project conducted by the SWRCB, (3) GAMA Special Studies Project conducted by the LLNL, and (4) GeoTracker GAMA

conducted by the SWRCB. The GAMA-PBP primarily focuses on the deep part of the groundwater resource, which is typically used for public drinking-water supply. The GAMA Domestic Well Project generally focuses on the shallow aquifer systems, which can be at risk as a result of surficial contamination. The GAMA Special Studies Project focuses on using research methods to help understand the source, fate, transport, and occurrence of chemicals that can affect groundwater quality. GeoTracker GAMA is an online interface serving data from the GAMA Program and other efforts to the public (*http://geotracker.waterboards.ca.gov/*).

The GAMA-PBP assesses groundwater quality in key groundwater basins that account for more than 90 percent of all groundwater used for public supply in the State. For the GAMA-PBP, the USGS, in collaboration with the SWRCB, developed a monitoring plan to assess groundwater basins through direct and other statistically reliable sampling approaches (Belitz and others, 2003; California State Water Resources Control Board, 2003). Additional partners in the GAMA-PBP include the California Department of Public Health (CDPH), California Department of Water Resources (CDWR), California Department of Pesticide Regulation (CDPR), local water agencies, and well owners (Kulongoski and Belitz, 2004). Participation in the GAMA-PBP is entirely voluntary.

The GAMA-PBP is unique in California because it includes many chemical analyses that are not otherwise available in statewide water-quality monitoring datasets. Groundwater samples collected for the GAMA-PBP are typically analyzed for approximately 300 chemical constituents by using analytical methods with lower detection limits than required by the CDPH for regulatory monitoring of water from drinking-water wells. These analyses can be useful for providing an early indication of changes in groundwater quality. In addition, the GAMA-PBP analyzes samples for a more extensive suite of constituents than required by the CDPH and for a suite of chemical and isotopic tracers to help understand hydrologic and geochemical processes. The analysis of groundwater composition is useful for identifying the natural and human factors affecting water quality. Knowing the occurrence and distribution of chemical constituents of significance to water quality is important for the long-term management and protection of groundwater resources.

The range of hydrologic, geologic, and climatic conditions in California was considered in this statewide assessment of groundwater quality. Belitz and others (2003) partitioned the State into 10 hydrogeologic provinces, each with distinctive hydrologic, geologic, and climatic characteristics: Modoc Plateau and Cascades Range, Klamath Mountains, Northern Coast Ranges, Central Valley, Sierra Nevada, Basin and Range, Southern Coast Ranges, Transverse and selected Peninsular Ranges, Desert, and San Diego Drainages (*fig. 1*). These 10 hydrogeologic provinces include groundwater basins and subbasins designated by the CDWR (California Department of Water Resources, 2003). Groundwater basins and subbasins generally consist of relatively permeable, unconsolidated deposits of alluvial origin. Of California's approximately 16,000 active and standby drinking-water wells listed in the statewide database maintained by the CDPH (referred to as CDPH wells in this report), 80 percent are in groundwater basins and subbasins in the 10 hydrogeologic provinces. [The CDPH Drinking Water Program, which regulated water quality in public-supply wells, was transferred to the SWRCB Division of Drinking Water on July 1, 2014; however, the label "CDPH" is retained in this report to be consistent with other GAMA Priority Basin Project publications and because the CDPH had jurisdiction over public-supply wells at the time that samples were collected for this study.] Groundwater basins and subbasins were prioritized for sampling on the basis of the number of CDPH wells in the basin, with secondary consideration given to municipal groundwater use, agricultural pumping, the number of formerly leaking underground fuel tanks, and the number of square-mile sections with registered pesticide applications (Belitz and others, 2003). Of the 472 basins and subbasins designated by the CDWR, 116 basins and subbasins, defined as the priority basins, contained 90 percent of the CDPH wells in these basins. The remaining 356 basins were defined as low-use basins. The 116 priority basins, selected low-use basins, and selected areas outside of the defined groundwater basins were grouped into 35 GAMA study units, representing approximately 95 percent of the CDPH wells in California.

The data collected in each study unit are used for three types of water-quality assessments: (1) *status*—assessment of the current quality of the groundwater resource; (2) *understanding*—identification of the natural and human factors affecting groundwater quality; and (3) *trends*—detection of changes in groundwater quality over time (Kulongoski and Belitz, 2004). The assessments are intended to characterize the quality of groundwater in the primary aquifer system of the study units, not the treated drinking water delivered to consumers by water purveyors. The primary aquifer system is defined as the parts of aquifers corresponding to the depths of the perforation intervals of wells listed in the CDPH Water Quality Monitoring database for the areas within the study units. The CDPH database lists wells used for public drinking-water supplies and includes wells from systems classified as community (such as cities, towns, and mobile-home parks); non-transient, non-community (such as those in schools, workplaces, and restaurants); and transient, non-community (such as campgrounds, parks, and highway rest areas). Collectively, the CDPH refers to these wells as "public-supply" wells. Groundwater quality in shallow or very deep parts of the aquifer systems can differ from that in the primary aquifer system. In particular, shallow groundwater can be more vulnerable to surface contamination. As a result, samples from shallow wells (such as many private domestic wells and environmental monitoring wells) can have greater concentrations of constituents (such as volatile organic compounds [VOCs] and nitrate) from anthropogenic sources than samples from wells screened in the underlying primary aquifer system (for example, Landon and others, 2010).

Figure 1. Hydrogeologic provinces of California and the locations of the Groundwater Ambient Monitoring and Assessment (GAMA) study units featured in this report.

All published and quality-assurance/quality-control (QA/QC) approved analytical data collected for the GAMA Program are stored in the web-based Geotracker Database (California State Water Resources Control Board, 2009, website at *https://geotracker.waterboards.ca.gov/gama/*) and are also available through the USGS National Water Information System (NWIS) website at *http://waterdata.usgs.gov/ca/nwis/qw/*. The Geotracker Database also stores groundwater-quality data and related reports collected by other State agencies, such as the CDPH, CDWR, and CDPR, and data collected by the SWRCB and Regional Boards from environmental monitoring wells at contaminated and (or) remediated sites.

This report presents water-quality data collected in 15 GAMA-PBP study units that were initially sampled between January 2006 and June 2010 and then were sampled again between April 2009 and April 2013 to evaluate temporal trends. Data are presented for results from the initial sampling, as well as from the sampling for trends, in the 15 study units. Data for additional parameters, evaluations of the QC data, and detailed descriptions of the study units can be found in published USGS data-series reports for each study unit: Kern County Subbasin (Shelton and others, 2008); Central Eastside San Joaquin Basin (Landon and Belitz, 2008); Middle Sacramento Valley (Schmitt and others, 2008); Northern Sacramento Valley (Bennett and others, 2009); Madera–Chowchilla (Shelton and others, 2009); Western San Joaquin Valley (Mathany and others, 2013); Owens and Indian Wells Valleys (Densmore and others, 2009); Coachella Valley (Goldrath and others, 2009); Colorado River (Goldrath and others, 2010); Antelope Valley (Schmitt and others, 2009); Mojave (Mathany and Belitz, 2009); Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts (Mathany and others, 2012); Coastal Los Angeles Basin (Mathany and others, 2008); Upper Santa Ana Watershed (Kent and Belitz, 2009); and Santa Clara River Valley (Montrella and Belitz, 2009).

Purpose and Scope

The purposes of this report are (1) to describe the study design and study methods, (2) to present the results of QC measurements, and (3) to present the results of the second sampling for an assessment of trends in the 15 selected GAMA study units. Groundwater samples were analyzed for field parameters, organic and inorganic constituents, and chemical tracers of groundwater source and age. The data presented in this report were evaluated according to State and Federal drinking-water standards. The health-based and non-health-based benchmarks used in this report are those established by the U.S. Environmental Protection Agency (EPA) and the CDPH. The data presented in this report are intended to characterize the quality of untreated groundwater resources in the study units and to provide a means to evaluate changes in the groundwater quality over time. Discussion of the occurrence of the constituents detected in groundwater samples and factors influencing their distribution in most of the selected GAMA-PBP study units can be found in the following published USGS scientific investigation reports: Kern County Subbasin (Burton and others, 2012); Central Eastside San Joaquin Basin (Landon and others, 2010); Middle Sacramento Valley and Northern Sacramento Valley (Bennett and others, 2011); Madera–Chowchilla (Shelton and others, 2013); Owens and Indian Wells Valleys, Coachella Valley, Colorado River, Antelope Valley, Mojave (Dawson and Belitz, 2012); and Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts (Parsons and others, 2014); Coastal Los Angeles Basin (Goldrath and others, 2012); Upper Santa Ana Watershed (Kent and Belitz, 2012); and Santa Clara River Valley (Burton and others, 2011).

Study Units

The 15 GAMA-PBP study units discussed in this report are in 4 different hydrogeologic provinces—the Central Valley, the Basin and Range, the Desert, and the Transverse and Selected Peninsular Ranges hydrogeologic provinces (Belitz and others, 2003). The study units are grouped by hydrogeologic province in this report. Within hydrogeologic provinces, the study units are presented in the chronological order in which they were initially sampled by the GAMA-PBP. Detailed information on the hydrogeologic settings of the 15 GAMA-PBP study units discussed in this report, along with descriptions of data collection and analytical results from the first round of sampling of these study units, can be found in published USGS Data-Series reports referenced in this report. Brief introductions are presented in this report that include the general location of each study unit, its spatial area, how it was divided into study areas, the number of wells that were initially sampled, and the number of trend wells that were sampled in the later period. Initial sampling of each study unit included "status" wells (selected by using a spatially distributed, randomized, grid-based method to provide statistical representation of the areas assessed) and "understanding" wells (sampled to aid in the understanding of aquifer-system flow and related groundwater-quality issues). Trend wells were selected from among the status wells. In some study units, wells available for sampling were scarce or unevenly distributed. In these study units, circular buffer areas were drawn around each available well to delineate the area used to characterize groundwater quality to obtain the desired sampling density. As a result, the sampled area was smaller than the total area of the study unit. For these study units, both the total area of the study unit and the smaller area used to characterize groundwater quality are given.

Central Valley Hydrogeologic Province (six study units)

Kern County Subbasin Study Unit

The Kern County subbasin study unit (*figs. 1*, *2*) is in the southern end of the Central Valley hydrogeologic province and covers approximately 3,000 square miles (mi^2) entirely in Kern County (Belitz and others, 2003). The Kern County subbasin study unit consists of the groundwater subbasin with the same name, which is part of the San Joaquin Valley Groundwater Basin (California Department of Water Resources 2003). The study unit consists of a single study area (*fig. 2*). Originally, 50 wells in the Kern County subbasin study unit were sampled between January and March 2006 (Shelton and others, 2008). Of these wells, 47 were status wells, and 3 were understanding wells. Five of the status wells (10.6 percent) were sampled as trend wells between February and March 2010 (*table 1*; *fig. 2*).

Central Eastside San Joaquin Basin Study Unit

The Central Eastside San Joaquin Basin study unit (*figs. 1*, *3*) covers approximately 1,695 mi^2, primarily in Merced and Stanislaus Counties. The study unit consists of three CDWR-defined groundwater subbasins in the San Joaquin Valley Groundwater Basin (Belitz and others, 2003): Modesto, Turlock, and Merced (California Department of Water Resources, 2003). The study unit is divided into four study areas (*fig. 3*). Three of the study areas are named after and closely correspond to the three groundwater subbasins. The fourth study area, Uplands, consists of Pleistocene age semiconsolidated deposits distributed throughout the eastern half of the study unit. The hydrogeologic setting of the Central Eastside San Joaquin Basin study unit, its groundwater subbasins, and the study areas are described by Landon and Belitz (2008). Originally, 78 wells in the Central Eastside San Joaquin Basin study unit were sampled between March and June 2006, of which 58 were status wells. Six of the status wells (10.3 percent) were sampled as trend wells during January 2010 (*table 1*); the Merced and Turlock study areas each had two trend wells , and the Modesto and Uplands study areas each had one trend well (*fig. 3*).

Middle Sacramento Valley Study Unit

The Middle Sacramento Valley study unit (*figs. 1*, *4*) covers approximately 3,340 mi^2 in Butte, Colusa, Glenn, Sutter, Tehama, Yolo, and Yuba Counties. The study unit consists of eight CDWR-defined groundwater subbasins of the Sacramento Valley Groundwater Basin (Belitz and others, 2003): Corning, Colusa, Vina, West Butte, East Butte, North Yuba, South Yuba, and Sutter (California Department of Water Resources, 2003). The study unit is divided into two study areas, East and West, separated by the Sacramento River (*fig. 4*). The hydrogeologic setting of the Middle Sacramento Valley study unit, its groundwater subbasins, and the two study areas are described by Schmitt and others (2008). Originally, 108 wells in the Middle Sacramento Valley study unit were sampled between June and September 2006. Of these wells, 71 were status wells. The study unit was sampled again in August 2010. Eight of the status wells (11.3 percent) from the two study areas in the study unit were sampled as trend wells (*table 1*); three trend wells were in the East study area, and five trend wells were in the West study area (*fig. 4*).

Northern Sacramento Valley Study Unit

The Northern Sacramento Valley study unit (*figs. 1*, *5*) covers approximately 1,180 mi^2 in Shasta and Tehama Counties. Public supply wells are unevenly distributed in this study unit. Therefore, in order to obtain the desired sampling density, the area used to characterize groundwater quality was much smaller (approximately 310 mi^2) than the entire study unit (Bennett and others, 2009). The study unit consists of six CDWR-defined groundwater subbasins of the Redding Groundwater Basin and five CDWR-defined groundwater subbasins of the Sacramento Valley Groundwater Basin (Belitz and others, 2003). The study unit is divided into two study areas (*fig. 5*). The Redding study area consists of study unit subbasins that are part of the Redding Groundwater Basin: Enterprise, Millville, Anderson, South Battle Creek, Rosewood, and Bowman (California Department of Water Resources, 2003). The Northern Sacramento Valley study area consists of study unit subbasins that are part of the Sacramento Valley Groundwater Basin: Bend, Red Bluff, Antelope, Dye Creek, and Los Molinos (California Department of Water Resources, 2003). The hydrogeologic setting of the Northern Sacramento Valley study unit, its groundwater basins and subbasins, and its study areas are described by Bennett and others (2009). Originally, 66 wells in the Northern Sacramento Valley study unit were sampled between October 2007 and January 2008. Forty-three of these wells were status wells. The Northern Sacramento Valley study unit was sampled again in January 2011. Four of the status wells (9.3 percent) in the study unit were sampled as trend wells (*table 1*); the Redding and the Northern Sacramento Valley study areas each had two trend wells (*fig. 5*).

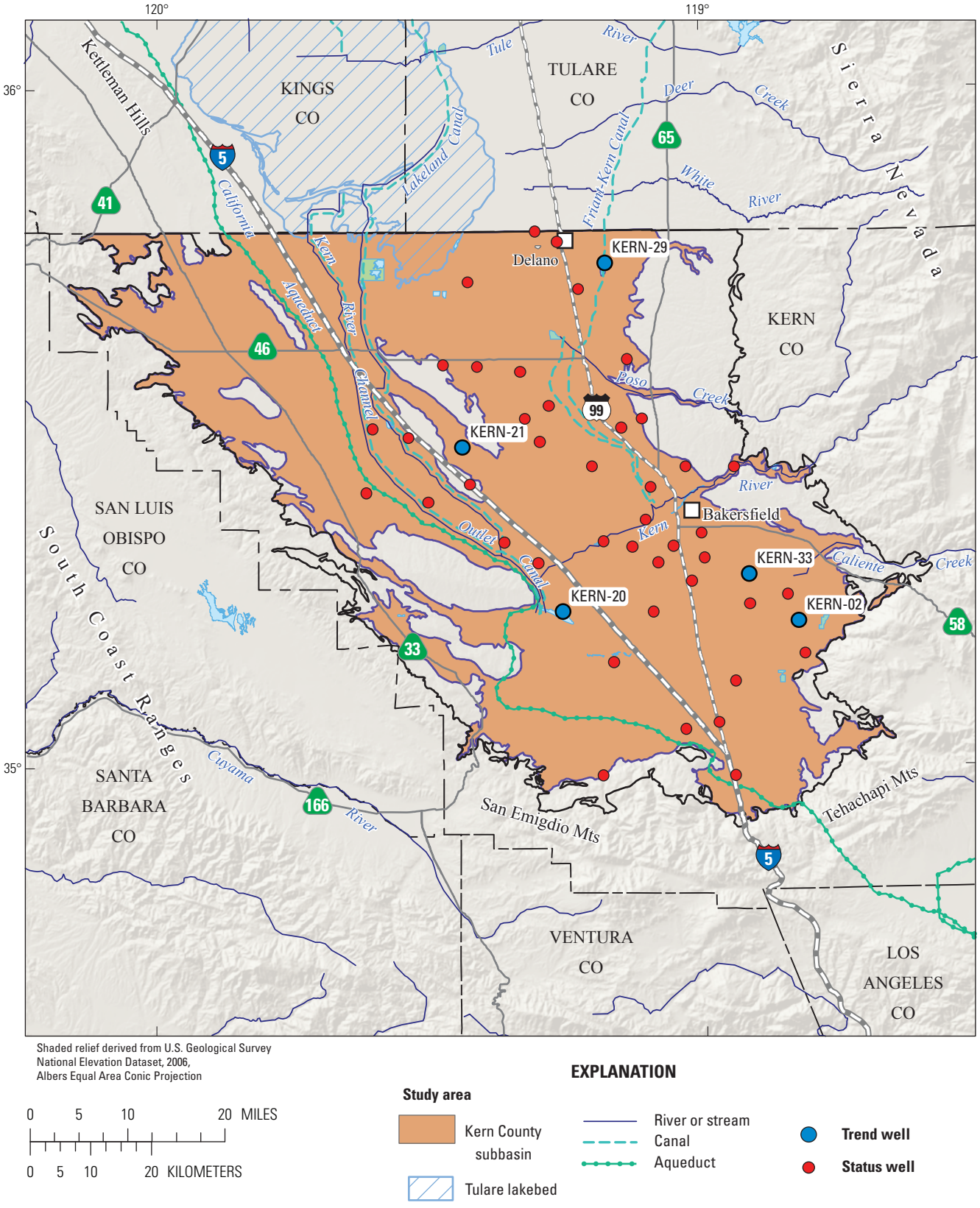


Figure 2. Kern County subbasin Groundwater Ambient Monitoring and Assessment (GAMA) study unit with locations of status wells and trend wells.

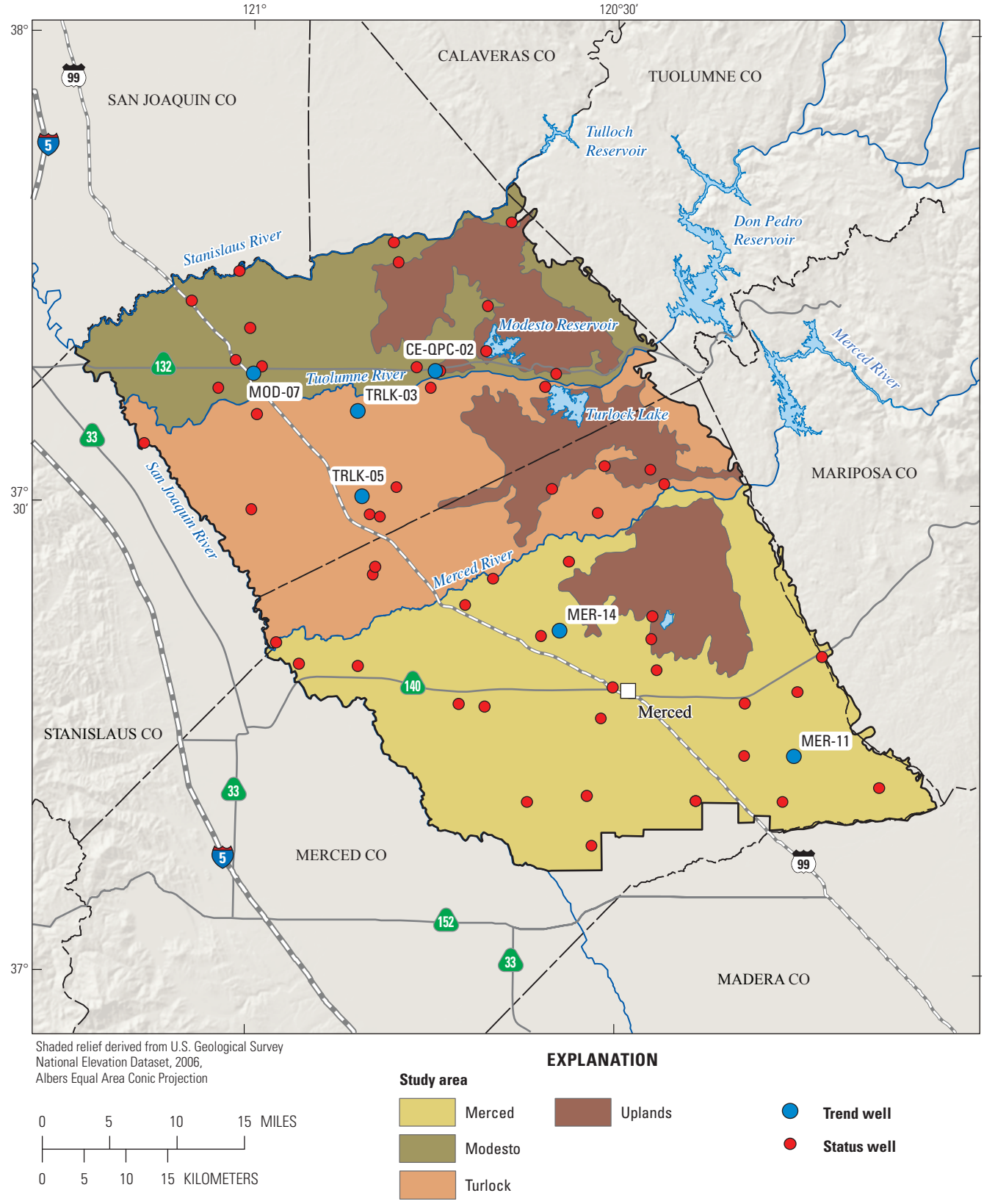


Figure 3. Central Eastside San Joaquin Basin Groundwater Ambient Monitoring and Assessment (GAMA) study unit with locations of study areas, status wells, and trend wells.

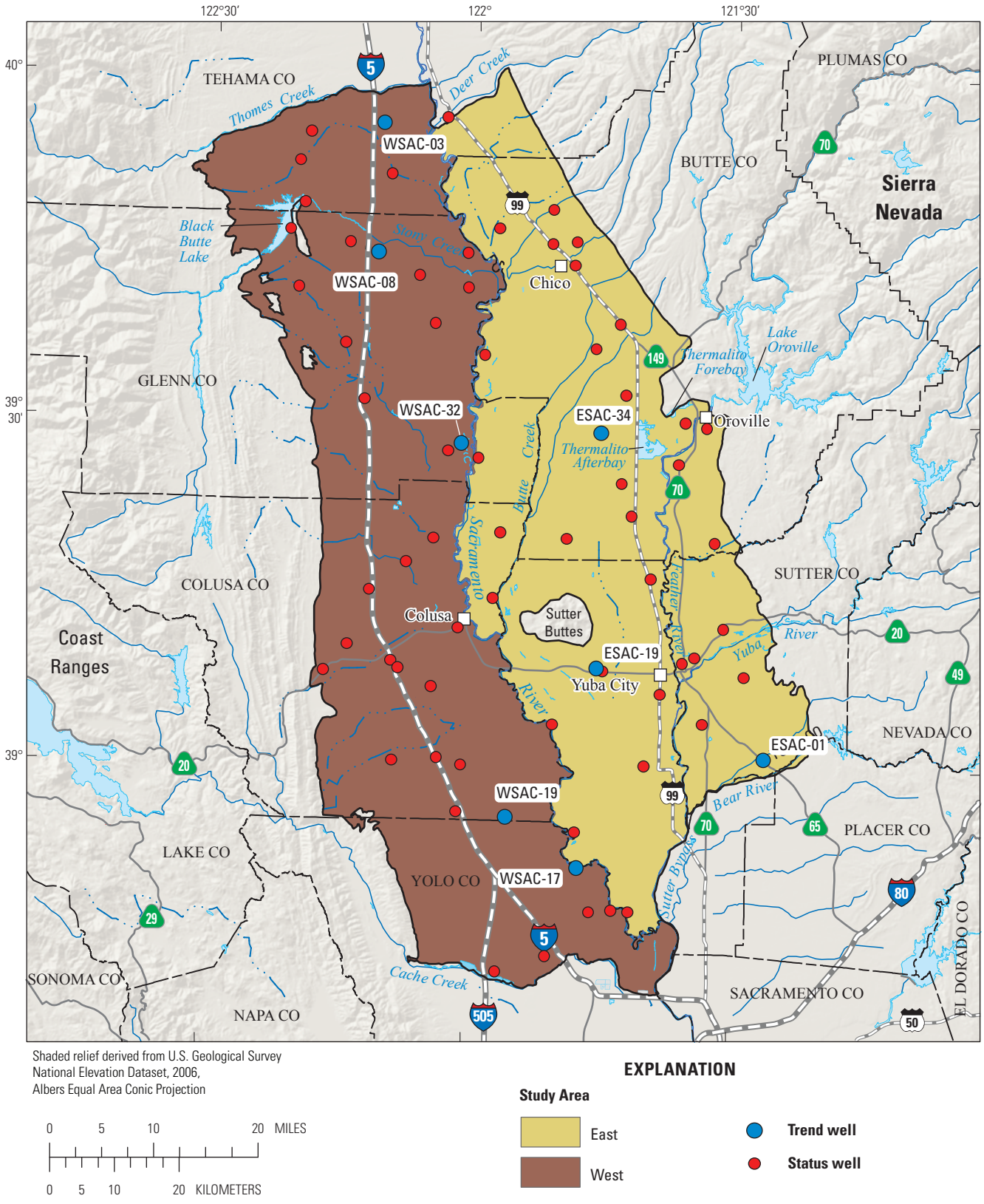


Figure 4. Middle Sacramento Valley Groundwater Ambient Monitoring and Assessment (GAMA) study unit with locations of study areas, status wells, and trend wells.

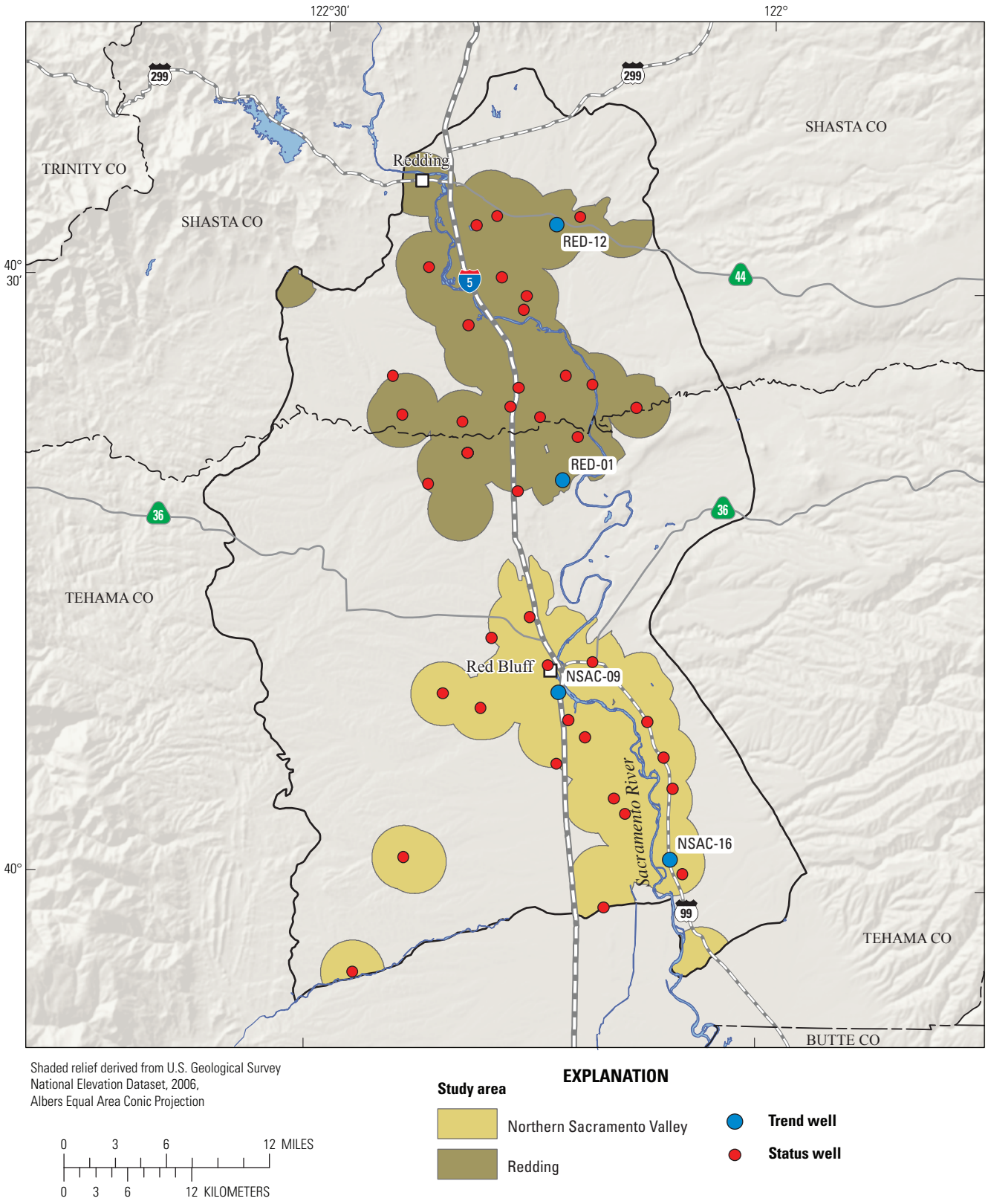


Figure 5. Northern Sacramento Valley Groundwater Ambient Monitoring and Assessment (GAMA) study unit with locations of study areas, status wells, and trend wells.

Madera–Chowchilla Study Unit

The Madera–Chowchilla study unit (*figs. 1*, *6*) covers approximately 860 mi^{2,} primarily in Madera County, but partially in Merced County north of the Chowchilla River and in Fresno County south of the San Joaquin River (Shelton and others, 2009). The study unit consists of a single study area that corresponds to the two CDWR-defined groundwater subbasins of the San Joaquin Valley Groundwater Basin: Madera and Chowchilla (*fig. 6*) (California Department of Water Resources, 2003). The hydrogeologic setting of the Madera–Chowchilla study unit and its groundwater subbasins are described by Shelton and others (2009). Originally, 35 wells in the Madera–Chowchilla study unit were sampled between April and May 2008. Thirty of these wells were status wells. The Madera–Chowchilla study unit was sampled again in March 2011. Four of the status wells (13.3 percent) in the single-study-area study unit were sampled as trend wells (*table 1; fig. 6*).

Western San Joaquin Valley Study Unit

The Western San Joaquin Valley study unit (*figs. 1*, *7*) covers approximately 2,170 mi^2 in Stanislaus, Merced, Madera, Fresno, and Kings Counties (Mathany and others, 2013). The study unit is divided into two study areas that correspond to two CDWR-defined groundwater subbasins of the San Joaquin Valley Groundwater Basin: Delta–Mendota and Westside (*fig. 7*) (California Department of Water Resources, 2003). There are few public supply wells in the Westside study area. Therefore, in order to obtain the desired sampling density, the area used to characterize groundwater quality was much smaller (386 mi^2) than the entire Westside study area (1,000 mi^2). As a result, the area used to characterize groundwater quality in the Western San Joaquin Valley study unit was approximately 1,600 mi^2. The hydrogeologic setting of the Western San Joaquin Valley study unit, its groundwater basin and subbasins, and its study areas are described by Mathany and others (2013). Originally, 58 wells in the Western San Joaquin Valley study unit were sampled between March and July 2010. Thirty-nine of these wells were status wells. The Western San Joaquin Valley study unit was sampled again in April 2013. Four of the status wells (10.3 percent) in the study unit were sampled as trend wells (*table 1*); three trend wells were in the Delta–Mendota study area, and one trend well was in the Westside study area (*fig. 7*).

Basin and Range Hydrogeologic Province (one study unit)

Owens and Indian Wells Valleys Study Unit

The Owens and Indian Wells Valleys study unit (*figs. 1*, *8*) covers approximately 1,630 mi^2 in Inyo, Kern, Mono, and San Bernardino Counties (Densmore and others, 2009). The study unit is divided into two, non-adjacent study areas that correspond to the Owens Valley and Indian Wells Valley CDWR-defined groundwater basins (*fig. 8*) (California Department of Water Resources, 2003). The hydrogeologic setting of the Owens and Indian Wells Valleys study unit, its groundwater basins, and its study areas are described by Densmore and others (2009). Originally, 74 wells in the Owens and Indian Wells Valleys study unit were sampled between September and December 2006. Fifty-three of these wells were status wells. The Owens and Indian Wells Valleys study unit was sampled again in October 2010. Six of the status wells (11.3 percent) in the study unit were sampled as trend wells (*table 1*); two trend wells were in the Indian Wells Valley study area, and four trend wells were in the Owens Valley study area (*fig. 8*).

Desert Hydrogeologic Province (five study units)

Coachella Valley Study Unit

The Coachella Valley study unit (*figs. 1*, *9*) covers approximately 820 mi^2, primarily in Riverside County, but extending into San Bernardino, San Diego, and Imperial Counties (Goldrath and others, 2009). The Coachella Valley study unit consists of a single study area that corresponds to the four CDWR-defined groundwater subbasins of the Coachella Valley Groundwater Basin: San Gorgonio Pass, Indio, Mission Creek, and Desert Hot Springs (*fig. 9*) (California Department of Water Resources, 2003; Goldrath and others, 2009). The hydrogeologic setting of the Coachella Valley study unit is described by Goldrath and others (2009). Originally, 35 wells in the Coachella Valley study unit were sampled between February and March 2007. Nineteen of these wells were status wells. The Coachella Valley study unit was sampled again in January 2011. Four of the status wells (21.1 percent) in the single-study-area study unit were sampled as trend wells (*table 1*; *fig. 9*).

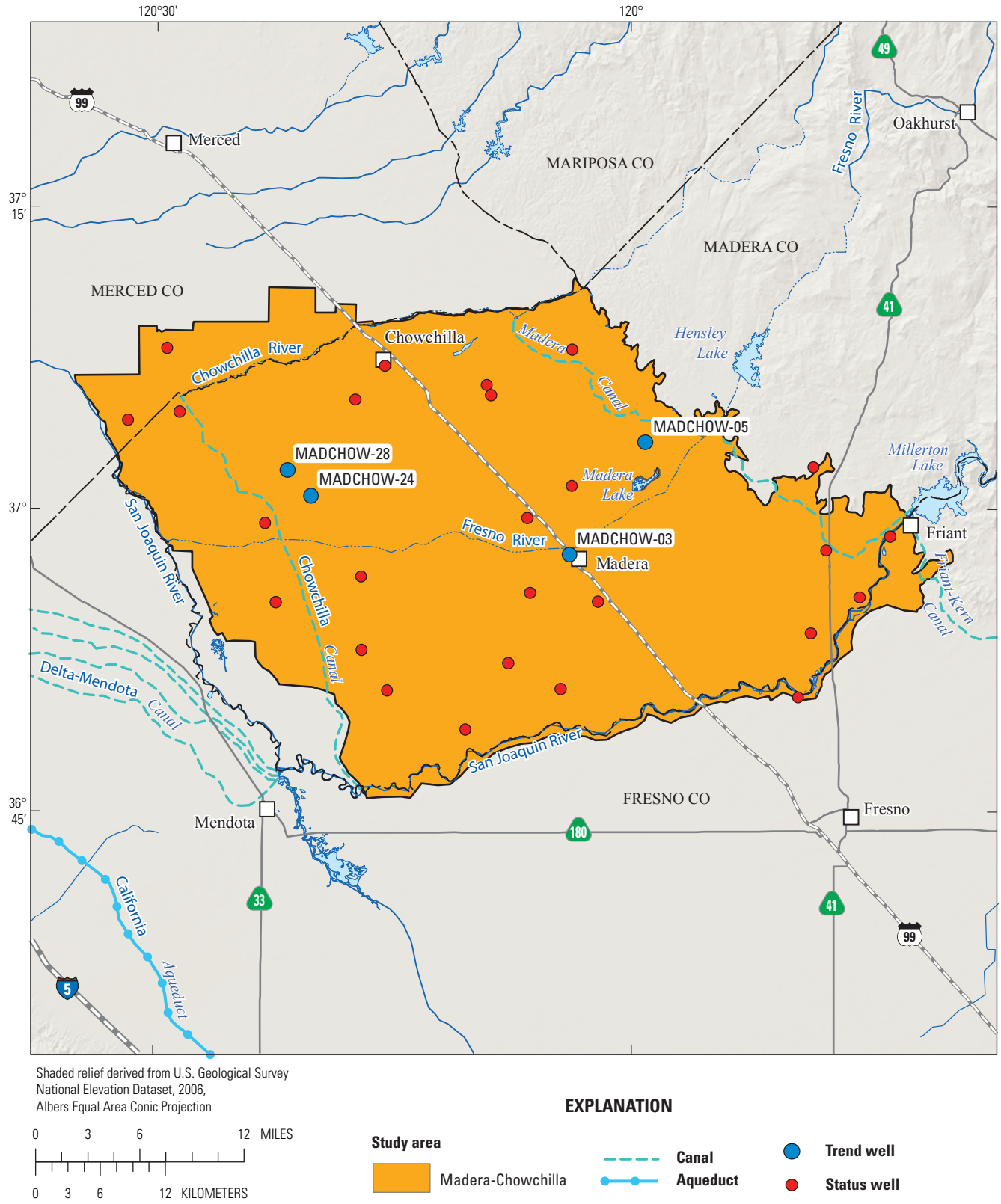


Figure 6 Madera–Chowchilla Groundwater Ambient Monitoring and Assessment (GAMA) study unit with locations of status wells and trend wells.

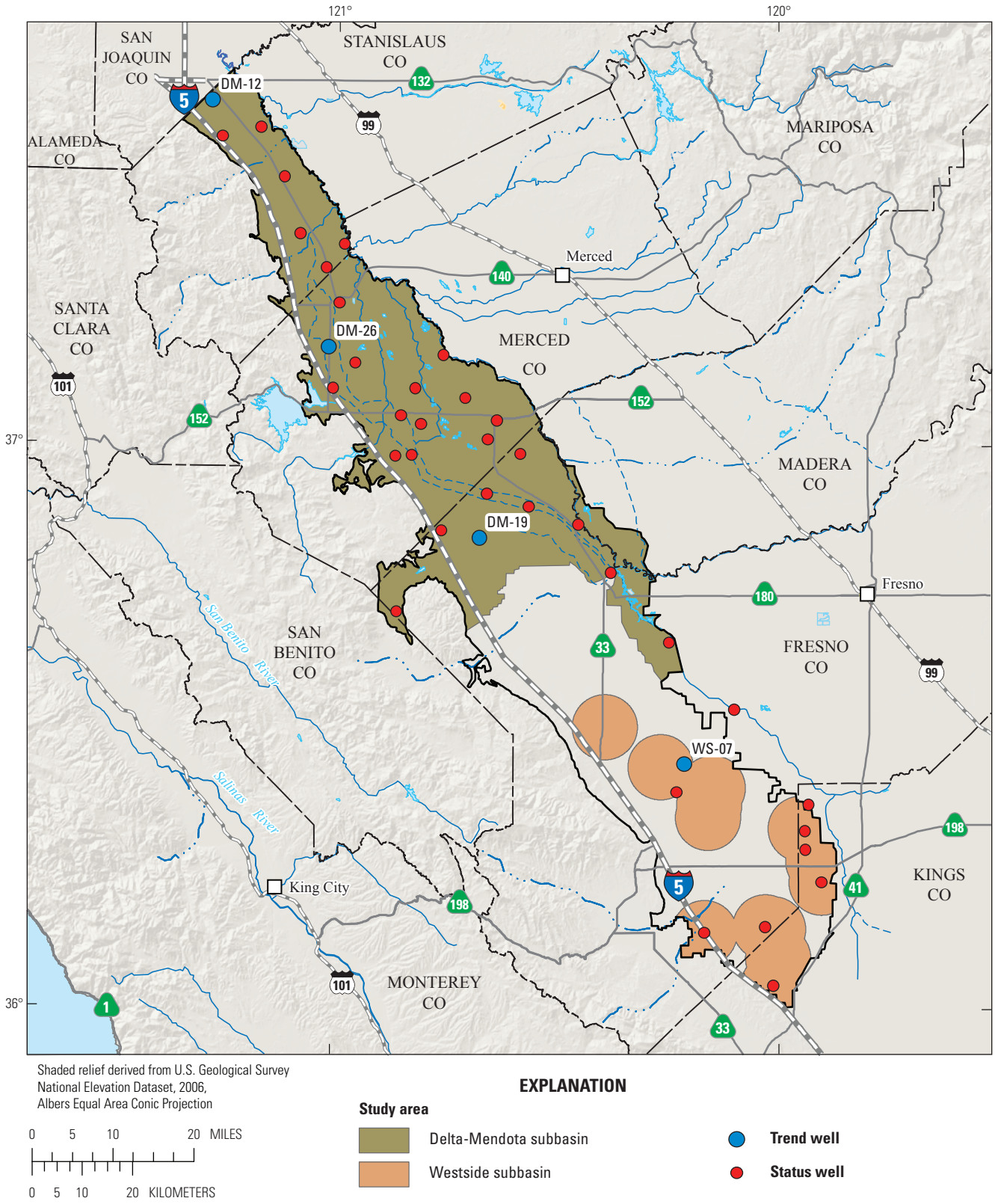


Figure 7. Western San Joaquin Valley Groundwater Ambient Monitoring and Assessment (GAMA) study unit with locations of study areas, status wells, and trend wells.

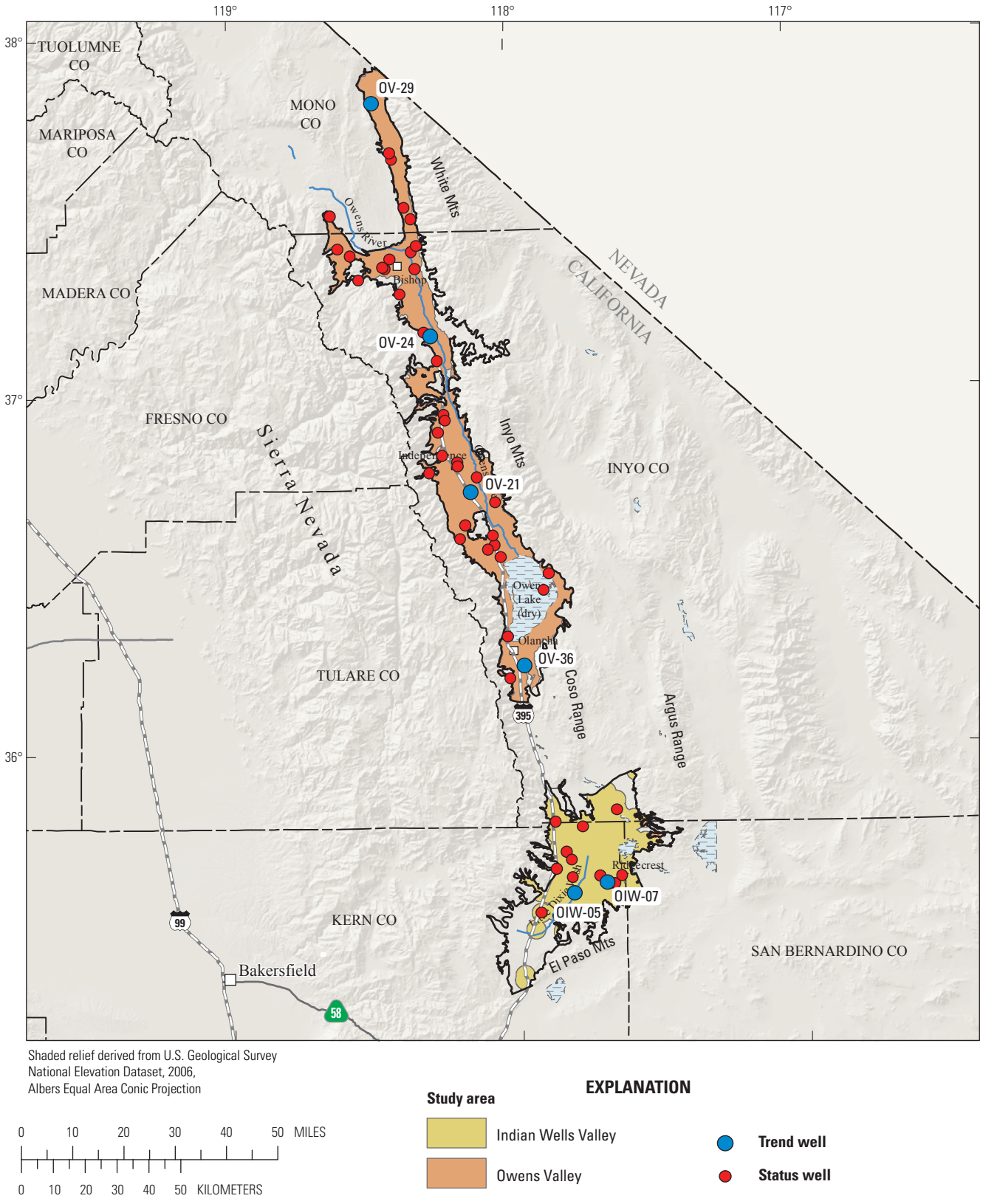


Figure 8. Owens and Indian Wells Valleys Groundwater Ambient Monitoring and Assessment (GAMA) study unit with locations of study areas, status wells, and trend wells.

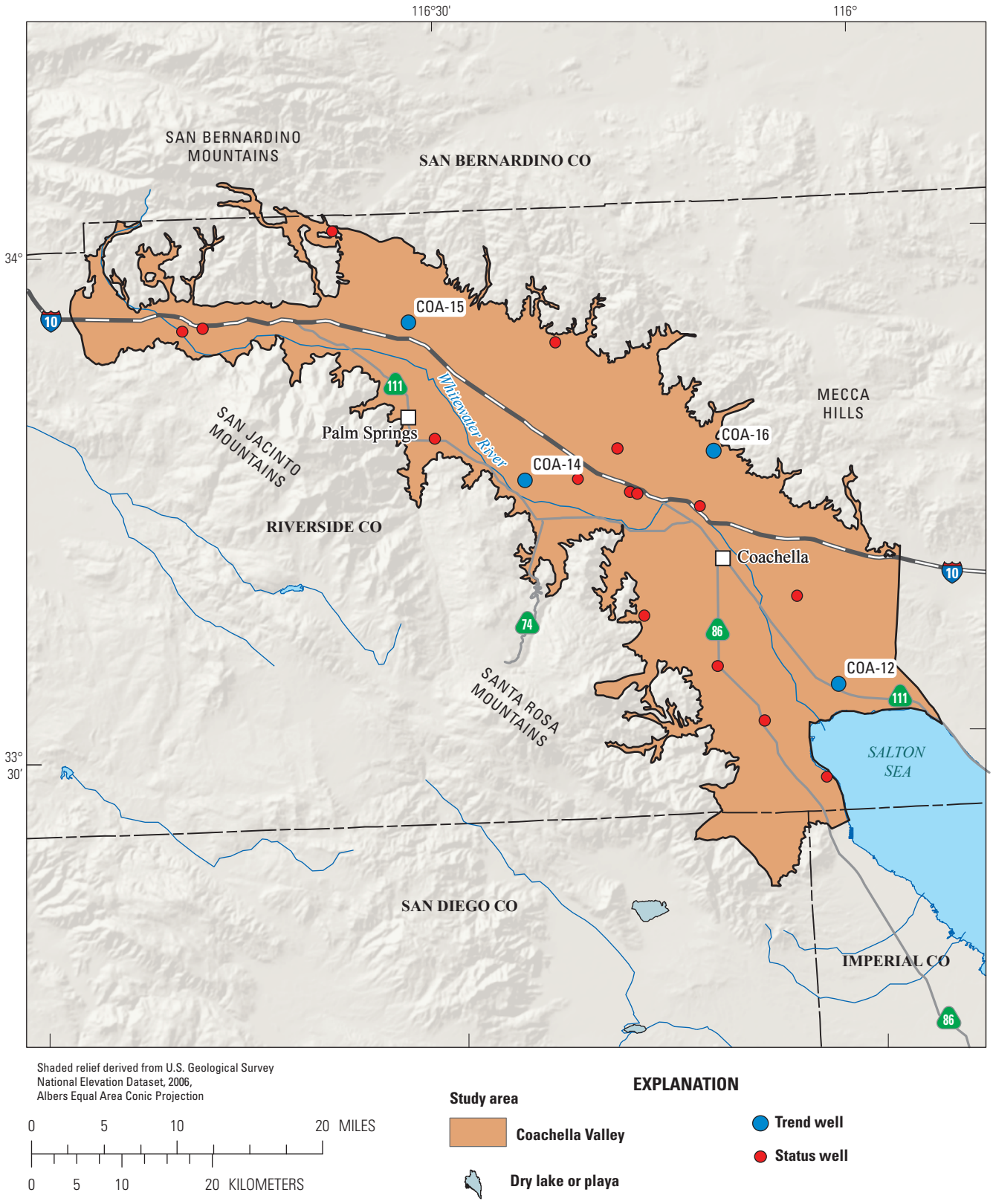


Figure 9. Coachella Valley Groundwater Ambient Monitoring and Assessment (GAMA) study unit with locations of status wells and trend wells.

Colorado River Study Unit

The Colorado River study unit (*figs. 1*, *10*) is next to the western bank of the Colorado River and covers approximately 800 mi^2 in eastern San Bernardino County (Goldrath and others, 2010). The study unit consists of three widely separated study areas—Needles Valley, Palo Verde, and Yuma Valley (*fig. 10*). Public supply wells are unevenly distributed in these study areas. Therefore, in order to obtain the desired sampling density, the area used to characterize groundwater quality was much smaller (188 mi^2) than the entire study unit (Goldrath and others, 2010). The study unit includes portions of four CDWR-defined groundwater basins: Needles Valley, Palo Verde Valley, Palo Verde Mesa, and Yuma Valley (California Department of Water Resources, 2003). The hydrogeologic setting of the Colorado River study unit is described by Goldrath and others (2010). Originally, 28 wells in the Colorado River study unit were sampled between October and December 2007. Twenty of these wells were status wells. The Colorado River study unit was sampled again in January 2011. Three status wells (15.0 percent) in the study unit were sampled as trend wells; one was in each of the study areas (*table 1*; *fig. 10*).

Antelope Valley Study Unit

The Antelope Valley study unit (*figs. 1*, *11*) covers approximately 1,600 mi^2 in Kern, Los Angeles, and San Bernardino Counties (Schmitt and others, 2009). Public supply wells are unevenly distributed in this study unit. Therefore, in order to obtain the desired sampling density, the area used to characterize groundwater quality was much smaller (approximately 640 mi^2) than the entire study unit (Schmitt and others, 2009). The Antelope Valley study unit consists of a single study area (*fig. 11*) that closely corresponds to the CDWR-defined Antelope Valley Groundwater Basin. The hydrogeologic setting of the Antelope Valley study unit is described by Schmitt and others (2009). Originally, 57 wells in the Antelope Valley study unit were sampled between January and April 2008. Fifty-six of these wells were status wells. The Antelope Valley study unit was sampled again in February 2012. Six of the status wells (10.7 percent) in the single-study-area study unit were sampled as trend wells (*table 1*; *fig. 11*).

Mojave Study Unit

The Mojave study unit (*figs. 1*, *12*) covers approximately 1,500 mi^2 in Kern, Los Angeles, and San Bernardino Counties (Mathany and Belitz, 2009). Public supply wells are unevenly distributed in this study unit. Therefore, in order to obtain the desired sampling density, the area used to characterize groundwater quality was much smaller (approximately 620 mi^2) than the entire study unit (Mathany and Belitz, 2009). The Mojave study unit overlies four CDWR-defined groundwater basins: Upper Mojave River, Middle Mojave River, Lower Mojave River, and El Mirage Valley (*fig. 12*) (California Department of Water Resources, 2003). Also, there are two distinct and separate water-bearing formations in the Mojave River Valley basin system—the regional aquifer and the floodplain aquifer. The hydrogeologic setting of the Mojave study unit is described by Mathany and Belitz (2009). Originally, 59 wells in the Mojave study unit were sampled between February and April 2008. Fifty-two of these wells were status wells. The Mojave study unit was sampled again in March 2011. Seven of the status wells (13.5 percent) in the study unit were resampled as trend wells; the floodplain aquifer and the western portion of the regional aquifer each had two trend wells, and the eastern and northern portions of the regional aquifer and the El Mirage Valley each had one trend well (*table 1*; *fig. 12*).

Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts Study Unit

The Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit (*figs. 1*, *13*) is extensive and covers approximately 12,103 mi^2 in San Bernardino, Riverside, Kern, San Diego, and Imperial Counties (Mathany and others, 2012). Public supply wells are unevenly distributed in this study unit. Therefore, in order to obtain the desired sampling density, the area used to characterize groundwater quality was much smaller (approximately 930 mi^2) than the entire study unit (Mathany and others, 2012). The study unit is divided into 3 study areas overlying at least parts of 47 CDWR-defined groundwater basins or subbasins (*fig. 13*) (California Department of Water Resources, 2003). The three study areas are the Borrego Valley study area, the Central Desert study area, and the Low-Use Basins of the Mojave and Sonoran Deserts study area. The hydrogeologic setting of the Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit, its groundwater basins and subbasins, and its study areas are described by Mathany and others (2012). Originally, 52 wells in the Borrego Valley, Central, Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit were sampled between December 2008 and March 2010. This exceptionally long sampling period was due to a California state budget crisis in early 2009 that suspended work on GAMA for several months. Forty-nine of the wells sampled were status wells. The Borrego Valley, Central, Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit was sampled again in October 2012. Six of the status wells (12.2 percent) in the study unit were sampled as trend wells: one trend well in the Borrego Valley study area, two trend wells in the Central Desert study area, and three trend wells in the Low-Use Basins of the Mojave and Sonoran Deserts study area (*table 1*; *fig. 13*).

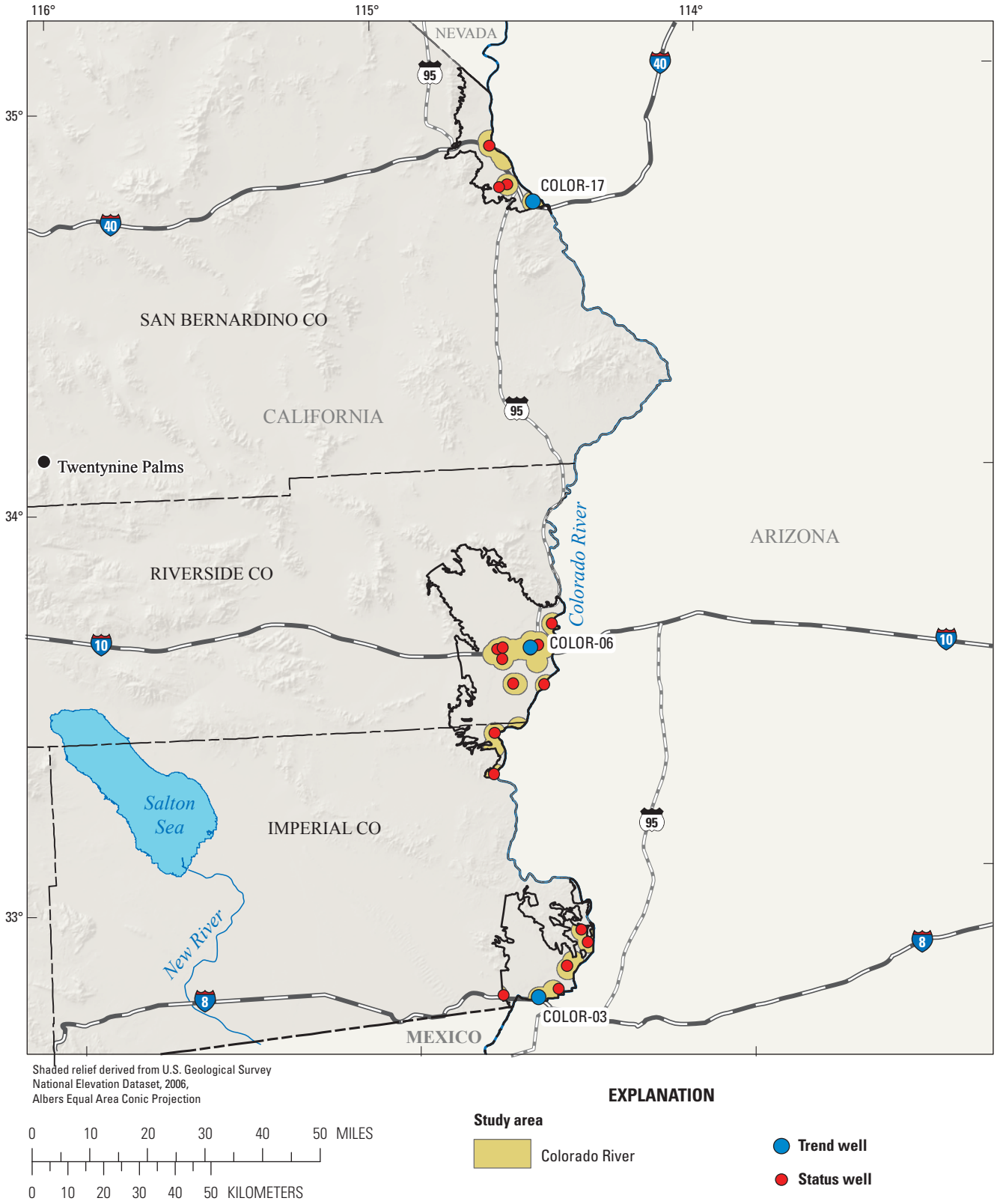


Figure 10. Colorado River Groundwater Ambient Monitoring and Assessment (GAMA) study unit with locations of study areas, status wells, and trend wells.

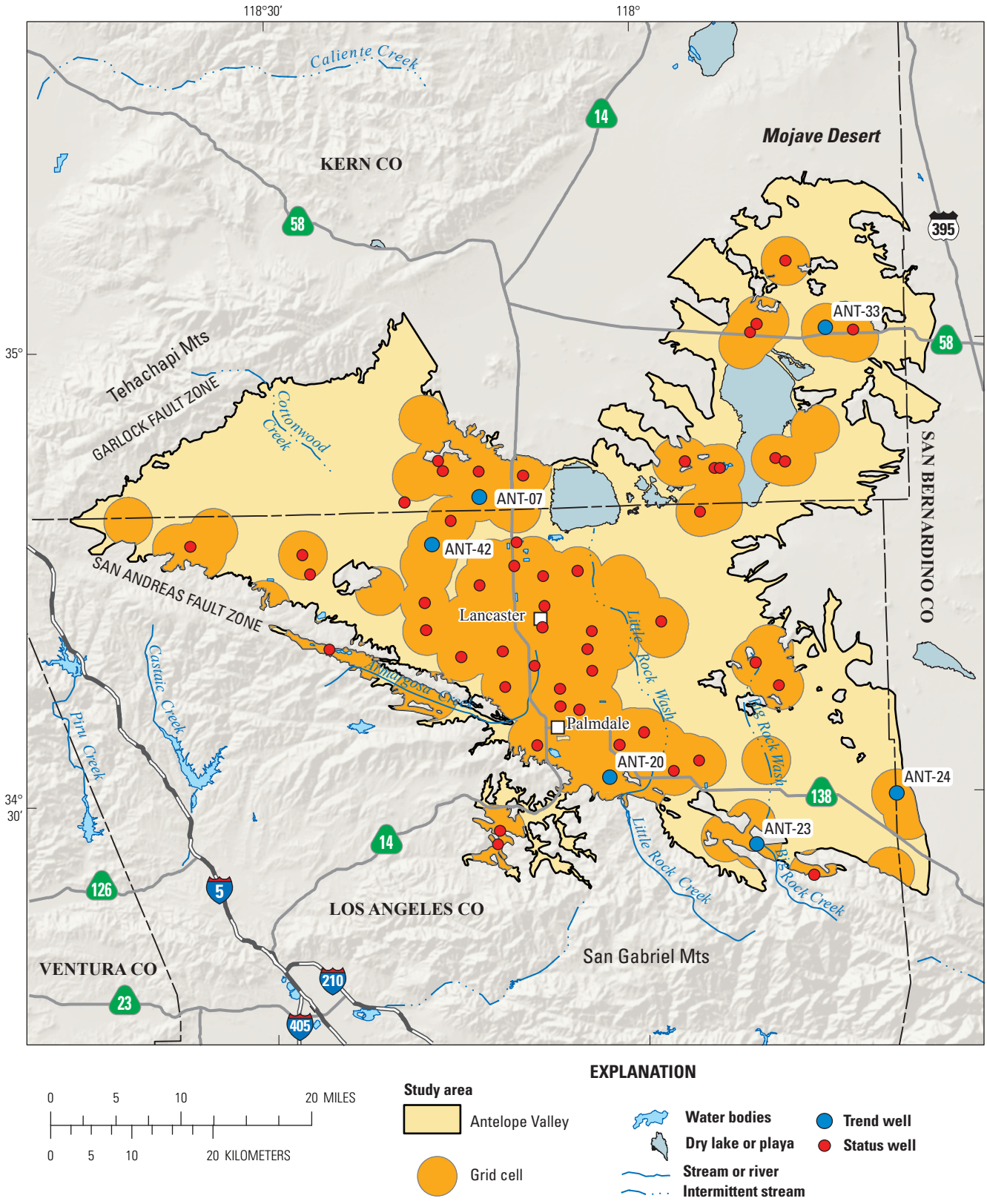


Figure 11. Antelope Valley Groundwater Ambient Monitoring and Assessment (GAMA) study unit with locations of status wells and trend wells.

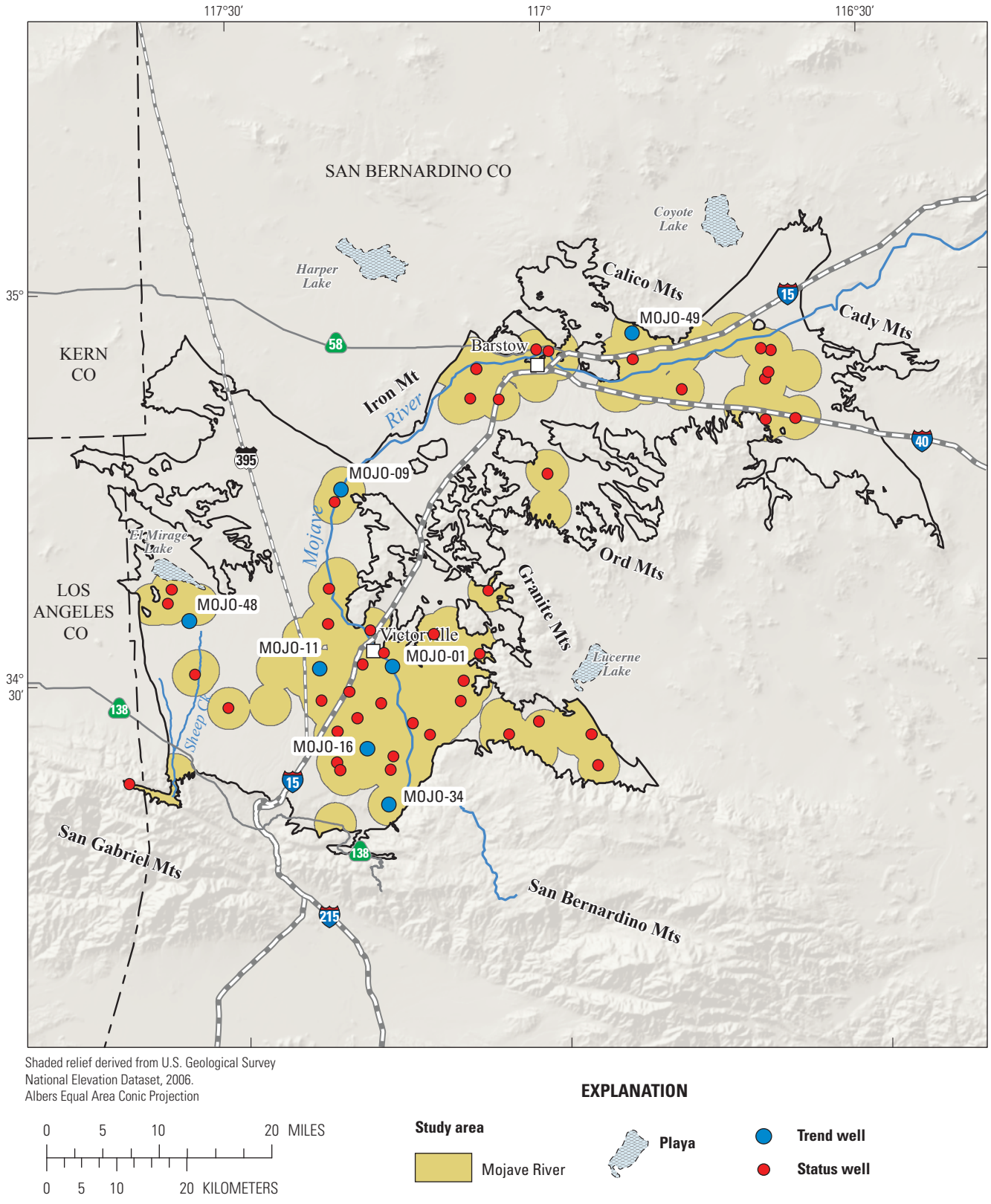


Figure 12. Mojave Groundwater Ambient Monitoring and Assessment (GAMA) study unit with locations of status wells and trend wells.

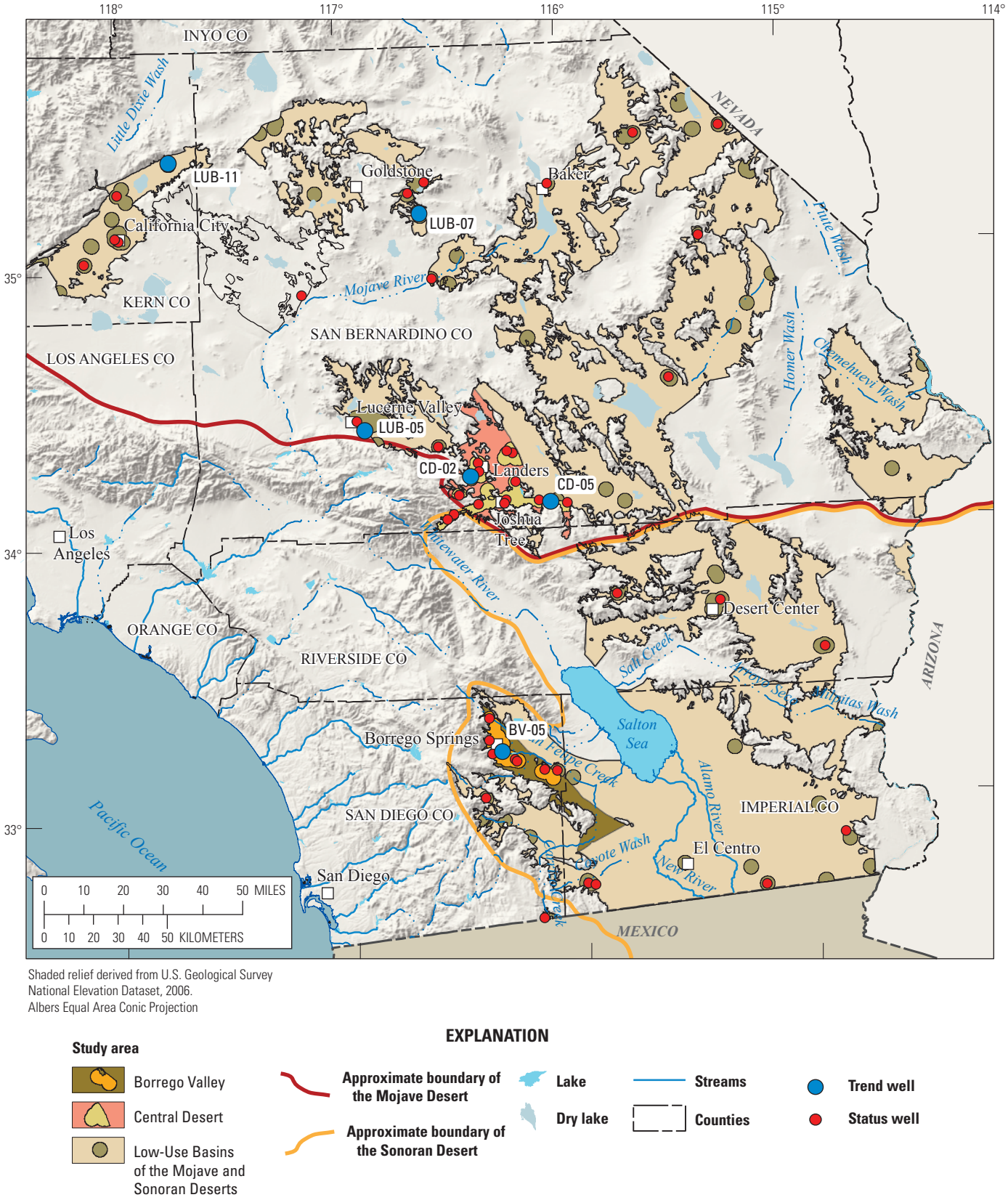


Figure 13. Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts Groundwater Ambient Monitoring and Assessment (GAMA) study unit with locations of status wells and trend wells.

Transverse and Selected Peninsular Ranges Hydrogeologic Province (three study units)

Coastal Los Angeles Basin Study Unit

The Coastal Los Angeles Basin study unit (*figs. 1*, *14*) covers approximately 860 mi^2 in Los Angeles and Orange Counties (Mathany and others, 2008). The Coastal Los Angeles Basin study unit includes the CDWR-defined Coastal Plain of Orange County Groundwater Basin (California Department of Water Resources, 2003) and four subbasins of the CDWR-defined Coastal Plain of Los Angeles Groundwater Basin: Central, West Coast, Santa Monica, and Hollywood (California Department of Water Resources, 2003). The study unit is divided into five study areas that correspond to these five CDWR-defined basins or subbasins (*fig. 14*). The study units are named Orange County Coastal Plain, Central Basin, West Coast Basin, Santa Monica Basin, and Hollywood Basin. The hydrogeologic setting of the Coastal Los Angeles Basin study unit, its groundwater basins and subbasins, and its individual study areas are described by Mathany and others (2008). Originally, 69 wells were sampled in the Coastal Los Angeles Basin study unit between June and November 2006 (Mathany and others, 2008). Of these wells, 61 were status wells, but 6 of the status wells were sampled as "Direct Assessment" wells to spatially represent the Santa Monica Basin and Hollywood Basin study areas. These basins (actually subbasins) were considered too small to divide into grids. The Coastal Los Angeles Basin study unit was sampled again in August 2010. Eight of the status wells (13.1 percent) in the study unit were sampled as trend wells. Four trend wells were in the Central Basin study area, two trend wells were in the Orange County Coastal Plain study area, and the West Coast Basin and Direct Assessment (Santa Monica Basin) study areas each had one trend well (*table 1*; *fig. 14*).

Upper Santa Ana Watershed Study Unit

The Upper Santa Ana Watershed study unit (*figs. 1*, *15*) covers approximately 1,000 mi^2 in Riverside and San Bernardino Counties (Kent and Belitz, 2009). The study unit includes the CDWR-defined Elsinore and San Jacinto Groundwater Basins (California Department of Water Resources, 2003) as well as the nine subbasins of the Santa Ana Valley Groundwater Basin: Bunker Hill, Cajon, Rialto–Colton, Cucamonga, Chino, Yucaipa, San Timoteo, Riverside–Arlington, and Temescal (California Department of Water Resources, 2003). The Upper Santa Ana Watershed study unit was divided into six study areas (*fig. 15*), of which, two corresponded to the San Jacinto and Elsinore Groundwater Basins. The nine subbasins of the Upper Santa Ana Valley were grouped and divided into the other four study areas: Bunker Hill/Cajon/Rialto–Colton, Cucamonga/Chino, Riverside–Arlington/Temescal, and Yucaipa/San Timoteo. The hydrogeologic setting of the Upper Santa Ana Watershed study unit, its groundwater basins and subbasins, and its study areas are described by Kent and Belitz (2009).

Originally, 99 wells in the Upper Santa Ana Watershed study unit were sampled between November 2006 and March 2007. Ninety of these wells were status wells. The Upper Santa Ana Watershed study unit was sampled again in April and May 2009 in conjunction with sampling of the Inland Santa Ana Basin by the National Water-Quality Assessment (NAWQA) Program as part of its Source Water-Quality Assessment of groundwater used for public supply (Delzer and Hamilton, 2007). The combined resources of these programs allowed for greater trend sampling density in the Upper Santa Ana Watershed study unit than in the other study units. There were 16 trend wells sampled in the study unit; the Bunker Hill/Cajon/Rialto–Colton study area and the Cucamonga/Chino study area each had 5 trend wells, and the Riverside–Arlington/Temescal study area, the San Jacinto study area, and the Yucaipa/San Timoteo study area each had two trend wells (*table 1*; *fig. 15*). No trend wells were sampled in the relatively small Elsinore study area.

Santa Clara River Valley Study Unit

The Santa Clara River Valley study unit (*figs. 1*, *16*) covers approximately 460 mi^2 in Los Angeles and Ventura Counties. The study unit includes eight CDWR-defined groundwater basins: Arroyo Santa Rosa Valley, Santa Clara River Valley (6 subbasins), Las Posas Valley, Ventura River Valley (2 subbasins), Ojai Valley, Pleasant Valley, Simi Valley, and Upper Ojai Valley (California Department of Water Resources, 2003). The hydrogeologic setting of the Santa Clara River Valley study unit, and its groundwater basins and subbasins are described by Montrella and Belitz (2009). Originally, 53 wells in the Santa Clara River Valley study unit were sampled between April and June 2007. Forty-two of these wells were status wells. The Santa Clara River Valley study unit was sampled again in April 2011. Six trend wells were sampled in the single-study-area study unit (*table 1*; *fig. 16*).

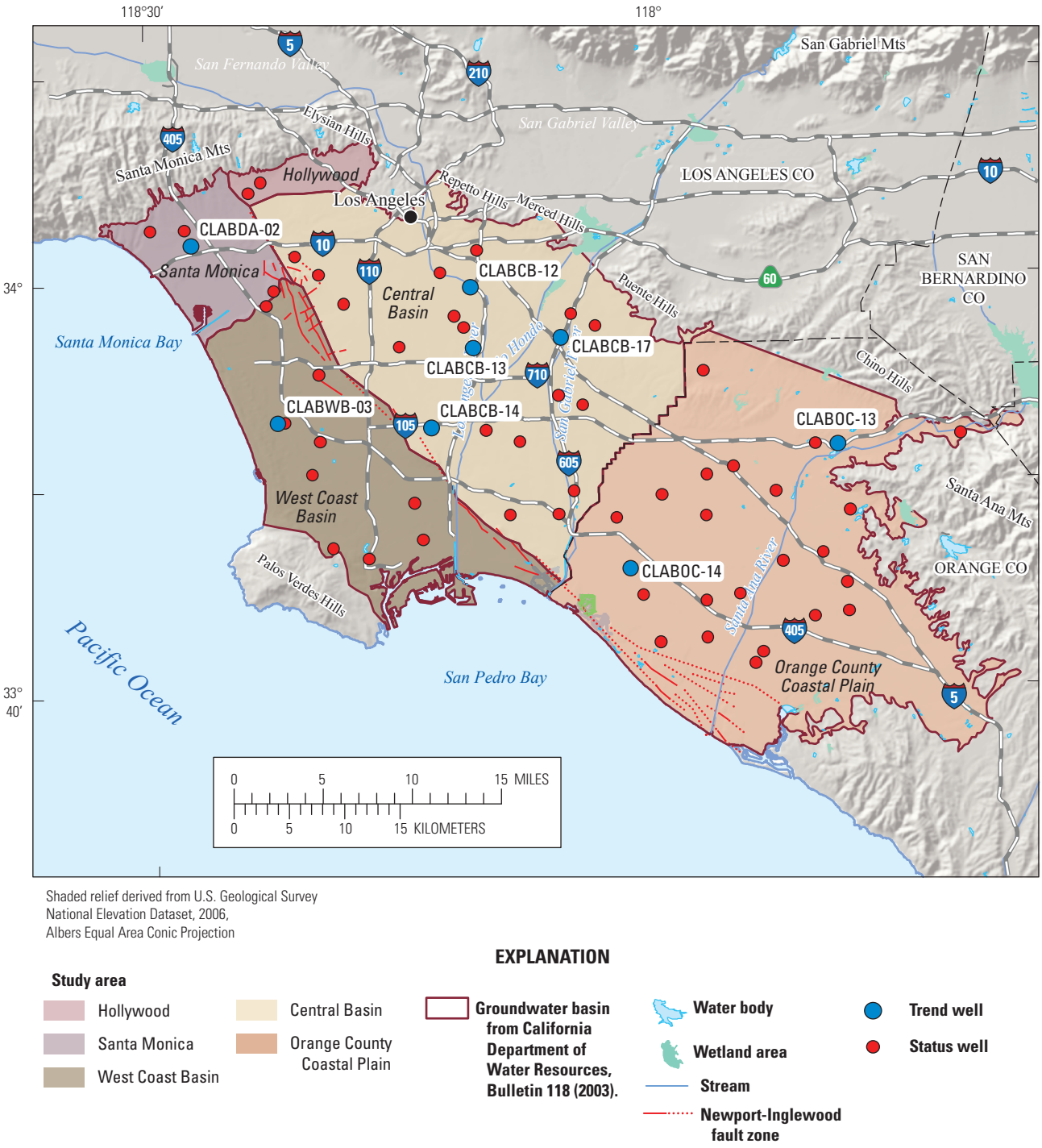


Figure 14. Coastal Los Angeles Basin Groundwater Ambient Monitoring and Assessment (GAMA) study unit with locations of status wells and trend wells.

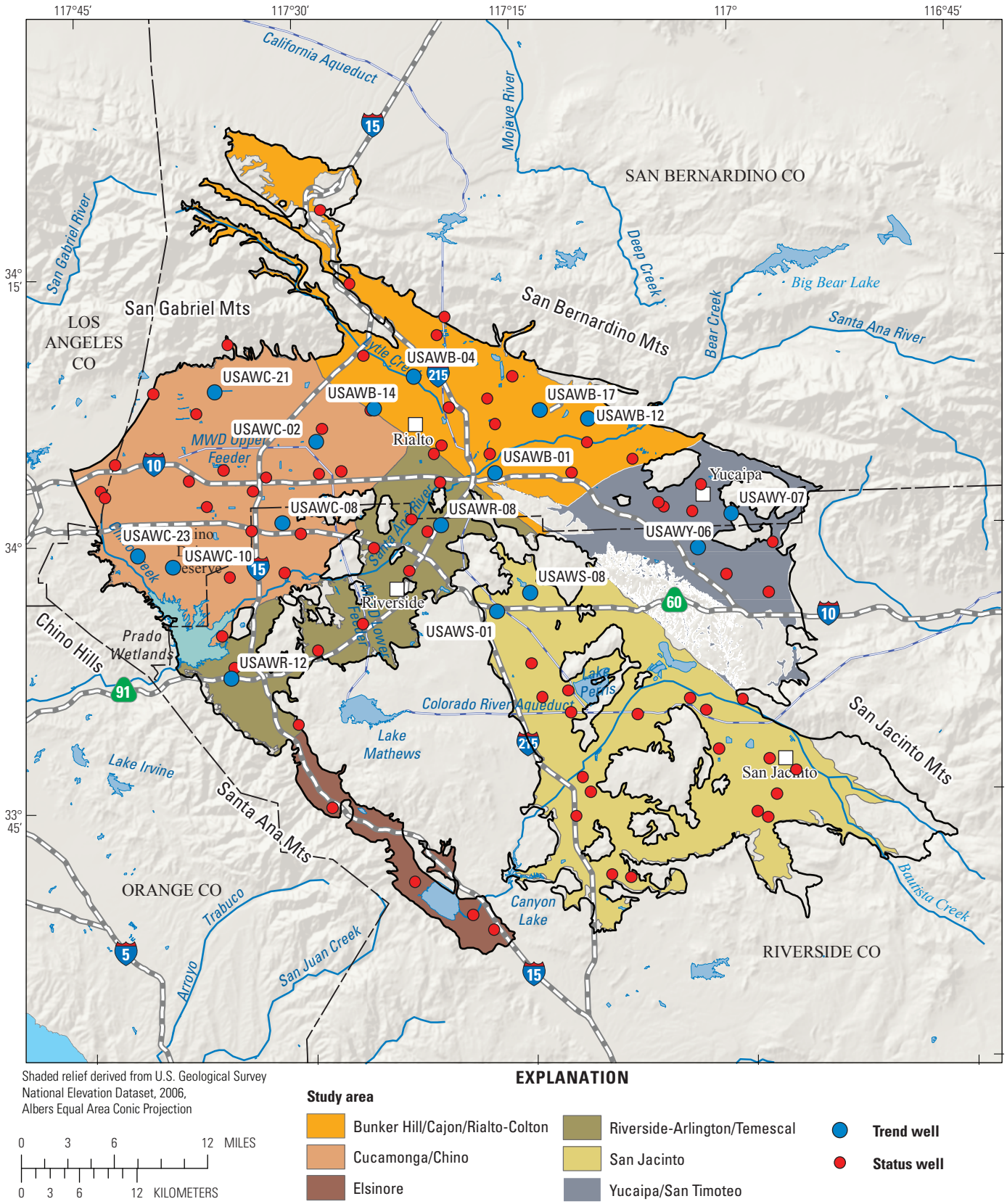


Figure 15. Upper Santa Ana Watershed Groundwater Ambient Monitoring and Assessment (GAMA) study unit with locations of status wells and trend wells.

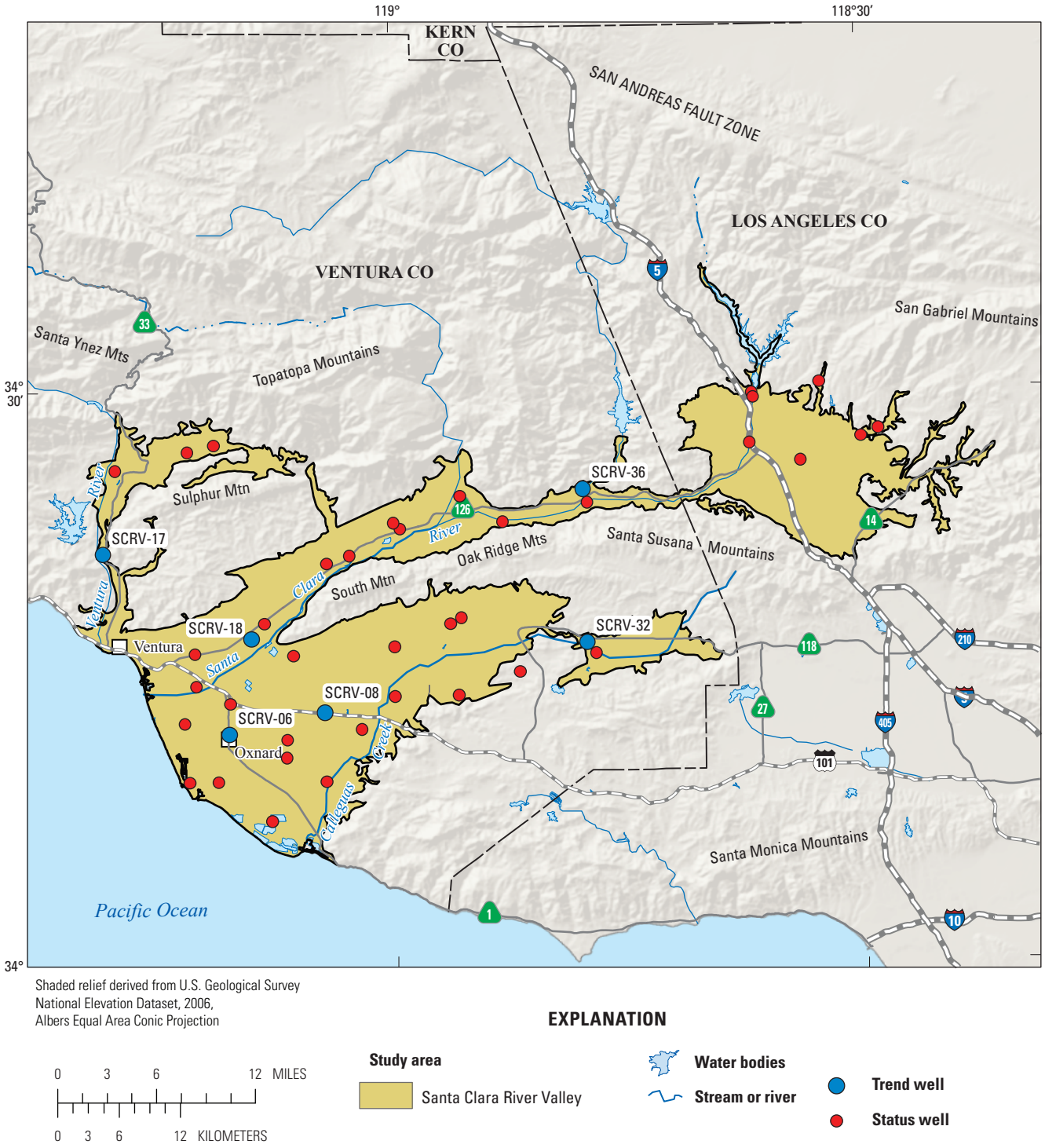


Figure 16. Santa Clara River Valley Groundwater Ambient Monitoring and Assessment (GAMA) study unit with locations of status wells and trend wells.

Methods

Methods used by the GAMA-PBP were selected to achieve the following objectives: (1) to collect groundwater samples that are statistically representative of the primary aquifer system in each study unit, (2) to collect samples in a consistent manner, (3) to analyze samples by using proven and reliable laboratory methods, (4) to assure the quality of the groundwater data, and (5) to maintain data securely and with relevant documentation.

The initial sampling was designed to provide a spatially unbiased assessment of the quality of untreated groundwater used for public water supplies in the 15 study units. Each study area was divided into equal-area grid cells. A total of 842 grid cells were defined in the 31 study areas, and the number of grid cells in each study area ranged from 20 to 107 cells. The CDPH wells in each cell were assigned random ranks, and the highest ranked well that met basic sampling criteria, and for which permission to be sampled could be obtained, was sampled. For cells that had no available CDPH well, an irrigation or a domestic well that had a perforation interval similar to that of CDPH wells in the area was sampled, if available. In each of 714 of the grid cells, 1 well (status wells) was sampled; the remaining cells contained no wells that were appropriate for sampling and accessible.

Ninety-three of the status wells were selected for sampling as part of the trends analysis (trend wells) by randomly ranking the status wells in each study area and then sampling the highest ranked wells. At least 10 percent of the status wells in each study area were sampled for trends, and more than 10 percent were sampled for trends in a few study units for reasons described in the previous section on the study units. Typically, the number of trend wells in each study area was rounded up so that, for example, if a study area had 11 status wells, 2 of these were selected to be trend wells. In addition, for some study units that had not been divided into study areas, groundwater subbasins were treated like separate study areas for the purpose of selecting trend wells so that all of the subbasins were represented in the trend evaluation and the trend wells were spatially distributed. *Table 1* lists the 93 trend wells by study unit and provides the GAMA well identification number, along with the paired sampling dates, land-surface elevation, and construction information (when available) for each well. The GAMA well identification numbers were assigned when the wells were first sampled by the GAMA-PBP.

Well locations were verified by using a global positioning system (GPS; 1:24,000-scale USGS topographic maps; well information in USGS and CDPH databases; and information provided by well owners, drillers' logs, and (or) other sources of construction information. Information updated from that gathered at any well during the initial sampling period was entered in the USGS NWIS database. Well owner, well use, and well location are not published.

Sample Collection and Analysis

Samples were collected by following modified USGS National Field Manual (NFM) (U.S. Geological Survey, variously dated) and modified USGS NAWQA Program (Koterba and others, 1995) sampling protocols. These sampling protocols were followed so that samples representative of groundwater in the aquifer were collected at each site and so that the samples were collected and handled in ways that minimized the potential for contamination. Following these protocols also allows for comparison of data collected by GAMA-PBP throughout California and with other USGS projects in California and the Nation. The methods used for sample collection and analysis are listed in *table A1* and described in the appendix section "*Sample Collection and Analysis*."

Table 2 lists the number of water-quality indicators and chemical constituents, by class, that were sampled and analyzed for from each trend well in the initial sampling and the trend sampling periods. During the trend sampling, most of the trend wells were analyzed for at least 218 core constituents. The core constituents included 7 water-quality indicators (including concentrations of bicarbonate and carbonate estimated from measurements of laboratory alkalinity), 85 VOCs, 81 pesticides and degradates, perchlorate, 5 nutrient species, 34 major ions and trace elements, the 2 stable isotopes of hydrogen and oxygen in water, tritium, and 2 measures of carbon isotopes. Trend samples collected from a few trend wells were analyzed for fewer than the 218 core constituents. Trend samples collected in the Central Eastside San Joaquin Basin study unit were analyzed for only 63 pesticides and pesticide degradates, and samples to be analyzed for pesticides and pesticide degradates collected from 2 trend wells in the Coachella Valley study unit were ruined at the laboratory prior to analysis (*table 2*). Samples from two trend wells in the Middle Sacramento Valley study unit were not analyzed for stable isotopes of hydrogen and oxygen in water (*table 2*). Samples from four trend wells in the Middle Sacramento Valley study unit and two trend wells in the Upper Santa Ana Watershed study unit were not analyzed for carbon isotopes (*table 2*).

Analyses were added to the set of 218 measurements in 5 of the 15 study units. Tungsten, a trace element, was added to trend samples collected in the Western San Joaquin study unit, the Owens and Indian Wells Valleys study unit, the Coastal Los Angeles Basin study unit, and the Upper Santa Ana Watershed study unit. Samples from three trend wells were measured in the field for alkalinity and for concentrations of bicarbonate and carbonate during trend sampling. Analysis for *N*-nitrosodimethylamine (NDMA) was added to trend samples collected in the Coastal Los Angeles Basin study unit. Finally, analyses for 57 polar pesticides and caffeine were added to samples collected in the Middle Sacramento Valley study unit and the Upper Santa Ana Watershed study unit. Of these polar pesticides, 6 overlapped with the analyses of 81 pesticides and pesticide degradates mentioned previously.

Tables 3A–H list the constituents in each constituent class by name and other identifiers, their primary use or source (for organic and special interest constituents), and their minimum and maximum reporting levels and benchmark levels. For the organic constituents and constituents of special interest, *tables 3A–E* also indicate whether or not each constituent was detected during the initial sampling or the later trend sampling of these study units and, if so, in which of the study units they were detected. Up to 271 constituents were measured in the trend sampling period between 2009 and 2013, including 7 water-quality indicators (*table 4*); 85 VOCs (*tables 3A–B*); up to 131 pesticides, pesticide degradates, and caffeine (*tables 3C–D*); 3 constituents of special interest (*table 3E*); 5 nutrient species (*table 3F*); 34 or 35 major ions and trace elements (*table 3G*); the 2 stable isotopes of hydrogen and oxygen in water; dissolved tritium; and 2 carbon isotope metrics (*table 3H*).

Three methods were used to analyze for VOCs in this study. The first method included 85 constituents (Schedule 2020, *table 3A*). Of the 85 compounds analyzed by Schedule 2020, in most trend samples, 2 constituents—1,2-dibromo-3-chloropropane (DBCP) and 1,2-Dibromoethane (EDB)—were also analyzed by Schedule 1306, which provided lower detection levels than those provided by Schedule 2020 for these 2 compounds (*table 3B*). Similarly, most trend samples were submitted to one of two non-USGS laboratories for analysis of 1,2,3-trichloropropane (*table 3E*) to obtain a lower detection level than that provided by Schedule 2020.

Two methods were used to analyze for pesticides and pesticide degradates in this study. The first method included a basic set of 63 constituents (Schedule 2003) or an expanded number of compounds (70 for Schedule 2032 and 81 for Schedule 2033), depending on the specific laboratory schedule requested when the sample was submitted to the NWQL (*table 3C*). NWQL Schedules 2003, 2032, and 2033 all use the same analytical method (Zaugg and others, 1995; Sandstrom and others, 2001). The second analytical method for pesticide compounds (NWQL Schedule 2060) included 57 polar pesticides and pesticide degradates and caffeine (*table 3D*). Five of the pesticide compounds on Schedule 2060 were in common with all of the Schedules (2003, 2032, or 2033) of the first method. Two compounds included on Schedule 2060, carbofuran and propiconazole, were also on the two expanded schedules of the first method (Schedules 2032 and 2033), but were not on Schedule 2003. In the case of propiconazole, schedules 2032 and 2033 analyze for both isomers, *cis* and *trans*, whereas schedule 2060 analyzes for propiconazole without resolving the isomers. Initial samples from 9 of the 15 study units were analyzed by using Schedule 2003 (*table 2*). Initial samples from two of the study units (the Middle Sacramento Valley and the Northern Sacramento Valley) were analyzed by using Schedule 2032. Initial samples from the other four study units were analyzed by using Schedule 2033. During trend sampling, samples from all but one study unit were analyzed by using Schedule 2033 (*table 2*). Samples collected from the Central Eastside San Joaquin Basin study unit during trend sampling in 2010 were analyzed by using Schedule 2003.

Analyses for the constituents of special interest—perchlorate, NDMA, and 1,2,3-TCP—were performed by Montgomery Watson Harza Laboratories (MWH) prior to October 2007 and by Weck Laboratories, Inc. (Weck), beginning in October 2007. As a result, the initial samples collected from 8 of the 15 study units (*table 2*) were analyzed for constituents of special interest by MWH. Initial samples from the other seven study units were analyzed for these constituents by Weck. Initial samples collected from the Colorado River study unit were analyzed by both MWH and Weck (*table 2)* as part of an effort to determine the comparability of results from these two laboratories. All samples collected during trend sampling were analyzed for constituents of special interest by Weck. The change in laboratories for the analyses of these constituents was most likely to affect trend evaluations with regard to perchlorate because the minimum reporting levels (MRLs) and sample collection methods for perchlorate were not the same for the two laboratories. MWH performed analyses for perchlorate by using unfiltered samples with an MRL of 0.5 micrograms per liter (µg/L). Some high-salinity samples were diluted for analysis and had an MRL of 1 µg/L. Weck performed analyses for perchlorate by using filtered samples and had an MRL of 0.1 µg/L. Field sample processing and MRLs for NDMA and 1,2,3-TCP were the same for both laboratories.

Fifteen constituents were measured two different ways for some samples for this study (*table A2*), and both results are reported. Eight of these constituents were measured by different methods for at least some samples at the USGS National Water Quality Laboratory (NWQL). Atrazine, deethylatrazine, carbaryl, carbofuran, metalaxyl, propiconazole, and tebuthiuron were analyzed by Schedules 2033 (the analytical method for pesticides and pesticide degradates used for most trend samples) and 2060 (the polar pesticides and pesticide degradates method); 1,2-dibromo-3-chloropropane (DBCP) and 1,2-dibromoethane (EDB) were analyzed by Schedules 2020 and 1306. In addition, 1,2,3-trichloropropane (1,2,3-TCP) was measured by the NWQL and, at lower reporting levels, by Weck Laboratories, Inc., for some samples. Finally, the water-quality indicator measurements of pH, specific conductance, and alkalinity were performed by USGS field personnel on-site as well as by the NWQL as part of all samples analyzed for Schedule 1948 (major and minor ions and trace elements). Concentrations of the major ions carbonate and bicarbonate were also determined from titrations for field measurements of alkalinity. Indirect estimates of carbonate and bicarbonate concentrations were calculated from the laboratory alkalinity and pH values by using the advanced speciation method (*http://or.water.usgs.gov/alk/methods.html*) with $pK_1 = 6.35$, $pK_2 = 10.33$, and $pK_W = 14$.

Quality-Assurance Procedures

The QA procedures used for this study followed the protocols described in the NFM (U.S. Geological Survey, variously dated) and used by the NAWQA Program (Koterba and others, 1995). The QA plan followed by the NWQL, the primary laboratory used to analyze samples for this study, is described by Pirkey and Glodt (1998), and Maloney (2005).

Quality-Control Samples

The QC samples collected during the trend sampling of the GAMA-PBP study units included blanks, replicates, and matrix spikes. The QC samples were collected at one-third (31 of 93) of the trend wells. The QC sample results were used to evaluate potential contamination, as well as bias and variability of the data, that could result from sample collection, processing, storage, transportation, and laboratory analysis. Surrogate spikes were an additional type of QC, and these were added to all of the groundwater and blank samples collected for analyses of organic compounds. The QC results are described in the appendix section titled "Quality-Control Methods and Results" and are summarized in appendix *tables A3–A6*.

On the basis of detections in laboratory and field blanks by GAMA-PBP study units, including the 15 study units covered in this report, reporting levels for 6 VOCs (*tables 3A*, *5*) and 14 inorganic constituents (*tables 3F*, *10*) were adjusted for this report by using methods described by Olsen and others (2010), Fram and others (2012), and Davis and others (2014). The adjusted reporting levels are referred to as "study reporting levels" (SRLs). Also, detections of acetone, ethyl methyl ketone, and tetrahydrofuran were determined to be unreliable on the basis of their frequency of occurrence in field blanks, likely because of their use in well construction and other materials in the sampling environment (Fram and others, 2012); therefore, only nondetections are reported. Had there been detections of these compounds in samples collected from the trend wells, these results would have been reported as "not analyzed" because reliable analysis was not possible for these constituents.

Comparison Benchmarks

Concentrations of constituents detected in groundwater samples were compared with the EPA and CDPH regulatory and non-regulatory drinking-water health-based benchmarks and benchmarks established for aesthetic purposes (U.S. Environmental Protection Agency, 2006, 2013; California Department of Public Health, 2008a, b). The chemical data presented in this report are meant to characterize the quality of the untreated groundwater in samples from the trend wells and are not intended to represent the treated drinking water delivered to consumers by water purveyors. The chemical composition of treated drinking water can differ from untreated groundwater because treated drinking water may be subjected to disinfection, filtration, mixing with other waters, and (or) exposure to the atmosphere prior to its delivery to consumers. Comparisons of untreated groundwater to benchmarks are used for illustrative purposes only and are not indicative of compliance or non-compliance with drinking-water regulations. The following benchmarks were used for comparisons:

- **MCL—Maximum Contaminant Level:** Legally enforceable standards that apply to public-water systems and are designed to protect public health by limiting the levels of contaminants in drinking water. The MCLs established by the EPA are the minimum standards with which states are required to comply, although individual states may choose to set more stringent standards. The CDPH has established MCLs for additional constituents not regulated by the EPA and also has lowered the benchmark concentrations for a number of constituents with MCLs established by the EPA. In this report, a benchmark set by the EPA and adopted by the CDPH is labeled "MCL-US," and a benchmark set by CDPH that is more stringent than the MCL-US is labeled "MCL-CA." Well owners are notified when constituents are detected at concentrations greater than the MCL-US or the MCL-CA benchmark in samples collected for the GAMA-PBP, but these detections do not constitute violations of CDPH regulations.

- **AL—Action Level:** Legally enforceable standards that apply to public-water systems and are designed to protect public health by limiting the levels of copper and lead in drinking water. Detections of copper or lead greater than the action-level benchmarks in tap water from public supplies can trigger requirements for mandatory water treatment to reduce the corrosiveness of water to water pipes. The action levels established by the EPA and CDPH are the same; thus, the benchmarks are labeled "AL-US" in this report.

- **SMCL—Secondary Maximum Contaminant Level:** Non-enforceable standards applied to constituents that affect the aesthetic qualities of drinking water, such as taste, odor, and color, or the technical qualities of drinking water, such as scaling and staining. The EPA and CDPH both define SMCLs, but unlike MCLs, SMCLs established by the CDPH are not required to be as stringent as those established by the EPA. The SMCLs established by the CDPH are used in this report (SMCL-CA) for all constituents that have SMCL-CA values. The SMCL-US is used for pH because no SMCL-CA has been defined.

- **NL—Notification Level:** Health-based notification levels established by CDPH (NL-CA) for some of the constituents in drinking water that lack MCLs. If a constituent is detected at concentrations greater than its NL-CA, California state law requires timely notification of local governing bodies and recommends consumer notification.
- **HAL—Lifetime Health Advisory Level:** The maximum concentration of a constituent at which its presence in drinking water is not expected to cause any adverse carcinogenic effects for a lifetime of exposure. The HALs are established by the EPA (HAL-US) and are calculated assuming consumption of 2 liters (2.1 quarts) of water a day during a 70-year lifetime by a 70-kilogram (154-pound) adult and that 20 percent of a person's exposure comes from drinking water.
- **RSD5—Risk-Specific Dose:** The concentration of a constituent in drinking water corresponding to an excess estimated lifetime cancer risk of 1 in 100,000 (or 10^{-5}). An RSD5 is an abbreviation for "risk-specific dose" at a risk level of 10^{-5}. An RSD5 is calculated by dividing the 10^{-4} cancer-risk concentration established by the EPA by 10 (RSD5-US).

For constituents with regulatory benchmarks (MCLs or ALs), detections in groundwater samples were compared to the MCL-US, MCL-CA, or AL-US. Constituents with SMCLs were compared to the SMCL-CA. For chloride, sulfate, specific conductance, and total dissolved solids (TDS), the CDPH defines a "recommended" and an "upper" SMCL-CA; detections of these constituents in groundwater samples were compared to both levels. The SMCLs-US for these constituents are equivalent to the recommended SMCLs-CA. Detected concentrations of constituents without an MCL or SMCL were compared to the NL-CA. For constituents without an MCL, SMCL, or NL-CA, detected concentrations were compared to the HAL-US. For constituents without an MCL, SMCL, NL-CA, or HAL-US, detected concentrations were compared to the RSD5-US. Note that using this hierarchy to select the comparison benchmark for a constituent with more than one type of established benchmark does not necessarily result in selection of the benchmark with the lowest concentration. For example, for zinc, the SMCL-CA is 5,000 µg/L, and the HAL-US is 2,000 µg/L, but the comparison benchmark selected by this hierarchy is the SMCL-CA. The comparison benchmarks used in this report are listed in *tables 3A–H* for all constituents and in *tables 4–11* for constituents detected in groundwater samples collected for this trends study. Not all constituents analyzed have established benchmarks. Detections of constituents at concentrations greater than the selected comparison benchmark are marked with asterisk (*) in *tables 4, 5,* and *7–11*.

Water-Quality Results

Results from analyses of groundwater samples from this study are presented in *tables 4–11*. During trend sampling, more than 200 water-quality parameters were measured in samples collected from 93 trend wells, including water-quality indicators measured onsite and at the NWQL (*table 2*). Samples collected during the initial sampling period were analyzed for additional constituents that were not analyzed during trend sampling period and are not presented in this report. Groundwater samples collected from trend wells during the trend sampling period in 2009–13 were analyzed for between 139 and 273 constituents (median 220) (*table 2*). Of the 218 organic constituents that were analyzed in one or more of the study units during trend sampling, 42 were detected in at least one sample from either sample period (*tables 3A−E*). All of the inorganic and isotopic parameters were detected at least once in both sampling periods (*tables 8–11*). *Tables 4−11* present paired results of the samples collected from the 93 trend wells in the 2 sampling periods for constituents that were detected in at least 1 sample. Organic constituents listed in *tables 3A−E* that were not detected in any samples are not included in *tables 5−7*.

Table 4 lists water-quality indicators measured in the field and at the NWQL, and *tables 5−11* present the results of groundwater analyses organized by compound classes:

- Organic constituents.
  - Volatile organic compounds (*table 5*).
  - Pesticides and pesticide degradates (*tables 6A–B*).
- Constituents of special interest (*table 7*).
- Inorganic constituents.
  - Nutrients (*table 8*).
  - Major and minor ions, and total dissolved solids (*table 9*).
  - Trace elements (*table 10*).
- Isotopic tracers (*table 11*).

Water-Quality Indicators

Measurements of dissolved oxygen, water temperature, pH, specific conductance, and alkalinity and associated parameters (bicarbonate and carbonate concentrations) are presented in *table 4*. Dissolved oxygen, alkalinity, bicarbonate, and carbonate concentrations are used as indicators of natural processes that affect water chemistry. The pH value indicates the acidity of the water. Specific conductance is the measure of electrical conductivity of the water and is proportional to the amount of dissolved solids in the water.

The specific conductance of all samples was measured in the field (*table 4*). Specific conductance was also measured for most of the samples by the NWQL as part of Schedule 1948. In all cases where specific conductance was measured both in the field and by the laboratory, the field and laboratory measurements were comparable, with relative standard deviations (RSDs) less than 2 percent.

During the trend sampling period in 2009–13, samples from 25 wells had specific conductance values greater than the recommended SMCL-CA of 900 microsiemens per centimeter at 25 degrees Celsius (µS/cm at 25 °C), and all but 4 study units had at least 1 well where the specific conductance measured in its sample was greater than this benchmark (*table 4*). In addition, samples from one well in each of three study units—the Western San Joaquin Valley study unit, the Colorado River study unit, and the Mojave study unit—and samples from two wells in the Santa Clara River Valley study unit had specific conductance values greater than the upper SMCL-CA of 1,600 µS/cm at 25 °C. Samples from all but two of the wells that had specific conductance values above the recommended SMCL-CA of 900 µS/cm in the 2009–13 trend sampling period also had specific conductance values greater than the recommended benchmark during the initial sampling in 2006–10. Specific conductance in the sample from a well in the Coastal Los Angeles Basin study unit (CLABOC-13), measured at 794 µS/cm in 2006, had increased to 1,020 µS/cm in 2010. Samples from five other wells also showed substantial increases (change of at least 20 percent) in specific conductance between the two sampling periods: KERN-21 (from 1,300 to 1590 µS/cm), OIW-07 (from 491 to 851 µS/cm), CLABWB-03 (from 1,130 to 1,550 µS/cm), SCRV-17 (from 1,010 to 1,300 µS/cm), and SCRV-36 (from 1,040 to 1,370 µS/cm). Water from one well, ANT-20, showed a substantial decrease in specific conductance between the two sampling periods; it was measured at 619 µS/cm in 2008 and at 393 µS/cm in 2012. Specific conductance measured in water samples collected from the other 86 trend wells differed little between the two sampling periods (*table 4*).

The pH of all samples collected during 2009–13 was measured in the field and by the NWQL as part of Schedule 1948 (*table 4*). During the initial sampling in 2006–10, the pH of 78 samples was measured in the field, and the pH of 52 of these samples also was measured by the NWQL. With few exceptions, the pH values were similar in both sampling periods and within the SMCL-US acceptable range (greater than 6.5 and less than 8.5) (*table 4*). Values of pH greater than 8.5 were measured in samples from seven wells, four of which were in the Mojave study unit. In most cases where pH was measured in the field and by the NWQL, the field and laboratory measurements were comparable. Field and laboratory measurements of pH differed by more than one-half of a standard pH unit for only 7 of 145 samples collected in both sampling periods (*table 4*).

Organic Constituents

Organic constituents typically are chemicals that enter water through human activities. The two broad categories of organic constituents discussed in this report are volatile organic compounds and pesticides (including pesticide degradates). VOCs can be present in paints, solvents, fuels, fuel additives, refrigerants, fumigants, and disinfected water and are characterized by their tendency to evaporate. VOCs generally persist longer in groundwater than in surface water because groundwater is isolated from the atmosphere. Pesticides are chemicals used to control weeds, insects, fungi, and other pests in agricultural, urban, and suburban settings and include herbicides, insecticides, and fungicides. Pesticide degradates are the products of the environmental transformations of the parent pesticide, and they can have similar properties to the parent pesticide (Andreu and Pico, 2004).

Volatile Organic Compounds

Of the 85 VOCs analyzed by NWQL Schedule 2020, 29 were detected in at least 1 groundwater sample from the trend wells in the initial sampling or trend sampling periods (*table 5*). Nearly all VOC detections were less than the health-based benchmarks, and most were less than one-tenth of the benchmarks. The solvents tetrachloroethene (PCE) and trichloroethene (TCE) were detected at concentrations greater than their respective MCLs in samples from one well (CLABDA-02) in the Coastal Los Angeles Basin (*table 5*). The concentration of PCE in the sample collected from this well in 2006 (13.2 µg/L) was identical to the concentration detected in 2010. In contrast, the concentration of TCE detected in the sample collected from this well in 2006 (24.8 µg/L) was more than double the concentration detected in 2010 (11.8 µg/L).

Three VOCs were detected in samples from more than 10 percent of the trend wells in both sampling periods. These were the trihalomethane (a by-product of drinking-water disinfection), chloroform, and the solvents PCE and TCE. These three compounds are among the most commonly detected VOCs in groundwater nationally (Zogorski and others, 2006). The other 26 VOCs detected in trend well samples were detected in samples from less than 10 percent of the wells in both sampling periods (*table 5*).

In addition to the 29 VOCs considered detected for the purposes of statistical summaries, 7 other VOCs (carbon disulfide, DBCP, diethyl ether, ethylbenzene, toluene, *m* + *p*-xylene, and *o*-xylene) were observed in samples from at least 1 trend well at concentrations less than their long-term method detection levels (LT-MDLs) or SRLs (*table 5*) (see appendix "*Data Reporting*" section). These concentrations are not considered detections for the purposes of statistical summaries in this report because of the reduced confidence at such low levels; however, concentrations less than the LT-MDLs or SRLs are reported in *table 5* for completeness.

Pesticide Compounds

Of the 131 distinct pesticides and pesticide degradates analyzed, 17 were detected in groundwater samples; all detections were at concentrations less than one-fifth of the health-based benchmarks (*tables 6A–B*). Twelve pesticide compounds were detected using Schedule 2003 (or one of its expanded versions—Schedules 2032 or 2033): alachlor, atrazine, deethylatrazine, 3,4-dichloroaniline, *S*-ethyl dipropylthiocarbamate (EPTC), hexazinone, metalaxyl, metolachlor, pendimethalin, prometon, simazine, and tebuthiuron. Seven pesticide compounds were detected using Schedule 2060: atrazine, bentazon, bromacil, deethylatrazine, deisopropylatrazine, diuron, and 2-hydroxy-4-isopropylamino-6-ethylamino-*s*-triazine. Two compounds analyzed in common by the two methods were detected by both: atrazine and deethylatrazine (*tables 6A–B*). Another compound analyzed in common by the two methods—tebuthiuron—was detected only by Schedule 2003/2033.

The herbicides atrazine, simazine, and deethylatrazine (a degradate of atrazine) were detected in samples from more than 10 percent of the trend wells in both sampling periods. These three compounds are among the most commonly detected pesticide compounds in groundwater nationally (Gilliom and others, 2006). Concentrations of the detected pesticide compounds were similar in both the sampling periods (no obvious trends) and, for compounds analyzed by both methods, the detected concentrations for the two methods were generally similar (*tables 6A–B*).

In addition to the 17 pesticide compounds considered detected for the purposes of statistical summaries, 7 other pesticides (bromoxynil, desulfinyl fipronil, dinoseb, diphenamid, imazethapyr, siduron, and thiobencarb) were observed in samples from at least 1 trend well at concentrations less than their LT-MDLs (*table 6A–B*) (see appendix "*Data Reporting*" section). These concentrations are not considered detections for the purposes of statistical summaries in this report because of the reduced confidence at such low levels; however, concentrations less than the LT-MDLs are reported in *tables 6A–B* for completeness.

Constituents of Special Interest

Perchlorate, NDMA, and 1,2,3-TCP were defined as constituents of special interest at the beginning of the GAMA-PBP in 2004 because they began to be detected in groundwater in the late 1990s after advances in analytical methods resulted in lower detection limits and because they were considered to have the potential to adversely affect drinking-water quality in California (California Department of Public Health, 2008b).

Perchlorate was detected at concentrations greater than the MCL-CA of 6 µg/L in samples from two trend wells in the Upper Santa Ana Watershed study unit (*table 7*). Perchlorate concentrations were similar in the initial sample and in the later trend sample collected from the well USAWR-12, and both were greater than the MCL-CA. The perchlorate concentration in the initial sample collected from the well USAWS-08 (6.0 µg/L) was at the MCL-CA of 6 µg/L in 2007. The perchlorate concentration in the trend sample collected at this well in 2009 was 7.9 µg/L (*table 7*).

Samples collected from selected wells in 9 of the 15 study units were analyzed for NDMA in the initial sampling period during 2006–10. During trend sampling in 2009–13, NDMA was only analyzed for samples from the Coastal Los Angeles Basin study unit. NDMA was not detected in any of the samples from either sampling period.

All samples from both sampling periods were analyzed for 1,2,3-TCP as part of NWQL Schedule 2020 with a reporting limit ranging from 0.12 to 0.18 µg/L (*table 3A*), and it was not detected above the LT-MDL in any sample analyzed by this method. Because it is a constituent of special interest, a low-level analysis for 1,2,3-TCP, with a reporting level of 0.005 µg/L, was performed for selected samples from all study units included in this report, except for the Coastal Los Angeles Basin study unit (*tables 2, 7*). Samples from a total of 35 trend wells during the initial sampling, and 61 trend wells during the trend sampling period, were analyzed for low-level concentrations of 1,2,3-TCP. During the initial sampling in 2006–10, 1,2,3-TCP was detected in a sample from one well in the Central Eastside San Joaquin Basin study unit (TRLK-05) and from one well in the Upper Santa Ana Watershed study unit (USAWC-23) (*table 7*). During trend sampling in 2009–13, 1,2,3-TCP was detected in samples from two wells in the Central Eastside San Joaquin Basin study unit (TRLK-05, again, and CE-QPC-02) and from three trend wells sampled in the Kern County Subbasin study unit (*table 7*). Samples collected in the Kern County Subbasin study unit during the initial sampling period in 2006 were not analyzed for 1,2,3-TCP by the low-level method. All detections of 1,2,3-TCP in samples from trend wells were at concentrations less than one-hundredth of the HAL-US of 40 µg/L.

Inorganic Constituents

Unlike the organic constituents and the constituents of special interest, most of the inorganic constituents are naturally present in groundwater, although their concentrations can be influenced by human activities.

Nutrients

Nutrients (nitrogen and phosphorus) present in groundwater can affect biological activity in aquifers and in surface-water bodies that receive groundwater discharge. Inorganic nitrogen can be present in the form of ammonia, nitrite, or nitrate, depending on the oxidation-reduction state of the groundwater. Analyses for nutrients in GAMA-PBP samples include the determination of these forms of nitrogen, as well as total nitrogen (dissolved) and orthophosphate (the most biologically available form of phosphorus). Samples collected from more than half (52 out of 93) of the trend wells

were analyzed for nutrients during initial sampling in 2006–10 (*table 8*). During trend sampling in 2009–13, all trend wells samples were analyzed for nutrients.

All concentrations of ammonia and nitrite measured in samples from the trend wells were less than the health-based benchmarks during both sampling periods (*table 8*). Results for these 2 nitrogen species were similar in samples from the 52 trend wells for the 2 sampling periods; most trend-well sample results for both periods were non-detections for ammonia and nitrite. In contrast, nitrate plus nitrite was detected in samples from most of the trend wells in both periods. In most cases, sample concentrations of nitrate plus nitrite (as nitrogen) consisted nearly entirely of nitrate, so this analysis is referred to as nitrate in this report. Concentrations of nitrate greater than the MCL-US of 10 milligrams per liter as nitrogen (mg/L as N) were detected in samples from six trend wells (*table 8*). Four of these wells are in the Upper Santa Ana Watershed study unit, and nitrate concentrations in samples from three of the four wells were greater than the MCL-US in both sampling periods (a sample from the fourth well was not analyzed for nutrients in the initial sampling period). Another well is in the Kern County Subbasin study unit (KERN-21), and its sample had a nitrate concentration of 11.9 mg/L in the resampling period (the initial sample collected from this well was not analyzed for nutrients). The sixth well is in the Santa Clara River Valley study unit (SCRV-06) and had a nitrate concentration greater than the MCL-US only in the initial sample collected in 2007. That result was 12.9 mg/L as N, compared to only 4.90 mg/L as N measured in the sample collected from this well in 2011 (*table 8*). There were replicate results for both the initial sample and the later trend sample collected from SCRV-06. Replicate sample results for this well were 13.0 mg/L as N in 2007 and 4.91 mg/L as N in 2011, which confirmed the difference in nitrate concentrations between sampling periods.

As with nitrate, orthophosphate was detected in samples from most of the trend wells, and results were similar for the two sampling periods. No Federal or State drinking-water standard, such as an MCL, exists for phosphorus or phosphorus compounds. However, most orthophosphate concentrations in samples from the trend wells were less than 0.1 mg/L as P, a desired goal for total phosphates recommended by the EPA to prevent plant nuisances in streams (Mackenthun, 1973).

Major and Minor Ions, Total Dissolved Solids, and Trace Elements

Benchmarks for major and minor ions, total dissolved solids (TDS), and trace elements in water used for public supply are based on human-health concerns, aesthetic properties (such as taste, color, and odor), or technical properties (such as scaling and staining). The CDPH has established non-health-based secondary benchmarks (SMCL-CAs) based on aesthetic and technical properties for iron, manganese, silver, zinc, chloride, sulfate, and TDS. A health-based MCL-CA has been established for fluoride (a minor ion), and 17 of the 24 trace elements analyzed in this study have health-based benchmarks (MCL-US, MCL-CA, NL-US, AL-US, or HAL-US). More than half (52 out of 93) of the trend wells were sampled for major and minor ions, TDS, and trace elements during the initial sampling period in 2006–10 (*tables 9–10*). During trend sampling in 2009–13, all trend wells were sampled for these constituents. The concentrations of the major and minor ions, silica, and TDS are given in *table 9*. The concentrations of the trace elements are given in *table 10*.

Chloride concentrations greater than the recommended SMCL-CA benchmark of 250 mg/L were detected in samples from four trend wells during trend sampling in 2009–13: two wells in the Colorado River study unit (COLOR-03 and COLOR-17), and one well in each the Antelope Valley (ANT-33) and Coastal Los Angeles Basin (CLABWB-03) study units (*table 9*). Chloride concentrations in samples from the two Colorado River study unit trend wells were also greater than the SMCL-CA during initial sampling in 2007. Samples from the Antelope Valley and Coastal Los Angeles Basin study unit wells that had chloride concentrations greater than the SMCL-CA in the trend sampling period were not sampled for major ions in the initial sampling period.

Sulfate concentrations greater than the recommended SMCL-CA benchmark of 250 mg/L were detected in samples from 14 trend wells during trend sampling in 2009–13: 1 well each in the Kern (KERN-21) and Coachella Valley (COA-16) study units; 2 wells each in the Western San Joaquin Valley (DM-19 and WS-07), Colorado River (COLOR-03 and COLOR-06), and Mojave (MOJO-09 and MOJO-49) study units; and all 6 trend wells in the Santa Clara River Valley study unit (*table 9*). Sulfate concentrations in samples from four of these wells—DM-19, MOJO-49, SCRV-06, and SCRV-32—were greater than the upper SMCL-CA benchmark of 500 mg/L. Of the 13 trend wells that had samples with sulfate concentrations greater than one or both benchmarks in the trend sampling period, 7 were not sampled for major ions in the initial sampling period. Samples from the other seven trend wells that had sulfate concentrations greater than the benchmarks in the trend sampling period also had sulfate concentrations greater than the same (recommended or upper) benchmark in the initial sampling.

Fluoride is the only minor ion with an MCL-CA, and samples from six trend wells had concentrations greater than the MCL-CA of 2 mg/L in the trend sampling period: two wells in the Coachella Valley study unit (COA-12 and COA-16) and one well each in the Kern (KERN-20), Colorado River (COLOR-17); Mojave (MOJO-49); and Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts (LUB-07) study units (*table 9*). Of these wells, five were sampled for major and minor ions in the initial sampling, and the fluoride concentrations of those initial samples were also greater than the MCL-CA. The initial sample collected from KERN-20 was not analyzed for major

and minor ions. It should be noted that the USGS Branch of Quality Systems determined that fluoride results from the USGS National Water Quality Laboratory had a positive analytical bias greater than 10 percent at the time of some of these measurements.

Concentrations of TDS greater than the recommended SMCL-CA benchmark of 500 mg/L were detected in one-third (31) of the 93 trend wells during trend sampling in 2009–13. At least one trend well sample in all study units, except the Middle Sacramento Valley and the Northern Sacramento Valley, had a TDS concentration greater than this benchmark, and samples from all trend wells in the Western San Joaquin Valley, Colorado River, and Santa Clara River Valley study units had TDS concentrations greater than the benchmark. Samples from eight trend wells had TDS concentrations greater than the upper SMCL-CA benchmark of 1,000 mg/L in the trend sampling period: one well each in the Kern County Subbasin, Western San Joaquin Valley, Colorado River, and Mojave study units and four trend wells in the Santa Clara River Valley study unit (*table 9*). Of the 31 trend wells that had samples with TDS concentrations greater than one or both benchmarks in the trend sampling period, 12 were not sampled for TDS in the initial sampling period. Of the 19 trend wells that had been sampled in both sampling periods, 18 had samples with TDS concentrations greater than the respective benchmarks (recommended or upper) in both sampling periods. A sample from one trend well in the Owens and Indian Wells Valleys study unit (OIW-07) had a TDS concentration of 298 mg/L in the initial sampling, which is less than the recommended SMCL-CA benchmark of 500 mg/L, and a TDS concentration of 508 mg/L in the trend sampling period (*table 9*).

Of the 24 trace elements analyzed in this study, 17 have health-based benchmarks (MCL-US, MCL-CA, NL-US, AL-US, and HAL-US). Concentrations of 10 of the 17 trace elements that have health-based benchmarks were less than these health-based benchmarks in samples collected in both sampling periods (*table 10*). Arsenic, boron, lead, molybdenum, strontium, uranium, and vanadium were detected in samples from some trend wells at concentrations greater than their health-based benchmarks.

Arsenic was detected in samples from 12 trend wells at concentrations greater than its MCL-US of 10 µg/L during trend sampling in 2009–13: one well each in the Owens and Indian Wells Valleys (OIW-07); Coachella Valley (COA-12); Antelope Valley (ANT-33); Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts (LUB-11); and Upper Santa Ana Watershed (USAWC-10) study units; two wells each in the Kern County Subbasin (KERN-02, KERN-20) and Central Eastside San Joaquin Basin (MER-11, TRLK-03) study units; and three wells in the Mojave (MOJO-09, MOJO-48, MOJO-49) study unit (*table 10*). Arsenic concentrations in the initial samples collected from five of these wells were also greater than the MCL-US. The arsenic concentration in the initial sample collected from OIW-07 was less than the MCL-US. Initial samples collected from the other six wells were not analyzed for trace elements.

Boron was detected in samples from six trend wells at concentrations greater than its NL-CA of 1,000 µg/L during trend sampling in 2009–13: three wells in the Western San Joaquin Valley (DM-12, DM-19, WS-07) study unit and one well each in the Owens and Indian Wells Valleys (OIW-07), Antelope Valley (ANT-33), and Mojave (MOJO-49) study units (*table 10*). Boron concentrations in the initial samples collected from four of these wells were also greater than the NL-CA. The boron concentration in the initial sample collected from OIW-07 was less than the NL-CA. The initial sample collected from ANT-33 was not analyzed for trace elements.

Lead was detected in one sample from a trend well (TRLK-03 in the Central Eastside San Joaquin Basin study unit) at a concentration (56.8 µg/L) greater than its AL-US of 15 µg/L in the initial sampling during 2006 (*table 10*). The concentration measured in a replicate sample collected from this well at the same time, however, was 21.4 µg/L—less than half the primary sample result. The result of a re-analysis requested for the primary sample was 58.6 µg/L. No reanalysis was requested for the replicate sample. The lead concentration measured in the sample from this well during trend sampling in 2010 was less than the SRL of 0.82 µg/L, and no sample collected from any trend well during trend sampling in 2009–13 had a lead concentration greater than the AL-US.

Molybdenum was detected in samples from five trend wells at concentrations greater than its HAL-US of 40 µg/L during trend sampling in 2009–13: one well each in the Kern County Subbasin (KERN-20); Western San Joaquin Valley (DM-19); Coachella Valley (COA-16); Mojave (MOJO-49); and Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts (LUB-07) study units (*table 10*). Molybdenum concentrations in the initial samples collected from four of these wells were also greater than the HAL-US. The initial sample collected from KERN-20 was not analyzed for trace elements.

Strontium was detected in one sample from a trend well (MOJO-49 in the Mojave study unit) at a concentration (8,640 µg/L) greater than the HAL-US of 4,000 µg/L during trend sampling in 2011 (*table 10*). The strontium concentration measured in the initial sample from this well in 2008 (8,210 µg/L) was also greater than the HAL-US.

Uranium was detected in samples from two trend wells at concentrations greater than the MCL-US of 30 µg/L during trend sampling. For one of these wells (OV-29), the uranium concentration measured in the initial sample was also greater than the MCL-US. The uranium concentration measured in the initial sample from the other well (MADCHOW-28) was less than the MCL-US.

Vanadium was detected in one sample from a trend well (TRLK-05 in the Central Eastside San Joaquin Basin study unit) at a concentration (50.1 µg/L) slightly greater than its NL-CA of 50 µg/L during initial sampling in 2006 (*table 10*). The vanadium concentration in the sample from this well

during trend sampling in 2010 (49.3 µg/L) was slightly less than the NL-CA, and no sample collected from any trend well during trend sampling in 2009–13 had a vanadium concentration greater than the NL-CA.

Four trace elements analyzed in this study—iron, manganese, silver, and zinc—have SMCLs, benchmarks established for aesthetic concerns (taste and odor). Of these four trace elements with SMCLs, only manganese was detected in samples from trend wells at concentrations greater than its SMCL (*table 10*). Manganese was detected in 10 trend wells at concentrations greater than its SMCL of 50 µg/L either in the initial sampling during 2006–10, the trend sampling during 2009–13, or both sampling periods: 1 well each in the Kern County Subbasin (KERN-21), Northern Sacramento Valley (RED-12), and Western San Joaquin Valley (WS-07) study units; 2 wells each in the Colorado River (COLOR-03, COLOR-06) and Coastal Los Angeles Basin (CLABCB-12, CLABWB-03) study units; and 3 wells in the Santa Clara River Valley study unit (SCRV-06, SCRV-18, SCRV-32). Samples collected from 9 of these 10 trend wells had manganese concentrations greater than the SMCL in the resampling period. The initial sample collected from WS-07 had a manganese concentration (60 µg/L) greater than the SMCL. During trend sampling, however, the manganese concentration in a sample from this well (43 µg/L) was less than the SMCL. Manganese concentrations measured in the initial samples collected from RED-12, COLOR-03, and COLOR-06 were greater than the SMCL. Initial samples collected from the other five trend wells that had manganese concentrations greater than the SMCL in the trend sampling period were not analyzed for trace elements.

Isotopic Tracers

The isotopic ratios of oxygen and hydrogen in water, as well as tritium and carbon-14 activities, can be used as tracers of hydrologic processes. The isotopic ratios of hydrogen and oxygen in water (δ^2H and $\delta^{18}O$) help to deduce the sources of groundwater recharge. These stable isotopic ratios reflect the altitude, latitude, and temperature of precipitation as well as the extent of evaporation of the water in surface-water bodies or soils prior to infiltration into the aquifer. The isotopic ratios of hydrogen and oxygen in water were measured in samples from all trend wells in both sampling periods (except for two wells in the Middle Sacramento Valley study unit during trend sampling), and these ratios changed little between sampling periods (*table 11*).

Tritium and carbon-14 activities also provide information about the age (time since recharge) of the groundwater. Tritium is a short-lived radioactive isotope of hydrogen that is incorporated into the water molecule. Low levels of tritium are continuously produced by interaction of cosmic radiation with the Earth's atmosphere, and a large amount of tritium was produced as a result of atmospheric testing of nuclear weapons between 1952 and 1963. Thus, concentrations of tritium above background generally indicate the presence of water recharged since the early 1950s. During initial sampling in 2006–10, all the samples from 11 of the 15 study units were analyzed for tritium. Selected samples from the Central Eastside San Joaquin Basin and the Upper Santa Ana Watershed study units were analyzed for tritium. No initial samples from the Kern County Subbasin and Coastal Los Angeles Basin study units were analyzed for tritium (*tables 2, 11*). Tritium analyses were performed by the USGS Stable Isotope and Tritium Laboratory, Menlo Park, California. During trend sampling in 2009–13, all the trend samples were submitted for tritium analysis.

Of the isotopic tracers analyzed for this study, tritium is the only one with a health-based benchmark—an MCL-CA of 20,000 picocuries per liter (pCi/L). All tritium activities measured in samples from trend wells during both sampling periods were about (or less than) one-thousandth of this benchmark (*table 11*). For trend wells that had samples analyzed for tritium in both sampling periods, the tritium values were similar and typically showed slight decreases between the periods, with a few exceptions. Tritium activities decreased the most in samples from three trend wells (WSAC-32, MADCHOW-28, OV-24) and more than doubled in two trend wells (ESAC-01, MADCHOW-24) (*table 11*). Five trend wells, for which tritium was not detected in the initial samples, did have low-level detections in samples from the trend sampling period (ESAC-19, WSAC-19, COA-15, ANT-24, and SCRV-08), and one well for which tritium was detected in the initial sample did not have a detection of tritium in the sample from the trend sampling period. Tritum nondetections in the initial samples could be due to the laboratory's use of a less sensitive reporting method during the initial sampling than during the trend sampling period. The USGS Stable Isotope and Tritium Laboratory used the minimum reporting level method until August 2007 and used the more sensitive sample-specific critical level (ssL_C) reporting method after that.

Carbon-14 is a radioactive isotope of carbon. Low levels of carbon-14 are continuously produced by interaction of cosmic radiation with the Earth's atmosphere and are incorporated into atmospheric carbon dioxide. Carbon dioxide dissolves in precipitation, surface water, and groundwater exposed to the atmosphere, thereby entering the hydrologic cycle. Because carbon-14 decays with a half-life of approximately 5,700 years, low activities of carbon-14 relative to modern values generally indicate presence of groundwater that is several thousand years old. Forty-nine trend wells were sampled for carbon-14 during initial sampling in 2006−2010. Eighty-six trend wells were sampled for carbon-14 during trend sampling in 2009−2013 (*tables 2, 11*). For most trend wells that had samples analyzed for carbon-14 in both sampling periods, values were similar in both periods. However, samples from three trend wells showed great differences in values of percent modern carbon (pmc) for the two sampling periods. Percent modern carbon values measured in samples collected from two trend wells in

the Coachella Valley study unit (COA-15 and COA-16) during trend sampling in 2011 were notably less (at 71 and 13 pmc, respectively) than those from the initial samples collected from these wells in 2007 (105 and 70 pmc, respectively). In contrast, the value of 94 pmc measured in the sample collected from a trend well in the Madera–Chowchilla study unit (MADCHOW-24) during trend sampling in 2011 was much greater than the value of 54 pmc measured in the initial sample collected from this well in 2008 (*table 11*).

Future Work

A data report similar to this one and its predecessor (Kent and others, 2014) is planned to present data from the initial sampling and trend sampling periods for evaluations of temporal trends in the remaining 13 GAMA-PBP study units not included in the first 2 data reports on temporal trends. Reports subsequent to these data reports on temporal trends will focus on an assessment of the data presented in this report and the other data reports on temporal trends by using a variety of statistical, qualitative, and quantitative approaches to evaluate the natural and human factors affecting temporal changes in groundwater quality. Water-quality data maintained in the CDPH and USGS databases, and water-quality data available from other State and local water agencies, will be compiled, evaluated, and used in combination with the data that are presented in the data reports on temporal trends. The results of these efforts will be presented in one or more subsequent reports.

Summary

Data from 93 wells sampled during 2 sampling periods (2006–10 and 2009–13) in 15 study units are presented in this report as part of an assessment of temporal trends in groundwater quality by the California State Water Resources Control Board (SWRCB) Groundwater Ambient Monitoring and Assessment (GAMA) Program's Priority Basin Project (PBP). The GAMA Program was created to provide a comprehensive baseline of groundwater quality in the State and to evaluate changes over time (trends) in this groundwater quality. The GAMA-PBP was created as a result of the Groundwater Quality Monitoring Act of 2001 (Sections 10780–10782.3 of the California Water Code, Assembly Bill 599) to assess and monitor the quality of groundwater. The GAMA-PBP is being conducted by the USGS in cooperation with the SWRCB and Lawrence Livermore National Laboratory.

The GAMA-PBP was designed to provide a spatially unbiased assessment of untreated-groundwater quality in the primary aquifer systems and to facilitate statistically consistent comparisons of untreated-groundwater quality throughout California. The primary aquifer systems are defined as parts of aquifers corresponding to the perforation intervals of wells listed in the California Department of Public Health (CDPH) database for each study unit. The quality of groundwater in shallow or deep water-bearing zones can differ from that in the primary aquifer systems; shallow groundwater can be more vulnerable to surficial contamination.

This study did not attempt to evaluate the quality of water delivered to consumers; after withdrawal from the ground, water typically is treated, disinfected, and blended with other waters to achieve acceptable water quality. The benchmarks used in this report apply to treated water that is served to the consumer, not to untreated groundwater. However, to provide a context for the results, concentrations of constituents measured in these groundwater samples were compared to benchmarks established by the U.S. Environmental Protection Agency and the CDPH.

During the initial sampling period (2006−10) for the 15 study units discussed in this report, 730 wells were selected by using a randomized grid approach to obtain a statistically unbiased representation of groundwater used for public drinking-water supplies (status wells). Ninety-three of these status wells (approximately 10 percent in each of the 15 study units) were sampled again during 2009−13 to assess temporal trends. The study units, the number of status wells in the initial sampling, and the number of these wells that were sampled again for trends in each study unit were as follows: the Kern County Subbasin had 47 status wells, of which 5 were trend wells; the Central Eastside San Joaquin Basin had 58 status wells, of which 6 were trend wells; the Middle Sacramento Valley had 71 status wells, of which 8 were trend wells; the Northern Sacramento Valley had 43 status wells, of which 4 were trend wells; the Madera–Chowchilla had 30 status wells, of which 4 were trend wells; the Western San Joaquin Valley had 39 status wells, of which 4 were trend wells; the Owens and Indian Wells Valleys had 53 status wells, of which 6 were trend wells; the Coachella Valley had 19 status wells, of which 4 were trend wells; the Colorado River had 20 status wells, of which 3 were trend wells; the Antelope Valley had 56 status wells, of which 6 were trend wells; the Mojave had 52 status wells, of which 7 were trend wells; the Borrego Valley, Central Desert and Low-Use Basins of the Mojave and Sonoran Deserts had 49 status wells, of which 6 were trend wells; the Coastal Los Angeles Basin had 61 status wells, of which 8 were trend wells; the Upper Santa Ana Watershed had 90 status wells, of which 16 were trend wells; and the Santa Clara River Valley had 42 status wells, of which 6 were trend wells.

Groundwater samples were analyzed for water-quality indicators, organic constituents, constituents of special interest, inorganic constituents, and isotopic tracers. Use of 2 different methods of analysis for 14 of the constituents resulted in up to 271 measurements for each sample. This report describes the sampling, analytical, and quality-assurance methods used in the study and presents the results of the chemical analyses from the initial sampling and trend sampling periods in the primary aquifer systems.

At least one type of quality-control sample (blank, replicate, or matrix spike) was collected at more than 30 percent of the wells during trend sampling, and the results for these samples were used to evaluate the quality of the data for the groundwater samples. Blanks rarely contained detectable concentrations of any constituent. Replicate samples generally were within the acceptable limits of variability, and median matrix-spike recoveries were within the acceptable range for most compounds.

There were 29 volatile organic compounds (VOCs) and 17 pesticide compounds detected in samples from the trend wells. All pesticide detections and nearly all VOC detections were at concentrations less than health-based benchmarks. The VOCs detected at concentrations greater than health-based benchmarks were the solvents tetrachloroethene (PCE) and trichloroethene (TCE). The VOCs that were detected in samples from more than 10 percent of the trend wells in both sampling periods were chloroform, PCE, and TCE. The pesticide compounds that were detected in samples from more than 10 percent of the trend wells in both sampling periods were atrazine, deethylatrazine, and simazine.

Perchlorate, *N*-nitrosodimethylamine (NDMA), and 1,2,3-trichloropropane (1,2,3-TCP) are constituents of special interest in California. Perchlorate was detected at concentrations greater than health-based benchmarks in samples collected from two trend wells in the Upper Santa Ana Watershed study unit during the trend sampling period in 2009 and in the initial sample collected in 2007. NDMA was not detected in either sampling period. In a few samples submitted for low-level analysis in both sampling periods, 1,2,3-TCP was detected at concentrations less than one-hundredth of the U.S. Environmental Protection Agency lifetime health advisory level (HAL-US).

Nitrate concentrations were greater than the health-based benchmark in samples from four trend wells in the Upper Santa Ana Watershed study unit, and these concentrations generally were similar in both sampling periods. A nitrate concentration greater than the U.S. Environmental Protection Agency maximum contaminant level (MCL-US) was also detected in the trend sample collected from a well in the Kern County Subbasin Study Unit (no sample was collected in the initial sampling period). A nitrate concentration greater than the MCL-US was detected in the initial sample collected from a well in the Santa Clara River Valley study unit, but the nitrate concentration in the trend sample collected from this well was less than the MCL-US. Arsenic, boron, fluoride, molybdenum, strontium, and uranium were detected in samples from some trend wells at concentrations greater than their health-based benchmarks in both sampling periods. Lead and vanadium were detected in a sample from one well each at concentrations greater than their respective health-based benchmarks during the initial sampling period only. Total dissolved solids, chloride, sulfate, and manganese were detected at concentrations greater than secondary maximum contaminant levels (SMCL-CAs) (non-health-based benchmarks set for aesthetic concerns) in samples from a few wells in both sampling periods. Subsequent reports will present analyses of the data presented in this report by using a variety of statistical, qualitative, and quantitative approaches to assess the natural and human factors affecting changes in groundwater quality.

References Cited

Andreu, V. and Pico, Y., 2004, Determination of pesticides and their degradation products in soil: critical review and comparison of methods: Trends in Analytical Chemistry, v. 23, no. 10–11, p. 772–789., accessed December 6, 2013, at *http://dx.doi.org/10.1016/j.trac.2004.07.008*.

Belitz, Kenneth, Dubrovsky, N.M., Burow, Karen, Jurgens, Bryant, and Johnson, Tyler, 2003, Framework for a ground-water quality monitoring and assessment program for California: U.S. Geological Survey Water-Resources Investigations Report 03–4166, 78 p., *http://pubs.er.usgs.gov/publication/wri034166*.

Bennett, G.L., V, Fram, M.S., and Belitz, Kenneth, 2011, Status of groundwater quality in the Southern, Middle, and Northern Sacramento Valley study units, 2005–08, California GAMA Priority Basin Project: U.S. Geological Survey Scientific Investigations Report 2011–5002, 119 p., *http://pubs.er.usgs.gov/publication/sir20115002*.

Bennett, P.A., Bennett, G.L., V, Belitz, Kenneth, 2009, Groundwater quality data for the Northern Sacramento Valley, 2007, Results from the California GAMA program: U.S. Geological Survey Data Series 452, 91 p., *http://pubs.er.usgs.gov/publication/ds452*.

Burton, C.A., Montrella, Joseph, Landon, M.K., and Belitz, Kenneth, 2011, Status and understanding of groundwater quality in the Santa Clara River Valley, 2007, California GAMA Priority Basin Project: U.S. Geological Survey Scientific Investigations Report 2011–5052, 86 p., *http://pubs.er.usgs.gov/publication/sir20115052*.

Burton, C.A., Shelton, J.L., and Belitz, Kenneth, 2012, Status and understanding of groundwater quality in two southern San Joaquin Valley study units, 2005–2006, California GAMA Priority Basin Project: U.S. Geological Survey Scientific Investigations Report 2011–5218, 149 p., *http://pubs.er.usgs.gov/publication/sir20115218*.

California Department of Public Health, 2008a, California drinking water-related laws, Drinking water-related regulations (Title 22). Program transferred to the State Water Resources Control Board in July 2014, accessed August 17, 2015, at *http://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/Lawbook.shtml*.

California Department of Public Health, 2008b, Drinking water notification levels: Notification levels. Program transferred to the State Water Resources Control Board in July 2014, accessed August 17, 2015, at *http://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/NotificationLevels.shtml*.

California Department of Water Resources, 2003, California's groundwater: California Department of Water Resources Bulletin 118, 246 p., accessed August 17, 2015, at *http://www.water.ca.gov/groundwater/bulletin118/update_2003.cfm*.

California State Water Resources Control Board, 2003, Report to the Governor and Legislature, A comprehensive groundwater quality monitoring program for California: Assembly Bill 599 March 2003, 100 p., accessed November 4, 2013, at *http://www.waterboards.ca.gov/gama/docs/final_ab_599_rpt_to_legis_7_31_03.pdf*.

California State Water Resources Control Board, 2009, Geotracker GAMA: State Water Resources Control Board database, accessed December 13, 2013, at *https://geotracker.waterboards.ca.gov/gama/*.

California State Water Resources Control Board, 2013, GAMA—Groundwater Ambient Monitoring and Assessment Program: State Water Resources Control Board website, accessed November 4, 2013, at *http://www.waterboards.ca.gov/water_issues/programs/gama/*.

Davis, T.A., Olsen, L.D., Fram, M.S., and Belitz, Kenneth, 2014, Updated study reporting levels (SRLs) for trace-element data collected for the California Groundwater Ambient Monitoring and Assessment (GAMA) Priority Basin Project, October 2009–March 2013: U.S. Geological Survey Scientific Investigations Report 2014–5105, 52 p., *http://dx.doi.org/10.3133/sir20145105*.

Dawson, B.J.M., and Belitz, Kenneth, 2012, Status of groundwater quality in the California Desert Region, 2006–2008, California GAMA Priority Basin Project: U.S. Geological Survey Scientific Investigations Report 2012–5040, 110 p., *http://pubs.usgs.gov/sir/2012/5040/pdf/sir20125040.pdf*.

Delzer, G.C. and Hamilton, P.A., 2007, National Water-Quality Assessment Program—Source Water-Quality Assessments: U.S. Geological Survey Fact Sheet 2007–3069, 2 p., *http://pubs.er.usgs.gov/publication/fs20073069*.

Densmore, J.N., Fram, M.S., and Belitz, Kenneth, 2009, Ground-water quality data in the Owens and Indian Wells Valleys study unit, 2006, Results from the California GAMA program: U.S. Geological Survey Data Series 427, 86 p., *http://pubs.er.usgs.gov/publication/ds427*.

Fram, M.S., Olsen, L.D., and Belitz, Kenneth, 2012, Evaluation of volatile organic compound (VOC) blank data and application of study reporting levels to groundwater data collected for the California GAMA Priority Basin Project, May 2004 through September 2010: U.S. Geological Survey Scientific Investigations Report 2012–5139, 94 p., *http://pubs.er.usgs.gov/publication/sir20125139*.

Gilliom, R.J., Barbash, J.E., Crawford, C.G., Hamilton, P.A., Martin, J.D., Nakagaki, Naomi, Nowell, L.H., Scott, J.C., Stackelberg, P.E., Thelin, G.P., and Wolock, D.M., 2006, The quality of our nation's waters, Pesticides in the nation's streams and ground water, 1992–2001: U.S. Geological Survey Circular 1291, 172 p., *http://pubs.er.usgs.gov/publication/cir1291*.

Goldrath, D.A., Wright, M.T., and Belitz, Kenneth, 2009, Ground-water quality data in the Coachella Valley study unit, 2007, Results from the California GAMA Program: U.S. Geological Survey Data Series 373, 70 p., *http://pubs.er.usgs.gov/publication/ds373*.

Goldrath, D.A., Wright, M.T., and Belitz, Kenneth, 2010, Groundwater-quality data in the Colorado River study unit, 2007, Results from the California GAMA program: U.S. Geological Survey Data Series 474, 66 p., *http://pubs.er.usgs.gov/publication/ds474*.

Goldrath, Dara, Fram, M.S., Land, Michael, and Belitz, Kenneth, 2012, Status of groundwater quality in the Coastal Los Angeles Basin, 2006, California GAMA Priority Basin Project: U.S. Geological Survey Scientific Investigations Report 2012–5048, 64 p., *http://pubs.er.usgs.gov/publication/sir20125048*.

Kenny, J.F., Barber, N.L., Hutson, S.S., Linsey, K.S., Lovelace, J.K., and Maupin, M.A., 2009, Estimated use of water in the United States in 2005: U.S. Geological Survey Circular 1344, 52 p., *http://pubs.er.usgs.gov/publication/cir1344*.

Kent, Robert, and Belitz, Kenneth, 2009, Ground-water quality data in the Upper Santa Ana Watershed study unit, November 2006–March 2007: Results from the California GAMA Program: U.S. Geological Survey Data Series 404, 116 p., *http://pubs.er.usgs.gov/publication/ds404*.

Kent, Robert, and Belitz, Kenneth, 2012, Status of groundwater quality in the Upper Santa Ana Watershed, November 2006–March 2007: California GAMA Priority Basin Project: U.S. Geological Survey Scientific Investigations Report 2012–5052, 88 p., *http://pubs.er.usgs.gov/publication/sir20125052*.

Kent, Robert, Belitz, Kenneth, and Fram, M.S., 2014, Groundwater-quality data in seven GAMA study units: Results from initial sampling, 2004–2005, and resampling, 2007–2008, of wells: California GAMA Program Priority Basin Project: U.S. Geological Survey Data Series 795, 170 p., *http://dx.doi.org/10.3133/ds795*.

Koterba, M.T., Wilde, F.D., and Lapham, W.W., 1995, Ground-water data-collection protocols and procedures for the National Water-Quality Assessment Program: Collection and documentation of water-quality samples and related data: U.S. Geological Survey Open-File Report 95–399, 113 p., *http://pubs.er.usgs.gov/publication/ofr95399*.

Kulongoski, Justin, and Belitz, Kenneth, 2004, Ground-water ambient monitoring and assessment program: U.S. Geological Survey Fact Sheet 2004–3088, 2 p., *http://pubs.er.usgs.gov/publication/fs20043088*.

Landon, M.K., and Belitz, Kenneth, 2008, Ground-water quality data in the Central Eastside San Joaquin Basin 2006: Results from the California GAMA Program: U.S. Geological Survey Data Series 325, 88 p., *http://pubs.er.usgs.gov/publication/ds325*.

Landon, M.K., Belitz, Kenneth, Jurgens, B.C., Kulongoski, J.T., and Johnson, T.D., 2010, Status and understanding of groundwater quality in the Central–Eastside San Joaquin Basin, 2006: California GAMA Priority Basin project: U.S. Geological Survey Scientific Investigations Report 2009–5266, 97 p., *http://pubs.er.usgs.gov/publication/sir20095266*.

Mackenthun, K.M., 1973, Toward a cleaner aquatic environment: U.S. Environmental Protection Agency, Office of Air and Water Programs, 273 p., *http://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=9100M9RA.txt*.

Maloney, T.J., ed., 2005, Quality management system, U.S. Geological Survey National Water Quality Laboratory: U.S. Geological Survey Open-File Report 2005–1263, accessed December 6, 2013, at *http://pubs.usgs.gov/of/2005/1263/pdf/OFR2005-1263.pdf*.

Mathany, T.M., and Belitz, Kenneth, 2009, Groundwater quality data in the Mojave study unit, 2008: Results from the California GAMA Program: U.S. Geological Survey Data Series 440, 80 p., *http://pubs.er.usgs.gov/publication/ds440*.

Mathany, T.M., Land, Michael, and Belitz, Kenneth, 2008, Ground-water quality data in the coastal Los Angeles Basin study unit, 2006: Results from the California GAMA Program: U.S. Geological Survey Data Series 387, 98 p., *http://pubs.er.usgs.gov/publication/ds387*.

Mathany, T.M., Wright, M.T., Beuttel, B.S., and Belitz, Kenneth, 2012, Groundwater-quality data in the Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit, 2008–2010: Results from the California GAMA Program: U.S. Geological Survey Data Series 659, 100 p., *http://pubs.er.usgs.gov/publication/ds659*.

Mathany, T.M., Landon, M.K., Shelton, J.L., and Belitz, Kenneth, 2013, Groundwater-quality data in the Western San Joaquin Valley study unit, 2010: Results from the California GAMA Program: U.S. Geological Survey Data Series 706, 102 p., *http://pubs.er.usgs.gov/publication/ds706*.

Montrella, Joseph, and Belitz, Kenneth, 2009, Groundwater quality data in the Santa Clara River Valley study unit, 2007: Results from the California GAMA Program: U.S. Geological Survey Data Series 408, 84 p., *http://pubs.er.usgs.gov/publication/ds408*.

Olsen, L.D., Fram, M.S., and Belitz, Kenneth, 2010, Review of trace-element field-blank data collected for the California Groundwater Ambient Monitoring and Assessment (GAMA) Program, May 2004–January 2008: U.S. Geological Survey Scientific Investigations Report 2009–5220, 47 p., *http://pubs.er.usgs.gov/publication/sir20095220*.

Parsons, M.C., Hancock, T.C., Kulongoski, J.T., and Belitz, Kenneth, 2014, Status of groundwater quality in the Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit, 2008–2010: California GAMA Priority Basin Project: U.S. Geological Survey Scientific Investigations Report 2014–5001, 88 p., *http://dx.doi.org/10.3133/sir20145001*.

Pirkey, K.D., and Glodt, S.R., 1998, Quality control at the U.S. Geological Survey National Water Quality Laboratory: U.S. Geological Survey Fact-Sheet 026–98, 4 p., *http://pubs.er.usgs.gov/publication/fs02698*.

Sandstrom, M.W., Stroppel, M.E., Foreman, W.T., and Schroeder, M.P., 2001, Methods of analysis by the U.S. Geological Survey National Water Quality Laboratory—Determination of moderate-use pesticides and selected degradates in water by C-18 solid-phase extraction and gas chromatography/mass spectrometry: U.S. Geological Survey Water-Resources Investigations Report 01–4098, 70 p., *http://nwql.usgs.gov/Public/pubs/WRIR/WRIR-01-4098.pdf*.

Schmitt, S.J., Fram, M.S., Dawson, B.J.M., and Belitz, Kenneth, 2008, Ground-water quality data in the Middle Sacramento Valley study unit, 2006—Results from the California GAMA program: U.S. Geological Survey Data Series 385, 100 p., *http://pubs.er.usgs.gov/publication/ds385*.

Schmitt, S.J., Milby Dawson, B.J., and Belitz, Kenneth, 2009, Groundwater-quality data in the Antelope Valley study unit, 2008: Results from the California GAMA program: U.S. Geological Survey Data Series 479, 79 p., *http://pubs.er.usgs.gov/publication/ds479*.

Shelton, J.L., Pimentel, Isabel, Fram, M.S., and Belitz, Kenneth, 2008, Ground-water quality data in the Kern County subbasin study unit, 2006—Results from the California GAMA Program: U.S. Geological Survey Data Series 337, 75 p., *http://pubs.er.usgs.gov/publication/ds337*.

Shelton, J.L., Fram, M.S., and Belitz, Kenneth, 2009, Groundwater-quality data for the Madera–Chowchilla study unit, 2008: Results from the California GAMA Program: U.S. Geological Survey Data Series 455, 80 p., *http://pubs.er.usgs.gov/publication/ds455*.

Shelton, J.L., Fram, M.S., Belitz, Kenneth, and Jurgens, B.C., 2013, Status and understanding of groundwater quality in the Madera–Chowchilla study unit, 2008: California GAMA Priority Basin Project: U.S. Geological Survey Scientific Investigations Report 2012–5094, 86 p., *http://pubs.er.usgs.gov/publication/sir20125094*.

State of California, 2001a, Assembly Bill No. 599, Chapter 522: accessed November 4, 2013, at *http://www.swrcb.ca.gov/gama/docs/ab_599_bill_20011005_chaptered.pdf*.

State of California, 2001b, Groundwater Monitoring Act of 2001: California Water Code, part 2.76, Sections 10780–10782.3, accessed August 17, 2015, at *http://www.leginfo.ca.gov/cgi-bin/displaycode?section=wat&group=10001-11000&file=10780-10783*.

U.S. Environmental Protection Agency, 2006, Drinking water health advisories: 2006 Drinking water standards and health advisory tables (pdf document), accessed November 22, 2013, at *http://water.epa.gov/action/advisories/drinking/dwstandards.cfm*.

U.S. Environmental Protection Agency, 2013, Drinking water contaminants: accessed November 22, 2013, at *http://water.epa.gov/drink/contaminants/*.

U.S. Geological Survey, 2011, What is the Priority Basin Project: California Water Science Center, website available at *http://ca.water.usgs.gov/gama/*.

U.S. Geological Survey, variously dated, National field manual for the collection of water-quality data: U.S. Geological Survey Techniques of Water-Resources Investigations, book 9, chap. A1–A9, *http://pubs.water.usgs.gov/twri9A*.

Zaugg, S.D., Sandstrom, M.W., Smith, S.G., and Fehlberg, K.M., 1995, Methods of Analysis by the U.S. Geological Survey National Water Quality Laboratory—Determination of pesticides in water by C-18 solid-phase extraction and capillary-column gas chromatography/mass spectrometry with selected-ion monitoring: U.S. Geological Survey Open-File Report 95–181, 49 p., *http://pubs.er.usgs.gov/publication/ofr95181*.

Zogorski, J.S., Carter, J.M., Ivahnenko, Tamara, Lapham, W.W., Moran, M.J., Rowe, B.L., Squillace, P.J., and Toccalino, P.L., 2006. Volatile organic compounds in the Nation's ground water and drinking-water supply wells: U.S. Geological Survey Circular 1292, 101 p., *http://pubs.er.usgs.gov/publication/cir1292*.

Table 1. Identification, sampling, and construction information for trend wells sampled for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.

[**GAMA identification number acronyms**: ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. A***ntelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Other abbreviations**: ft, foot; LSD, land-surface datum; mm/dd/yyyy, month/day/year; na, not available; NAVD 88, North American Vertical Datum of 1988]

GAMA well identification number	Sample date (mm/dd/yyyy)	Previous sample date (mm/dd/yyyy)	Elevation of LSD (ft above NAVD 88)[1]	Well depth (ft below LSD)	Top of highest perforation (ft below LSD)	Bottom of lowest perforation (ft below LSD)
Kern County Subbasin study unit						
KERN-02	02/11/2010	01/10/2006	456	702	402	702
KERN-20	[2,3]02/10/2010	02/13/2006	295	1,000	350	1,000
KERN-21	03/16/2010	02/13/2006	267	455	125	455
KERN-29	02/10/2010	02/28/2006	403	500	320	500
KERN-33	[4]02/09/2010	03/01/2006	398	793	395	793
Central Eastside San Joaquin Basin study unit						
CE-QPC-02	[2,3,5]01/26/2010	03/22/2006	174	300	124	na
MER-11	01/28/2010	04/12/2006	257	630	234	620
MER-14	[4]01/27/2010	04/17/2006	170	734	261	730
MOD-07	01/26/2010	03/21/2006	95	231	155	225
TRLK-03	01/28/2010	03/21/2006	127	497	230	460
TRLK-05	01/25/2010	03/22/2006	107	472	204	324
Middle Sacramento Valley study unit						
ESAC-01	08/11/2010	06/29/2006	76	278	150	252
ESAC-19	[3,4]08/10/2010	07/20/2006	47	265	185	265
ESAC-34	08/12/2010	08/17/2006	100	60	na	na
WSAC-03	08/10/2010	07/11/2006	274	na	116	253
WSAC-08	08/12/2010	07/18/2006	246	180	56	170
WSAC-17	[2]08/09/2010	08/01/2006	32	260	230	260
WSAC-19	08/11/2010	08/01/2006	37	364	348	356
WSAC-32	08/09/2010	08/21/2006	89	180	110	180
Northern Sacramento Valley study unit						
NSAC-09	01/11/2011	11/06/2007	316	510	230	500
NSAC-16	01/12/2011	12/06/2007	222	307	90	307
RED-01	01/11/2011	10/01/2007	707	418	308	398
RED-12	[2,3,4] 01/10/2011	11/08/2007	457	360	160	360
Madera-Chowchilla study unit						
MADCHOW-03	[2,4]03/15/2011	04/15/2008	274	540	240	520
MADCHOW-05	03/15/2011	04/16/2008	356	350	290	350
MADCHOW-24	[3]03/16/2011	05/13/2008	168	294	244	na
MADCHOW-28	03/16/2011	05/19/2008	170	216	204	212
Western San Joaquin Valley study unit						
DM-12	[2]04/02/2013	03/11/2010	131	350	na	na
DM-19	[3]04/02/2013	04/14/2010	228	350	250	290
DM-26	04/03/2013	06/17/2010	143	280	160	280
WS-07	[4]04/03/2013	06/10/2010	239	1,020	650	na

Table 1. Identification, sampling, and construction information for trend wells sampled for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[**GAMA identification number acronyms**: ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. A***ntelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Other abbreviations**: ft, foot; LSD, land-surface datum; mm/dd/yyyy, month/day/year; na, not available; NAVD 88, North American Vertical Datum of 1988]

GAMA well identification number	Sample date (mm/dd/yyyy)	Previous sample date (mm/dd/yyyy)	Elevation of LSD (ft above NAVD 88)[1]	Well depth (ft below LSD)	Top of highest perforation (ft below LSD)	Bottom of lowest perforation (ft below LSD)
Owens and Indian Wells Valleys study unit						
OIW-05	[3]10/27/2010	10/18/2006	2,561	1,020	560	1,000
OIW-07	[4]10/27/2010	10/19/2006	2,336	620	260	600
OV-21	[2]10/26/2010	10/03/2006	3,857	255	140	240
OV-24	10/28/2010	[6]12/12/2006	3,955	305	120	300
OV-29	10/28/2010	10/05/2006	5,380	200	180	200
OV-36	10/26/2010	10/25/2006	3,710	na	na	na
Coachella Valley study unit						
COA-12	01/05/2011	03/08/2007	–173	525	445	525
COA-14	01/04/2011	03/12/2007	232	820	420	820
COA-15	[4]01/06/2011	03/14/2007	872	400	180	380
COA-16	01/05/2011	03/15/2007	477	650	300	650
Colorado River study unit						
COLOR-03	01/04/2011	10/02/2007	132	512	437	497
COLOR-06	[2]01/03/2011	10/24/2007	269	505	421	na
COLOR-17	[3]01/03/2011	12/11/2007	532	210	80	200
Antelope Valley study unit						
ANT-07	[2]02/15/2012	01/29/2008	2,358	527	260	527
ANT-20	[3]02/14/2012	02/05/2008	3,059	350	80	350
ANT-23	02/13/2012	02/06/2008	3,733	150	0	150
ANT-24	02/16/2012	02/06/2008	3,385	795	545	785
ANT-33	02/15/2012	02/13/2008	2,353	530	281	530
ANT-42	[4]02/14/2012	03/03/2008	2,434	na	na	na
Mojave study unit						
MOJO-01	[3]03/08/2011	02/04/2008	2,790	393	168	373
MOJO-09	[4]03/08/2011	02/07/2008	2,431	425	150	415
MOJO-11	03/09/2011	02/07/2008	3,055	630	310	610
MOJO-16	03/10/2011	02/13/2008	3,255	1,000	515	1,000
MOJO-34	03/10/2011	03/17/2008	3,070	na	na	na
MOJO-48	03/09/2011	04/01/2008	2,978	540	200	520
MOJO-49	[2]03/07/2011	04/01/2008	2,007	400	200	300
Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit						
BV-05	10/18/2012	10/29/2009	533	580	248	568
CD-02	10/16/2012	12/15/2008	3,471	358	na	na
CD-05	10/16/2012	12/17/2008	2,160	430	220	420
LUB-05	10/17/2012	12/04/2008	3,224	490	322	480
LUB-07	10/17/2012	12/09/2008	2,181	660	160	440
LUB-11	[3]10/15/2012	12/11/2008	2,288	600	452	590

Table 1. Identification, sampling, and construction information for trend wells sampled for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[**GAMA identification number acronyms**: ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. A***ntelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Other abbreviations**: ft, foot; LSD, land-surface datum; mm/dd/yyyy, month/day/year; na, not available; NAVD 88, North American Vertical Datum of 1988]

GAMA well identification number	Sample date (mm/dd/yyyy)	Previous sample date (mm/dd/yyyy)	Elevation of LSD (ft above NAVD 88)[1]	Well depth (ft below LSD)	Top of highest perforation (ft below LSD)	Bottom of lowest perforation (ft below LSD)
Coastal Los Angeles Basin study unit						
CLABCB-12	08/25/2010	08/29/2006	157	1,182	475	1,094
CLABCB-13	08/23/2010	08/29/2006	108	746	610	620
CLABCB-14	[2]08/23/2010	08/29/2006	71	501	451	501
CLABCB-17	[3]08/25/2010	09/14/2006	140	627	277	584
CLABDA-02	08/24/2010	08/08/2006	157	550	210	530
CLABOC-13	08/26/2010	08/28/2006	252	420	90	406
CLABOC-14	08/26/2010	08/31/2006	24	880	374	860
CLABWB-03	[4]08/24/2010	08/30/2006	91	445	215	425
Upper Santa Ana Watershed study unit						
USAWB-01	04/20/2009	11/27/2006	1,078	1,067	497	1,047
USAWB-04	05/06/2009	11/28/2006	1,422	900	464	884
USAWB-12	04/22/2009	12/13/2006	1,333	950	500	930
USAWB-14	04/14/2009	12/14/2006	1,418	1,060	300	1,040
USAWB-17	04/23/2009	01/10/2007	1,155	421	173	415
USAWC-02	04/30/2009	01/29/2007	1,173	870	570	850
USAWC-08	04/28/2009	01/31/2007	782	370	210	370
USAWC-10	04/27/2009	02/01/2007	625	520	290	500
USAWC-21	04/13/2009	02/14/2007	1,633	1,110	400	1,090
USAWC-23	04/16/2009	02/15/2007	634	1,180	440	1,180
USAWR-08	[4]04/21/2009	01/10/2007	898	402	40	380
USAWR-12	04/29/2009	01/29/2007	733	515	200	250
USAWS-01	05/07/2009	01/22/2007	1,548	225	100	205
USAWS-08	05/07/2009	01/24/2007	1,655	428	170	420
USAWY-06	05/05/2009	01/09/2007	2,443	790	150	340
USAWY-07	05/04/2009	01/11/2007	2,881	314	164	314
Santa Clara River Valley study unit						
SCRV-06	[2,3]04/26/2011	04/04/2007	57	220	120	220
SCRV-08	04/26/2011	04/04/2007	95	910	700	890
SCRV-17	[4]04/27/2011	04/11/2007	253	60	15	60
SCRV-18	04/27/2011	04/11/2007	162	420	300	400
SCRV-32	04/25/2011	04/18/2007	725	300	50	230
SCRV-36	04/28/2011	04/19/2007	690	300	na	na

[1]LSD is a datum plane that is approximately at land surface at each well. The altitude of the LSD is described in feet above the NAVD 88.

[2]Replicate sample also collected at this site on this date.

[3]Additional sample spiked with organic constituents at the laboratory also collected at this site on this date.

[4]Blank sample also collected at this site on this date.

[5]An additional resample was collected from CE-QPC-02 on March 10, 2010, for volatile organic and pesticide compounds that have been affected by chlorine in the January 26, 2010, sample.

[6]An additional sample was collected October 4, 2006, from OV-24. However, all 2006 data for this well presented in this report and in the data series report (Densmore and others, 2009) represent the sample collected December 12, 2006 (incorrectly identified as December 14, 2006, in Densmore and others, 2009).

Table 2. Number of water-quality indicators and chemical constituents measured in samples collected at trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.

[Analytical methods are reported in *table A1*. **GAMA identification number acronyms**: ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Other abbreviations**: DBCP, 1,2-dibromo-3-chloropropane; EDB, 1,2-dibromoethane; mm/dd/yyyy, month/day/year; NDMA, *N*-nitrosodimethylamine; NWQL, National Water Quality Laboratory; VOCs, volatile organic compounds; USGS, U.S. Geological Survey; 1,2,3-TCP, 1,2,3-trichloropropane; µg/L, micrograms per liter]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Water-quality indicators		Organic constituents				Special-interest constituents			Inorganic constituents		Isotopes			Total number of constituents measured per well[4]
		Measured on-site	Measured by NWQL	VOCs[1]	DBCP and EDB[1]	Pesticides and degradates[2]	Polar pesticides and pesticide degradates[2]	1,2,3-TCP[1]	NDMA	Perchlorate[3]	Nutrients	Major ions and trace elements	Stable isotopes of hydrogen and oxygen in water	Tritium	Carbon isotopes	
	Laboratory schedule			2020	1306	2003, 2032, or 2033	2060	Non-USGS laboratory			2755	1948	1142	Laboratory code 1565	2255	
Kern County Subbasin study unit																
KERN-02	01/10/2006	3	0	85	2	81	0	0	0	1	0	0	2	0	0	172
	02/11/2010	4	5	85	2	81	0	1	0	1	5	34	2	1	2	218
KERN-20	02/13/2006	3	0	85	2	81	0	0	0	1	0	0	2	0	0	172
	02/10/2010	4	5	85	2	81	0	1	0	1	5	34	2	1	2	218
KERN-21	02/13/2006	3	0	85	2	81	0	0	0	1	0	0	2	0	0	172
	03/16/2010	4	5	85	2	81	0	1	0	1	5	34	2	1	2	218
KERN-29	02/28/2006	3	0	85	2	81	0	0	0	1	0	0	2	0	0	172
	02/10/2010	4	5	85	2	81	0	1	0	1	5	34	2	1	2	218
KERN-33	03/01/2006	3	0	85	2	81	0	0	0	1	0	0	2	0	0	172
	02/09/2010	4	5	85	2	81	0	1	0	1	5	34	2	1	2	218
Central Eastside San Joaquin Basin study unit																
CE-QPC-02	03/22/2006	3	0	85	2	63	0	0	0	1	0	0	2	0	0	154
	01/26/2010[5]	4	5	[5]85	2	[5]63	0	1	0	1	5	34	2	1	2	200
MER-11	04/12/2006	7	5	85	2	63	58	1	1	1	5	35	2	1	2	253
	01/28/2010	4	5	85	2	63	0	1	0	1	5	34	2	1	2	200
MER-14	04/17/2006	3	0	85	2	63	0	0	0	1	0	0	2	0	0	154
	01/27/2010	4	5	85	2	63	0	1	0	1	5	34	2	1	2	200
MOD-07	03/21/2006	3	0	85	2	63	0	0	0	1	0	0	2	0	0	154
	01/26/2010	4	5	85	2	63	0	1	0	1	5	34	2	1	2	200
TRLK-03	03/21/2006	7	5	85	2	63	58	1	1	1	5	35	2	1	2	255
	01/28/2010	4	5	85	2	63	0	1	0	1	5	34	2	1	2	200

Table 2. Number of water-quality indicators and chemical constituents measured in samples collected at trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[Analytical methods are reported in *table A1*. **GAMA identification number acronyms**: ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Other abbreviations**: DBCP, 1,2-dibromo-3-chloropropane; EDB, 1,2-dibromoethane; mm/dd/yyyy, month/day/year; NDMA, *N*-nitrosodimethylamine; NWQL, National Water Quality Laboratory; VOCs, volatile organic compounds; USGS, U.S. Geological Survey; 1,2,3-TCP, 1,2,3-trichloropropane; µg/L, micrograms per liter]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Water-quality indicators		Organic constituents				Special-interest constituents			Inorganic constituents		Isotopes			Total number of constituents measured per well[4]
		Measured on-site	Measured by NWQL	VOCs[1]	DBCP and EDB[1]	Pesticides and degradates[2]	Polar pesticides and pesticide degradates[2]	1,2,3-TCP[1]	NDMA	Perchlorate[3]	Nutrients	Major ions and trace elements	Stable isotopes of hydrogen and oxygen in water	Tritium	Carbon isotopes	
	Laboratory schedule			2020	1306	2003, 2032, or 2033	2060	Non-USGS laboratory			2755	1948	1142	Laboratory code 1565	2255	
Middle Sacramento Valley study unit																
TRLK-05	03/22/2006	7	5	85	2	63	58	1	1	1	5	35	2	1	2	255
	01/25/2010	4	5	85	2	63	0	1	0	1	5	34	2	1	2	200
ESAC-01	06/29/2006	3	0	85	0	70	58	0	0	1	0	0	2	1	0	213
	08/11/2010	4	5	85	0	81	58	0	0	1	5	34	2	1	2	269
ESAC-19	07/20/2006	4	5	85	0	70	58	1	1	1	5	35	2	1	2	260
	08/10/2010	4	5	85	0	81	58	0	0	1	5	34	2	1	0	267
ESAC-34	08/17/2006	4	0	85	0	70	58	1	1	1	5	35	2	1	2	257
	08/12/2010	4	5	85	0	81	58	0	0	1	5	34	2	1	0	267
WSAC-03	07/11/2006	4	5	85	0	70	58	1	1	1	5	35	2	1	2	260
	08/10/2010	4	5	85	0	81	58	0	0	1	5	34	2	1	0	267
WSAC-08	07/18/2006	7	5	85	0	70	58	1	1	1	5	35	2	1	2	260
	08/12/2010	4	5	85	0	81	58	0	0	1	5	34	0	1	0	265
WSAC-17	08/01/2006	7	5	85	0	70	58	1	1	1	5	35	2	1	2	260
	08/09/2010	4	5	85	0	81	58	0	0	1	5	34	2	1	0	267
WSAC-19	08/01/2006	4	5	85	0	70	58	0	0	1	0	0	2	1	0	217
	08/11/2010	4	5	85	0	81	58	0	0	1	5	34	0	1	2	267
WSAC-32	08/21/2006	4	0	85	0	70	58	0	0	1	0	0	2	1	0	214
	08/09/2010	4	5	85	0	81	58	0	0	1	5	34	2	1	2	269

Table 2. Number of water-quality indicators and chemical constituents measured in samples collected at trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[Analytical methods are reported in *table A1*. **GAMA identification number acronyms**: ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Other abbreviations**: DBCP, 1,2-dibromo-3-chloropropane; EDB, 1,2-dibromoethane; mm/dd/yyyy, month/day/year; NDMA, *N*-nitrosodimethylamine; NWQL, National Water Quality Laboratory; VOCs, volatile organic compounds; USGS, U.S. Geological Survey; 1,2,3-TCP, 1,2,3-trichloropropane; µg/L, micrograms per liter]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Water-quality indicators		Organic constituents				Special-interest constituents			Inorganic constituents		Isotopes			Total number of constituents measured per well[4]
		Measured on-site	Measured by NWQL	VOCs[1]	DBCP and EDB[1]	Pesticides and degradates[2]	Polar pesticides and pesticide degradates[2]	1,2,3-TCP[1]	NDMA	Perchlorate[3]	Nutrients	Major ions and trace elements	Stable isotopes of hydrogen and oxygen in water	Tritium	Carbon isotopes	
	Laboratory schedule			2020	1306	2003, 2032, or 2033	2060	Non-USGS laboratory			2755	1948	1142	Laboratory code 1565	2255	
Northern Sacramento Valley study unit																
NSAC-09	11/06/2007	7	5	85	0	70	58	0	1	1	5	35	2	1	2	260
	01/11/2011	4	5	85	2	81	0	1	0	1	5	34	2	1	2	218
NSAC-16	12/06/2007	7	5	85	0	70	58	0	1	1	5	35	2	1	2	260
	01/12/2011	4	5	85	2	81	0	1	0	1	5	34	2	1	2	218
RED-01	10/01/2007	4	5	85	0	70	58	0	0	1	5	35	2	1	2	259
	01/11/2011	4	5	85	2	81	0	1	0	1	5	34	2	1	2	218
RED-12	11/08/2007	7	5	85	0	70	58	0	1	1	5	35	2	1	2	260
	01/10/2011	4	5	85	2	81	0	1	0	1	5	34	2	1	2	218
Madera-Chowchilla study unit																
MAD-CHOW-03	04/15/2008	4	5	85	2	81	58	1	0	1	5	35	2	1	2	270
	03/15/2011	4	5	85	2	81	0	1	0	1	5	34	2	1	2	218
MAD-CHOW-05	04/16/2008	3	5	85	2	81	58	1	0	1	5	35	2	1	2	269
	03/15/2011	4	5	85	2	81	0	1	0	1	5	34	2	1	2	218
MAD-CHOW-24	05/13/2008	4	5	85	2	81	58	1	0	1	5	35	2	1	2	270
	03/16/2011	4	5	85	2	81	0	1	0	1	5	34	2	1	2	218
MAD-CHOW-28	05/19/2008	4	5	85	2	81	58	1	0	1	5	35	2	1	2	270
	03/16/2011	4	5	85	2	81	0	1	0	1	5	34	2	1	2	218
Western San Joaquin Valley study unit																
DM-12	03/11/2010	4	5	85	2	81	0	1	0	1	5	35	2	1	2	219
	04/02/2013	4	5	85	2	81	0	1	0	1	5	35	2	1	2	219

Table 2. Number of water-quality indicators and chemical constituents measured in samples collected at trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[Analytical methods are reported in *table A1*. **GAMA identification number acronyms**: ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Other abbreviations**: DBCP, 1,2-dibromo-3-chloropropane; EDB, 1,2-dibromoethane; mm/dd/yyyy, month/day/year; NDMA, *N*-nitrosodimethylamine; NWQL, National Water Quality Laboratory; VOCs, volatile organic compounds; USGS, U.S. Geological Survey; 1,2,3-TCP, 1,2,3-trichloropropane; µg/L, micrograms per liter]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Water-quality indicators		Organic constituents				Special-interest constituents			Inorganic constituents		Isotopes			Total number of constituents measured per well[4]
		Measured on-site	Measured by NWQL	VOCs[1]	DBCP and EDB[1]	Pesticides and degradates[2]	Polar pesticides and pesticide degradates[2]	1,2,3-TCP[1]	NDMA	Perchlorate[3]	Nutrients	Major ions and trace elements	Stable isotopes of hydrogen and oxygen in water	Tritium	Carbon isotopes	
	Laboratory schedule			2020	1306	2003, 2032, or 2033	2060	Non-USGS laboratory			2755	1948	1142	Laboratory code 1565	2255	
Western San Joaquin Valley study unit—Continued																
DM-19	04/14/2010	7	5	85	2	81	0	1	1	1	5	35	2	1	2	220
	04/02/2013	7	5	85	2	81	0	1	0	1	5	35	2	1	2	219
DM-26	06/17/2010	4	5	85	2	81	0	1	1	1	5	35	2	1	2	220
	04/03/2013	4	5	85	2	81	0	1	0	1	5	35	2	1	2	219
WS-07	06/10/2010	4	5	85	2	81	0	1	0	1	5	35	2	1	2	219
	04/03/2013	4	5	85	2	81	0	1	0	1	5	35	2	1	2	219
Owens and Indian Wells Valleys study unit																
OIW-05	10/18/2006	4	5	85	0	63	0	1	1	1	5	35	2	1	2	202
	10/27/2010	4	5	85	2	81	0	1	0	1	5	35	2	1	2	219
OIW-07	10/19/2006	4	5	85	0	63	0	1	1	1	5	35	2	1	2	202
	10/27/2010	4	5	85	2	81	0	1	0	1	5	35	2	1	2	219
OV-21	10/03/2006	4	5	85	0	63	0	0	0	1	5	35	2	1	0	199
	10/26/2010	4	5	85	2	81	0	1	0	1	5	35	2	1	2	219
OV-24	12/12/2006	4	5	85	0	63	0	1	1	1	5	35	2	1	2	202
	10/28/2010	4	5	85	2	81	0	1	0	1	5	35	2	1	2	219
OV-29	10/05/2006	4	5	85	0	63	0	0	0	1	5	35	2	1	0	199
	10/28/2010	4	5	85	2	81	0	1	0	1	5	35	2	1	2	219
OV-36	10/25/2006	4	5	85	0	63	0	1	1	1	5	35	2	1	2	202
	10/26/2010	4	5	85	2	81	0	1	0	1	5	35	2	1	2	219

Table 2. Number of water-quality indicators and chemical constituents measured in samples collected at trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[Analytical methods are reported in *table A1*. **GAMA identification number acronyms**: ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Other abbreviations**: DBCP, 1,2-dibromo-3-chloropropane; EDB, 1,2-dibromoethane; mm/dd/yyyy, month/day/year; NDMA, *N*-nitrosodimethylamine; NWQL, National Water Quality Laboratory; VOCs, volatile organic compounds; USGS, U.S. Geological Survey; 1,2,3-TCP, 1,2,3-trichloropropane; µg/L, micrograms per liter]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Water-quality indicators		Organic constituents				Special-interest constituents			Inorganic constituents		Isotopes			Total number of constituents measured per well[4]
		Measured on-site	Measured by NWQL	VOCs[1]	DBCP and EDB[1]	Pesticides and degradates[2]	Polar pesticides and pesticide degradates[2]	1,2,3-TCP[1]	NDMA	Perchlorate[3]	Nutrients	Major ions and trace elements	Stable isotopes of hydrogen and oxygen in water	Tritium	Carbon isotopes	
	Laboratory schedule			2020	1306	2003, 2032, or 2033	2060	Non-USGS laboratory			2755	1948	1142	Laboratory code 1565	2255	
Coachella Valley study unit																
COA-12	03/08/2007	4	5	85	0	63	58	0	0	1	5	35	2	1	2	254
	01/05/2011	4	5	85	2	[6]0	0	1	0	1	5	34	2	1	2	137
COA-14	03/12/2007	4	5	85	0	63	58	0	0	1	5	35	2	1	2	254
	01/04/2011	4	5	85	2	81	0	1	0	1	5	34	2	1	2	218
COA-15	03/14/2007	7	5	85	0	63	58	1	0	1	5	35	2	1	2	254
	01/06/2011	4	5	85	2	[6]0	0	1	0	1	5	34	2	1	2	137
COA-16	03/15/2007	7	5	85	0	63	58	1	0	1	5	35	2	1	2	254
	01/05/2011	4	5	85	2	81	0	1	0	1	5	34	2	1	2	218
Colorado River study unit																
COLOR-03	10/02/2007	7	5	85	0	63	0	1	0	2	5	35	2	1	2	201
	01/04/2011	4	5	85	2	81	0	1	0	1	5	34	2	1	2	218
COLOR-06	10/24/2007	7	5	85	0	63	0	1	0	2	5	35	2	1	2	201
	01/03/2011	4	5	85	2	81	0	1	0	1	5	34	2	1	2	218
COLOR-17	12/11/2007	7	5	85	0	63	0	1	0	2	5	35	2	1	2	201
	01/03/2011	4	5	85	2	81	0	1	0	1	5	34	2	1	2	218
Antelope Valley study unit																
ANT-07	01/29/2008	7	5	85	2	63	0	1	1	1	5	35	2	1	2	202
	02/15/2012	4	5	85	2	81	0	1	0	1	5	34	2	1	2	218
ANT-20	02/05/2008	4	0	85	0	63	0	0	0	1	0	0	2	1	0	156
	02/14/2012	4	5	85	2	81	0	1	0	1	5	34	2	1	2	218

Table 2. Number of water-quality indicators and chemical constituents measured in samples collected at trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[Analytical methods are reported in *table A1*. **GAMA identification number acronyms**: ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Other abbreviations**: DBCP, 1,2-dibromo-3-chloropropane; EDB, 1,2-dibromoethane; mm/dd/yyyy, month/day/year; NDMA, *N*-nitrosodimethylamine; NWQL, National Water Quality Laboratory; VOCs, volatile organic compounds; USGS, U.S. Geological Survey; 1,2,3-TCP, 1,2,3-trichloropropane; µg/L, micrograms per liter]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Water-quality indicators		Organic constituents				Special-interest constituents			Inorganic constituents		Isotopes			Total number of constituents measured per well[4]
		Measured on-site	Measured by NWQL	VOCs[1]	DBCP and EDB[1]	Pesticides and degradates[2]	Polar pesticides and pesticide degradates[2]	1,2,3-TCP[1]	NDMA	Perchlorate[3]	Nutrients	Major ions and trace elements	Stable isotopes of hydrogen and oxygen in water	Tritium	Carbon isotopes	
	Laboratory schedule			2020	1306	2003, 2032, or 2033	2060	Non-USGS laboratory			2755	1948	1142	Laboratory code 1565	2255	
Antelope Valley study unit—Continued																
ANT-23	02/06/2008	4	0	85	0	63	0	0	0	1	0	0	2	1	0	156
	02/13/2012	7	5	85	2	81	0	1	0	1	5	34	2	1	2	218
ANT-24	02/06/2008	4	0	85	0	63	0	0	0	1	0	0	2	1	0	156
	02/16/2012	4	5	85	2	81	0	1	0	1	5	34	2	1	2	218
ANT-33	02/13/2008	4	0	85	0	63	0	0	0	1	0	0	2	1	0	156
	02/15/2012	4	5	85	2	81	0	1	0	1	5	34	2	1	2	218
ANT-42	03/03/2008	4	0	85	0	63	0	0	0	1	0	0	2	1	0	156
	02/14/2012	4	5	85	2	81	0	1	0	1	5	34	2	1	2	218
Mojave study unit																
MOJO-01	02/04/2008	4	0	85	0	63	0	0	0	1	0	0	2	1	0	156
	03/08/2011	4	5	85	2	81	0	1	0	1	5	34	2	1	2	218
MOJO-09	02/07/2008	4	0	85	0	63	0	0	0	1	0	0	2	1	0	156
	03/08/2011	4	5	85	2	81	0	1	0	1	5	34	2	1	2	218
MOJO-11	02/07/2008	4	0	85	0	63	0	0	0	1	0	0	2	1	0	156
	03/09/2011	4	5	85	2	81	0	1	0	1	5	34	2	1	2	218
MOJO-16	02/13/2008	7	5	85	0	63	0	0	1	1	5	35	2	1	2	202
	03/10/2011	4	5	85	2	81	0	1	0	1	5	34	2	1	2	218
MOJO-34	03/17/2008	4	0	85	0	63	0	0	0	1	0	0	2	1	0	156
	03/10/2011	4	5	85	2	81	0	1	0	1	5	34	2	1	2	218

Table 2. Number of water-quality indicators and chemical constituents measured in samples collected at trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[Analytical methods are reported in *table A1*. **GAMA identification number acronyms**: ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Other abbreviations**: DBCP, 1,2-dibromo-3-chloropropane; EDB, 1,2-dibromoethane; mm/dd/yyyy, month/day/year; NDMA, *N*-nitrosodimethylamine; NWQL, National Water Quality Laboratory; VOCs, volatile organic compounds; USGS, U.S. Geological Survey; 1,2,3-TCP, 1,2,3-trichloropropane; µg/L, micrograms per liter]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Water-quality indicators		Organic constituents				Special-interest constituents			Inorganic constituents		Isotopes			Total number of constituents measured per well[4]
		Measured on-site	Measured by NWQL	VOCs[1]	DBCP and EDB[1]	Pesticides and degradates[2]	Polar pesticides and pesticide degradates[2]	1,2,3-TCP[1]	NDMA	Perchlorate[3]	Nutrients	Major ions and trace elements	Stable isotopes of hydrogen and oxygen in water	Tritium	Carbon isotopes	
	Laboratory schedule			2020	1306	2003, 2032, or 2033	2060	Non-USGS laboratory			2755	1948	1142	Laboratory code 1565	2255	
Mojave study unit—Continued																
MOJO-48	04/01/2008	4	0	85	0	63	0	0	0	1	0	0	2	1	0	156
	03/09/2011	4	5	85	2	81	0	1	0	1	5	34	2	1	2	218
MOJO-49	04/01/2008	7	5	85	0	63	0	0	1	1	5	35	2	1	0	200
	03/07/2011	4	5	85	2	81	0	1	0	1	5	34	2	1	2	218
Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit																
BV-05	10/29/2009	4	3	85	0	63	0	0	0	1	0	0	2	1	2	161
	10/18/2012	4	5	85	2	81	0	1	0	1	5	34	2	1	2	218
CD-02	12/15/2008	4	0	85	0	63	0	0	0	1	0	0	2	1	2	158
	10/16/2012	7	5	85	2	81	0	1	0	1	5	34	2	1	2	218
CD-05	12/17/2008	4	0	85	0	63	0	0	0	1	0	0	2	1	2	158
	10/16/2012	4	5	85	2	81	0	1	0	1	5	34	2	1	2	218
LUB-05	12/04/2008	4	5	85	0	63	0	0	0	1	5	35	2	1	2	201
	10/17/2012	4	5	85	2	81	0	1	0	1	5	34	2	1	2	218
LUB-07	12/09/2008	7	5	85	0	63	0	0	1	1	5	35	2	1	2	202
	10/17/2012	4	5	85	2	81	0	1	0	1	5	34	2	1	2	218
LUB-11	12/11/2008	4	5	85	0	63	0	0	0	1	5	35	2	1	2	201
	10/15/2012	4	5	85	2	81	0	1	0	1	5	34	2	1	2	218
Coastal Los Angeles Basin study unit																
CLABCB-12	08/29/2006	3	0	85	0	63	0	0	0	1	0	0	2	0	0	154
	08/25/2010	4	5	85	0	81	0	0	1	1	5	35	2	1	2	220

Table 2. Number of water-quality indicators and chemical constituents measured in samples collected at trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[Analytical methods are reported in *table A1*. **GAMA identification number acronyms**: ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Other abbreviations**: DBCP, 1,2-dibromo-3-chloropropane; EDB, 1,2-dibromoethane; mm/dd/yyyy, month/day/year; NDMA, *N*-nitrosodimethylamine; NWQL, National Water Quality Laboratory; VOCs, volatile organic compounds; USGS, U.S. Geological Survey; 1,2,3-TCP, 1,2,3-trichloropropane; µg/L, micrograms per liter]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Water-quality indicators		Organic constituents				Special-interest constituents			Inorganic constituents		Isotopes			Total number of constituents measured per well[4]
		Measured on-site	Measured by NWQL	VOCs[1]	DBCP and EDB[1]	Pesticides and degradates[2]	Polar pesticides and pesticide degradates[2]	1,2,3-TCP[1]	NDMA	Perchlorate[3]	Nutrients	Major ions and trace elements	Stable isotopes of hydrogen and oxygen in water	Tritium	Carbon isotopes	
Laboratory schedule				2020	1306	2003, 2032, or 2033	2060	Non-USGS laboratory			2755	1948	1142	Laboratory code 1565	2255	
Coastal Los Angeles Basin study unit—Continued																
CLABCB-13	08/29/2006	3	0	85	0	63	0	0	0	1	0	0	2	0	0	154
	08/23/2010	4	5	85	0	81	0	0	1	1	5	35	2	1	2	220
CLABCB-14	08/29/2006	3	0	85	0	63	0	0	0	1	0	0	2	0	0	154
	08/23/2010	4	5	85	0	81	0	0	1	1	5	35	2	1	2	220
CLABCB-17	09/14/2006	4	5	85	0	63	58	0	0	1	5	35	2	0	0	250
	08/25/2010	4	5	85	0	81	0	0	1	1	5	35	2	1	2	220
CLABDA-02	08/08/2006	7	5	85	0	63	58	0	0	1	5	35	2	0	0	250
	08/24/2010	4	5	85	0	81	0	0	1	1	5	35	2	1	2	220
CLABOC-13	08/28/2006	3	0	85	0	63	0	0	0	1	0	0	2	0	0	154
	08/26/2010	4	5	85	0	81	0	0	1	1	5	35	2	1	2	220
CLABOC-14	08/31/2006	3	0	85	0	63	0	0	0	1	0	0	2	0	0	154
	08/26/2010	4	5	85	0	81	0	0	1	1	5	35	2	1	2	220
CLABWB-03	08/30/2006	3	0	85	0	63	0	0	0	1	0	0	2	0	0	154
	08/24/2010	4	5	85	0	81	0	0	1	1	5	35	2	1	2	220
Upper Santa Ana Watershed study unit																
USAWB-01	11/27/2006	4	0	85	0	81	58	0	0	1	0	0	2	0	0	224
	04/20/2009	4	5	85	0	81	58	0	0	1	5	35	2	1	2	270
USAWB-04	11/28/2006	7	5	85	0	81	58	1	1	1	5	35	2	1	2	271
	05/06/2009	4	5	85	0	81	58	0	0	1	5	35	2	1	0	268

Table 2. Number of water-quality indicators and chemical constituents measured in samples collected at trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[Analytical methods are reported in *table A1*. **GAMA identification number acronyms**: ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Other abbreviations**: DBCP, 1,2-dibromo-3-chloropropane; EDB, 1,2-dibromoethane; mm/dd/yyyy, month/day/year; NDMA, *N*-nitrosodimethylamine; NWQL, National Water Quality Laboratory; VOCs, volatile organic compounds; USGS, U.S. Geological Survey; 1,2,3-TCP, 1,2,3-trichloropropane; µg/L, micrograms per liter]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Water-quality indicators		Organic constituents				Special-interest constituents			Inorganic constituents		Isotopes			Total number of constituents measured per well[4]
		Measured on-site	Measured by NWQL	VOCs[1]	DBCP and EDB[1]	Pesticides and degradates[2]	Polar pesticides and pesticide degradates[2]	1,2,3-TCP[1]	NDMA	Perchlorate[3]	Nutrients	Major ions and trace elements	Stable isotopes of hydrogen and oxygen in water	Tritium	Carbon isotopes	
Laboratory schedule				2020	1306	2003, 2032, or 2033	2060	Non-USGS laboratory			2755	1948	1142	Laboratory code 1565	2255	
Upper Santa Ana Watershed study unit—Continued																
USAWB-12	12/13/2006	3	0	85	0	81	58	0	0	1	0	0	2	0	0	223
	04/22/2009	4	5	85	0	81	58	0	0	1	5	35	2	1	2	270
USAWB-14	12/14/2006	7	5	85	0	81	58	1	1	1	5	35	2	1	2	271
	04/14/2009	4	5	85	0	81	58	0	0	1	5	35	2	1	2	270
USAWB-17	01/10/2007	4	0	85	0	81	58	0	0	1	0	0	2	0	0	224
	04/23/2009	4	5	85	0	81	58	0	0	1	5	35	2	1	2	270
USAWC-02	01/29/2007	4	5	85	0	81	58	0	0	1	5	35	2	0	2	269
	04/30/2009	4	5	85	0	81	58	0	0	1	5	35	2	1	2	270
USAWC-08	01/31/2007	7	5	85	0	81	58	1	1	1	5	35	2	1	2	271
	04/28/2009	4	5	85	0	81	58	0	0	1	5	35	2	1	2	270
USAWC-10	02/01/2007	4	0	85	0	81	58	0	0	1	0	0	2	0	0	224
	04/27/2009	4	5	85	0	81	58	0	0	1	5	35	2	1	2	270
USAWC-21	02/14/2007	7	5	85	0	81	58	1	1	1	5	35	2	1	2	271
	04/13/2009	4	5	85	0	81	58	0	0	1	5	35	2	1	2	270
USAWC-23	02/15/2007	7	5	85	0	81	58	1	1	1	5	35	2	1	2	271
	04/16/2009	4	5	85	0	81	58	0	0	1	5	35	2	1	2	270
USAWR-08	01/10/2007	7	5	85	0	81	58	1	1	1	5	35	2	1	2	271
	04/21/2009	4	5	85	0	81	58	0	0	1	5	35	2	1	2	270
USAWR-12	01/29/2007	7	5	85	0	81	58	1	1	1	5	35	2	1	2	271
	04/29/2009	4	5	85	0	81	58	0	0	1	5	35	2	1	2	270

Table 2. Number of water-quality indicators and chemical constituents measured in samples collected at trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[Analytical methods are reported in *table A1*. **GAMA identification number acronyms**: ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Other abbreviations**: DBCP, 1,2-dibromo-3-chloropropane; EDB, 1,2-dibromoethane; mm/dd/yyyy, month/day/year; NDMA, *N*-nitrosodimethylamine; NWQL, National Water Quality Laboratory; VOCs, volatile organic compounds; USGS, U.S. Geological Survey; 1,2,3-TCP, 1,2,3-trichloropropane; µg/L, micrograms per liter]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Water-quality indicators		Organic constituents				Special-interest constituents			Inorganic constituents		Isotopes			Total number of constituents measured per well[4]
		Measured on-site	Measured by NWQL	VOCs[1]	DBCP and EDB[1]	Pesticides and degradates[2]	Polar pesticides and pesticide degradates[2]	1,2,3-TCP[1]	NDMA	Perchlorate[3]	Nutrients	Major ions and trace elements	Stable isotopes of hydrogen and oxygen in water	Tritium	Carbon isotopes	
	Laboratory schedule			2020	1306	2003, 2032, or 2033	2060	Non-USGS laboratory			2755	1948	1142	Laboratory code 1565	2255	
Upper Santa Ana Watershed study unit—Continued																
USAWS-01	01/22/2007	4	0	85	0	81	58	0	0	1	0	0	2	0	0	224
	05/07/2009	4	5	85	0	81	58	0	0	1	5	35	2	1	2	270
USAWS-08	01/24/2007	7	5	85	0	81	58	1	1	1	5	35	2	1	2	271
	05/07/2009	4	5	85	0	81	58	0	0	1	5	35	2	1	0	268
USAWY-06	01/09/2007	7	5	85	0	81	58	1	1	1	5	35	2	1	2	271
	05/05/2009	4	5	85	0	81	58	0	0	1	5	35	2	1	2	270
USAWY-07	01/11/2007	4	0	85	0	81	58	0	0	1	0	0	2	0	0	224
	05/04/2009	4	5	85	0	81	58	0	0	1	5	35	2	1	2	270
Santa Clara River Valley study unit																
SCRV-06	04/04/2007	4	5	85	0	63	0	0	0	1	5	35	2	1	0	199
	04/26/2011	4	5	85	2	81	0	1	0	1	5	34	2	1	2	218
SCRV-08	04/04/2007	4	0	85	0	63	0	0	0	1	0	0	2	1	0	156
	04/26/2011	4	5	85	2	81	0	1	0	1	5	34	2	1	2	218
SCRV-17	04/11/2007	4	0	85	0	63	0	0	0	1	0	0	2	1	0	156
	04/27/2011	4	5	85	2	81	0	1	0	1	5	34	2	1	2	218
SCRV-18	04/11/2007	4	0	85	0	63	0	0	0	1	0	0	2	1	0	156
	04/27/2011	4	5	85	2	81	0	1	0	1	5	34	2	1	2	218
SCRV-32	04/18/2007	4	0	85	0	63	0	0	0	1	0	0	2	1	0	156
	04/25/2011	4	5	85	2	81	0	1	0	1	5	34	2	1	2	218

Table 2. Number of water-quality indicators and chemical constituents measured in samples collected at trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[Analytical methods are reported in *table A1*. **GAMA identification number acronyms**: ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Other abbreviations**: DBCP, 1,2-dibromo-3-chloropropane; EDB, 1,2-dibromoethane; mm/dd/yyyy, month/day/year; NDMA, *N*-nitrosodimethylamine; NWQL, National Water Quality Laboratory; VOCs, volatile organic compounds; USGS, U.S. Geological Survey; 1,2,3-TCP, 1,2,3-trichloropropane; µg/L, micrograms per liter]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Water-quality indicators		Organic constituents				Special-interest constituents			Inorganic constituents		Isotopes			Total number of constituents measured per well[4]
		Measured on-site	Measured by NWQL	VOCs[1]	DBCP and EDB[1]	Pesticides and degradates[2]	Polar pesticides and pesticide degradates[2]	1,2,3-TCP[1]	NDMA	Perchlorate[3]	Nutrients	Major ions and trace elements	Stable isotopes of hydrogen and oxygen in water	Tritium	Carbon isotopes	
Laboratory schedule				2020	1306	2003, 2032, or 2033	2060	Non-USGS laboratory			2755	1948	1142	Laboratory code 1565	2255	
Santa Clara River Valley study unit—Continued																
SCRV-36	04/19/2007	4	0	85	0	63	0	0	0	1	0	0	2	1	0	156
	04/28/2011	4	5	85	2	81	0	1	0	1	5	34	2	1	2	218

[1]For a subset of samples, DBCP, EDB, and 1,2,3-TCP also were analyzed using methods having lower-level detection limits than the method used for analysis of VOCs as a class (*table A1*).

[2]Pesticides and degradates were analyzed using the same analytical method in all samples (*table A1*). Analytical schedules having 63, 70, or 81 compounds were used, and the base set of 63 compounds is included in all three schedules. Polar pesticides were analyzed using a different analytical method (*table A1*), and for compounds analyzed using both methods the results from the pesticides and degradates method are reported (*table A2*).

[3]Perchlorate was analyzed in unfiltered samples with a reporting limit of 0.5 or 1.0 µg/L prior to October 1, 2007, and was analyzed in filtered samples with a reporting limit of 0.1 µg/L after August 15, 2007. The initial Colorado River study unit samples collected from October to December 2007 were analyzed using both methods.

[4]Constituents analyzed by more than one method (*table A2*) are only counted once in the total number of constituents analyzed.

[5]After it was discovered that the sample collected on January 26, 2010, from CE-QPC-02 was chlorinated, the well was resampled for Schedule 2020 VOCs and Schedule 2003 pesticides and pesticide degradates on March 10, 2010.

[6]Sample to be analyzed for pesticides and pesticide degradates was ruined at the laboratory prior to analysis.

Table 3A. Volatile organic compounds (VOCs), primary uses or sources, comparative benchmarks, and reporting information for the U.S. Geological Survey (USGS) National Water Quality Laboratory Schedule 2020.

[The five-digit USGS parameter code is used to uniquely identify a specific constituent or property. Benchmarks and benchmark values as of August 1, 2013. **Benchmark type**: HAL-US, USEPA Lifetime Health Advisory level; MCL-CA, CDPH maximum contaminant level; MCL-US, USEPA maximum contaminant level; NL-CA, CDPH notification level; RSD5-US,USEPA risk-specific dose at a risk factor of 10^{-5}; This report contains CAS Registry numbers®, which is a Registered Trademark of the American Chemical Society. CAS recommends the verification of the CASRNs through CAS Client Services℠. **Other abbreviations**: CAS, Chemical Abstract Service; CDPH, California Department of Public Health; D, detected in groundwater samples (*table 5*); LRL, laboratory reporting level; LT-MDL, long-term method detection limit; na, not available; nv, no value in category; SRL, study reporting level; THM, trihalomethane; USEPA, U.S. Environmental Protection Agency; µg/L, micrograms per liter; —, not detected]

Constituent (synonym or abbreviation)	Primary use or source	USGS parameter code	CAS Registry number	Minimum LRL 2006–13 (µg/L)	Maximum LRL 2006–13 (µg/L)	SRL[1] (µg/L)	Benchmark type[2]	Benchmark value (µg/L)	Trend-well detection (2006–10)	Trend-well detection (2009–13)
Acetone	Solvent	81552	67-64-1	3.4	6	nv[3]	na	na	—	—
Acrylonitrile	Organic synthesis	34215	107-13-1	0.4	0.8	nv	RSD5-US	0.6	—	—
tert-Amyl methyl ether (TAME)	Gasoline oxygenate	50005	994-05-8	0.04	0.06	nv	na	na	—	—
Benzene	Gasoline hydrocarbon	34030	71-43-2	0.016	0.026	nv	MCL-CA	1	D[a]	—
Bromobenzene	Solvent	81555	108-86-1	0.02	0.028	nv	na	na	—	—
Bromochloromethane	Fire retardant	77297	74-97-5	0.06	0.12	nv	HAL-US	90	D[j]	—
Bromodichloromethane	Disinfection byproduct (THM)	32101	75-27-4	0.028	0.04	nv	MCL-US	[4]80	D[b,c,j,m,n]	D[b,c,e,j,m,n,o]
Bromoform (Tribromomethane)	Disinfection byproduct (THM)	32104	75-25-2	0.08	0.1	nv	MCL-US	[4]80	D[b,c,j,n]	D[c,e,j,n,o]
Bromomethane (Methyl bromide)	Fumigant	34413	74-83-9	0.2	0.4	nv	HAL-US	10	—	—
n-Butylbenzene	Gasoline hydrocarbon	77342	104-51-8	0.08	0.14	nv	NL-CA	260	—	—
sec-Butylbenzene	Gasoline hydrocarbon	77350	135-98-8	0.02	0.06	nv	NL-CA	260	—	—
tert-Butylbenzene	Gasoline hydrocarbon	77353	98-06-6	0.06	0.08	nv	NL-CA	260	—	—
Carbon disulfide	Organic synthesis	77041	75-15-0	0.038	0.1	0.03	NL-CA	160	—	—
Carbon tetrachloride (Tetrachloromethane)	Solvent	32102	56-23-5	0.06	0.08	nv	MCL-CA	0.5	D[b,m,n]	D[b,m]
Chlorobenzene	Solvent	34301	108-90-7	0.016	0.028	nv	MCL-CA	70	—	—
Chloroethane	Solvent	34311	75-00-3	0.06	0.12	nv	na	na	D[j]	—
Chloroform (Trichloromethane)	Disinfection byproduct (THM)	32106	67-66-3	0.02	0.04	nv	MCL-US	[4]80	D[a,b,c,d,e,h,j,k,m,n,o]	D[a,b,c,d,e,g,h,j,k,m,n,o]
Chloromethane	Solvent	34418	74-87-3	0.1	0.2	nv	HAL-US	30	D[j]	D[a]
3-Chloropropene	Organic synthesis	78109	107-05-1	0.08	0.5	nv	na	na	—	—
2-Chlorotoluene	Solvent	77275	95-49-8	0.02	0.04	nv	NL-CA	140	—	—
4-Chlorotoluene	Solvent	77277	106-43-4	0.02	0.05	nv	NL-CA	140	—	—
Dibromochloromethane	Disinfection byproduct (THM)	32105	124-48-1	0.1	0.12	nv	MCL-US	[4]80	D[b,c,j,n]	D[c,e,j,n,o]
1,2-Dibromo-3-chloropropane (DBCP)[5]	Fumigant	82625	96-12-8	0.5	1	nv	MCL-US	0.2	—	—
1,2-Dibromoethane (EDB)[5]	Fumigant	77651	106-93-4	0.028	0.05	nv	MCL-US	0.05	—	—
Dibromomethane	Solvent	30217	74-95-3	0.04	0.05	nv	na	na	D[j]	—
1,2-Dichlorobenzene	Solvent	34536	95-50-1	0.02	0.048	nv	MCL-US	600	D[n]	D[n]
1,3-Dichlorobenzene	Solvent	34566	541-73-1	0.02	0.04	nv	HAL-US	600	—	—

Table 3A. Volatile organic compounds (VOCs), primary uses or sources, comparative benchmarks, and reporting information for the U.S. Geological Survey (USGS) National Water Quality Laboratory Schedule 2020.—Continued

[The five-digit USGS parameter code is used to uniquely identify a specific constituent or property. Benchmarks and benchmark values as of August 1, 2013. **Benchmark type**: HAL-US, USEPA Lifetime Health Advisory level; MCL-CA, CDPH maximum contaminant level; MCL-US, USEPA maximum contaminant level; NL-CA, CDPH notification level; RSD5-US,USEPA risk-specific dose at a risk factor of 10^{-5}; This report contains CAS Registry numbers®, which is a Registered Trademark of the American Chemical Society. CAS recommends the verification of the CASRNs through CAS Client Services℠. **Other abbreviations**: CAS, Chemical Abstract Service; CDPH, California Department of Public Health; D, detected in groundwater samples (*table 5*); LRL, laboratory reporting level; LT-MDL, long-term method detection limit; na, not available; nv, no value in category; SRL, study reporting level; THM, trihalomethane; USEPA, U.S. Environmental Protection Agency; µg/L, micrograms per liter; —, not detected]

Constituent (synonym or abbreviation)	Primary use or source	USGS parameter code	CAS Registry number	Minimum LRL 2006–13 (µg/L)	Maximum LRL 2006–13 (µg/L)	SRL[1] (µg/L)	Benchmark type[2]	Benchmark value (µg/L)	Trend-well detection (2006–10)	Trend-well detection (2009–13)
1,4-Dichlorobenzene	Fumigant	34571	106-46-7	0.02	0.04	nv	MCL-CA	5	—	—
trans-1,4-Dichloro-2-butene	Organic synthesis	73547	110-57-6	0.36	2	nv	na	na	—	—
Dichlorodifluoromethane (CFC-12)	Refrigerant	34668	75-71-8	0.1	0.18	nv	NL-CA	1,000	D[b,m,n]	D[b,e,m,n]
1,1-Dichloroethane (1,1-DCA)	Solvent	34496	75-34-3	0.035	0.06	nv	MCL-CA	5	D[m,n]	D[m,n]
1,2-Dichloroethane (1,2-DCA)	Solvent	32103	107-06-2	0.06	0.13	nv	MCL-CA	0.5	—	D[n]
1,1-Dichloroethene (1,1-DCE)	Organic synthesis	34501	75-35-4	0.02	0.024	nv	MCL-CA	6	D[b,m,n]	D[m,n]
cis-1,2-Dichloroethene (*cis*-1,2-DCE)	Solvent	77093	156-59-2	0.02	0.024	nv	MCL-CA	6	D[e,m,n]	D[e,m,n]
trans-1,2-Dichloroethene (*trans*-1,2-DCE)	Solvent	34546	156-60-5	0.018	0.032	nv	MCL-CA	10	D[m,n]	D[e,m]
1,2-Dichloropropane	Fumigant	34541	78-87-5	0.02	0.029	nv	MCL-US	5	D[a]	D[a,n]
1,3-Dichloropropane	Fumigant	77173	142-28-9	0.06	0.06	nv	na	na	—	—
2,2-Dichloropropane	Fumigant	77170	594-20-7	0.05	0.06	nv	na	na	—	—
1,1-Dichloropropene	Organic synthesis	77168	563-58-6	0.026	0.04	nv	na	na	—	—
cis-1,3-Dichloropropene	Fumigant	34704	10061-01-5	0.05	0.1	nv	RSD5-US	[6]4	—	—
trans-1,3-Dichloropropene	Fumigant	34699	10061-02-6	0.09	0.14	nv	RSD5-US	[6]4	—	—
Diethyl ether	Solvent	81576	60-29-7	0.08	0.12	nv	na	na	—	—
Diisopropyl ether (DIPE)	Gasoline oxygenate	81577	108-20-3	0.06	0.1	nv	na	na	—	—
Ethylbenzene	Gasoline hydrocarbon	34371	100-41-4	0.02	0.04	0.06	MCL-CA	300	—	—
Ethyl *tert*-butyl ether (ETBE)	Gasoline oxygenate	50004	637-92-3	0.03	0.04	nv	na	na	—	—
Ethyl methacrylate	Organic synthesis	73570	97-63-2	0.14	0.2	nv	na	na	—	—
Ethyl methyl ketone (2-Butanone)	Solvent	81595	78-93-3	1.6	2	nv[3]	HAL-US	4,000	—	—
o-Ethyl toluene (1-Ethyl-2-methyl benzene)	Gasoline hydrocarbon	77220	611-14-3	0.02	0.06	nv	na	na	—	—
Hexachlorobutadiene	Organic synthesis	39702	87-68-3	0.06	0.14	nv	RSD5-US	9	—	—
Hexachloroethane	Solvent	34396	67-72-1	0.1	0.22	nv	HAL-US	1	—	—
2-Hexanone (*n*-Butyl methyl ketone)	Solvent	77103	591-78-6	0.4	0.6	nv	na	na	—	—
Iodomethane (Methyl iodide)	Fumigant, natural	77424	74-88-4	0.26	0.8	nv	na	na	—	—
Isopropylbenzene	Gasoline hydrocarbon	77223	98-82-8	0.038	0.042	nv	NL-CA	770	—	—
4-Isopropyltoluene (*p*-Isopropyltoluene)	Gasoline hydrocarbon	77356	99-87-6	0.06	0.08	nv	na	na	—	D[a]

Table 3A. Volatile organic compounds (VOCs), primary uses or sources, comparative benchmarks, and reporting information for the U.S. Geological Survey (USGS) National Water Quality Laboratory Schedule 2020.—Continued

[The five-digit USGS parameter code is used to uniquely identify a specific constituent or property. Benchmarks and benchmark values as of August 1, 2013. **Benchmark type**: HAL-US, USEPA Lifetime Health Advisory level; MCL-CA, CDPH maximum contaminant level; MCL-US, USEPA maximum contaminant level; NL-CA, CDPH notification level; RSD5-US,USEPA risk-specific dose at a risk factor of 10^{-5}; This report contains CAS Registry numbers®, which is a Registered Trademark of the American Chemical Society. CAS recommends the verification of the CASRNs through CAS Client Services℠. **Other abbreviations**: CAS, Chemical Abstract Service; CDPH, California Department of Public Health; D, detected in groundwater samples (*table 5*); LRL, laboratory reporting level; LT-MDL, long-term method detection limit; na, not available; nv, no value in category; SRL, study reporting level; THM, trihalomethane; USEPA, U.S. Environmental Protection Agency; µg/L, micrograms per liter; —, not detected]

Constituent (synonym or abbreviation)	Primary use or source	USGS parameter code	CAS Registry number	Minimum LRL 2006–13 (µg/L)	Maximum LRL 2006–13 (µg/L)	SRL[1] (µg/L)	Benchmark type[2]	Benchmark value (µg/L)	Trend-well detection (2006–10)	Trend-well detection (2009–13)
Methyl acrylate	Organic synthesis	49991	96-33-3	0.4	1	nv	na	na	—	—
Methyl acrylonitrile	Organic synthesis	81593	126-98-7	0.2	0.40	nv	na	na	—	—
Methyl *tert*-butyl ether (MTBE)	Gasoline oxygenate	78032	1634-04-4	0.1	0.17	nv	MCL-CA	13	D[d,g,m,n]	D[b,g,m,n]
Methyl *iso*-butyl ketone (MIBK)	Solvent	78133	108-10-1	0.2	0.4	nv	NL-CA	120	—	—
Methylene chloride (Dichloromethane)	Solvent	34423	75-09-2	0.04	0.06	nv	MCL-US	5	D[b,j,n]	D[m,n]
Methyl methacrylate	Organic synthesis	81597	80-62-6	0.20	0.40	nv	na	na	—	—
Naphthalene	Gasoline hydrocarbon	34696	91-20-3	0.18	0.52	nv	NL-CA	17	—	—
n-Propylbenzene	Solvent	77224	103-65-1	0.036	0.042	nv	NL-CA	260	—	—
Styrene	Gasoline hydrocarbon	77128	100-42-5	0.03	0.042	nv	MCL-US	100	—	D[l]
1,1,1,2-Tetrachloroethane	Solvent	77562	630-20-6	0.030	0.040	nv	HAL-US	70	—	—
1,1,2,2-Tetrachloroethane	Solvent	34516	79-34-5	0.08	0.14	nv	MCL-CA	1	—	—
Tetrachloroethene (PCE)	Solvent	34475	127-18-4	0.026	0.04	nv	MCL-US	5	D[b,e,h,m,n]	D[e,f,m,n]
Tetrahydrofuran	Solvent	81607	109-99-9	1	1.4	nv[3]	na	na	—	—
1,2,3,4-Tetramethylbenzene	Gasoline hydrocarbon	49999	488-23-3	0.08	0.14	nv	na	na	—	—
1,2,3,5-Tetramethylbenzene	Gasoline hydrocarbon	50000	527-53-7	0.08	0.18	nv	na	na	—	—
Toluene	Gasoline hydrocarbon	34010	108-88-3	0.018	0.02	0.69	MCL-CA	150	—	—
1,2,3-Trichlorobenzene	Organic synthesis	77613	87-61-6	0.06	0.18	nv	na	na	—	—
1,2,4-Trichlorobenzene	Solvent	34551	120-82-1	0.04	0.12	nv	MCL-CA	5	—	—
1,1,1-Trichloroethane (TCA)	Solvent	34506	71-55-6	0.02	0.04	nv	MCL-US	200	D[m,n,o]	D[m,n,o]
1,1,2-Trichloroethane	Solvent	34511	79-00-5	0.028	0.06	nv	MCL-CA	5	—	—
Trichloroethene (TCE)	Solvent	39180	79-01-6	0.02	0.038	nv	MCL-US	5	D[b,e,m,n]	D[b,e,m,n]
Trichlorofluoromethane (CFC-11)	Refrigerant	34488	75-69-4	0.06	0.16	nv	MCL-CA	150	D[m,n]	D[n]
1,2,3-Trichloropropane (1,2,3-TCP)[7]	Fumigant/solvent	77443	96-18-4	0.12	0.18	nv	HAL-US[8]	40	[9]—	D[a]
Trichlorotrifluoroethane (CFC-113)	Refrigerant	77652	76-13-1	0.038	0.04	nv	MCL-CA	1,200	D[m,n]	D[b,m,n]
1,2,3-Trimethylbenzene	Gasoline hydrocarbon	77221	526-73-8	0.06	0.09	nv	na	na	—	—
1,2,4-Trimethylbenzene	Gasoline hydrocarbon	77222	95-63-6	0.032	0.056	0.56	NL-CA	330	—	D[j]
1,3,5-Trimethylbenzene	Organic synthesis	77226	108-67-8	0.032	0.044	nv	NL-CA	330	—	—
Vinyl bromide (Bromoethene)	Fire retardant	50002	593-60-2	0.10	0.12	nv	na	na	—	—
Vinyl chloride (Chloroethene)	Organic synthesis	39175	75-01-4	0.06	0.08	nv	MCL-CA	0.5	—	—

Table 3A. Volatile organic compounds (VOCs), primary uses or sources, comparative benchmarks, and reporting information for the U.S. Geological Survey (USGS) National Water Quality Laboratory Schedule 2020.—Continued

[The five-digit USGS parameter code is used to uniquely identify a specific constituent or property. Benchmarks and benchmark values as of August 1, 2013. **Benchmark type**: HAL-US, USEPA Lifetime Health Advisory level; MCL-CA, CDPH maximum contaminant level; MCL-US, USEPA maximum contaminant level; NL-CA, CDPH notification level; RSD5-US,USEPA risk-specific dose at a risk factor of 10^{-5}; This report contains CAS Registry numbers®, which is a Registered Trademark of the American Chemical Society. CAS recommends the verification of the CASRNs through CAS Client Services℠. **Other abbreviations**: CAS, Chemical Abstract Service; CDPH, California Department of Public Health; D, detected in groundwater samples (*table 5*); LRL, laboratory reporting level; LT-MDL, long-term method detection limit; na, not available; nv, no value in category; SRL, study reporting level; THM, trihalomethane; USEPA, U.S. Environmental Protection Agency; µg/L, micrograms per liter; —, not detected]

Constituent (synonym or abbreviation)	Primary use or source	USGS parameter code	CAS Registry number	Minimum LRL 2006–13 (µg/L)	Maximum LRL 2006–13 (µg/L)	SRL[1] (µg/L)	Benchmark type[2]	Benchmark value (µg/L)	Trend-well detection (2006–10)	Trend-well detection (2009–13)
m- and *p*-Xylene	Gasoline hydrocarbon	85795	108-38-3, 106-42-3	0.06	0.08	0.33	MCL-CA	[10]1,750	—	—
o-Xylene	Gasoline hydrocarbon	77135	95-47-6	0.032	0.04	0.12	MCL-CA	[10]1,750	—	—

[1]Study reporting levels for VOCs are based on Fram and others (2012).

[2]Maximum contaminant level benchmarks are listed as MCL-US when the MCL-US and MCL-CA are identical and as MCL-CA when the MCL-CA is lower than the MCL-US or no MCL-US exists.

[3]Detections of acetone, ethyl methyl ketone, and tetrahydrofuran were found to be unreliable on the basis of their frequency of occurrence in field blanks, likely because of their use in well construction and other materials in the sampling environment (Fram and others, 2012); therefore, only nondetections are reported. Detections are reported as "not analyzed" because reliable analysis was not possible for these constituents.

[4]The MCL-US benchmark for trihalomethanes is for the sum of chloroform, bromoform, bromodichloromethane, and dibromochloromethane.

[5]Compound also analyzed for selected samples by (preferred method) laboratory schedule 1306 (*table 3B*).

[6]The RSD5 benchmark for 1,3-dichloropropene is for the sum of its isomers (*cis* and *trans*).

[7]Compound also analyzed for selected samples by a (preferred method) non-USGS laboratory (*table 3E*).

[8]In earlier reports in this series, the NL-CA (0.005 µg/L) was used as the comparison benchmark for 1,2,3-TCP.

[9]1,2,3-TCP was detected in a few initial samples analyzed using the preferred method with a detection limit of 0.005 µg/L. See *table 3H*.

[10]The MCL-CA benchmarks for *m*- plus *p*-Xylene and *o*-Xylene are for the sum all three xylene compounds.

[a]Detected in the Kern County Subbasin study unit

[b]Detected in the Central Eastside San Joaquin Basin study unit.

[c]Detected in the Middle Sacramento Valley study unit.

[d]Detected in the Northern Sacramento Valley study unit.

[e]Detected in the Madera-Chowchilla study unit.

[f]Detected in the Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Desert study unit.

[g]Detected in the Owens and Indian Wells Valleys study unit.

[h]Detected in the Coachella Valley study unit.

[i]Detected in the Colorado River study unit.

[j]Detected in the Antelope Valley study unit.

[k]Detected in the Mojave study unit.

[l]Detected in the Western San Joaquin Valley study unit.

[m]Detected in the Coastal Los Angeles Basin study unit.

[n]Detected in the Upper Santa Ana Watershed study unit.

[o]Detected in the Santa Clara River Valley study unit.

Table 3B. 1,2-Dibromo-3-chloropropane (DBCP) and 1,2-Dibromoethane (EDB), primary uses or sources, comparative benchmarks, and reporting information for the U.S. Geological Survey (USGS) National Water Quality Laboratory Schedule 1306.

[The five-digit USGS parameter code is used to uniquely identify a specific constituent or property. This analytical schedule is the preferred method for these two constituents, but was not used for all study units. Benchmarks and benchmark values as of April 1, 2010. **Benchmark type**: MCL-CA, CDPH maximum contaminant level; MCL-US, U.S. Environmental Protection Agency maximum contaminant level. **Other abbreviations**: CAS, Chemical Abstract Service; LRL, laboratory reporting level; µg/L, micrograms per liter; —, not detected]

Constituent (synonym or abbreviation)	Primary use or source	USGS parameter code	CAS Registry number	Minimum LRL 2006–13 (µg/L)	Maximum LRL 2006–13 (µg/L)	Benchmark type[1]	Benchmark value (µg/L)	Trend-well detection (2006–10)	Trend-well detection (2009–13)
1,2-Dibromo-3-chloropropane (DBCP)[2]	Fumigant	82625	96-12-8	0.030	0.030	MCL-US	0.2	—	—
1,2-Dibromoethane (EDB)[2]	Fumigant	77651	106-93-4	0.02	0.040	MCL-US	0.05	—	—

[1]Maximum contaminant level benchmarks are listed as MCL-US when the MCL-US and MCL-CA are identical and as MCL-CA when the MCL-CA is lower than the MCL-US or no MCL-US exists.

[2]Compound also analyzed for by (non-preferred method) laboratory schedule 2020 (*table 3A*).

Table 3C. Pesticides and pesticide degradates, primary uses or sources, comparative benchmarks, and reporting information for the U.S. Geological Survey (USGS) National Water Quality Laboratory Schedule 2003, and the expanded versions Schedule 2032 and Schedule 2033.

[The five-digit USGS parameter code is used to uniquely identify a specific constituent or property. Benchmarks and benchmark values as of April 1, 2010. **Benchmark type**: HAL-US, USEPA Lifetime Health Advisory level; MCL-CA, CDPH maximum contaminant level; MCL-US, USEPA maximum contaminant level; RSD5-US, USEPA risk-specific dose at a risk factor of 10^{-5}. **Other abbreviations**: CAS, Chemical Abstract Service; CDPH, California Department of Public Health; D, detected in groundwater samples (*table 6A*); LRL, laboratory reporting level; na, not available; USEPA, U.S. Environmental Protection Agency; µg/L, micrograms per liter; —, not detected]

Constituent (synonym or abbreviation)	Primary use or source	USGS parameter code	CAS Registry number	Minimum LRL 2006–13 (µg/L)	Maximum LRL 2006–13 (µg/L)	Benchmark type[1]	Benchmark value (µg/L)	Trend-well detection (2006–10)	Trend-well detection (2009–13)
Acetochlor	Herbicide	49260	34256-82-1	0.006	0.010	na	na	—	—
Alachlor	Herbicide	46342	15972-60-8	0.005	0.008	MCL-US	2	—	D[n]
Atrazine[2]	Herbicide	39632	1912-24-9	0.007	0.008	MCL-CA	1	D[a,b,c,d,h,m,n]	D[a,b,c,e,g,h,m,n]
Azinphos-methyl	Insecticide	82686	86-50-0	0.05	0.12	na	na	—	—
Azinphos-methyl oxon	Insecticide degradate	61635	961-22-8	0.042	0.07	na	na	[3]—	[3]—
Benfluralin	Herbicide	82673	1861-40-1	0.004	0.014	na	na	—	—
Carbaryl[2]	Insecticide	82680	63-25-2	0.041	0.2	RSD5-US	400	—	—
Carbofuran[2,4]	Insecticide	82674	1563-66-2	0.02	0.060	MCL-CA	18	—	—
2-Chloro-2,6-diethylacetanilide	Herbicide degradate	61618	6967-29-9	0.005	0.010	na	na	—	—
4-Chloro-2-methylphenol	Herbicide degradate	61633	1570-64-5	0.0032	0.008	na	na	—	—
Chlorpyrifos	Insecticide	38933	2921-88-2	0.0036	0.010	HAL-US	2	—	—
Chlorpyrifos oxon	Insecticide degradate	61636	5598-15-2	0.05	0.08	na	na	[3]—	[3]—
Cyanazine[5]	Herbicide	04041	21725-46-2	0.018	0.04	HAL-US	1	—	—
Cyfluthrin	Insecticide	61585	68359-37-5	0.016	0.053	na	na	—	—
λ-Cyhalothrin[4]	Insecticide	61595	91465-08-6	0.004	0.014	na	na	[3]—	[3]—
Cypermethrin	Insecticide	61586	52315-07-8	0.0086	0.046	na	na	[3]—	[3]—
DCPA (Dacthal)	Herbicide	82682	1861-32-1	0.003	0.0076	HAL-US	70	—	—
Deethylatrazine (2-Chloro-4-isopropyl-amino-6-amino-*s*-triazine)[2]	Herbicide degradate	04040	6190-65-4	0.006	0.014	na	na	D[a,b,c,e,f,m,n]	D[b,c,e,f,h,m,n,o]
Desulfinylfipronil	Insecticide degradate	62170	na	0.012	0.012	na	na	—	—
Desulfinylfipronil amide	Insecticide degradate	62169	na	0.029	0.029	na	na	—	—
Diazinon	Insecticide	39572	333-41-5	0.005	0.0060	HAL-US	1	—	—
3,4-Dichloroaniline	Herbicide degradate	61625	95-76-1	0.004	0.006	na	na	D[a,c,m,n]	D[a,c,e,m,n,o]
3,5-Dichloroaniline[5]	Herbicide degradate	61627	626-43-7	0.0030	0.012	na	na	—	—
Dichlorvos	Insecticide	38775	62-73-7	0.0118	0.04	na	na	[3]—	[3]—
Dicrotophos	Insecticide	38454	141-66-2	0.08	0.0843	na	na	[3]—	[3]—
Dieldrin	Insecticide	39381	60-57-1	0.008	0.009	RSD5-US	0.02	—	—
2,6-Diethylaniline	Herbicide degradate	82660	579-66-8	0.006	0.006	na	na	—	—
Dimethoate	Insecticide	82662	60-51-5	0.006	0.0061	na	na	[3]—	[3]—
Disulfoton[5]	Insecticide	82677	298-04-4	0.02	0.04	HAL-US	0.7	—	—
Disulfoton sulfone[5]	Insecticide degradate	61640	2497-06-5	0.0059	0.014	na	na	—	—
α-Endosulfan[5]	Insecticide	34362	959-98-8	0.0047	0.011	na	na	—	—
Endosulfan sulfate[5]	Insecticide degradate	61590	1031-07-8	0.0138	0.022	na	na	—	—
Ethion	Insecticide	82346	563-12-2	0.004	0.016	na	na	—	—
Ethion monoxon	Insecticide degradate	61644	17356-42-2	0.002	0.021	na	na	—	—

Table 3C. Pesticides and pesticide degradates, primary uses or sources, comparative benchmarks, and reporting information for the U.S. Geological Survey (USGS) National Water Quality Laboratory Schedule 2003, and the expanded versions Schedule 2032 and Schedule 2033.—Continued

[The five-digit USGS parameter code is used to uniquely identify a specific constituent or property. Benchmarks and benchmark values as of April 1, 2010. **Benchmark type**: HAL-US, USEPA Lifetime Health Advisory level; MCL-CA, CDPH maximum contaminant level; MCL-US, USEPA maximum contaminant level; RSD5-US, USEPA risk-specific dose at a risk factor of 10^{-5}. **Other abbreviations**: CAS, Chemical Abstract Service; CDPH, California Department of Public Health; D, detected in groundwater samples (*table 6A*); LRL, laboratory reporting level; na, not available; USEPA, U.S. Environmental Protection Agency; µg/L, micrograms per liter; —, not detected]

Constituent (synonym or abbreviation)	Primary use or source	USGS parameter code	CAS Registry number	Minimum LRL 2006–13 (µg/L)	Maximum LRL 2006–13 (µg/L)	Benchmark type[1]	Benchmark value (µg/L)	Trend-well detection (2006–10)	Trend-well detection (2009–13)
Ethoprophos[5]	Herbicide	82672	13194-48-4	0.005	0.016	na	na	—	—
S-Ethyl-dipropylthiocarbamate (EPTC)[5]	Herbicide	82668	759-94-4	0.002	0.0056	na	na	—	D[j]
2-Ethyl-6-methylaniline	Herbicide degradate	61620	24549-06-2	0.0045	0.010	na	na	—	—
Fenamiphos	Insecticide	61591	22224-92-6	0.029	0.030	HAL-US	0.7	—	—
Fenamiphos sulfone	Insecticide degradate	61645	31972-44-8	0.0491	0.054	na	na	—	—
Fenamiphos sulfoxide	Insecticide degradate	61646	31972-43-7	0.0387	0.2	na	na	[3]—	[3]—
Fipronil	Insecticide	62166	120068-37-3	0.016	0.04	na	na	—	—
Fipronil sulfide	Insecticide degradate	62167	120067-83-6	0.012	0.013	na	na	—	—
Fipronil sulfone	Insecticide degradate	62168	120068-36-2	0.024	0.024	na	na	—	—
Fonofos	Insecticide	04095	944-22-9	0.003	0.01	HAL-US	10	—	—
Hexazinone	Herbicide	04025	51235-04-2	0.008	0.026	HAL-US	400	D[c,m,3]	D[c,m,3]
Iprodione	Fungicide	61593	36734-19-7	0.01	0.538	na	na	—	—
Isofenphos	Insecticide	61594	25311-71-1	0.0034	0.011	na	na	—	—
Malaoxon	Insecticide degradate	61652	1634-78-2	0.02	0.08	na	na	—	—
Malathion	Insecticide	39532	121-75-5	0.016	0.027	HAL-US	100	—	—
Metalaxyl[2]	Fungicide	61596	57837-19-1	0.0051	0.014	na	na	D[m]	D[m]
Methidathion	Insecticide	61598	950-37-8	0.004	0.012	na	na	—	—
Metolachlor	Herbicide	39415	51218-45-2	0.006	0.020	HAL-US	700	D[j]	D[e,n]
Metribuzin	Herbicide	82630	21087-64-9	0.006	0.028	HAL-US	70	—	—
Molinate[4]	Herbicide	82671	2212-67-1	0.002	0.008	MCL-CA	20	—	—
Myclobutanil	Fungicide	61599	88671-89-0	0.008	0.033	na	na	—	—
1-Naphthol	Insecticide degradate	49295	90-15-3	0.036	0.0882	na	na	[3]—	[3]—
Oxyfluorfen[5]	Herbicide	61600	42874-03-3	0.006	0.017	na	na	[3]—	[3]—
Paraoxon-methyl	Insecticide degradate	61664	950-35-6	0.010	0.0299	na	na	[3]—	[3]—
Parathion-methyl	Insecticide	82667	298-00-0	0.008	0.015	HAL-US	1	—	—
Pendimethalin	Herbicide	82683	40487-42-1	0.012	0.022	na	na	D[n]	[3]—
cis-Permethrin	Insecticide	82687	54774-45-7	0.006	0.014	na	na	[3]—	[3]—
Phorate	Insecticide	82664	298-02-2	0.011	0.055	na	na	—	—
Phorate oxon	Insecticide degradate	61666	2600-69-3	0.027	0.1048	na	na	—	—
Phosmet	Insecticide	61601	732-11-6	0.0079	0.2	na	na	[3]—	[3]—
Phosmet oxon	Insecticide degradate	61668	3735-33-9	0.0511	0.0511	na	na	[3]—	[3]—
Prometon	Herbicide	04037	1610-18-0	0.01	0.012	HAL-US	100	D[m]	D[c,m,n]
Prometryn	Herbicide	04036	7287-19-6	0.0054	0.010	na	na	—	—
Pronamide (Propyzamide)	Herbicide	82676	23950-58-5	0.0036	0.004	RSD5-US	20	—	—
Propanil[4]	Herbicide	82679	709-98-8	0.006	0.014	na	na	—	—

Table 3C. Pesticides and pesticide degradates, primary uses or sources, comparative benchmarks, and reporting information for the U.S. Geological Survey (USGS) National Water Quality Laboratory Schedule 2003, and the expanded versions Schedule 2032 and Schedule 2033.—Continued

[The five-digit USGS parameter code is used to uniquely identify a specific constituent or property. Benchmarks and benchmark values as of April 1, 2010. **Benchmark type**: HAL-US, USEPA Lifetime Health Advisory level; MCL-CA, CDPH maximum contaminant level; MCL-US, USEPA maximum contaminant level; RSD5-US, USEPA risk-specific dose at a risk factor of 10^{-5}. **Other abbreviations**: CAS, Chemical Abstract Service; CDPH, California Department of Public Health; D, detected in groundwater samples (*table 6A*); LRL, laboratory reporting level; na, not available; USEPA, U.S. Environmental Protection Agency; µg/L, micrograms per liter; —, not detected]

Constituent (synonym or abbreviation)	Primary use or source	USGS parameter code	CAS Registry number	Minimum LRL 2006–13 (µg/L)	Maximum LRL 2006–13 (µg/L)	Benchmark type[1]	Benchmark value (µg/L)	Trend-well detection (2006–10)	Trend-well detection (2009–13)
Propargite[5]	Insecticide	82685	2312-35-8	0.020	0.04	na	na	[3]—	[3]—
cis-Propiconazole[2,4]	Fungicide	79846	60207-90-1	0.006	0.013	na	na	—	—
trans-Propiconazole[2,4]	Fungicide	79847	60207-90-1	0.010	0.034	na	na	—	—
Simazine	Herbicide	04035	122-34-9	0.005	0.01	MCL-US	4	D[a,b,c,f,g,h,j,k,m,n,o]	D[a,c,e,f,g,h,j,k,m,n,o]
Tebuthiuron[2]	Herbicide	82670	34014-18-1	0.016	0.028	HAL-US	500	D[g,m]	D[m]
Tefluthrin[5]	Insecticide	61606	79538-32-2	0.0033	0.014	na	na	[3]—	[3]—
Terbufos	Insecticide	82675	13071-79-9	0.012	0.018	HAL-US	0.4	—	—
Terbufos oxon sulfone	Insecticide degradate	61674	56070-15-6	0.045	0.0676	na	na	[3]—	[3]—
Terbuthylazine	Herbicide	04022	5915-41-3	0.006	0.0102	na	na	—	—
Thiobencarb	Herbicide	82681	28249-77-6	0.010	0.016	MCL-CA	70	—	—
Tribufos	Defoliant	61610	78-48-8	0.0044	0.035	na	na	[3]—	[3]—
Trifluralin	Herbicide	82661	1582-09-8	0.006	0.018	HAL-US	10	—	—

[1]Maximum contaminant level benchmarks are listed as MCL-US when the MCL-US and MCL-CA are identical and as MCL-CA when the MCL-CA is lower than the MCL-US or no MCL-US exists.

[2]Compound also analyzed for selected samples by (non-preferred method) laboratory schedule 2060 (*table 3D*).

[3]The median matrix-spike recovery was less than 70 percent. Low recoveries can indicate that the compound might not have been detected in some samples even if it was present.

[4]Compound analyzed by schedules 2032 and 2033, but not by schedule 2003.

[5]Compound analyzed only by schedule 2033.

[a]Detected in the Kern County Subbasin study unit

[b]Detected in the Central Eastside San Joaquin Basin study unit.

[c]Detected in the Middle Sacramento Valley study unit.

[d]Detected in the Northern Sacramento Valley study unit.

[e]Detected in the Madera-Chowchilla study unit.

[f]Detected in the Detected in the Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Desert study unit.

[g]Detected in the Owens and Indian Wells Valleys study unit.

[h]Detected in the Coachella Valley study unit.

[i]Detected in the Colorado River study unit.

[j]Detected in the Antelope Valley study unit.

[k]Detected in the Mojave study unit.

[l]Detected in the Western San Joaquin Valley study unit.

[m]Detected in the Coastal Los Angeles Basin study unit.

[n]Detected in the Upper Santa Ana Watershed study unit.

[o]Detected in the Santa Clara River Valley study unit.

Table 3D. Polar pesticides, pesticide degradates, and caffeine, primary uses or sources, comparative benchmarks, and reporting information for the U.S. Geological Survey (USGS) National Water Quality Laboratory Schedule 2060.

[The five-digit USGS parameter code is used to uniquely identify a specific constituent or property. Benchmarks and benchmark values as of April 1, 2010. **Benchmark type**: HAL-US, USEPA Lifetime Health Advisory level; MCL-CA, CDPH maximum contaminant level; MCL-US, USEPA maximum contaminant level; RSD5-US, USEPA risk specific dose at a risk factor of 10^{-5}. **Other abbreviations**: CAS, Chemical Abstract Service; CDPH, California Department of Public Health; D, detected in groundwater samples (*table 6B*); IRL, interim reporting level; MRL, minimum reporting level; na, not available; USEPA, U.S. Environmental Protection Agency; µg/L, micrograms per liter; —, not detected]

Constituent (synonym or abbreviation)	Primary use or source	USGS parameter code	CAS Registry number	Minimum IRL/MRL 2006–10 (µg/L)	Maximum IRL/MRL 2006–10 (µg/L)	Benchmark type[1]	Benchmark value (µg/L)	Trend-well detection[2] (2006–10)	Trend-well detection[2] (2009–13)
Acifluorfen	Herbicide	49315	50594-66-6	0.028	0.06	na	na	[4]—	[4]—
Aldicarb	Insecticide	49312	116-06-3	0.040	[3]0.15	MCL-US	3	—	—
Aldicarb sulfone	Degradate	49313	1646-88-4	0.018	0.08	MCL-US	3	—	—
Aldicarb sulfoxide	Degradate	49314	1646-87-3	0.040	0.10	MCL-US	4	—	—
Atrazine[5]	Herbicide	39632	1912-24-9	0.008	0.04	MCL-CA	1	D[m]	D[m,n]
Bendiocarb	Insecticide	50299	22781-23-3	0.040	0.08	na	na	—	—
Benomyl	Fungicide	50300	17804-35-2	0.020	0.06	na	na	—	—
Bensulfuron-methyl	Herbicide	61693	83055-99-6	0.018	0.06	na	na	—	—
Bentazon	Herbicide	38711	25057-89-0	0.020	0.06	MCL-CA	18	D[c]	D[c]
Bromacil	Herbicide	04029	314-40-9	0.018	0.06	HAL-US	70	D[n]	D[n]
Bromoxynil	Herbicide	49311	1689-84-5	0.044	0.12	na	na	—	—
Caffeine	Beverages	50305	58-08-2	0.018	0.08	na	na	—	—
Carbaryl[5]	Herbicide	49310	63-25-2	0.018	0.04	RSD5-US	400	—	—
Carbofuran[5]	Herbicide	49309	1563-66-2	0.016	0.06	MCL-CA	18	—	—
Chloramben, methyl ester	Herbicide	61188	7286-84-2	0.024	0.10	na	na	—	—
Chlorimuron-ethyl	Herbicide	50306	90982-32-4	0.032	0.08	na	na	[7]—	[7]—
3-(4-Chlorophenyl)-1-methyl urea	Degradate	61692	5352-88-5	0.036	0.12	na	na	—	—
Clopyralid	Herbicide	49305	1702-17-6	0.024	0.07	na	na	[4]—	[4]—
Cycloate	Herbicide	04031	1134-23-2	0.014	0.06	na	na	[4]—	[4]—
2,4-D[6]	Herbicide	39732	94-75-7	0.020	0.06	HAL-US	70	—	—
2,4-D methyl ester[6]	Herbicide	50470	1928-38-7	0.040	0.20	na	na	—	—
2,4-D plus 2,4-D methyl ester[6]	Herbicides	66496	na	0.020	0.06	na	na	—	—
2,4-DB (4-(2,4-Dichlorophenoxy) butyric acid)	Herbicide	38746	94-82-6	0.020	0.02	na	na	—	—
DCPA (Dacthal) monoacid	Degradate	49304	887-54-7	0.020	0.04	na	na	—	—
Deethylatrazine (2-Chloro-4-isopropyl-amino-6-amino-*s*-triazine)[5]	Degradate	04040	6190-65-4	0.020	0.06	na	na	D[m]	D[m,n]
Deisopropyl atrazine (2-Chloro-6-ethyl-amino-4-amino-*s*-triazine)	Degradate	04038	1007-28-9	0.060	0.08	na	na	D[n]	D[n]
Dicamba	Herbicide	38442	1918-00-9	0.036	0.08	HAL-US	4,000	[4]—	[4]—
Dichlorprop	Herbicide	49302	120-36-5	0.020	0.04	na	na	—	—

Table 3D. Polar pesticides, pesticide degradates, and caffeine, primary uses or sources, comparative benchmarks, and reporting information for the U.S. Geological Survey (USGS) National Water Quality Laboratory Schedule 2060.—Continued

[The five-digit USGS parameter code is used to uniquely identify a specific constituent or property. Benchmarks and benchmark values as of April 1, 2010. **Benchmark type**: HAL-US, USEPA Lifetime Health Advisory level; MCL-CA, CDPH maximum contaminant level; MCL-US, USEPA maximum contaminant level; RSD5-US, USEPA risk specific dose at a risk factor of 10^{-5}. **Other abbreviations**: CAS, Chemical Abstract Service; CDPH, California Department of Public Health; D, detected in groundwater samples (*table 6B*); IRL, interim reporting level; MRL, minimum reporting level; na, not available; USEPA, U.S. Environmental Protection Agency; µg/L, micrograms per liter; —, not detected]

Constituent (synonym or abbreviation)	Primary use or source	USGS parameter code	CAS Registry number	Minimum IRL/MRL 2006–10 (µg/L)	Maximum IRL/MRL 2006–10 (µg/L)	Benchmark type[1]	Benchmark value (µg/L)	Trend-well detection[2] (2006–10)	Trend-well detection[2] (2009–13)
Dinoseb (Dinitrobutyl phenol)	Herbicide	49301	88-85-7	0.038	0.04	MCL-CA	7	—	—
Diphenamid	Herbicide	04033	957-51-7	0.010	0.04	HAL-US	200	—	—
Diuron	Herbicide	49300	330-54-1	0.016	0.04	HAL-US	10	D[n]	D[n]
Fenuron	Herbicide	49297	101-42-8	0.018	0.06	na	na	[7]—	[7]—
Flumetsulam	Herbicide	61694	98967-40-9	0.011	0.06	na	na	[7]—	[7]—
Fluometuron	Herbicide	38811	2164-17-2	0.016	0.04	HAL-US	90	—	—
Hydroxyatrazine (2-Hydroxy-4-isopropyl-amino-6-ethylamino-*s*-triazine)	Degradate	50355	2163-68-0	0.032	0.08	na	na	D[c]	D[c]
3-Hydroxycarbofuran	Degradate	49308	16655-82-6	0.006	0.04	na	na	—	—
Imazaquin	Herbicide	50356	81335-37-7	0.036	0.06	na	na	[7]—	[7]—
Imazethapyr	Herbicide	50407	81335-77-5	0.038	0.06	na	na	[7]—	[7]—
Imidacloprid	Insecticide	61695	138261-41-3	0.020	0.06	na	na	—	—
Linuron	Herbicide	38478	330-55-2	0.014	0.04	na	na	—	—
MCPA (2-Methyl-4-chlorophenoxyacetic acid)	Herbicide	38482	94-74-6	0.040	0.07	HAL-US	30	—	—
MCPB (4-(2-Methyl-4-chlorophenoxy) butyric acid)	Herbicide	38487	94-81-5	0.060	0.20	na	na	[4]—	[4]—
Metalaxyl[5]	Fungicide	50359	57837-19-1	0.020	0.04	na	na	—	—
Methiocarb	Insecticide	38501	2032-65-7	0.034	0.04	na	na	—	—
Methomyl	Insecticide	49296	16752-77-5	0.060	0.12	HAL-US	200	—	—
Metsulfuron methyl	Herbicide	61697	74223-64-6	0.067	0.14	na	na	—	—
Neburon	Herbicide	49294	555-37-3	0.012	0.02	na	na	—	—
Nicosulfuron	Herbicide	50364	111991-09-4	0.040	0.10	na	na	[7]—	[7]—
Norflurazon	Herbicide	49293	27314-13-2	0.020	0.04	na	na	—	—
Oryzalin	Herbicide	49292	19044-88-3	0.023	0.04	na	na	—	—
Oxamyl	Insecticide	38866	23135-22-0	0.040	0.12	MCL-CA	50	—	—
Picloram	Herbicide	49291	1918-02-01	0.032	0.12	MCL-US	500	[4]—	[4]—
Propham	Herbicide	49236	122-42-9	0.030	0.06	HAL-US	100	—	—
Propiconazole[5]	Fungicide	50471	60207-90-1	0.010	0.06	na	na	[4]—	[4]—
Propoxur	Insecticide	38538	114-26-1	0.008	0.06	na	na	—	—
Siduron	Herbicide	38548	1982-49-6	0.020	0.04	na	na	—	—
Sulfometuron-methyl	Herbicide	50337	74222-97-2	0.060	0.09	na	na	[7]—	[7]—

Table 3D. Polar pesticides, pesticide degradates, and caffeine, primary uses or sources, comparative benchmarks, and reporting information for the U.S. Geological Survey (USGS) National Water Quality Laboratory Schedule 2060.—Continued

[The five-digit USGS parameter code is used to uniquely identify a specific constituent or property. Benchmarks and benchmark values as of April 1, 2010. **Benchmark type**: HAL-US, USEPA Lifetime Health Advisory level; MCL-CA, CDPH maximum contaminant level; MCL-US, USEPA maximum contaminant level; RSD5-US, USEPA risk specific dose at a risk factor of 10^{-5}. **Other abbreviations**: CAS, Chemical Abstract Service; CDPH, California Department of Public Health; D, detected in groundwater samples (*table 6B*); IRL, interim reporting level; MRL, minimum reporting level; na, not available; USEPA, U.S. Environmental Protection Agency; µg/L, micrograms per liter; —, not detected]

Constituent (synonym or abbreviation)	Primary use or source	USGS parameter code	CAS Registry number	Minimum IRL/MRL 2006–10 (µg/L)	Maximum IRL/MRL 2006–10 (µg/L)	Benchmark type[1]	Benchmark value (µg/L)	Trend-well detection[2] (2006–10)	Trend-well detection[2] (2009–13)
Tebuthiuron[5]	Herbicide	82670	34014-18-1	0.026	0.06	HAL-US	500	[7]—	[7]—
Terbacil	Herbicide	04032	5902-51-2	0.026	0.04	HAL-US	90	—	—
Triclopyr	Herbicide	49235	55335-06-3	0.026	0.08	na	na	—	—

[1]Maximum contaminant level benchmarks are listed as MCL-US when the MCL-US and MCL-CA are identical and as MCL-CA when the MCL-CA is lower than the MCL-US or no MCL-US exists.

[2]Analysis by this laboratory schedule was performed for only 41 wells in 8 study units during initial sampling and for only 24 wells in 2 study units during resampling.

[3]Value is a laboratory reporting level or a method reporting level, rather than an IRL or MRL.

[4]The median matrix-spike recovery was less than 70 percent. Low recoveries could indicate that the compound might not have been detected in some samples even if it was present.

[5]The preferred analytical method for this constituent is laboratory schedule 2003/2033 (*table 3C*).

[6]Because 2,4-D and 2,4-D methyl ester can convert interchangeably during analysis, they are considered one constituent (parameter code 66496) in this report.

[7]The median laboratory matrix-spike recovery during 2007–08 sampling was greater than 130 percent. High recoveries could indicate that reported values could be higher than what is in the samples.

[a]Detected in the Kern County Subbasin study unit

[b]Detected in the Central Eastside San Joaquin Basin study unit.

[c]Detected in the Middle Sacramento Valley study unit.

[d]Detected in the Northern Sacramento Valley study unit.

[e]Detected in the Madera-Chowchilla study unit.

[f]Detected in the Detected in the Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Desert study unit.

[g]Detected in the Owens and Indian Wells Valleys study unit.

[h]Detected in the Coachella Valley study unit.

[i]Detected in the Colorado River study unit.

[j]Detected in the Antelope Valley study unit.

[k]Detected in the Mojave study unit.

[l]Detected in the Western San Joaquin Valley study unit.

[m]Detected in the Coastal Los Angeles Basin study unit.

[n]Detected in the Upper Santa Ana Watershed study unit.

[o]Detected in the Santa Clara River Valley study unit.

Table 3E. Constituents of special interest, primary uses or sources, comparative benchmarks, and reporting information for the Montgomery Watson Harza Laboratory and Weck Laboratories, Inc.

[The five-digit U.S. Geological Survey (USGS) parameter code is used to uniquely identify a specific constituent or property. Benchmarks and benchmark values as of April 1, 2010. **Benchmark type**: MCL-US, USEPA maximum contaminant level; HAL-US, U.S. Environmental Protection Agency lifetime health advisory level; MCL-CA, California Department of Public Health maximum contaminant level; NL-CA, California Department of Public Health notification level. **Other abbreviations**: CAS, Chemical Abstract Service; D, detected in groundwater samples (*table 7*); LRL, laboratory reporting level; MRL, minimum reporting level; µg/L, micrograms per liter; nc, not collected; —, not detected]

Constituent	Primary use or source	USGS parameter code	CAS Registry number	MRL or LRL (µg/L)	Benchmark type[1]	Benchmark value (µg/L)	Trend-well detection (2006–10)	Trend-well detection (2009–13)
Perchlorate (unfiltered)[2]	Rocket fuel, fireworks, flares, natural	61209	14797-73-0	0.5	MCL-CA	6	D[b,h,m,n,o]	nc
Perchlorate (filtered)[3]	Rocket fuel, fireworks, flares, natural	63790	14797-73-0	0.1	MCL-CA	6	D[d,e,f,i,j,k,l]	D[a,b,c,d,e,f,g,h,i,j,k,l,m,n,o]
N-Nitrosodimethylamine (NDMA)[4]	Disinfection by-product	34438	62-75-9	0.002	NL-CA	0.010	[5]—	[5]—
1,2,3-Trichloropropane (1,2,3-TCP)[4]	Fumigant, solvent	77443	96-18-4	0.005	HAL-US[6]	40	D[b,n]	D[a,b]

[1]Maximum contaminant level benchmarks are listed as MCL-US when the MCL-US and MCL-CA are identical and as MCL-CA when the MCL-CA is lower than the MCL-US or no MCL-US exists.

[2]Perchlorate analyses from unfiltered samples (initial samples from nine study units) were performed by Montgomery Watson-Harza Laboratory. The nominal MRL was 0.5 µg/L; some higher salinity samples were diluted for analysis and had an MRL of 1 µg/L.

[3]Perchlorate analyses from filtered samples performed by Weck Laboratories, Inc. Analyses on filtered samples were performed on initial samples from seven study units and resamples for all study units. Perchlorate analyses both on unfiltered and filtered samples were performed on initial samples from the Colorado River study unit as part of a method comparability period.

[4]NDMA and low-level 1,2,3-TCP analyses were performed by Montgomery Watson-Harza Laboratory for samples collected before August 2007 and by Weck Laboratories Inc., after that date. Additionally, all samples were analyzed for 1,2,3-TCP by the USGS National Water Quality Laboratory schedule 2020, which had an LRL ranging from 0.12 to 0.18 (*table 3A*).

[5]Initial samples from only 38 wells in 10 study units were analyzed for NDMA. Only resamples from the Coastal Los Angeles Basin were analyzed for NDMA.

[6]In some earlier reports in this series, the NL-CA (0.005 µg/L) was used as the comparison benchmark for 1,2,3-TCP.

[a]Detected in the Kern County Subbasin study unit.

[b]Detected in the Central Eastside San Joaquin Basin study unit.

[c]Detected in the Middle Sacramento Valley study unit.

[d]Detected in the Northern Sacramento Valley study unit.

[e]Detected in the Madera-Chowchilla study unit.

[f]Detected in the Western San Joaquin Valley study unit.

[g]Detected in the Owens and Indian Wells Valleys study unit.

[h]Detected in the Coachella Valley study unit.

[i]Detected in the Colorado River study unit.

[j]Detected in the Antelope Valley study unit.

[k]Detected in the Mojave study unit.

[l]Detected in the Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Desert study unit.

[m]Detected in the Coastal Los Angeles Basin study unit.

[n]Detected in the Upper Santa Ana Watershed study unit.

[o]Detected in the Santa Clara River Valley study unit.

Table 3F. Nutrients, comparative benchmarks, and reporting information for the U.S. Geological Survey (USGS) National Water Quality Laboratory Schedule 2755.

[The five-digit USGS parameter code is used to uniquely identify a specific constituent or property. Benchmarks and benchmark values as of February 10, 2007. **Benchmark type**: HAL-US, U.S. Environmental Protection Agency lifetime health advisory level; MCL-CA, California Department of Public Health maximum contaminant level; MCL-US, U.S. Environmental Protection Agency maximum contaminant level. **Other abbreviations**: CAS, Chemical Abstract Service; IRL, interim reporting level; MDL, method detection limit; mg/L, milligrams per liter; MRL, minimum reporting level; na, not available; nv, no value in category]

Constituent	USGS parameter code	CAS Registry number	Minimum IRL, MDL, or MRL 2006–13 (mg/L)	Maximum IRL, MDL, or MRL 2006–13 (mg/L)	SRL[1] (mg/L)	Benchmark type[1,2]	Benchmark value (mg/L)
Ammonia (as nitrogen)	00608	7664-41-7	0.010	0.02	0.014	HAL-US	[3]24.7
Nitrite (as nitrogen)	00613	14797-65-0	0.002	0.002	nv	MCL-US	1
Nitrate plus nitrite (as nitrogen)	00631	na	0.04	0.08	0.001	MCL-US	10
Total nitrogen (ammonia, nitrite, nitrate, organic nitrogen)	62854	17778-88-0	0.06	0.1	nv	na	na
Orthophosphate (as phosphorus)	00671	14265-44-2	0.006	0.008	nv	na	na

[1]Study reporting levels for ammonia and nitrate plus nitrite were established on the basis of detections in field blanks during GAMA trend sampling and GAMA sampling done at about the same time as GAMA trend sampling.

[2]Maximum contaminant level benchmarks are listed as MCL-US when the MCL-US and MCL-CA are identical and as MCL-CA when the MCL-CA is lower than the MCL-US or no MCL-US exists.

[3]The HAL-US is 30 mg/L "as ammonia." To facilitate comparison to the analytical results, we have converted and reported this HAL-US as 24.7 mg/L "as nitrogen."

Table 3G. Major and minor ions, total dissolved solids, trace elements, comparative benchmarks, and reporting information for the U.S. Geological Survey (USGS) National Water Quality Laboratory Schedule 1948.

[The five-digit USGS parameter code is used to uniquely identify a specific constituent or property. Benchmarks and benchmark values as of June 1, 2008. **Benchmark type**: AL-US, U.S. Environmental Protection Agency action level; HAL-US, U.S. Environmental Protection Agency lifetime health advisory level; MCL-CA, California Department of Public Health maximum contaminant level; MCL-US, U.S. Environmental Protection Agency maximum contaminant level; NL-CA, California Department of Public Health notification level; SMCL-CA, California Department of Public Health secondary maximum contaminant level. **Other abbreviations**: CAS, Chemical Abstract Service; IRL, interim reporting limit; LRL, laboratory reporting level; MDL, method detection limit; mg/L, milligrams per liter; MRL, minimum reporting level; na, not available; nv, no value in category; SRL, study reporting limit; µg/L, micrograms per liter]

Constituent	USGS parameter code	CAS Registry number	Minimum IRL, MDL, or MRL 2006–13 (mg/L)	Maximum IRL, MDL, or MRL 2006–13 (mg/L)	SRL applied to samples collected from April to October 2009[1]	SRL applied to samples collected from October 2009 to April 2013[2]	Benchmark type[3]	Benchmark value
Major and minor ions (mg/L)								
Bromide	71870	24959-67-9	0.01	0.02	nv	nv	na	na
Calcium	00915	7440-70-2	0.02	0.044	nv	nv	na	na
Chloride	00940	16887-00-6	0.06	0.20	nv	nv	SMCL-CA	[4]250 (500)
Fluoride	00950	16984-48-8	0.04	0.12	nv	nv	MCL-CA	2
Iodide	71865	7553-56-2	0.001	0.002	nv	nv	na	na
Magnesium	00925	7439-95-4	0.008	0.022	nv	nv	na	na
Potassium	00935	7440-09-7	0.02	0.16	nv	nv	na	na
Silica	00955	7631-86-9	0.018	0.058	nv	nv	na	na
Sodium	00930	7440-23-5	0.06	0.20	nv	nv	na	na
Sulfate	00945	14808-79-8	0.09	0.18	nv	nv	SMCL-CA	[4]250 (500)
Residue on evaporation (total dissolved solids, TDS)	70300	na	10	20	nv	nv	SMCL-CA	[4]500 (1,000)
Trace elements (µg/L)								
Aluminum	01106	7429-90-5	1.6	4.4	1.6	12.7	MCL-CA	1,000
Antimony	01095	7440-36-0	0.027	0.2	nv	nv	MCL-US	6
Arsenic	01000	7440-38-2	0.022	0.12	nv	nv	MCL-US	10
Barium	01005	7440-39-3	0.07	0.4	0.36	nv	MCL-CA	1,000
Beryllium	01010	7440-41-7	0.006	0.06	nv	nv	MCL-US	4
Boron	01020	7440-42-8	2.8	8	nv	nv	NL-CA	1,000
Cadmium	01025	7440-43-9	0.016	0.04	nv	nv	MCL-US	5
Chromium	01030	7440-47-3	0.04	0.14	0.42	nv	MCL-CA	50
Cobalt	01035	7440-48-4	0.010	0.046	nv	all data	na	na
Copper	01040	7440-50-8	0.4	1.6	1.7	2.1	AL-US	1,300
Iron	01046	7439-89-6	3.2	8	6	6	SMCL-CA	300
Lead	01049	7439-92-1	0.025	0.12	0.65	0.82	AL-US	15
Lithium	01130	7439-93-2	0.22	1	nv	nv	na	na
Manganese	01056	7439-96-5	0.13	0.30	0.2	0.66	SMCL-CA	50
Molybdenum	01060	7439-98-7	0.014	0.4	nv	0.023	HAL-US	40
Nickel	01065	7440-02-0	0.06	0.2	0.36	0.21	MCL-CA	100
Selenium	01145	7782-49-2	0.03	0.08	nv	nv	MCL-US	50
Silver	01075	7440-22-4	0.005	0.20	nv	nv	SMCL-CA	100
Strontium	01080	7440-24-6	0.2	0.8	0.99	nv	HAL-US	4,000
Thallium	01057	7440-28-0	0.01	0.04	nv	nv	MCL-US	2
Tungsten	01155	7440-33-7	0.01	0.06	0.11	0.023	na	na
Uranium	22703	7440-61-1	0.004	0.04	nv	nv	MCL-US	30
Vanadium	01085	7440-62-2	0.04	0.16	0.1	nv	NL-CA	50
Zinc	01090	7440-66-6	0.6	2.8	4.8	6.2	SMCL-CA[6]	5,000

[1]SRL based on Olsen and others (2010) and applied to results for samples collected prior to October 2009.

[2]SRL based on Davis and others (2014) and applied to results for samples collected starting in October 2009.

[3]Maximum contaminant level benchmarks are listed as MCL-US when the MCL-US and MCL-CA are identical and as MCL-CA when the MCL-CA is lower than the MCL-US or no MCL-US exists.

[4]The recommended SMCL-CA benchmarks for chloride, sulfate, and TDS are listed with the upper SMCL-CA benchmarks in parentheses.

[5]Detections of cobalt were found to be unreliable on the basis of their frequency of occurrence in field blanks, likely because of its presence in filters or other materials in the sampling environment (Davis and others, 2014); this constituent is reported as "not analyzed" because reliable analysis was not possible.

[6]The SMCL-CA for zinc is listed as SMCL-CA because SMCLs established by CDPH are used in this report for all constituents that have SMCL-CA values.

Table 3H. Isotopic and radioactive constituents, comparative benchmarks, and reporting information for laboratories.

[The five-digit U.S. Geological Survey (USGS) parameter code is used to uniquely identify a specific constituent or property. Stable isotope ratios are reported in the standard delta notation (δ), the ratio of a heavier isotope to a more common lighter isotope of that element, relative to a standard reference material. Benchmark type and value for tritium was in effect during both sampling periods. **Benchmark type**: MCL-CA, California Department of Public Health maximum contaminant level; MCL-US, USEPA maximum contaminant level. **Other abbreviations**: CAS, Chemical Abstract Service; MRL, minimum reporting level; MU, method uncertainty; na, not available; pCi/L, picocuries per liter; ssL_c, sample specific critical level; USEPA, U.S. Environmental Protection Agency]

Constituent	USGS parameter code	CAS Registry number	Reporting level type	Reporting level or uncertainty (range)	Benchmark type[1]	Benchmark value
Stable isotope ratios (per mil)						
$\delta^{2}H$ of water[2]	82082	na	MU	2	na	na
$\delta^{18}O$ of water[2]	82085	na	MU	0.20	na	na
$\delta^{13}C$ of dissolved carbonates[3]	82081	na	1 sigma	0.05	na	na
Radioactive constituents (percent modern)						
[5]Carbon-14	49933	14762-75-5	1 sigma	(0.0015–0.002)	na	na
Radioactive constituents (pCi/L)						
Tritium[6]	07000	10028-17-8	MRL or ssL_c	(0.3–1)	MCL-CA	20,000

[1]Maximum contaminant level benchmarks are listed as MCL-US when the MCL-US and MCL-CA are identical and as MCL-CA when the MCL-CA is lower than the MCL-US or no MCL-US exists.

[2]USGS Stable Isotope Laboratory, Reston, Virginia.

[3]University of Waterloo (contract laboratory).

[4]Parameters 82081, 82082, and 82085 are isotopes that are inherent constituents of the substance measured. Parameter 82081 was not detected in Southeast San Joaquin Valley study unit wells during resampling in 2008 because those samples were not analyzed for it.

[5]University of Arizona, Accelerator Mass Spectrometry Laboratory (contract laboratory).

[6]USGS Stable Isotope and Tritium Laboratory, Menlo Park, California.

Table 4. Water-quality indicators in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. **GAMA well identification number acronyms**: ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. ***Benchmark type***: SMCL-CA, California Department of Public Health secondary maximum contaminant level; SMCL-US, U.S. Environmental Protection Agency secondary maximum contaminant level. Benchmark type, benchmark level, and RL as of August 1, 2013. **Other abbreviations**: $CaCO_3$, calcium carbonate; E, estimated or having a higher degree of uncertainty; mg/L, milligrams per liter; mm/dd/yyyy, month/day/year; na, not available; nc, not collected; RL, reporting level or range; USGS, U.S. Geological Survey; µS/cm, microsiemens per centimeter; <, less than; >, greater than; *, concentration is greater than the benchmark level; **, concentration is greater than the upper benchmark level; —, not detected; °C, degrees Celsius]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Dissolved oxygen, field (mg/L) (00300)	Water temperature, field (°C) (00010)	pH, laboratory (standard units) (00403)[1]	pH, field (standard units) (00400)	Specific conductance, laboratory (µS/cm at 25 °C) (90095)[1]	Specific conductance, field (µS/cm at 25 °C) (00095)	Alkalinity, laboratory (mg/L as $CaCO_3$) (29801)[1]	Alkalinity, field (mg/L as $CaCO_3$) (29802)	Bicarbonate, calculated from laboratory data[3] (mg/L)	Bicarbonate, field (mg/L) (63786)	Carbonate, calculated from laboratory data[3] (mg/L)	Carbonate, field (mg/L) (63788)
Benchmark type		na	na	SMCL-US	SMCL-US	SMCL-CA	SMCL-CA	na	na	na	na	na	na
Benchmark level		na	na	<6.5 or >8.5	<6.5 or >8.5	[2]900 (1,600)	[2]900 (1,600)	na	na	na	na	na	na
RL		0.2	0.0–38.5	0–14	0–14	5	5	1	1	1	1	1	1
Kern County Subbasin study unit													
KERN-02	01/10/2006	3.9	22.5	nc	nc	nc	423	nc	nc	nc	nc	nc	nc
	02/11/2010	0.5	24.5	8.5	8.5	422	421	88	nc	105	nc	1.5	nc
KERN-20	02/13/2006	6.4	31.0	nc	nc	nc	534	nc	nc	nc	nc	nc	nc
	02/10/2010	—	32.0	8.7*	9.0*	546	544	100	nc	116	nc	2.7	nc
KERN-21	02/13/2006	5.7	20.0	nc	nc	nc	1,300*	nc	nc	nc	nc	nc	nc
	03/16/2010	4.7	20.0	6.9	7.1	1,580*	1,590*	19	nc	23	nc	—	nc
KERN-29	02/28/2006	5.0	20.0	nc	nc	nc	209	nc	nc	nc	nc	nc	nc
	02/10/2010	4.5	20.5	8.2	8.5	194	175	88	nc	106	nc	0.8	nc
KERN-33	03/01/2006	1.1	22.5	nc	nc	nc	461	nc	nc	nc	nc	nc	nc
	02/09/2010	0.8	22.5	7.9	7.8	445	445	161	nc	195	nc	0.7	nc
Central Eastside San Joaquin Basin study unit													
CE-QPC-02	03/22/2006	4.7	18.0	nc	nc	nc	308	nc	nc	nc	nc	nc	nc
	01/26/2010	5.5	18.5	7.6	7.5	326	320	130	nc	158	nc	0.3	nc
MER-11	04/12/2006	1.5	20.0	7.1	7.6	276	285	117	116	143	140	0.1	—
	01/28/2010	1.7	20.0	7.9	7.7	293	274	121	nc	146	nc	0.5	nc
MER-14	04/17/2006	1.1	26.0	nc	nc	nc	306	nc	nc	nc	nc	nc	nc
	01/27/2010	1.4	25.5	8.1	8.1	305	297	112	nc	135	nc	0.8	nc
MOD-07	03/21/2006	3.4	20.5	nc	nc	nc	874	nc	nc	nc	nc	nc	nc
	01/26/2010	3.6	21.5	7.7	7.6	1,020*	937*	208	nc	253	nc	0.6	nc
TRLK-03	03/21/2006	2.4	22.0	8.2	8.3	324	320	142	141	171	168	1.2	—
	01/28/2010	0.4	23.0	8.3	8.3	330	327	153	nc	183	nc	1.7	nc

Table 4. Water-quality indicators in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. **GAMA well identification number acronyms**: ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. ***Benchmark type***: SMCL-CA, California Department of Public Health secondary maximum contaminant level; SMCL-US, U.S. Environmental Protection Agency secondary maximum contaminant level. Benchmark type, benchmark level, and RL as of August 1, 2013. **Other abbreviations**: $CaCO_3$, calcium carbonate; E, estimated or having a higher degree of uncertainty; mg/L, milligrams per liter; mm/dd/yyyy, month/day/year; na, not available; nc, not collected; RL, reporting level or range; USGS, U.S. Geological Survey; µS/cm, microsiemens per centimeter; <, less than; >, greater than; *, concentration is greater than the benchmark level; **, concentration is greater than the upper benchmark level; —, not detected; °C, degrees Celsius]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Dissolved oxygen, field (mg/L) (00300)	Water temperature, field (°C) (00010)	pH, laboratory (standard units) (00403)[1]	pH, field (standard units) (00400)	Specific conductance, laboratory (µS/cm at 25 °C) (90095)[1]	Specific conductance, field (µS/cm at 25 °C) (00095)	Alkalinity, laboratory (mg/L as $CaCO_3$) (29801)[1]	Alkalinity, field (mg/L as $CaCO_3$) (29802)	Bicarbonate, calculated from laboratory data[3] (mg/L)	Bicarbonate, field (mg/L) (63786)	Carbonate, calculated from laboratory data[3] (mg/L)	Carbonate, field (mg/L) (63788)
Central Eastside San Joaquin Basin study unit—Continued													
TRLK-05	03/22/2006	3.1	21.5	8.0	8.2	261	264	98	95	118	114	0.5	—
	01/25/2010	3.1	21.5	8.0	8.1	268	263	99	nc	120	nc	0.6	nc
Middle Sacramento Valley study unit													
ESAC-01	06/29/2006	2.4	19.0	nc	nc	nc	372	nc	nc	nc	nc	nc	nc
	08/11/2010	3.4	19.0	7.3	7.0	421	416	120	nc	146	nc	0.1	nc
ESAC-19	07/20/2006	2.3	21.0	7.6	7.0	429	421	191	nc	232	nc	0.4	nc
	08/10/2010	2.3	21.0	7.5	7.4	429	433	189	nc	230	nc	0.3	nc
WSAC-19	08/01/2006	0.7	20.5	nc	7.6	nc	567	nc	nc	nc	nc	nc	nc
	08/11/2010	0.1	20.5	7.8	7.6	569	568	186	nc	226	nc	0.7	nc
ESAC-34	08/17/2006	2.5	17.5	7.6	7.2	593	591	273	nc	332	nc	0.6	nc
	08/12/2010	1.7	17.5	7.6	7.3	612	612	283	nc	344	nc	0.6	nc
WSAC-03	07/11/2006	7.7	20.0	7.5	7.3	338	337	133	122	162	148	0.2	—
	08/10/2010	6.2	20.0	7.4	7.1	313	311	127	nc	155	nc	0.2	nc
WSAC-08	07/18/2006	4.1	20.5	7.4	7.0	535	536	221	202	269	245	0.3	—
	08/12/2010	4.1	19.5	7.4	7.2	535	538	220	nc	268	nc	0.3	nc
WSAC-17	08/01/2006	1.3	18.0	7.5	7.2	428	429	204	nc	248	nc	0.4	nc
	08/09/2010	0.9	20.0	7.8	7.5	484	489	217	nc	263	nc	0.8	nc
WSAC-32	08/21/2006	1.8	18.0	nc	7.8	nc	409	nc	nc	nc	nc	nc	nc
	08/09/2010	0.7	18.5	8.0	7.7	449	450	229	nc	277	nc	1.3	nc
Northern Sacramento Valley study unit													
NSAC-09	11/06/2007	2.2	20.5	7.9	8.1	272	283	134	126	162	153	0.6	—
	01/11/2011	2.8	20.5	8.1	8.0	252	260	141	nc	170	nc	1.0	nc
NSAC-16	12/06/2007	4.9	20.0	7.9	7.8	274	271	115	109	139	132	0.5	—
	01/12/2011	4.9	20.0	8.0	7.5	269	270	117	nc	141	nc	0.7	nc

Table 4. Water-quality indicators in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. **GAMA well identification number acronyms**: ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. ***Benchmark type***: SMCL-CA, California Department of Public Health secondary maximum contaminant level; SMCL-US, U.S. Environmental Protection Agency secondary maximum contaminant level. Benchmark type, benchmark level, and RL as of August 1, 2013. **Other abbreviations**: $CaCO_3$, calcium carbonate; E, estimated or having a higher degree of uncertainty; mg/L, milligrams per liter; mm/dd/yyyy, month/day/year; na, not available; nc, not collected; RL, reporting level or range; USGS, U.S. Geological Survey; µS/cm, microsiemens per centimeter; <, less than; >, greater than; *, concentration is greater than the benchmark level; **, concentration is greater than the upper benchmark level; —, not detected; °C, degrees Celsius]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Dissolved oxygen, field (mg/L) (00300)	Water temperature, field (°C) (00010)	pH, laboratory (standard units) (00403)[1]	pH, field (standard units) (00400)	Specific conductance, laboratory (µS/cm at 25 °C) (90095)[1]	Specific conductance, field (µS/cm at 25 °C) (00095)	Alkalinity, laboratory (mg/L as $CaCO_3$) (29801)[1]	Alkalinity, field (mg/L as $CaCO_3$) (29802)	Bicarbonate, calculated from laboratory data[3] (mg/L)	Bicarbonate, field (mg/L) (63786)	Carbonate, calculated from laboratory data[3] (mg/L)	Carbonate, field (mg/L) (63788)
Northern Sacramento Valley study unit—Continued													
RED-01	10/01/2007	6.0	20.0	7.8	7.5	198	200	97	nc	118	nc	0.3	nc
	01/11/2011	4.9	19.0	7.8	7.6	195	199	95	nc	115	nc	0.3	nc
RED-12	11/08/2007	0.1	19.5	7.7	7.6	248	247	113	109	137	132	0.3	—
	01/10/2011	0.4	19.0	7.9	7.6	239	240	113	nc	137	nc	0.5	nc
Madera-Chowchilla study unit													
MADCHOW-03	04/15/2008	3.3	20.5	7.4	7.2	218	218	76	nc	92	nc	0.1	nc
	03/15/2011	4.0	20.5	7.5	7.0	216	220	79	nc	96	nc	0.1	nc
MADCHOW-05	04/16/2008	nc	24.5	7.3	7.0	267	272	97	nc	118	nc	0.1	nc
	03/15/2011	5.8	23.0	7.3	6.9	247	255	91	nc	110	nc	0.1	nc
MADCHOW-24	05/13/2008	5.7	21.0	7.2	8.0	302	317	84	nc	103	nc	0.1	nc
	03/16/2011	4.9	20.0	7.7	7.3	315	314	132	nc	160	nc	0.4	nc
MADCHOW-28	05/19/2008	7.5	21.0	7.3	6.9	1,270*	1,290*	394	nc	480	nc	0.4	nc
	03/16/2011	6.6	19.5	7.4	7.0	1,190*	1,190*	398	nc	484	nc	0.6	nc
Western San Joaquin Valley study unit													
DM-12	03/11/2010	5.0	21.0	7.5	7.6	1,120*	1,110*	199	nc	242	nc	0.4	nc
	04/02/2013	5.0	21.0	7.7	7.4	1,090*	1,100*	202	nc	245	nc	0.6	nc
DM-19	04/14/2010	—	23.0	7.7	7.7	1,730**	1,700**	69	103	84	125	0.2	—
	04/02/2013	—	23.0	7.9	7.4	1,730**	1,740**	112	112	136	135	0.5	—
DM-26	06/17/2010	4.6	19.5	7.3	7.1	1,250*	1,240*	296	nc	360	nc	0.3	nc
	04/03/2013	4.2	19.5	7.6	7.3	1,200*	1,180*	298	nc	362	nc	0.7	nc
WS-07	06/10/2010	—	28.0	8.2	8.3	1,280*	1,320*	78.4	nc	94	nc	0.7	nc
	04/03/2013	—	28.5	8.4	8.4	1,080*	1,080*	78.8	nc	94	nc	1.1	nc

Table 4. Water-quality indicators in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. **GAMA well identification number acronyms**: ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. ***Benchmark type***: SMCL-CA, California Department of Public Health secondary maximum contaminant level; SMCL-US, U.S. Environmental Protection Agency secondary maximum contaminant level. Benchmark type, benchmark level, and RL as of August 1, 2013. **Other abbreviations**: $CaCO_3$, calcium carbonate; E, estimated or having a higher degree of uncertainty; mg/L, milligrams per liter; mm/dd/yyyy, month/day/year; na, not available; nc, not collected; RL, reporting level or range; USGS, U.S. Geological Survey; µS/cm, microsiemens per centimeter; <, less than; >, greater than; *, concentration is greater than the benchmark level; **, concentration is greater than the upper benchmark level; —, not detected; °C, degrees Celsius]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Dissolved oxygen, field (mg/L) (00300)	Water temperature, field (°C) (00010)	pH, laboratory (standard units) (00403)[1]	pH, field (standard units) (00400)	Specific conductance, laboratory (µS/cm at 25 °C) (90095)[1]	Specific conductance, field (µS/cm at 25 °C) (00095)	Alkalinity, laboratory (mg/L as $CaCO_3$) (29801)[1]	Alkalinity, field (mg/L as $CaCO_3$) (29802)	Bicarbonate, calculated from laboratory data[3] (mg/L)	Bicarbonate, field (mg/L) (63786)	Carbonate, calculated from laboratory data[3] (mg/L)	Carbonate, field (mg/L) (63788)
Owens and Indian Wells Valleys study unit													
OIW-05	10/18/2006	15.8	26.5	7.7	7.4	427	459	117	nc	142	nc	0.3	nc
	10/27/2010	5.7	25.5	7.5	7.5	431	434	119	nc	145	nc	0.2	nc
OIW-07	10/19/2006	0.3	28.5	8.7*	8.7*	489	491	96	nc	111	nc	2.6	nc
	10/27/2010	0.2	31.0	8.7*	8.8*	846	851	126	nc	147	nc	3.4	nc
OV-21	10/03/2006	7.3	19.0	7.6	7.5	106	105	51	nc	61	nc	0.1	nc
	10/26/2010	6.7	18.5	8.0	7.4	108	107	52	nc	63	nc	0.3	nc
OV-24	12/12/2006	2.3	13.5	7.7	7.4	223	214	104	nc	126	nc	0.3	nc
	10/28/2010	2.0	14.0	7.5	7.5	218	214	103	nc	125	nc	0.2	nc
OV-29	10/05/2006	5.2	15.0	7.9	7.4	376	372	171	nc	207	nc	0.8	nc
	10/28/2010	4.3	14.5	7.3	7.7	357	350	167	nc	203	nc	0.2	nc
OV-36	10/25/2006	11.2	18.0	7.5	7.2	486	493	221	nc	269	nc	0.4	nc
	10/26/2010	7.5	18.0	7.5	7.3	477	470	213	nc	259	nc	0.4	nc
Coachella Valley study unit													
COA-12	03/08/2007	—	26.0	8.6*	8.5	746	710	123	nc	144	nc	2.6	nc
	01/05/2011	0.3	26.0	8.6*	8.8*	825	834	127	nc	149	nc	2.7	nc
COA-14	03/12/2007	7.1	21.0	7.9	7.9	409	392	137	nc	166	nc	0.6	nc
	01/04/2011	7.2	21.0	8.2	7.9	420	420	134	nc	161	nc	1.2	nc
COA-15	03/14/2007	4.9	26.5	7.8	7.8	478	487	125	121	152	146	0.4	—
	01/06/2011	4.9	26.0	8.1	7.9	492	504	126	nc	152	nc	0.9	nc
COA-16	03/15/2007	2.7	35.0	8.1	8.1	1,330*	1,340*	90	87	108	104	0.6	—
	01/05/2011	3.5	34.0	8.2	8.2	1,420*	1,430*	88	nc	106	nc	0.8	nc
Colorado River study unit													
COLOR-03	10/02/2007	0.2	24.0	7.4	7.5	2,190**	2,180**	284	254	346	308	0.4	—
	01/04/2011	0.1	23.5	8.0	7.6	2,140**	2,150**	274	nc	331	nc	1.5	nc

Table 4. Water-quality indicators in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. **GAMA well identification number acronyms**: ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. ***Benchmark type***: SMCL-CA, California Department of Public Health secondary maximum contaminant level; SMCL-US, U.S. Environmental Protection Agency secondary maximum contaminant level. Benchmark type, benchmark level, and RL as of August 1, 2013. **Other abbreviations**: $CaCO_3$, calcium carbonate; E, estimated or having a higher degree of uncertainty; mg/L, milligrams per liter; mm/dd/yyyy, month/day/year; na, not available; nc, not collected; RL, reporting level or range; USGS, U.S. Geological Survey; µS/cm, microsiemens per centimeter; <, less than; >, greater than; *, concentration is greater than the benchmark level; **, concentration is greater than the upper benchmark level; —, not detected; °C, degrees Celsius]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Dissolved oxygen, field (mg/L) (00300)	Water temperature, field (°C) (00010)	pH, laboratory (standard units) (00403)[1]	pH, field (standard units) (00400)	Specific conductance, laboratory (µS/cm at 25 °C) (90095)[1]	Specific conductance, field (µS/cm at 25 °C) (00095)	Alkalinity, laboratory (mg/L as $CaCO_3$) (29801)[1]	Alkalinity, field (mg/L as $CaCO_3$) (29802)	Bicarbonate, calculated from laboratory data[3] (mg/L)	Bicarbonate, field (mg/L) (63786)	Carbonate, calculated from laboratory data[3] (mg/L)	Carbonate, field (mg/L) (63788)
Colorado River study unit—Continued													
COLOR-06	10/24/2007	0.3	24.5	7.7	7.5	1,390*	1,400*	231	192	280	233	0.6	—
	01/03/2011	0.1	25.0	7.8	7.6	1,410*	1,420*	232	nc	281	nc	0.8	nc
COLOR-17	12/11/2007	3.8	27.0	7.8	7.8	1,320*	1,340*	89	85	108	103	0.3	—
	01/03/2011	3.2	29.0	7.8	7.7	1,360*	1,250*	93	nc	113	nc	0.3	nc
Antelope Valley study unit													
ANT-07	01/29/2008	2.1	23.0	8.0	8.0	372	372	111	109	134	131	0.6	—
	02/15/2012	2.0	21.0	8.1	8.2	382	386	110	nc	133	nc	0.8	nc
ANT-20	02/05/2008	4.2	17.5	nc	7.4	nc	619	nc	nc	nc	nc	nc	nc
	02/14/2012	4.8	17.0	7.7	7.8	411	393	172	nc	209	nc	0.5	nc
ANT-23	02/06/2008	7.8	17.5	nc	7.1	nc	464	nc	nc	nc	nc	nc	nc
	02/13/2012	7.6	17.0	7.3	7.1	511	493	236	236	287	288	0.3	—
ANT-24	02/06/2008	0.9	26.0	nc	7.8	nc	526	nc	nc	nc	nc	nc	nc
	02/16/2012	1.5	25.5	8.0	8.1	524	504	113	nc	137	nc	0.6	nc
ANT-33	02/13/2008	5.3	25.0	nc	7.6	nc	1,620**	nc	nc	nc	nc	nc	nc
	02/15/2012	6.7	24.5	7.7	7.8	1,550*	1,550*	172	nc	209	nc	0.5	nc
ANT-42	03/03/2008	7.4	23.5	nc	7.5	nc	532	nc	nc	nc	nc	nc	nc
	02/14/2012	6.9	23.5	7.8	7.8	530	521	139	nc	169	nc	0.5	nc
Mojave study unit													
MOJO-01	02/04/2008	5.4	17.0	nc	8.8*	nc	173	nc	nc	nc	nc	nc	nc
	03/08/2011	5.1	19.0	8.8	8.8*	186	182	78	nc	90	nc	2.6	nc
MOJO-09	02/07/2008	—	20.0	nc	8.1	nc	981*	nc	nc	nc	nc	nc	nc
	03/08/2011	0.4	19.5	8.0	8.0	1,020*	1,010*	152	nc	184	nc	0.8	nc
MOJO-11	02/07/2008	0.3	27.5	nc	8.6*	nc	422	nc	nc	nc	nc	nc	nc
	03/09/2011	0.5	27.5	8.6*	8.7*	422	425	58	nc	68	nc	1.2	nc

Table 4. Water-quality indicators in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. **GAMA well identification number acronyms**: ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. ***Benchmark type***: SMCL-CA, California Department of Public Health secondary maximum contaminant level; SMCL-US, U.S. Environmental Protection Agency secondary maximum contaminant level. Benchmark type, benchmark level, and RL as of August 1, 2013. **Other abbreviations**: $CaCO_3$, calcium carbonate; E, estimated or having a higher degree of uncertainty; mg/L, milligrams per liter; mm/dd/yyyy, month/day/year; na, not available; nc, not collected; RL, reporting level or range; USGS, U.S. Geological Survey; µS/cm, microsiemens per centimeter; <, less than; >, greater than; *, concentration is greater than the benchmark level; **, concentration is greater than the upper benchmark level; —, not detected; °C, degrees Celsius]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Dissolved oxygen, field (mg/L) (00300)	Water temperature, field (°C) (00010)	pH, laboratory (standard units) (00403)[1]	pH, field (standard units) (00400)	Specific conductance, laboratory (µS/cm at 25 °C) (90095)[1]	Specific conductance, field (µS/cm at 25 °C) (00095)	Alkalinity, laboratory (mg/L as $CaCO_3$) (29801)[1]	Alkalinity, field (mg/L as $CaCO_3$) (29802)	Bicarbonate, calculated from laboratory data[3] (mg/L)	Bicarbonate, field (mg/L) (63786)	Carbonate, calculated from laboratory data[3] (mg/L)	Carbonate, field (mg/L) (63788)
Mojave study unit—Continued													
MOJO-16	02/13/2008	5.6	22.5	8.5	8.6*	178	177	81	73	96	89	1.4	—
	03/10/2011	4.6	23.0	8.6*	8.6*	171	172	80	nc	94	nc	1.7	nc
MOJO-34	03/17/2008	8.7	15.5	nc	6.9	nc	231	nc	nc	nc	nc	nc	nc
	03/10/2011	8.1	16.0	7.2	6.5	227	223	91	nc	111	nc	0.1	nc
MOJO-48	04/01/2008	0.3	27.0	nc	9.8*	nc	462	nc	nc	nc	nc	nc	nc
	03/09/2011	0.5	19.5	9.2*	9.1*	387	384	97	nc	102	nc	7.4	nc
MOJO-49	04/01/2008	3.3	26.0	7.7	7.9	3,020**	2,990**	122	117	148	141	0.3	—
	03/07/2011	4.1	25.0	7.8	7.6	2,930**	3,010**	119	nc	144	nc	0.4	nc
Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit													
BV-05	10/29/2009	1.1	26.5	nc	8.4	nc	490	61	nc	73	nc	0.8	nc
	10/18/2012	0.3	27.0	8.4	8.4	486	494	62	nc	73	nc	0.8	nc
CD-02	12/15/2008	4.8	23.0	nc	7.8	nc	547	nc	nc	nc	nc	nc	nc
	10/16/2012	5.6	23.5	7.9	7.7	532	539	185	176	224	214	0.8	—
CD-05	12/17/2008	5.8	24.5	nc	7.8	nc	251	nc	nc	nc	nc	nc	nc
	10/16/2012	5.6	25.5	7.9	7.6	273	281	94	nc	114	nc	0.4	nc
LUB-05	12/04/2008	6.8	22.0	7.8	7.9	677	689	213	nc	258	nc	0.7	nc
	10/17/2012	6.1	22.0	7.8	7.6	686	691	214	nc	260	nc	0.8	nc
LUB-07	12/09/2008	1.9	24.5	8.3	8.1	886	893	229	219	274	262	2.5	—
	10/17/2012	3.0	24.0	8.3	8.1	883	865	229	nc	274	nc	2.5	nc
LUB-11	12/11/2008	1.2	26.5	7.7	7.7	694	700	171	nc	208	nc	0.5	nc
	10/15/2012	1.2	26.5	7.8	7.5	680	701	172	nc	209	nc	0.6	nc
Coastal Los Angeles Basin study unit													
CLABCB-12	08/29/2006	—	24.0	nc	nc	nc	697	nc	nc	nc	nc	nc	nc
	08/25/2010	0.1	24.0	7.8	7.4	685	675	195	nc	236	nc	0.7	nc

Table 4. Water-quality indicators in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. **GAMA well identification number acronyms**: ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. ***Benchmark type***: SMCL-CA, California Department of Public Health secondary maximum contaminant level; SMCL-US, U.S. Environmental Protection Agency secondary maximum contaminant level. Benchmark type, benchmark level, and RL as of August 1, 2013. **Other abbreviations**: $CaCO_3$, calcium carbonate; E, estimated or having a higher degree of uncertainty; mg/L, milligrams per liter; mm/dd/yyyy, month/day/year; na, not available; nc, not collected; RL, reporting level or range; USGS, U.S. Geological Survey; µS/cm, microsiemens per centimeter; <, less than; >, greater than; *, concentration is greater than the benchmark level; **, concentration is greater than the upper benchmark level; —, not detected; °C, degrees Celsius]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Dissolved oxygen, field (mg/L) (00300)	Water temperature, field (°C) (00010)	pH, laboratory (standard units) (00403)[1]	pH, field (standard units) (00400)	Specific conductance, laboratory (µS/cm at 25 °C) (90095)[1]	Specific conductance, field (µS/cm at 25 °C) (00095)	Alkalinity, laboratory (mg/L as $CaCO_3$) (29801)[1]	Alkalinity, field (mg/L as $CaCO_3$) (29802)	Bicarbonate, calculated from laboratory data[3] (mg/L)	Bicarbonate, field (mg/L) (63786)	Carbonate, calculated from laboratory data[3] (mg/L)	Carbonate, field (mg/L) (63788)
Coastal Los Angeles Basin study unit—Continued													
CLABCB-13	08/29/2006	1.2	19.0	nc	nc	nc	688	nc	nc	nc	nc	nc	nc
	08/23/2010	1.1	18.5	7.8	7.4	711	696	196	nc	238	nc	0.7	nc
CLABCB-14	08/29/2006	0.2	23.5	nc	nc	nc	534	nc	nc	nc	nc	nc	nc
	08/23/2010	0.2	23.0	8.1	7.9	544	543	175	nc	211	nc	1.2	nc
CLABCB-17	09/14/2006	3.0	19.0	7.7	7.3	814	808	224	nc	272	nc	0.6	nc
	08/25/2010	2.5	19.0	7.6	7.2	828	797	225	nc	273	nc	0.5	nc
CLABDA-02	08/08/2006	2.5	20.5	7.1	6.7	1,290*	1,290*	314	314	383	382	0.2	—
	08/24/2010	2.2	21.0	7.1	6.8	1,280*	1,250*	327	nc	398	nc	0.2	nc
CLABOC-13	08/28/2006	0.3	19.0	nc	nc	nc	794	nc	nc	nc	nc	nc	nc
	08/26/2010	0.3	19.5	7.5	7.2	1,030*	1,020*	217	nc	264	nc	0.4	nc
CLABOC-14	08/31/2006	0.3	20.0	nc	nc	nc	414	nc	nc	nc	nc	nc	nc
	08/26/2010	0.2	20.0	8.0	7.5	408	400	160	nc	193	nc	0.9	nc
CLABWB-03	08/30/2006	0.3	23.5	nc	nc	nc	1,130*	nc	nc	nc	nc	nc	nc
	08/24/2010	0.1	24.0	7.8	7.4	1,560*	1,550*	224	nc	272	nc	0.8	nc
Upper Santa Ana Watershed study unit													
USAWB-01	11/27/2006	1.2	24.5	nc	8.0	nc	525	nc	nc	nc	nc	nc	nc
	04/20/2009	1.3	26.0	8.2	8.0	520	512	135	nc	162	nc	1.2	nc
USAWB-04	11/28/2006	10.0	18.5	8.1	7.9	312	299	120	124	145	150	0.8	—
	05/06/2009	11.8	19.5	7.9	7.7	315	295	124	nc	150	nc	0.5	nc
USAWB-12	12/13/2006	nc	19.0	nc	7.3	nc	353	nc	nc	nc	nc	nc	nc
	04/22/2009	12.5	19.5	7.4	7.0	351	342	116	nc	141	nc	0.2	nc
USAWB-14	12/14/2006	11	19.5	7.8	7.4	367	365	168	157	204	189	0.6	—
	04/14/2009	9.0	19.5	7.9	7.3	371	354	162	nc	196	nc	0.7	nc

Table 4. Water-quality indicators in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. **GAMA well identification number acronyms**: ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. ***Benchmark type***: SMCL-CA, California Department of Public Health secondary maximum contaminant level; SMCL-US, U.S. Environmental Protection Agency secondary maximum contaminant level. Benchmark type, benchmark level, and RL as of August 1, 2013. **Other abbreviations**: $CaCO_3$, calcium carbonate; E, estimated or having a higher degree of uncertainty; mg/L, milligrams per liter; mm/dd/yyyy, month/day/year; na, not available; nc, not collected; RL, reporting level or range; USGS, U.S. Geological Survey; µS/cm, microsiemens per centimeter; <, less than; >, greater than; *, concentration is greater than the benchmark level; **, concentration is greater than the upper benchmark level; —, not detected; °C, degrees Celsius]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Dissolved oxygen, field (mg/L) (00300)	Water temperature, field (°C) (00010)	pH, laboratory (standard units) (00403)[1]	pH, field (standard units) (00400)	Specific conductance, laboratory (µS/cm at 25 °C) (90095)[1]	Specific conductance, field (µS/cm at 25 °C) (00095)	Alkalinity, laboratory (mg/L as $CaCO_3$) (29801)[1]	Alkalinity, field (mg/L as $CaCO_3$) (29802)	Bicarbonate, calculated from laboratory data[3] (mg/L)	Bicarbonate, field (mg/L) (63786)	Carbonate, calculated from laboratory data[3] (mg/L)	Carbonate, field (mg/L) (63788)
Upper Santa Ana Watershed study unit—Continued													
USAWB-17	01/10/2007	7.9	18.0	nc	7.2	nc	355	nc	nc	nc	nc	nc	nc
	04/23/2009	11.3	18.0	7.6	6.9	369	363	119	nc	145	nc	0.3	nc
USAWC-02	01/29/2007	7.7	22.0	7.8	8.0	368	360	162	nc	196	nc	0.6	nc
	04/30/2009	8.7	23.0	7.9	7.7	378	375	160	nc	194	nc	0.7	nc
USAWC-08	01/31/2007	8.1	21.5	7.7	7.7	580	569	147	144	178	175	0.4	—
	04/28/2009	7.7	22.0	7.6	7.6	615	615	144	nc	175	nc	0.3	nc
USAWC-10	02/01/2007	10.6	26.0	nc	8.2	nc	420	nc	nc	nc	nc	nc	nc
	04/27/2009	5.3	25.5	8.1	8.0	431	425	115	nc	139	nc	0.8	nc
USAWC-21	02/14/2007	10.1	21.0	7.6	7.5	427	433	146	141	177	172	0.3	—
	04/13/2009	6.6	21.0	7.4	7.3	459	432	150	nc	183	nc	0.2	nc
USAWC-23	02/15/2007	8.8	20.0	7.5	7.7	475	474	150	143	182	174	0.3	—
	04/16/2009	8.2	19.5	7.9	7.7	495	473	151	nc	183	nc	0.7	nc
USAWR-08	01/10/2007	0.2	20.5	7.0	7.1	930*	922*	261	249	318	302	0.1	—
	04/21/2009	3.6	22.0	7.3	7.0	937*	920*	256	nc	312	nc	0.3	nc
USAWR-12	01/29/2007	7.9	21.5	7.2	7.3	1,160*	1,150*	244	236	297	287	0.2	—
	04/29/2009	6.9	21.0	7.1	7.3	1,130*	1,130*	242	nc	295	nc	0.2	nc
USAWS-01	01/22/2007	7.9	21.0	nc	6.9	nc	794	nc	nc	nc	nc	nc	nc
	05/07/2009	12.1	22.0	6.8	6.6	864	824	91	nc	110	nc	—	nc
USAWS-08	01/24/2007	9.6	23.5	6.2*	6.9	828	831	75	69	91	84	—	—
	05/07/2009	10.9	25.0	6.5	6.7	881	853	77	nc	94	nc	—	nc
USAWY-06	01/09/2007	8.8	21.0	7.6	7.7	611	600	206	197	250	239	0.5	—
	05/05/2009	5.8	21.0	7.2	7.5	614	597	208	nc	253	nc	0.2	nc
USAWY-07	01/11/2007	6.5	16.5	nc	7.0	nc	615	nc	nc	nc	nc	nc	nc
	05/04/2009	10.4	17.5	7.3	7.0	595	585	218	nc	265	nc	0.2	nc

Table 4. Water-quality indicators in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. **GAMA well identification number acronyms**: ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. ***Benchmark type***: SMCL-CA, California Department of Public Health secondary maximum contaminant level; SMCL-US, U.S. Environmental Protection Agency secondary maximum contaminant level. Benchmark type, benchmark level, and RL as of August 1, 2013. **Other abbreviations**: $CaCO_3$, calcium carbonate; E, estimated or having a higher degree of uncertainty; mg/L, milligrams per liter; mm/dd/yyyy, month/day/year; na, not available; nc, not collected; RL, reporting level or range; USGS, U.S. Geological Survey; µS/cm, microsiemens per centimeter; <, less than; >, greater than; *, concentration is greater than the benchmark level; **, concentration is greater than the upper benchmark level; —, not detected; °C, degrees Celsius]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Dissolved oxygen, field (mg/L) (00300)	Water temperature, field (°C) (00010)	pH, laboratory (standard units) (00403)[1]	pH, field (standard units) (00400)	Specific conductance, laboratory (µS/cm at 25 °C) (90095)[1]	Specific conductance, field (µS/cm at 25 °C) (00095)	Alkalinity, laboratory (mg/L as $CaCO_3$) (29801)[1]	Alkalinity, field (mg/L as $CaCO_3$) (29802)	Bicarbonate, calculated from laboratory data[3] (mg/L)	Bicarbonate, field (mg/L) (63786)	Carbonate, calculated from laboratory data[3] (mg/L)	Carbonate, field (mg/L) (63788)
Santa Clara River Valley study unit													
SCRV-06	04/04/2007	0.4	18.0	7.4	7.2	1,890**	1,710**	259	nc	315	nc	0.4	nc
	04/26/2011	0.8	18.0	7.5	7.2	1,600*	1,560*	243	nc	296	nc	0.4	nc
SCRV-08	04/04/2007	—	25.5	nc	7.5	nc	1,030*	nc	nc	nc	nc	nc	nc
	04/26/2011	0.2	22.5	7.7	7.5	1,090*	1,110*	234	nc	284	nc	0.7	nc
SCRV-17	04/11/2007	2.6	17.0	nc	7.1	nc	1,010*	nc	nc	nc	nc	nc	nc
	04/27/2011	1.1	16.0	7.3	7.0	1,280*	1,300*	298	nc	363	nc	0.3	nc
SCRV-18	04/11/2007	0.7	19.5	nc	7.2	nc	1,430*	nc	nc	nc	nc	nc	nc
	04/27/2011	0.3	19.5	7.5	7.2	1,480*	1,500*	270	nc	328	nc	0.5	nc
SCRV-32	04/18/2007	—	22.0	nc	7.0	nc	2,020**	nc	nc	nc	nc	nc	nc
	04/25/2011	3.2	22.0	7.2	6.9	2,300**	2,300**	313	nc	381	nc	0.3	nc
SCRV-36	04/19/2007	3.0	19.0	nc	7.4	nc	1,040*	nc	nc	nc	nc	nc	nc
	04/28/2011	2.2	23.0	7.7	7.3	1,390*	1,370*	216	nc	262	nc	0.6	nc

[1]Field measurement is the preferred method of determination.

[2]The SMCL-CA for specific conductance has recommended and upper-benchmark values. The upper value is shown in parentheses.

[3]Bicarbonate and carbonate concentrations were calculated from the laboratory alkalinity and pH values using the advanced speciation method (*http://or.water.usgs.gov/alk/methods.html*) with $pK_1 = 6.35$, $pK_2 = 10.33$, and $pK_W = 14$.

Table 5. Volatile organic compounds (VOCs) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3A*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit: MADCHOW. Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, CDPH maximum contaminant level; HAL-US, USEPA Lifetime Health Advisory level; NL-CA, CDPH notification level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; nv, no value; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; ≤, less than or equal to; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Trihalomethane				Solvent			
		Chloroform (Trichloromethane) (µg/L) (32106)	Bromodichloromethane (µg/L) (32101)	Dibromochloromethane (µg/L) (32105)	Bromoform (Tribromomethane) (µg/L) (32104)	Perchloroethene (PCE, Tetrachloroethene) (µg/L) (34475)	Trichloroethene (TCE) (µg/L) (39180)	*cis*-1,2-Dichloroethene (µg/L) (77093)	1,1-Dichloroethane (1,1-DCA) (µg/L) (34496)
Benchmark type[1]		MCL-US	MCL-US	MCL-US	MCL-US	MCL-US	MCL-US	MCL-CA	MCL-CA
Benchmark level		[3]80	[3]80	[3]80	[3]80	5	5	6	5
SRL[2]		nv	nv	nv	nv	nv	nv	nv	nv
Minimum and maximum LRL 2006–13		0.02, 0.04	0.028, 0.04	0.1, 0.12	0.08, 0.1	0.026, 0.04	0.02, 0.038	0.02, 0.024	0.035, 0.06
Number of wells with detections 2006–10		32	8	5	7	16	12	7	6
Number of wells with detections 2009–13		31	9	5	5	18	12	7	7
Detection frequency (percent) 2006–10		34.4	8.6	5.4	7.5	17.2	12.9	7.5	6.5
Detection frequency (percent) 2009–13		33.3	9.7	5.4	5.4	19.4	12.9	7.5	7.5
Kern County Subbasin study unit									
KERN-02	01/10/2006	E0.02	—	—	—	—	—	—	—
	02/11/2010	E0.03	—	—	—	E0.015	—	—	—
KERN-20	02/13/2006	—	—	—	—	—	—	—	—
	02/10/2010	—	—	—	—	—	—	—	—
KERN-21	02/13/2006	E0.02	—	—	—	—	—	—	—
	03/16/2010	E0.04	—	—	—	—	—	—	—
KERN-29	02/28/2006	—	—	—	—	—	—	—	—
	02/10/2010	—	—	—	—	—	—	—	—

Table 5. Volatile organic compounds (VOCs) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3A*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit: MADCHOW. Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, CDPH maximum contaminant level; HAL-US, USEPA Lifetime Health Advisory level; NL-CA, CDPH notification level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; nv, no value; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; ≤, less than or equal to; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Trihalomethane				Solvent			
		Chloroform (Trichloromethane) (µg/L) (32106)	Bromodichloromethane (µg/L) (32101)	Dibromochloromethane (µg/L) (32105)	Bromoform (Tribromomethane) (µg/L) (32104)	Perchloroethene (PCE, Tetrachloroethene) (µg/L) (34475)	Trichloroethene (TCE) (µg/L) (39180)	*cis*-1,2-Dichloroethene (µg/L) (77093)	1,1-Dichloroethane (1,1-DCA) (µg/L) (34496)
Kern County Subbasin study unit—Continued									
KERN-33	03/01/2006	—	—	—	—	—	—	—	—
	02/09/2010	—	—	—	—	—	—	—	—
Central Eastside San Joaquin Basin study unit									
CE-QPC-02	03/22/2006	0.46	0.641	0.83	0.57	—	—	—	—
	03/10/2010	E0.03	—	—	—	E0.027	—	—	—
MER-11	04/12/2006	—	—	—	—	—	—	—	—
	01/28/2010	—	—	—	—	—	—	—	—
MER-14	04/17/2006	—	—	—	—	—	—	—	—
	01/27/2010	—	—	—	—	—	—	—	—
MOD-07	03/21/2006	2.27	0.209	E0.08	0.25	0.225	E0.026	—	—
	01/26/2010	0.25	—	—	—	0.081	E0.028	—	—
TRLK-03	03/21/2006	—	—	—	—	—	—	—	—
	01/28/2010	0.10	0.053	—	—	—	—	—	—
TRLK-05	03/22/2006	—	—	—	—	—	—	—	—
	01/25/2010	—	—	—	—	—	—	—	—
Middle Sacramento Valley study unit									
ESAC-01	06/29/2006	[4]E0.01	—	—	—	—	—	—	—
	08/11/2010	0.05	E0.030	0.12	0.80	—	—	—	—
ESAC-19	07/20/2006	—	—	—	—	—	—	—	—
	08/10/2010	—	—	—	—	—	—	—	—

Table 5. Volatile organic compounds (VOCs) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3A*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit: MADCHOW. Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, CDPH maximum contaminant level; HAL-US, USEPA Lifetime Health Advisory level; NL-CA, CDPH notification level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; nv, no value; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; ≤, less than or equal to; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Trihalomethane				Solvent			
		Chloroform (Trichloromethane) (µg/L) (32106)	Bromodichloromethane (µg/L) (32101)	Dibromochloromethane (µg/L) (32105)	Bromoform (Tribromomethane) (µg/L) (32104)	Perchloroethene (PCE, Tetrachloroethene) (µg/L) (34475)	Trichloroethene (TCE) (µg/L) (39180)	*cis*-1,2-Dichloroethene (µg/L) (77093)	1,1-Dichloroethane (1,1-DCA) (µg/L) (34496)
Middle Sacramento Valley study unit—Continued									
ESAC-34	08/17/2006	—	—	—	—	—	—	—	—
	08/12/2010	—	—	—	—	—	—	—	—
WSAC-03	07/11/2006	0.20	E0.031	[4]E0.05	0.11	—	—	—	—
	08/10/2010	0.03	—	—	—	—	—	—	—
WSAC-08	07/18/2006	—	—	—	—	—	—	—	—
	08/12/2010	—	—	—	—	—	—	—	—
WSAC-17	08/01/2006	E0.05	—	—	—	—	—	—	—
	08/09/2010	—	—	—	—	—	—	—	—
WSAC-19	08/01/2006	—	—	—	—	—	—	—	—
	08/11/2010	—	—	—	—	—	—	—	—
WSAC-32	08/21/2006	—	—	—	—	—	—	—	—
	08/09/2010	—	—	—	—	—	—	—	—
Northern Sacramento Valley study unit									
NSAC-09	11/06/2007	E0.04	—	—	—	—	—	—	—
	01/11/2011	—	—	—	—	—	—	—	—
NSAC-16	12/06/2007	—	—	—	—	—	—	—	—
	01/12/2011	—	—	—	—	—	—	—	—
RED-01	10/01/2007	—	—	—	—	—	—	—	—
	01/11/2011	—	—	—	—	—	—	—	—
RED-12	11/08/2007	—	—	—	—	—	—	—	—
	01/10/2011	0.19	—	—	—	—	—	—	—

Table 5. Volatile organic compounds (VOCs) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3A*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit: MADCHOW. Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, CDPH maximum contaminant level; HAL-US, USEPA Lifetime Health Advisory level; NL-CA, CDPH notification level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; nv, no value; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; ≤, less than or equal to; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Trihalomethane				Solvent			
		Chloroform (Trichloromethane) (µg/L) (32106)	Bromodichloromethane (µg/L) (32101)	Dibromochloromethane (µg/L) (32105)	Bromoform (Tribromomethane) (µg/L) (32104)	Perchloroethene (PCE, Tetrachloroethene) (µg/L) (34475)	Trichloroethene (TCE) (µg/L) (39180)	*cis*-1,2-Dichloroethene (µg/L) (77093)	1,1-Dichloroethane (1,1-DCA) (µg/L) (34496)
Madera-Chowchilla study unit									
MADCHOW-03	04/15/2008	E0.02	—	—	—	2.27	0.301	0.311	—
	03/15/2011	0.04	0.027	0.07	0.26	3.23	0.447	0.376	—
MADCHOW-05	04/16/2008	E0.03	—	—	—	—	—	—	—
	03/15/2011	—	—	—	—	—	—	—	—
MADCHOW-24	05/13/2008	—	—	—	—	—	—	—	—
	03/16/2011	—	—	—	—	—	—	—	—
MADCHOW-28	05/19/2008	—	—	—	—	—	—	—	—
	03/16/2011	—	—	—	—	—	—	—	—
Western San Joaquin Valley study unit									
DM-12	03/11/2010	—	—	—	—	—	—	—	—
	04/02/2013	—	—	—	—	—	—	—	—
DM-19	04/14/2010	—	—	—	—	—	—	—	—
	04/02/2013	—	—	—	—	—	—	—	—
DM-26	06/17/2010	—	—	—	—	—	—	—	—
	04/03/2013	—	—	—	—	0.105	—	—	—
WS-07	06/10/2010	—	—	—	—	—	—	—	—
	04/03/2013	—	—	—	—	—	—	—	—
Owens and Indian Wells Valleys study unit									
OIW-05	10/18/2006	—	—	—	—	—	—	—	—
	10/27/2010	0.02	—	—	—	—	—	—	—

Table 5. Volatile organic compounds (VOCs) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3A*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit: MADCHOW. Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, CDPH maximum contaminant level; HAL-US, USEPA Lifetime Health Advisory level; NL-CA, CDPH notification level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; nv, no value; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; ≤, less than or equal to; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Trihalomethane				Solvent			
		Chloroform (Trichloromethane) (µg/L) (32106)	Bromodichloromethane (µg/L) (32101)	Dibromochloromethane (µg/L) (32105)	Bromoform (Tribromomethane) (µg/L) (32104)	Perchloroethene (PCE, Tetrachloroethene) (µg/L) (34475)	Trichloroethene (TCE) (µg/L) (39180)	*cis*-1,2-Dichloroethene (µg/L) (77093)	1,1-Dichloroethane (1,1-DCA) (µg/L) (34496)
Owens and Indian Wells Valleys study unit—Continued									
OIW-07	10/19/2006	—	—	—	—	—	—	—	—
	10/27/2010	—	—	—	—	—	—	—	—
OV-21	10/03/2006	—	—	—	—	—	—	—	—
	10/26/2010	—	—	—	—	—	—	—	—
OV-24	12/12/2006	—	—	—	—	—	—	—	—
	10/28/2010	—	—	—	—	—	—	—	—
OV-29	10/05/2006	—	—	—	—	—	—	—	—
	10/28/2010	—	—	—	—	—	—	—	—
OV-36	10/25/2006	—	—	—	—	—	—	—	—
	10/26/2010	—	—	—	—	—	—	—	—
Coachella Valley study unit									
COA-12	03/08/2007	—	—	—	—	—	—	—	—
	01/05/2011	—	—	—	—	—	—	—	—
COA-14	03/12/2007	E0.06	—	—	—	E0.037	—	—	—
	01/04/2011	0.11	—	—	—	0.054	—	—	—
COA-15	03/14/2007	0.37	—	—	—	—	—	—	—
	01/06/2011	0.06	—	—	—	—	—	—	—
COA-16	03/15/2007	—	—	—	—	—	—	—	—
	01/05/2011	—	—	—	—	—	—	—	—

Table 5. Volatile organic compounds (VOCs) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3A*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit: MADCHOW. Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, CDPH maximum contaminant level; HAL-US, USEPA Lifetime Health Advisory level; NL-CA, CDPH notification level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; nv, no value; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; ≤, less than or equal to; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Trihalomethane				Solvent			
		Chloroform (Trichloromethane) (µg/L) (32106)	Bromodichloromethane (µg/L) (32101)	Dibromochloromethane (µg/L) (32105)	Bromoform (Tribromomethane) (µg/L) (32104)	Perchloroethene (PCE, Tetrachloroethene) (µg/L) (34475)	Trichloroethene (TCE) (µg/L) (39180)	*cis*-1,2-Dichloroethene (µg/L) (77093)	1,1-Dichloroethane (1,1-DCA) (µg/L) (34496)
Colorado River study unit									
COLOR-03	10/02/2007	—	—	—	—	—	—	—	—
	01/04/2011	—	—	—	—	—	—	—	—
COLOR-06	10/24/2007	—	—	—	—	—	—	—	—
	01/03/2011	—	—	—	—	—	—	—	—
COLOR-17	12/11/2007	—	—	—	—	—	—	—	—
	01/03/2011	—	—	—	—	—	—	—	—
Antelope Valley study unit									
ANT-07	01/29/2008	—	—	—	—	—	—	—	—
	02/15/2012	2.60	1.57	2.18	2.18	—	—	—	—
ANT-20	02/05/2008	E0.09	0.131	0.17	0.27	—	—	—	—
	02/14/2012	0.09	0.039	—	—	—	—	—	—
ANT-23	02/06/2008	—	—	—	—	—	—	—	—
	02/13/2012	—	—	—	—	—	—	—	—
ANT-24	02/06/2008	—	—	—	—	—	—	—	—
	02/16/2012	—	—	—	—	—	—	—	—
ANT-33	[9]02/13/2008	13.1	6.85	6.56	6.89	—	—	—	—
	02/15/2012	—	—	—	—	—	—	—	—
ANT-42	03/03/2008	—	—	—	—	—	—	—	—
	02/14/2012	—	—	—	—	—	—	—	—

Table 5. Volatile organic compounds (VOCs) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3A*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit: MADCHOW. Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, CDPH maximum contaminant level; HAL-US, USEPA Lifetime Health Advisory level; NL-CA, CDPH notification level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; nv, no value; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; ≤, less than or equal to; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Trihalomethane				Solvent			
		Chloroform (Trichloromethane) (µg/L) (32106)	Bromodichloromethane (µg/L) (32101)	Dibromochloromethane (µg/L) (32105)	Bromoform (Tribromomethane) (µg/L) (32104)	Perchloroethene (PCE, Tetrachloroethene) (µg/L) (34475)	Trichloroethene (TCE) (µg/L) (39180)	*cis*-1,2-Dichloroethene (µg/L) (77093)	1,1-Dichloroethane (1,1-DCA) (µg/L) (34496)
Mojave study unit									
MOJO-01	02/04/2008	—	—	—	—	—	—	—	—
	03/08/2011	0.10	—	—	—	—	—	—	—
MOJO-09	02/07/2008	E0.02	—	—	—	—	—	—	—
	03/08/2011	[4]0.01	—	—	—	—	—	—	—
MOJO-11	02/07/2008	—	—	—	—	—	—	—	—
	03/09/2011	—	—	—	—	—	—	—	—
MOJO-16	02/13/2008	—	—	—	—	—	—	—	—
	03/10/2011	—	—	—	—	—	—	—	—
MOJO-34	03/17/2008	—	—	—	—	—	—	—	—
	03/10/2011	—	—	—	—	—	—	—	—
MOJO-48	04/01/2008	—	—	—	—	—	—	—	—
	03/09/2011	—	—	—	—	—	—	—	—
MOJO-49	04/01/2008	—	—	—	—	—	—	—	—
	03/07/2011	—	—	—	—	—	—	—	—
Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit									
BV-05	10/29/2009	—	—	—	—	—	—	—	—
	10/18/2012	—	—	—	—	—	—	—	—
CD-02	12/15/2008	—	—	—	—	—	—	—	—
	10/16/2012	—	—	—	—	—	—	—	—
CD-05	12/17/2008	—	—	—	—	—	—	—	—
	10/16/2012	—	—	—	—	—	—	—	—

Table 5. Volatile organic compounds (VOCs) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3A*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit: MADCHOW. Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, CDPH maximum contaminant level; HAL-US, USEPA Lifetime Health Advisory level; NL-CA, CDPH notification level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; nv, no value; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; ≤, less than or equal to; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Trihalomethane				Solvent			
		Chloroform (Trichloromethane) (µg/L) (32106)	Bromodichloromethane (µg/L) (32101)	Dibromochloromethane (µg/L) (32105)	Bromoform (Tribromomethane) (µg/L) (32104)	Perchloroethene (PCE, Tetrachloroethene) (µg/L) (34475)	Trichloroethene (TCE) (µg/L) (39180)	*cis*-1,2-Dichloroethene (µg/L) (77093)	1,1-Dichloroethane (1,1-DCA) (µg/L) (34496)
Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit—Continued									
LUB-05	12/04/2008	—	—	—	—	—	—	—	—
	10/17/2012	—	—	—	—	—	—	—	—
LUB-07	12/09/2008	—	—	—	—	—	—	—	—
	10/17/2012	—	—	—	—	—	—	—	—
LUB-11	12/11/2008	—	—	—	—	—	—	—	—
	10/15/2012	—	—	—	—	—	—	—	—
Coastal Los Angeles Basin study unit									
CLABCB-12	08/29/2006	E0.03	—	—	—	E0.021	0.133	E0.022	—
	08/25/2010	[4]E0.01	—	—	—	E0.018	0.101	E0.014	—
CLABCB-13	08/29/2006	0.14	—	—	—	1.72	2.22	E0.062	E0.047
	08/23/2010	0.15	—	—	—	3.26	4.01	0.209	0.134
CLABCB-14	08/29/2006	—	—	—	—	—	—	—	—
	08/23/2010	—	—	—	—	—	—	—	—
CLABCB-17	09/14/2006	E0.06	—	—	—	4.14	0.617	—	E0.073
	08/25/2010	0.08	—	—	—	E4.96	0.501	—	0.056
CLABDA-02	08/08/2006	12.2	0.105	—	—	13.2*	24.8*	0.566	0.277
	08/24/2010	5.88	0.089	—	—	13.2*	11.8*	0.711	0.126
CLABOC-13	08/28/2006	E0.02	—	—	—	E0.035	—	—	—
	08/26/2010	0.30	—	—	—	E0.022	E0.016	—	—
CLABOC-14	08/31/2006	—	—	—	—	—	—	—	—
	08/26/2010	—	—	—	—	—	—	—	—

Table 5. Volatile organic compounds (VOCs) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3A*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit: MADCHOW. Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, CDPH maximum contaminant level; HAL-US, USEPA Lifetime Health Advisory level; NL-CA, CDPH notification level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; nv, no value; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; ≤, less than or equal to; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Trihalomethane				Solvent			
		Chloroform (Trichloromethane) (µg/L) (32106)	Bromodichloromethane (µg/L) (32101)	Dibromochloromethane (µg/L) (32105)	Bromoform (Tribromomethane) (µg/L) (32104)	Perchloroethene (PCE, Tetrachloroethene) (µg/L) (34475)	Trichloroethene (TCE) (µg/L) (39180)	*cis*-1,2-Dichloroethene (µg/L) (77093)	1,1-Dichloroethane (1,1-DCA) (µg/L) (34496)
Coastal Los Angeles Basin study unit—Continued									
CLABWB-03	08/30/2006	—	—	—	—	—	E0.020	E0.030	—
	08/24/2010	—	—	—	—	—	0.037	0.042	—
Upper Santa Ana Watershed study unit									
USAWB-01	11/27/2006	—	—	—	—	—	—	—	—
	04/20/2009	—	—	—	—	—	—	—	—
USAWB-04	11/28/2006	—	—	—	—	—	—	—	—
	05/06/2009	—	—	—	—	—	—	—	—
USAWB-12	12/13/2006	—	—	—	—	E0.027	—	—	—
	04/22/2009	—	—	—	—	—	—	—	—
USAWB-14	12/14/2006	E0.07	—	—	—	2.99	0.211	0.295	E0.047
	04/14/2009	E0.08	—	—	—	3.44	0.195	0.235	E0.056
USAWB-17	01/10/2007	E0.02	—	—	—	0.342	—	—	—
	04/23/2009	E0.02	—	—	—	0.190	—	—	—
USAWC-02	01/29/2007	0.17	0.293	0.47	0.51	—	—	—	—
	04/30/2009	E0.02	E0.046	—	—	—	—	—	—
USAWC-08	01/31/2007	E0.08	—	—	—	E0.039	E0.083	—	[4]E0.022
	04/28/2009	E0.05	—	—	—	—	E0.019	—	—
USAWC-10	02/01/2007	[4]E0.01	—	—	—	—	—	—	—
	04/27/2009	—	—	—	—	—	—	—	—
USAWC-21	02/14/2007	E0.03	—	—	—	—	—	—	—
	04/13/2009	E0.09	—	—	—	—	—	—	—

Table 5. Volatile organic compounds (VOCs) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3A*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit: MADCHOW. Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, CDPH maximum contaminant level; HAL-US, USEPA Lifetime Health Advisory level; NL-CA, CDPH notification level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; nv, no value; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; ≤, less than or equal to; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Trihalomethane				Solvent			
		Chloroform (Trichloromethane) (µg/L) (32106)	Bromodichloromethane (µg/L) (32101)	Dibromochloromethane (µg/L) (32105)	Bromoform (Tribromomethane) (µg/L) (32104)	Perchloroethene (PCE, Tetrachloroethene) (µg/L) (34475)	Trichloroethene (TCE) (µg/L) (39180)	*cis*-1,2-Dichloroethene (µg/L) (77093)	1,1-Dichloroethane (1,1-DCA) (µg/L) (34496)
Upper Santa Ana Watershed study unit—Continued									
USAWC-23	02/15/2007	0.29	—	—	0.26	—	—	—	—
	04/16/2009	0.18	—	—	—	—	—	—	—
USAWR-08	01/10/2007	0.53	—	—	—	0.504	E0.067	E0.020	0.100
	04/21/2009	0.58	—	—	—	0.463	E0.050	E0.033	E0.091
USAWR-12	01/29/2007	0.16	—	—	—	—	—	—	—
	04/29/2009	0.10	—	—	—	—	—	—	—
USAWS-01	01/22/2007	0.20	E0.040	—	—	E0.036	E0.015	—	E0.043
	05/07/2009	0.21	—	—	—	E0.055	—	—	E0.042
USAWS-08	01/24/2007	0.22	—	—	—	3.93	0.172	—	—
	05/07/2009	0.24	—	—	—	4.22	0.108	—	E0.027
USAWY-06	01/09/2007	—	—	—	—	E0.033	—	—	—
	05/05/2009	—	—	—	—	E0.025	—	—	—
USAWY-07	01/11/2007	E0.04	—	—	—	[4]E0.019	—	—	—
	05/04/2009	E0.05	E0.093	0.21	0.26	—	—	—	—
Santa Clara River Valley study unit									
SCRV-06	04/04/2007	E0.02	—	—	—	—	—	—	—
	04/26/2011	E0.02	0.063	0.15	0.14	—	—	—	—
SCRV-08	04/04/2007	—	—	—	—	—	—	—	—
	04/26/2011	—	—	—	—	—	—	—	—
SCRV-17	04/11/2007	E0.04	—	—	—	—	—	—	—
	04/27/2011	0.02	—	—	—	E0.013	—	—	—

Table 5. Volatile organic compounds (VOCs) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3A*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit: MADCHOW. Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, CDPH maximum contaminant level; HAL-US, USEPA Lifetime Health Advisory level; NL-CA, CDPH notification level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; nv, no value; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; ≤, less than or equal to; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Trihalomethane				Solvent			
		Chloroform (Trichloromethane) (µg/L) (32106)	Bromodichloromethane (µg/L) (32101)	Dibromochloromethane (µg/L) (32105)	Bromoform (Tribromomethane) (µg/L) (32104)	Perchloroethene (PCE, Tetrachloroethene) (µg/L) (34475)	Trichloroethene (TCE) (µg/L) (39180)	*cis*-1,2-Dichloroethene (µg/L) (77093)	1,1-Dichloroethane (1,1-DCA) (µg/L) (34496)
Santa Clara River Valley study unit—Continued									
SCRV-18	04/11/2007	—	—	—	—	—	—	—	—
	04/27/2011	—	—	—	—	—	—	—	—
SCRV-32	04/18/2007	—	—	—	—	—	—	—	—
	04/25/2011	—	—	—	—	—	—	—	—
SCRV-36	04/19/2007	—	—	—	—	—	—	—	—
	04/28/2011	—	—	—	—	—	—	—	—

Table 5. Volatile organic compounds (VOCs) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3A*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit: MADCHOW. Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, CDPH maximum contaminant level; HAL-US, USEPA Lifetime Health Advisory level; NL-CA, CDPH notification level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; nv, no value; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; ≤, less than or equal to; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Solvent								
		1,1-Dichloroethene (1,1-DCE) (µg/L) (34501)	Carbon tetrachloride (Tetrachloromethane) (µg/L) (32102)	1,1,1-Trichloroethane (1,1,1-TCA) (µg/L) (34506)	Methylene chloride (Dichloromethane) (µg/L) (34423)	*trans*-1,2-Dichloroethene (µg/L) (34546)	Chloromethane (µg/L) (34418)	Chloroethane (µg/L) (34311)	1,2-Dichlorobenzene (µg/L) (34536)	Dibromomethane (µg/L) (30217)
Benchmark type[1]		MCL-CA	MCL-CA	MCL-US	MCL-US	MCL-CA	na	na	MCL-US	na
Benchmark level		6	0.5	200	5	10	na	na	600	na
SRL[2]		nv	nv	nv	nv	nv	nv	nv	nv	nv
Minimum and maximum LRL 2006–13		0.02, 0.024	0.06, 0.08	0.02, 0.04	0.04, 0.06	0.018, 0.032	0.1, 0.2	0.06, 0.12	0.02, 0.048	0.04, 0.05
Number of wells with detections 2006−10		7	4	3	3	2	1	1	1	1
Number of wells with detections 2009–13		5	3	3	2	2	1	0	1	0
Detection frequency (percent) 2006–10		7.5	4.3	3.2	3.2	2.2	1.1	1.1	1.1	1.1
Detection frequency (percent) 2009–13		5.4	3.2	3.2	2.2	2.2	1.1	0.0	1.1	0.0
Kern County Subbasin study unit										
KERN-02	01/10/2006	—	—	—	—	—	—	—	—	—
	02/11/2010	—	—	—	—	—	—	—	—	—
KERN-20	02/13/2006	—	—	—	—	—	—	—	—	—
	02/10/2010	—	—	—	—	—	—	—	—	—
KERN-21	02/13/2006	—	—	—	—	—	—	—	—	—
	03/16/2010	—	—	—	—	—	0.1	—	—	—
KERN-29	02/28/2006	—	—	—	—	—	—	—	—	—
	02/10/2010	—	—	—	—	—	—	—	—	—

Table 5. Volatile organic compounds (VOCs) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3A*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit: MADCHOW. Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, CDPH maximum contaminant level; HAL-US, USEPA Lifetime Health Advisory level; NL-CA, CDPH notification level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; nv, no value; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; ≤, less than or equal to; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Solvent								
		1,1-Dichloroethene (1,1-DCE) (µg/L) (34501)	Carbon tetrachloride (Tetrachloromethane) (µg/L) (32102)	1,1,1-Trichloroethane (1,1,1-TCA) (µg/L) (34506)	Methylene chloride (Dichloromethane) (µg/L) (34423)	*trans*-1,2-Dichloroethene (µg/L) (34546)	Chloromethane (µg/L) (34418)	Chloroethane (µg/L) (34311)	1,2-Dichlorobenzene (µg/L) (34536)	Dibromomethane (µg/L) (30217)
Kern County Subbasin study unit—Continued										
KERN-33	03/01/2006	—	—	—	—	—	—	—	—	—
	02/09/2010	—	—	—	—	—	—	—	—	—
Central Eastside San Joaquin Basin study unit										
CE-QPC-02	03/22/2006	—	—	—	—	—	—	—	—	—
	03/10/2010	—	—	—	—	—	—	—	—	—
MER-11	04/12/2006	—	—	—	—	—	—	—	—	—
	01/28/2010	—	—	—	—	—	—	—	—	—
MER-14	04/17/2006	—	—	—	—	—	—	—	—	—
	01/27/2010	—	—	—	—	—	—	—	—	—
MOD-07	03/21/2006	E0.020	0.24	—	E0.04	—	—	—	—	—
	01/26/2010	—	0.34	—	—	—	—	—	—	—
TRLK-03	03/21/2006	—	—	—	—	—	—	—	—	—
	01/28/2010	—	—	—	—	—	—	—	—	—
TRLK-05	03/22/2006	—	E0.07	—	—	—	—	—	—	—
	01/25/2010	—	0.07	—	—	—	—	—	—	—
Middle Sacramento Valley study unit										
ESAC-01	06/29/2006	—	—	—	—	—	—	—	—	—
	08/11/2010	—	—	—	—	—	—	—	—	—
ESAC-19	07/20/2006	—	—	—	—	—	—	—	—	—
	08/10/2010	—	—	—	—	—	—	—	—	—

Table 5. Volatile organic compounds (VOCs) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3A*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit: MADCHOW. Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, CDPH maximum contaminant level; HAL-US, USEPA Lifetime Health Advisory level; NL-CA, CDPH notification level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; nv, no value; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; ≤, less than or equal to; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Solvent								
		1,1-Dichloroethene (1,1-DCE) (µg/L) (34501)	Carbon tetrachloride (Tetrachloromethane) (µg/L) (32102)	1,1,1-Trichloroethane (1,1,1-TCA) (µg/L) (34506)	Methylene chloride (Dichloromethane) (µg/L) (34423)	*trans*-1,2-Dichloroethene (µg/L) (34546)	Chloromethane (µg/L) (34418)	Chloroethane (µg/L) (34311)	1,2-Dichlorobenzene (µg/L) (34536)	Dibromomethane (µg/L) (30217)
Middle Sacramento Valley study unit—Continued										
ESAC-34	08/17/2006	—	—	—	—	—	—	—	—	—
	08/12/2010	—	—	—	—	—	—	—	—	—
WSAC-03	07/11/2006	—	—	—	—	—	—	—	—	—
	08/10/2010	—	—	—	—	—	—	—	—	—
WSAC-08	07/18/2006	—	—	—	—	—	—	—	—	—
	08/12/2010	—	—	—	—	—	—	—	—	—
WSAC-17	08/01/2006	—	—	—	—	—	—	—	—	—
	08/09/2010	—	—	—	—	—	—	—	—	—
WSAC-19	08/01/2006	—	—	—	—	—	—	—	—	—
	08/11/2010	—	—	—	—	—	—	—	—	—
WSAC-32	08/21/2006	—	—	—	—	—	—	—	—	—
	08/09/2010	—	—	—	—	—	—	—	—	—
Northern Sacramento Valley study unit										
NSAC-09	11/06/2007	—	—	—	—	—	—	—	—	—
	01/11/2011	—	—	—	—	—	—	—	—	—
NSAC-16	12/06/2007	—	—	—	—	—	—	—	—	—
	01/12/2011	—	—	—	—	—	—	—	—	—
RED-01	10/01/2007	—	—	—	—	—	—	—	—	—
	01/11/2011	—	—	—	—	—	—	—	—	—
RED-12	11/08/2007	—	—	—	—	—	—	—	—	—
	01/10/2011	—	—	—	—	—	—	—	—	—

Table 5. Volatile organic compounds (VOCs) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3A*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit: MADCHOW. Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, CDPH maximum contaminant level; HAL-US, USEPA Lifetime Health Advisory level; NL-CA, CDPH notification level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; nv, no value; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; ≤, less than or equal to; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Solvent								
		1,1-Dichloroethene (1,1-DCE) (µg/L) (34501)	Carbon tetrachloride (Tetrachloromethane) (µg/L) (32102)	1,1,1-Trichloroethane (1,1,1-TCA) (µg/L) (34506)	Methylene chloride (Dichloromethane) (µg/L) (34423)	*trans*-1,2-Dichloroethene (µg/L) (34546)	Chloromethane (µg/L) (34418)	Chloroethane (µg/L) (34311)	1,2-Dichlorobenzene (µg/L) (34536)	Dibromomethane (µg/L) (30217)
Madera-Chowchilla study unit										
MADCHOW-03	04/15/2008	—	—	—	—	—	—	—	—	—
	03/15/2011	—	—	—	—	0.057	—	—	—	—
MADCHOW-05	04/16/2008	—	—	—	—	—	—	—	—	—
	03/15/2011	—	—	—	—	—	—	—	—	—
MADCHOW-24	05/13/2008	—	—	—	—	—	—	—	—	—
	03/16/2011	—	—	—	—	—	—	—	—	—
MADCHOW-28	05/19/2008	—	—	—	—	—	—	—	—	—
	03/16/2011	—	—	—	—	—	—	—	—	—
Western San Joaquin Valley study unit										
DM-12	03/11/2010	—	—	—	—	—	—	—	—	—
	04/02/2013	—	—	—	—	—	—	—	—	—
DM-19	04/14/2010	—	—	—	—	—	—	—	—	—
	04/02/2013	—	—	—	—	—	—	—	—	—
DM-26	06/17/2010	—	—	—	—	—	—	—	—	—
	04/03/2013	—	—	—	—	—	—	—	—	—
WS-07	06/10/2010	—	—	—	—	—	—	—	—	—
	04/03/2013	—	—	—	—	—	—	—	—	—
Owens and Indian Wells Valleys study unit										
OIW-05	10/18/2006	—	—	—	—	—	—	—	—	—
	10/27/2010	—	—	—	—	—	—	—	—	—

Table 5. Volatile organic compounds (VOCs) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3A*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit: MADCHOW. Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, CDPH maximum contaminant level; HAL-US, USEPA Lifetime Health Advisory level; NL-CA, CDPH notification level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; nv, no value; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; ≤, less than or equal to; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Solvent								
		1,1-Dichloroethene (1,1-DCE) (µg/L) (34501)	Carbon tetrachloride (Tetrachloromethane) (µg/L) (32102)	1,1,1-Trichloroethane (1,1,1-TCA) (µg/L) (34506)	Methylene chloride (Dichloromethane) (µg/L) (34423)	*trans*-1,2-Dichloroethene (µg/L) (34546)	Chloromethane (µg/L) (34418)	Chloroethane (µg/L) (34311)	1,2-Dichlorobenzene (µg/L) (34536)	Dibromomethane (µg/L) (30217)
Owens and Indian Wells Valleys study unit—Continued										
OIW-07	10/19/2006	—	—	—	—	—	—	—	—	—
	10/27/2010	—	—	—	—	—	—	—	—	—
OV-21	10/03/2006	—	—	—	—	—	—	—	—	—
	10/26/2010	—	—	—	—	—	—	—	—	—
OV-24	12/12/2006	—	—	—	—	—	—	—	—	—
	10/28/2010	—	—	—	—	—	—	—	—	—
OV-29	10/05/2006	—	—	—	—	—	—	—	—	—
	10/28/2010	—	—	—	—	—	—	—	—	—
OV-36	10/25/2006	—	—	—	—	—	—	—	—	—
	10/26/2010	—	—	—	—	—	—	—	—	—
Coachella Valley study unit										
COA-12	03/08/2007	—	—	—	—	—	—	—	—	—
	01/05/2011	—	—	—	—	—	—	—	—	—
COA-14	03/12/2007	—	—	—	—	—	—	—	—	—
	01/04/2011	—	—	—	—	—	—	—	—	—
COA-15	03/14/2007	—	—	—	—	—	—	—	—	—
	01/06/2011	—	—	—	—	—	—	—	—	—
COA-16	03/15/2007	—	—	—	—	—	—	—	—	—
	01/05/2011	—	—	—	—	—	—	—	—	—

Table 5. Volatile organic compounds (VOCs) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3A*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit: MADCHOW. Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, CDPH maximum contaminant level; HAL-US, USEPA Lifetime Health Advisory level; NL-CA, CDPH notification level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; nv, no value; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; ≤, less than or equal to; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Solvent								
		1,1-Dichloroethene (1,1-DCE) (µg/L) (34501)	Carbon tetrachloride (Tetrachloromethane) (µg/L) (32102)	1,1,1-Trichloroethane (1,1,1-TCA) (µg/L) (34506)	Methylene chloride (Dichloromethane) (µg/L) (34423)	*trans*-1,2-Dichloroethene (µg/L) (34546)	Chloromethane (µg/L) (34418)	Chloroethane (µg/L) (34311)	1,2-Dichlorobenzene (µg/L) (34536)	Dibromomethane (µg/L) (30217)
Colorado River study unit										
COLOR-03	10/02/2007	—	—	—	—	—	—	—	—	—
	01/04/2011	—	—	—	—	—	—	—	—	—
COLOR-06	10/24/2007	—	—	—	—	—	—	—	—	—
	01/03/2011	—	—	—	—	—	—	—	—	—
COLOR-17	12/11/2007	—	—	—	—	—	—	—	—	—
	01/03/2011	—	—	—	—	—	—	—	—	—
Antelope Valley study unit										
ANT-07	01/29/2008	—	—	—	—	—	—	—	—	—
	02/15/2012	—	—	—	—	—	—	—	—	—
	02/14/2012	—	—	—	—	—	—	—	—	—
ANT-23	02/06/2008	—	—	—	—	—	—	—	—	—
	02/13/2012	—	—	—	—	—	—	—	—	—
ANT-24	02/06/2008	—	—	—	—		—	—	—	—
	02/16/2012	—	—	—	—	—	—	—	—	—
ANT-33	[9]02/13/2008	—	[4]E0.02	—	E0.05	—	E0.1	0.12	—	0.154
	02/15/2012	—	—	—	—	—	—	—	—	—
ANT-42	03/03/2008	—	—	—	—	—	—	—	—	—
	02/14/2012	—	—	—	—	—	—	—	—	—

Table 5. Volatile organic compounds (VOCs) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3A*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit: MADCHOW. Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, CDPH maximum contaminant level; HAL-US, USEPA Lifetime Health Advisory level; NL-CA, CDPH notification level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; nv, no value; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; ≤, less than or equal to; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Solvent								
		1,1-Dichloroethene (1,1-DCE) (µg/L) (34501)	Carbon tetrachloride (Tetrachloromethane) (µg/L) (32102)	1,1,1-Trichloroethane (1,1,1-TCA) (µg/L) (34506)	Methylene chloride (Dichloromethane) (µg/L) (34423)	*trans*-1,2-Dichloroethene (µg/L) (34546)	Chloromethane (µg/L) (34418)	Chloroethane (µg/L) (34311)	1,2-Dichlorobenzene (µg/L) (34536)	Dibromomethane (µg/L) (30217)
Mojave study unit										
MOJO-01	02/04/2008	—	—	—	—	—	—	—	—	—
	03/08/2011	—	—	—	—	—	—	—	—	—
MOJO-09	02/07/2008	—	—	—	—	—	—	—	—	—
	03/08/2011	—	—	—	—	—	—	—	—	—
MOJO-11	02/07/2008	—	—	—	—	—	—	—	—	—
	03/09/2011	—	—	—	—	—	—	—	—	—
MOJO-16	02/13/2008	—	—	—	—	—	—	—	—	—
	03/10/2011	—	—	—	—	—	—	—	—	—
MOJO-34	03/17/2008	—	—	—	—	—	—	—	—	—
	03/10/2011	—	—	—	—	—	—	—	—	—
MOJO-48	04/01/2008	—	—	—	—	—	—	—	—	—
	03/09/2011	—	—	—	—	—	—	—	—	—
MOJO-49	04/01/2008	—	—	—	—	—	—	—	—	—
	03/07/2011	—	—	—	—	—	—	—	—	—
Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit										
BV-05	10/29/2009	—	—	—	—	—	—	—	—	—
	10/18/2012	—	—	—	—	—	—	—	—	—
CD-02	12/15/2008	—	—	—	—	—	—	—	—	—
	10/16/2012	—	—	—	—	—	—	—	—	—
CD-05	12/17/2008	—	—	—	—	—	—	—	—	—
	10/16/2012	—	—	—	—	—	—	—	—	—

Table 5. Volatile organic compounds (VOCs) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3A*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit: MADCHOW. Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, CDPH maximum contaminant level; HAL-US, USEPA Lifetime Health Advisory level; NL-CA, CDPH notification level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; nv, no value; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; ≤, less than or equal to; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Solvent								
		1,1-Dichloroethene (1,1-DCE) (µg/L) (34501)	Carbon tetrachloride (Tetrachloromethane) (µg/L) (32102)	1,1,1-Trichloroethane (1,1,1-TCA) (µg/L) (34506)	Methylene chloride (Dichloromethane) (µg/L) (34423)	*trans*-1,2-Dichloroethene (µg/L) (34546)	Chloromethane (µg/L) (34418)	Chloroethane (µg/L) (34311)	1,2-Dichlorobenzene (µg/L) (34536)	Dibromomethane (µg/L) (30217)
Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit—Continued										
LUB-05	12/04/2008	—	—	—	—	—	—	—	—	—
	10/17/2012	—	—	—	—	—	—	—	—	—
LUB-07	12/09/2008	—	—	—	—	—	—	—	—	—
	10/17/2012	—	—	—	—	—	—	—	—	—
LUB-11	12/11/2008	—	—	—	—	—	—	—	—	—
	10/15/2012	—	—	—	—	—	—	—	—	—
Coastal Los Angeles Basin study unit										
CLABCB-12	08/29/2006	—	—	—	—	—	—	—	—	—
	08/25/2010	—	—	—	—	—	—	—	—	—
CLABCB-13	08/29/2006	0.262	—	E0.031	—	—	—	—	—	—
	08/23/2010	0.404	—	0.041	—	—	—	—	—	—
CLABCB-14	08/29/2006	—	—	—	—	—	—	—	—	—
	08/23/2010	—	—	—	—	—	—	—	—	—
CLABCB-17	09/14/2006	—	—	—	—	—	—	—	—	—
	08/25/2010	—	—	—	—	—	—	—	—	—
CLABDA-02	08/08/2006	2.17	0.32	—	—	E0.027	—	—	—	—
	08/24/2010	0.957	0.21	—	[4]E0.02	0.027	—	—	—	—
CLABOC-13	08/28/2006	—	—	—	—	—	—	—	—	—
	08/26/2010	—	—	—	—	—	—	—	—	—
CLABOC-14	08/31/2006	—	—	—	—	—	—	—	—	—
	08/26/2010	—	—	—	—	—	—	—	—	—

Table 5. Volatile organic compounds (VOCs) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3A*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit: MADCHOW. Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, CDPH maximum contaminant level; HAL-US, USEPA Lifetime Health Advisory level; NL-CA, CDPH notification level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; nv, no value; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; ≤, less than or equal to; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Solvent								
		1,1-Dichloroethene (1,1-DCE) (µg/L) (34501)	Carbon tetrachloride (Tetrachloromethane) (µg/L) (32102)	1,1,1-Trichloroethane (1,1,1-TCA) (µg/L) (34506)	Methylene chloride (Dichloromethane) (µg/L) (34423)	*trans*-1,2-Dichloroethene (µg/L) (34546)	Chloromethane (µg/L) (34418)	Chloroethane (µg/L) (34311)	1,2-Dichlorobenzene (µg/L) (34536)	Dibromomethane (µg/L) (30217)
Coastal Los Angeles Basin study unit—Continued										
CLABWB-03	08/30/2006	—	—	—	—	—	—	—	—	—
	08/24/2010	—	—	—	E0.02	—	—	—	—	—
Upper Santa Ana Watershed study unit										
USAWB-01	11/27/2006	—	—	—	—	—	—	—	—	—
	04/20/2009	—	—	—	—	—	—	—	—	—
USAWB-04	11/28/2006	—	—	—	—	—	—	—	—	—
	05/06/2009	—	—	—	—	—	—	—	—	—
USAWB-12	12/13/2006	—	—	—	—	—	—	—	—	—
	04/22/2009	—	—	—	—	—	—	—	—	—
USAWB-14	12/14/2006	—	—	—	E0.06	E0.012	—	—	—	—
	04/14/2009	—	—	—	E0.05	—	—	—	—	—
USAWB-17	01/10/2007	—	—	—	—	—	—	—	—	—
	04/23/2009	—	—	—	—	—	—	—	—	—
USAWC-02	01/29/2007	—	—	—	—	—	—	—	—	—
	04/30/2009	—	—	—	—	—	—	—	—	—
USAWC-08	01/31/2007	0.259	—	—	—	—	—	—	—	—
	04/28/2009	E0.067	—	—	—	—	—	—	—	—
USAWC-10	02/01/2007	—	—	—	—	—	—	—	—	—
	04/27/2009	—	—	—	—	—	—	—	—	—
USAWC-21	02/14/2007	—	—	—	—	—	—	—	—	—
	04/13/2009	—	—	—	—	—	—	—	—	—

Table 5. Volatile organic compounds (VOCs) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3A*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit: MADCHOW. Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, CDPH maximum contaminant level; HAL-US, USEPA Lifetime Health Advisory level; NL-CA, CDPH notification level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; nv, no value; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; ≤, less than or equal to; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Solvent								
		1,1-Dichloroethene (1,1-DCE) (µg/L) (34501)	Carbon tetrachloride (Tetrachloromethane) (µg/L) (32102)	1,1,1-Trichloroethane (1,1,1-TCA) (µg/L) (34506)	Methylene chloride (Dichloromethane) (µg/L) (34423)	*trans*-1,2-Dichloroethene (µg/L) (34546)	Chloromethane (µg/L) (34418)	Chloroethane (µg/L) (34311)	1,2-Dichlorobenzene (µg/L) (34536)	Dibromomethane (µg/L) (30217)
Upper Santa Ana Watershed study unit—Continued										
USAWC-23	02/15/2007	—	—	—	—	—	—	—	—	—
	04/16/2009	—	—	—	—	—	—	—	—	—
USAWR-08	01/10/2007	E0.028	—	—	—	—	[4]E0.01	—	—	—
	04/21/2009	E0.031	—	—	—	—	—	—	—	—
USAWR-12	01/29/2007	—	—	—	—	—	—	—	—	—
	04/29/2009	—	—	—	—	—	—	—	—	—
USAWS-01	01/22/2007	—	—	—	—	—	—	—	—	—
	05/07/2009	—	—	—	—	—	—	—	—	—
USAWS-08	01/24/2007	E0.031	E0.04	—	—	—	—	—	—	—
	05/07/2009	—	—	—	—	—	—	—	—	—
USAWY-06	01/09/2007	—	—	—	—	—	—	—	E0.031	—
	05/05/2009	—	—	—	—	—	—	—	E0.022	—
USAWY-07	01/11/2007	2.79	—	4.60	—	—	—	—	—	—
	05/04/2009	1.13	—	1.21	—	—	—	—	—	—
Santa Clara River Valley study unit										
SCRV-06	04/04/2007	—	—	—	—	—	—	—	—	—
	04/26/2011	—	—	—	—	—	—	—	—	—
SCRV-08	04/04/2007	—	—	—	—	—	—	—	—	—
	04/26/2011	—	—	—	—	—	—	—	—	—
SCRV-17	04/11/2007	—	—	E0.062	—	—	—	—	—	—
	04/27/2011	—	—	0.030	—	—	—	—	—	—

Table 5. Volatile organic compounds (VOCs) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3A*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit: MADCHOW. Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, CDPH maximum contaminant level; HAL-US, USEPA Lifetime Health Advisory level; NL-CA, CDPH notification level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; nv, no value; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; ≤, less than or equal to; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Solvent								
		1,1-Dichloroethene (1,1-DCE) (µg/L) (34501)	Carbon tetrachloride (Tetrachloromethane) (µg/L) (32102)	1,1,1-Trichloroethane (1,1,1-TCA) (µg/L) (34506)	Methylene chloride (Dichloromethane) (µg/L) (34423)	*trans*-1,2-Dichloroethene (µg/L) (34546)	Chloromethane (µg/L) (34418)	Chloroethane (µg/L) (34311)	1,2-Dichlorobenzene (µg/L) (34536)	Dibromomethane (µg/L) (30217)
Santa Clara River Valley study unit—Continued										
SCRV-18	04/11/2007	—	—	—	—	—	—	—	—	—
	04/27/2011	—	—	—	—	—	—	—	—	—
SCRV-32	04/18/2007	—	—	—	—	—	—	—	—	—
	04/25/2011	—	—	—	—	—	—	—	—	—
SCRV-36	04/19/2007	—	—	—	—	—	—	—	—	—
	04/28/2011	—	—	—	—	—	—	—	—	—

Table 5. Volatile organic compounds (VOCs) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3A*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit: MADCHOW. Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, CDPH maximum contaminant level; HAL-US, USEPA Lifetime Health Advisory level; NL-CA, CDPH notification level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; nv, no value; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; ≤, less than or equal to; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Solvent		Refrigerant			Fumigant		
		1,2-Dichloroethane (µg/L) (32103)	Diethyl ether (µg/L) (81576)	Dichlorodifluoromethane (CFC-12) (µg/L) (34668)	Trichlorofluoromethane (CFC-11) (µg/L) (34488)	Trichlorotrifluoroethane (CFC-113) (µg/L) (77652)	1,2-Dichloropropane (µg/L) (34541)	1,2,3-Trichloropropane[7] (µg/L) (77443)	1,2-Dibromo-3-chloropropane (DBCP) (82625)
Benchmark type[1]		MCL-CA	na	NL-CA	MCL-CA	MCL-CA	MCL-US	HAL-US	MCL-US
Benchmark level		0.5	na	1,000	150	1,200	5	40	0.2
SRL[2]		nv	nv	nv	nv	nv	nv	nv	nv
Minimum and maximum LRL 2006–13		0.06, 0.13	0.08, 0.12	0.1, 0.18	0.06, 0.16	0.038, 0.04	0.02, 0.029	0.12, 0.18	[5]0.03, 1
Number of wells with detections 2006–10		0	0	4	4	2	2	0	0
Number of wells with detections 2009–13		1	0	4	3	4	3	1	0
Detection frequency (percent) 2006–10		0.0	0.0	4.3	4.3	2.2	2.2	0.0	0.0
Detection frequency (percent) 2009–13		1.1	0.0	4.3	3.2	4.3	3.2	1.1	0.0
Kern County Subbasin study unit									
KERN-02	01/10/2006	—	—	—	—	—	E0.053	—	—
	02/11/2010	—	—	—	—	—	0.081	E0.087	—
KERN-20	02/13/2006	—	—	—	—	—	—	—	—
	02/10/2010	—	—	—	—	—	—	—	—
KERN-21	02/13/2006	—	—	—	—	—	0.147	—	—
	03/16/2010	—	—	—	—	—	0.143	—	—
KERN-29	02/28/2006	—	—	—	—	—	—	—	—
	02/10/2010	—	—	—	—	—	—	—	—

Table 5. Volatile organic compounds (VOCs) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3A*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit: MADCHOW. Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, CDPH maximum contaminant level; HAL-US, USEPA Lifetime Health Advisory level; NL-CA, CDPH notification level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; nv, no value; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; ≤, less than or equal to; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Solvent		Refrigerant			Fumigant		
		1,2-Dichloroethane (µg/L) (32103)	Diethyl ether (µg/L) (81576)	Dichlorodifluoromethane (CFC-12) (µg/L) (34668)	Trichlorofluoromethane (CFC-11) (µg/L) (34488)	Trichlorotrifluoroethane (CFC-113) (µg/L) (77652)	1,2-Dichloropropane (µg/L) (34541)	1,2,3-Trichloropropane[7] (µg/L) (77443)	1,2-Dibromo-3-chloropropane (DBCP) (82625)
Kern County Subbasin study unit—Continued									
KERN-33	03/01/2006	—	—	—	—	—	—	—	—
	02/09/2010	—	—	—	—	—	—	—	—
Central Eastside San Joaquin Basin study unit									
CE-QPC-02	03/22/2006	—	—	—	—	—	—	—	—
	03/10/2010	—	—	—	—	—	—	—	—
MER-11	04/12/2006	—	—	—	—	—	—	—	—
	01/28/2010	—	—	—	—	E0.018	—	—	—
MER-14	04/17/2006	—	—	—	—	—	—	—	—
	01/27/2010	—	—	—	—	—	—	—	—
MOD-07	03/21/2006	—	—	E0.80	—	—	—	—	—
	01/26/2010	—	—	E1.03	—	—	—	—	—
TRLK-03	03/21/2006	—	—	—	—	—	—	—	—
	01/28/2010	—	—	—	—	—	—	—	—
TRLK-05	03/22/2006	—	—	—	—	—	—	—	—
	01/25/2010	—	—	—	—	—	—	—	—
Middle Sacramento Valley study unit									
ESAC-01	06/29/2006	—	—	—	—	—	—	—	—
	08/11/2010	—	—	—	—	—	—	—	—
ESAC-19	07/20/2006	—	—	—	—	—	—	—	—
	08/10/2010	—	—	—	—	—	—	—	—

Table 5. Volatile organic compounds (VOCs) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3A*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit: MADCHOW. Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, CDPH maximum contaminant level; HAL-US, USEPA Lifetime Health Advisory level; NL-CA, CDPH notification level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; nv, no value; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; ≤, less than or equal to; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Solvent		Refrigerant			Fumigant		
		1,2-Dichloroethane (µg/L) (32103)	Diethyl ether (µg/L) (81576)	Dichlorodifluoromethane (CFC-12) (µg/L) (34668)	Trichlorofluoromethane (CFC-11) (µg/L) (34488)	Trichlorotrifluoroethane (CFC-113) (µg/L) (77652)	1,2-Dichloropropane (µg/L) (34541)	1,2,3-Trichloropropane[7] (µg/L) (77443)	1,2-Dibromo-3-chloropropane (DBCP) (82625)
Middle Sacramento Valley study unit—Continued									
ESAC-34	08/17/2006	—	—	—	—	—	—	—	—
	08/12/2010	—	—	—	—	—	—	—	—
WSAC-03	07/11/2006	—	—	—	—	—	—	—	—
	08/10/2010	—	—	—	—	—	—	—	—
WSAC-08	07/18/2006	—	—	—	—	—	—	—	—
	08/12/2010	—	—	—	—	—	—	—	—
WSAC-17	08/01/2006	—	—	—	—	—	—	—	—
	08/09/2010	—	—	—	—	—	—	—	—
WSAC-19	08/01/2006	—	—	—	—	—	—	—	—
	08/11/2010	—	—	—	—	—	—	—	—
WSAC-32	08/21/2006	—	—	—	—	—	—	—	—
	08/09/2010	—	—	—	—	—	—	—	—
Northern Sacramento Valley study unit									
NSAC-09	11/06/2007	—	—	—	—	—	—	—	—
	01/11/2011	—	—	—	—	—	—	—	—
NSAC-16	12/06/2007	—	—	—	—	—	—	—	—
	01/12/2011	—	—	—	—	—	—	—	—
RED-01	10/01/2007	—	—	—	—	—	—	—	—
	01/11/2011	—	—	—	—	—	—	—	—
RED-12	11/08/2007	—	—	—	—	—	—	—	—
	01/10/2011	—	—	—	—	—	—	—	—

Table 5. Volatile organic compounds (VOCs) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3A*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit: MADCHOW. Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, CDPH maximum contaminant level; HAL-US, USEPA Lifetime Health Advisory level; NL-CA, CDPH notification level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; nv, no value; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; ≤, less than or equal to; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Solvent		Refrigerant			Fumigant		
		1,2-Dichloroethane (µg/L) (32103)	Diethyl ether (µg/L) (81576)	Dichlorodifluoromethane (CFC-12) (µg/L) (34668)	Trichlorofluoromethane (CFC-11) (µg/L) (34488)	Trichlorotrifluoroethane (CFC-113) (µg/L) (77652)	1,2-Dichloropropane (µg/L) (34541)	1,2,3-Trichloropropane[7] (µg/L) (77443)	1,2-Dibromo-3-chloropropane (DBCP) (82625)
Madera-Chowchilla study unit									
MADCHOW-03	04/15/2008	—	—	—	—	—	—	—	—
	03/15/2011	—	—	E0.14	—	—	—	—	—
MADCHOW-05	04/16/2008	—	—	—	—	—	—	—	—
	03/15/2011	—	—	—	—	—	—	—	—
MADCHOW-24	05/13/2008	—	—	—	—	—	—	—	—
	03/16/2011	—	—	—	—	—	—	—	—
MADCHOW-28	05/19/2008	—	—	—	—	—	—	—	—
	03/16/2011	—	—	—	—	—	—	—	—
Western San Joaquin Valley study unit									
DM-12	03/11/2010	—	—	—	—	—	—	—	—
	04/02/2013	—	—	—	—	—	—	—	—
DM-19	04/14/2010	—	—	—	—	—	—	—	—
	04/02/2013	—	—	—	—	—	—	—	—
DM-26	06/17/2010	—	—	—	—	—	—	—	—
	04/03/2013	—	—	—	—	—	—	—	—
WS-07	06/10/2010	—	—	—	—	—	—	—	—
	04/03/2013	—	—	—	—	—	—	—	—
Owens and Indian Wells Valleys study unit									
OIW-05	10/18/2006	—	—	—	—	—	—	—	—
	10/27/2010	—	—	—	—	—	—	—	—

Table 5. Volatile organic compounds (VOCs) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3A*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit: MADCHOW. Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, CDPH maximum contaminant level; HAL-US, USEPA Lifetime Health Advisory level; NL-CA, CDPH notification level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; nv, no value; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; ≤, less than or equal to; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Solvent		Refrigerant			Fumigant		
		1,2-Dichloroethane (µg/L) (32103)	Diethyl ether (µg/L) (81576)	Dichlorodifluoromethane (CFC-12) (µg/L) (34668)	Trichlorofluoromethane (CFC-11) (µg/L) (34488)	Trichlorotrifluoroethane (CFC-113) (µg/L) (77652)	1,2-Dichloropropane (µg/L) (34541)	1,2,3-Trichloropropane[7] (µg/L) (77443)	1,2-Dibromo-3-chloropropane (DBCP) (82625)
Owens and Indian Wells Valleys study unit—Continued									
OIW-07	10/19/2006	—	—	—	—	—	—	—	—
	10/27/2010	—	—	—	—	—	—	—	—
OV-21	10/03/2006	—	—	—	—	—	—	—	—
	10/26/2010	—	—	—	—	—	—	—	—
OV-24	12/12/2006	—	—	—	—	—	—	—	—
	10/28/2010	—	—	—	—	—	—	—	—
OV-29	10/05/2006	—	—	—	—	—	—	—	—
	10/28/2010	—	—	—	—	—	—	—	—
OV-36	10/25/2006	—	—	—	—	—	—	—	—
	10/26/2010	—	—	—	—	—	—	—	—
Coachella Valley study unit									
COA-12	03/08/2007	—	—	—	—	—	—	—	—
	01/05/2011	—	—	—	—	—	—	—	—
COA-14	03/12/2007	—	—	—	—	—	—	—	—
	01/04/2011	—	—	—	—	—	—	—	—
COA-15	03/14/2007	—	—	—	—	—	—	—	—
	01/06/2011	—	—	—	—	—	—	—	—
COA-16	03/15/2007	—	—	—	—	—	—	—	—
	01/05/2011	—	—	—	—	—	—	—	—

Table 5. Volatile organic compounds (VOCs) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3A*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit: MADCHOW. Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, CDPH maximum contaminant level; HAL-US, USEPA Lifetime Health Advisory level; NL-CA, CDPH notification level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; nv, no value; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; ≤, less than or equal to; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Solvent		Refrigerant			Fumigant		
		1,2-Dichloroethane (µg/L) (32103)	Diethyl ether (µg/L) (81576)	Dichlorodifluoromethane (CFC-12) (µg/L) (34668)	Trichlorofluoromethane (CFC-11) (µg/L) (34488)	Trichlorotrifluoroethane (CFC-113) (µg/L) (77652)	1,2-Dichloropropane (µg/L) (34541)	1,2,3-Trichloropropane[7] (µg/L) (77443)	1,2-Dibromo-3-chloropropane (DBCP) (82625)
Colorado River study unit									
COLOR-03	10/02/2007	—	—	—	—	—	—	—	—
	01/04/2011	—	—	—	—	—	—	—	—
COLOR-06	10/24/2007	—	—	—	—	—	—	—	—
	01/03/2011	—	—	—	—	—	—	—	—
COLOR-17	12/11/2007	—	—	—	—	—	—	—	—
	01/03/2011	—	—	—	—	—	—	—	—
Antelope Valley study unit									
ANT-07	01/29/2008	—	—	—	—	—	—	—	—
	02/15/2012	—	—	—	—	—	—	—	—
ANT-20	02/05/2008	—	—	—	—	—	—	—	—
	02/14/2012	—	—	—	—	—	—	—	—
ANT-23	02/06/2008	—	—	—	—	—	—	—	—
	02/13/2012	—	—	—	—	—	—	—	—
ANT-24	02/06/2008	—	—	—	—	—	—	—	—
	02/16/2012	—	—	—	—	—	—	—	—
ANT-33	[9]02/13/2008	—	—	—	—	—	—	—	—
	02/15/2012	—	—	—	—	—	—	—	—
ANT-42	03/03/2008	—	—	—	—	—	—	—	—
	02/14/2012	—	—	—	—	—	—	—	—

Table 5. Volatile organic compounds (VOCs) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3A*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit: MADCHOW. Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, CDPH maximum contaminant level; HAL-US, USEPA Lifetime Health Advisory level; NL-CA, CDPH notification level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; nv, no value; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; ≤, less than or equal to; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Solvent		Refrigerant			Fumigant		
		1,2-Dichloroethane (µg/L) (32103)	Diethyl ether (µg/L) (81576)	Dichlorodifluoromethane (CFC-12) (µg/L) (34668)	Trichlorofluoromethane (CFC-11) (µg/L) (34488)	Trichlorotrifluoroethane (CFC-113) (µg/L) (77652)	1,2-Dichloropropane (µg/L) (34541)	1,2,3-Trichloropropane[7] (µg/L) (77443)	1,2-Dibromo-3-chloropropane (DBCP) (82625)
Mojave study unit									
MOJO-01	02/04/2008	—	—	—	—	—	—	—	—
	03/08/2011	—	—	—	—	—	—	—	—
MOJO-09	02/07/2008	—	—	—	—	—	—	—	—
	03/08/2011	—	—	—	—	—	—	—	—
MOJO-11	02/07/2008	—	—	—	—	—	—	—	—
	03/09/2011	—	—	—	—	—	—	—	—
MOJO-16	02/13/2008	—	—	—	—	—	—	—	—
	03/10/2011	—	—	—	—	—	—	—	—
MOJO-34	03/17/2008	—	—	—	—	—	—	—	—
	03/10/2011	—	—	—	—	—	—	—	—
MOJO-48	04/01/2008	—	—	—	—	—	—	—	—
	03/09/2011	—	—	—	—	—	—	—	—
MOJO-49	04/01/2008	—	—	—	—	—	—	—	—
	03/07/2011	—	—	—	—	—	—	—	—
Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit									
BV-05	10/29/2009	—	—	—	—	—	—	—	—
	10/18/2012	—	—	—	—	—	—	—	—
CD-02	12/15/2008	—	—	—	—	—	—	—	—
	10/16/2012	—	—	—	—	—	—	—	—
CD-05	12/17/2008	—	—	—	—	—	—	—	—
	10/16/2012	—	—	—	—	—	—	—	—

Table 5. Volatile organic compounds (VOCs) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3A*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit: MADCHOW. Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, CDPH maximum contaminant level; HAL-US, USEPA Lifetime Health Advisory level; NL-CA, CDPH notification level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; nv, no value; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; ≤, less than or equal to; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Solvent		Refrigerant			Fumigant		
		1,2-Dichloroethane (µg/L) (32103)	Diethyl ether (µg/L) (81576)	Dichlorodifluoromethane (CFC-12) (µg/L) (34668)	Trichlorofluoromethane (CFC-11) (µg/L) (34488)	Trichlorotrifluoroethane (CFC-113) (µg/L) (77652)	1,2-Dichloropropane (µg/L) (34541)	1,2,3-Trichloropropane[7] (µg/L) (77443)	1,2-Dibromo-3-chloropropane (DBCP) (82625)
Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit—Continued									
LUB-05	12/04/2008	—	—	—	—	—	—	—	—
	10/17/2012	—	—	—	—	—	—	—	—
LUB-07	12/09/2008	—	—	—	—	—	—	—	—
	10/17/2012	—	—	—	—	—	—	—	—
LUB-11	12/11/2008	—	—	—	—	—	—	—	—
	10/15/2012	—	—	—	—	—	—	—	—
Coastal Los Angeles Basin study unit									
CLABCB-12	08/29/2006	—	—	—	—	—	—	—	—
	08/25/2010	—	[5]≤0.03	—	—	—	—	—	—
CLABCB-13	08/29/2006	—	—	—	—	—	—	—	—
	08/23/2010	—	—	—	—	—	—	—	—
CLABCB-14	08/29/2006	—	—	—	—	—	—	—	—
	08/23/2010	—	—	—	—	—	—	—	—
CLABCB-17	09/14/2006	—	—	—	—	—	—	—	—
	08/25/2010	—	—	—	—	E0.032	—	—	—
CLABDA-02	08/08/2006	—	—	E0.28	0.10	0.341	—	—	—
	08/24/2010	0.09	—	E0.81	[4]E0.03	0.538	—	—	—
CLABOC-13	08/28/2006	—	—	—	—	—	—	—	—
	08/26/2010	—	—	—	—	—	—	—	—
CLABOC-14	08/31/2006	—	—	—	—	—	—	—	—
	08/26/2010	—	—	—	—	—	—	—	—

Table 5. Volatile organic compounds (VOCs) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3A*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit: MADCHOW. Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, CDPH maximum contaminant level; HAL-US, USEPA Lifetime Health Advisory level; NL-CA, CDPH notification level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; nv, no value; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; ≤, less than or equal to; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Solvent		Refrigerant			Fumigant		
		1,2-Dichloroethane (µg/L) (32103)	Diethyl ether (µg/L) (81576)	Dichlorodifluoromethane (CFC-12) (µg/L) (34668)	Trichlorofluoromethane (CFC-11) (µg/L) (34488)	Trichlorotrifluoroethane (CFC-113) (µg/L) (77652)	1,2-Dichloropropane (µg/L) (34541)	1,2,3-Trichloropropane[7] (µg/L) (77443)	1,2-Dibromo-3-chloropropane (DBCP) (82625)
Coastal Los Angeles Basin study unit—Continued									
CLABWB-03	08/30/2006	—	—	—	—	—	—	—	—
	08/24/2010	—	—	—	—	—	—	—	—
Upper Santa Ana Watershed study unit									
USAWB-01	11/27/2006	—	—	—	—	—	—	—	—
	04/20/2009	—	—	—	—	—	—	—	—
USAWB-04	11/28/2006	—	—	—	—	—	—	—	—
	05/06/2009	—	—	—	—	—	—	—	—
USAWB-12	12/13/2006	—	—	—	—	—	—	—	—
	04/22/2009	—	—	—	—	—	—	—	—
USAWB-14	12/14/2006	—	—	E1.49	0.35	—	—	—	—
	04/14/2009	—	—	E1.45	0.39	—	—	—	—
USAWB-17	01/10/2007	—	—	[4]E0.07	0.78	—	—	—	—
	04/23/2009	—	—	—	0.41	—	—	—	—
USAWC-02	01/29/2007	—	—	—	—	—	—	—	—
	04/30/2009	—	—	—	—	—	—	—	—
USAWC-08	01/31/2007	—	—	—	—	—	—	—	—
	04/28/2009	—	—	—	—	—	—	—	—
USAWC-10	02/01/2007	—	—	—	—	—	—	—	—
	04/27/2009	—	—	—	—	—	—	—	—
USAWC-21	02/14/2007	—	—	—	—	—	—	—	—
	04/13/2009	—	—	—	—	—	—	—	—

Table 5. Volatile organic compounds (VOCs) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3A*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit: MADCHOW. Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, CDPH maximum contaminant level; HAL-US, USEPA Lifetime Health Advisory level; NL-CA, CDPH notification level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; nv, no value; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; ≤, less than or equal to; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Solvent		Refrigerant			Fumigant		
		1,2-Dichloroethane (µg/L) (32103)	Diethyl ether (µg/L) (81576)	Dichlorodifluoromethane (CFC-12) (µg/L) (34668)	Trichlorofluoromethane (CFC-11) (µg/L) (34488)	Trichlorotrifluoroethane (CFC-113) (µg/L) (77652)	1,2-Dichloropropane (µg/L) (34541)	1,2,3-Trichloropropane[7] (µg/L) (77443)	1,2-Dibromo-3-chloropropane (DBCP) (82625)
Upper Santa Ana Watershed study unit—Continued									
USAWC-23	02/15/2007	—	—	—	—	—	—	—	—
	04/16/2009	—	—	—	—	—	E0.048	—	—
USAWR-08	01/10/2007	—	—	E0.07	0.12	—	—	—	—
	04/21/2009	—	—	—	0.11	—	—	—	[4]E0.38
USAWR-12	01/29/2007	—	—	—	—	—	—	—	—
	04/29/2009	—	—	—	—	—	—	—	—
USAWS-01	01/22/2007	—	—	—	—	—	—	—	—
	05/07/2009	—	—	—	—	—	—	—	—
USAWS-08	01/24/2007	—	—	—	—	—	—	—	—
	05/07/2009	—	—	—	—	—	—	—	—
USAWY-06	01/09/2007	—	—	—	—	—	—	—	—
	05/05/2009	—	—	—	—	—	—	—	—
USAWY-07	01/11/2007	—	—	—	—	6.03	—	—	—
	05/04/2009	—	—	—	—	1.52	—	—	—
Santa Clara River Valley study unit									
SCRV-06	04/04/2007	—	—	—	—	—	—	—	—
	04/26/2011	—	—	—	—	—	—	—	—
SCRV-08	04/04/2007	—	—	—	—	—	—	—	—
	04/26/2011	—	—	—	—	—	—	—	—
SCRV-17	04/11/2007	—	—	—	—	—	—	—	—
	04/27/2011	—	—	—	—	—	—	—	—

Table 5. Volatile organic compounds (VOCs) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3A*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit: MADCHOW. Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, CDPH maximum contaminant level; HAL-US, USEPA Lifetime Health Advisory level; NL-CA, CDPH notification level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; nv, no value; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; ≤, less than or equal to; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Solvent		Refrigerant			Fumigant		
		1,2-Dichloroethane (µg/L) (32103)	Diethyl ether (µg/L) (81576)	Dichlorodifluoromethane (CFC-12) (µg/L) (34668)	Trichlorofluoromethane (CFC-11) (µg/L) (34488)	Trichlorotrifluoroethane (CFC-113) (µg/L) (77652)	1,2-Dichloropropane (µg/L) (34541)	1,2,3-Trichloropropane[7] (µg/L) (77443)	1,2-Dibromo-3-chloropropane (DBCP) (82625)
Santa Clara River Valley study unit—Continued									
SCRV-18	04/11/2007	—	—	—	—	—	—	—	—
	04/27/2011	—	—	—	—	—	—	—	—
SCRV-32	04/18/2007	—	—	—	—	—	—	—	—
	04/25/2011	—	—	—	—	—	—	—	—
SCRV-36	04/19/2007	—	—	—	—	—	—	—	—
	04/28/2011	—	—	—	—	—	—	—	—

Table 5. Volatile organic compounds (VOCs) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3A*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit: MADCHOW. Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, CDPH maximum contaminant level; HAL-US, USEPA Lifetime Health Advisory level; NL-CA, CDPH notification level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; nv, no value; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; ≤, less than or equal to; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Fire retardant	Gasoline hydrocarbon					
		Bromochloro-methane (µg/L) (77297)	Methyl *tert*-butyl ether (MTBE) (µg/L) (78032)	Benzene (µg/L) (34030)	4-Isopropyltoluene (*p*-isopropyltoluene) (µg/L) (77356)	Styrene (µg/L) (77128)	1,2,4-Trimethyl-benzene (µg/L) (77222)	Ethylbenzene (µg/L) (34371)
Benchmark type[1]		HAL-US	MCL-CA	MCL-CA	na	MCL-US	NL-CA	MCL-CA
Benchmark level		90	13	1	na	100	330	300
SRL[2]		nv	nv	nv	nv	nv	0.56	0.06
Minimum and maximum LRL 2006–13		0.06, 0.12	0.1, 0.17	0.016, 0.026	0.06, 0.08	0.03, 0.042	0.032, 0.056	0.02, 0.04
Number of wells with detections 2006–10		1	8	1	0	0	0	0
Number of wells with detections 2009–13		0	5	0	1	1	1	0
Detection frequency (percent) 2006–10		1.1	8.6	1.1	0.0	0.0	0.0	0.0
Detection frequency (percent) 2009–13		0.0	5.4	0.0	1.1	1.1	1.1	0.0
Kern County Subbasin study unit								
KERN-02	01/10/2006	—	—	E0.033	—	—	—	—
	02/11/2010	—	—	—	—	—	—	—
KERN-20	02/13/2006	—	—	—	—	—	—	—
	02/10/2010	—	—	—	—	—	—	—
KERN-21	02/13/2006	—	—	—	—	—	—	—
	03/16/2010	—	—	—	E0.04	—	—	[4]E0.015
KERN-29	02/28/2006	—	—	—	—	—	—	—
	02/10/2010	—	—	—	—	—	—	—

Table 5. Volatile organic compounds (VOCs) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3A*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit: MADCHOW. Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, CDPH maximum contaminant level; HAL-US, USEPA Lifetime Health Advisory level; NL-CA, CDPH notification level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; nv, no value; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; ≤, less than or equal to; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Fire retardant	Gasoline hydrocarbon					
		Bromochloro-methane (µg/L) (77297)	Methyl *tert*-butyl ether (MTBE) (µg/L) (78032)	Benzene (µg/L) (34030)	4-Isopropyltoluene (*p*-isopropyltoluene) (µg/L) (77356)	Styrene (µg/L) (77128)	1,2,4-Trimethyl-benzene (µg/L) (77222)	Ethylbenzene (µg/L) (34371)
Kern County Subbasin study unit—Continued								
KERN-33	03/01/2006	—	—	—	—	—	—	—
	02/09/2010	—	—	—	—	—	—	—
Central Eastside San Joaquin Basin study unit								
CE-QPC-02	03/22/2006	—	—	—	—	—	—	—
	03/10/2010	—	—	—	—	—	—	—
MER-11	04/12/2006	—	—	—	—	—	—	—
	01/28/2010	—	—	—	—	—	—	—
MER-14	04/17/2006	—	—	—	—	—	—	—
	01/27/2010	—	—	—	—	—	—	—
MOD-07	03/21/2006	—	—	—	—	—	—	—
	01/26/2010	—	E0.09	—	—	—	—	—
TRLK-03	03/21/2006	—	—	—	—	—	—	—
	01/28/2010	—	—	—	—	—	—	—
TRLK-05	03/22/2006	—	—	—	—	—	—	—
	01/25/2010	—	—	—	—	—	—	—
Middle Sacramento Valley study unit								
ESAC-01	06/29/2006	—	—	—	—	—	—	—
	08/11/2010	—	[4]E0.02	—	—	—	—	—
ESAC-19	07/20/2006	—	—	—	—	—	—	—
	08/10/2010	—	—	—	—	—	—	—

Table 5. Volatile organic compounds (VOCs) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3A*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit: MADCHOW. Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, CDPH maximum contaminant level; HAL-US, USEPA Lifetime Health Advisory level; NL-CA, CDPH notification level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; nv, no value; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; ≤, less than or equal to; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Fire retardant	Gasoline hydrocarbon					
		Bromochloro-methane (µg/L) (77297)	Methyl *tert*-butyl ether (MTBE) (µg/L) (78032)	Benzene (µg/L) (34030)	4-Isopropyltoluene (*p*-isopropyltoluene) (µg/L) (77356)	Styrene (µg/L) (77128)	1,2,4-Trimethyl-benzene (µg/L) (77222)	Ethylbenzene (µg/L) (34371)
Middle Sacramento Valley study unit—Continued								
ESAC-34	08/17/2006	—	—	—	—	—	—	—
	08/12/2010	—	—	—	—	—	—	—
WSAC-03	07/11/2006	—	—	—	—	—	—	—
	08/10/2010	—	—	—	—	—	—	—
WSAC-08	07/18/2006	—	—	—	—	—	—	—
	08/12/2010	—	—	—	—	—	—	—
WSAC-17	08/01/2006	—	—	—	—	—	—	—
	08/09/2010	—	—	—	—	—	—	—
WSAC-19	08/01/2006	—	—	—	—	—	—	—
	08/11/2010	—	—	—	—	—	—	—
WSAC-32	08/21/2006	—	—	—	—	—	—	—
	08/09/2010	—	—	—	—	—	—	—
Northern Sacramento Valley study unit								
NSAC-09	11/06/2007	—	—	—	—	—	—	—
	01/11/2011	—	—	—	—	—	—	—
NSAC-16	12/06/2007	—	—	—	—	—	—	—
	01/12/2011	—	—	—	—	—	—	—
RED-01	10/01/2007	—	—	—	—	—	—	—
	01/11/2011	—	—	—	—	—	—	—
RED-12	11/08/2007	—	E0.07	—	—	—	—	—
	01/10/2011	—	—	—	—	—	—	—

Table 5. Volatile organic compounds (VOCs) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3A*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit: MADCHOW. Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, CDPH maximum contaminant level; HAL-US, USEPA Lifetime Health Advisory level; NL-CA, CDPH notification level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; nv, no value; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; ≤, less than or equal to; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Fire retardant	Gasoline hydrocarbon					
		Bromochloromethane (µg/L) (77297)	Methyl *tert*-butyl ether (MTBE) (µg/L) (78032)	Benzene (µg/L) (34030)	4-Isopropyltoluene (*p*-isopropyltoluene) (µg/L) (77356)	Styrene (µg/L) (77128)	1,2,4-Trimethylbenzene (µg/L) (77222)	Ethylbenzene (µg/L) (34371)
Madera-Chowchilla study unit								
MADCHOW-03	04/15/2008	—	—	—	—	—	—	—
	03/15/2011	—	—	—	—	—	—	—
MADCHOW-05	04/16/2008	—	—	—	—	—	—	—
	03/15/2011	—	—	—	—	—	—	—
MADCHOW-24	05/13/2008	—	—	—	—	—	—	—
	03/16/2011	—	—	—	—	—	—	—
MADCHOW-28	05/19/2008	—	—	—	—	—	—	—
	03/16/2011	—	—	—	—	—	—	—
Western San Joaquin Valley study unit								
DM-12	03/11/2010	—	—	—	—	—	—	—
	04/02/2013	—	—	—	—	—	—	—
DM-19	04/14/2010	—	—	—	—	—	—	—
	04/02/2013	—	—	—	—	—	—	—
DM-26	06/17/2010	—	—	—	—	—	—	—
	04/03/2013	—	—	—	—	—	—	—
WS-07	06/10/2010	—	—	—	—	—	[6]≤0.021	—
	04/03/2013	—	—	—	—	—	—	—
Owens and Indian Wells Valleys study unit								
OIW-05	10/18/2006	—	—	—	—	—	—	—
	10/27/2010	—	—	—	—	—	—	—

Table 5. Volatile organic compounds (VOCs) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3A*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit: MADCHOW. Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, CDPH maximum contaminant level; HAL-US, USEPA Lifetime Health Advisory level; NL-CA, CDPH notification level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; nv, no value; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; ≤, less than or equal to; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Fire retardant	Gasoline hydrocarbon					
		Bromochloro-methane (µg/L) (77297)	Methyl *tert*-butyl ether (MTBE) (µg/L) (78032)	Benzene (µg/L) (34030)	4-Isopropyltoluene (*p*-isopropyltoluene) (µg/L) (77356)	Styrene (µg/L) (77128)	1,2,4-Trimethyl-benzene (µg/L) (77222)	Ethylbenzene (µg/L) (34371)
Owens and Indian Wells Valleys study unit—Continued								
OIW-07	10/19/2006	—	—	—	—	—	—	—
	10/27/2010	—	—	—	—	—	—	—
OV-21	10/03/2006	—	—	—	—	—	—	—
	10/26/2010	—	—	—	—	—	—	—
OV-24	12/12/2006	—	0.14	—	—	—	—	—
	10/28/2010	—	0.04	—	—	—	—	—
OV-29	10/05/2006	—	—	—	—	—	—	—
	10/28/2010	—	—	—	—	—	—	—
OV-36	10/25/2006	—	—	—	—	—	—	—
	10/26/2010	—	—	—	—	—	—	—
Coachella Valley study unit								
COA-12	03/08/2007	—	—	—	—	—	—	—
	01/05/2011	—	—	—	—	—	—	—
COA-14	03/12/2007	—	—	—	—	—	—	—
	01/04/2011	—	—	—	—	—	—	—
COA-15	03/14/2007	—	—	—	—	—	—	—
	01/06/2011	—	—	—	—	—	—	—
COA-16	03/15/2007	—	—	—	—	—	—	—
	01/05/2011	—	—	—	—	—	—	—

Table 5. Volatile organic compounds (VOCs) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3A*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit: MADCHOW. Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, CDPH maximum contaminant level; HAL-US, USEPA Lifetime Health Advisory level; NL-CA, CDPH notification level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; nv, no value; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; ≤, less than or equal to; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Fire retardant	Gasoline hydrocarbon					
		Bromochloro-methane (µg/L) (77297)	Methyl *tert*-butyl ether (MTBE) (µg/L) (78032)	Benzene (µg/L) (34030)	4-Isopropyltoluene (*p*-isopropyltoluene) (µg/L) (77356)	Styrene (µg/L) (77128)	1,2,4-Trimethyl-benzene (µg/L) (77222)	Ethylbenzene (µg/L) (34371)
Colorado River study unit								
COLOR-03	10/02/2007	—	—	—	—	—	[6]≤0.034	—
	01/04/2011	—	—	—	—	—	—	—
COLOR-06	10/24/2007	—	—	—	—	—	[6]≤0.095	—
	01/03/2011	—	—	—	—	—	—	—
COLOR-17	12/11/2007	—	—	—	—	—	—	—
	01/03/2011	—	—	—	—	—	—	—
Antelope Valley study unit								
ANT-07	01/29/2008	—	—	—	—	—	—	—
	02/15/2012	—	—	—	—	—	—	—
ANT-20	02/05/2008	—	—	—	—	—	—	—
	02/14/2012	—	—	—	—	—	0.714	—
ANT-23	02/06/2008	—	—	—	—	—	—	—
	02/13/2012	—	—	—	—	—	—	—
ANT-24	02/06/2008	—	—	—	—	—	—	—
	02/16/2012	—	—	—	—	—	—	—
ANT-33	[9]02/13/2008	E0.03	—	—	—	—	—	—
	02/15/2012	—	—	—	—	—	—	—
ANT-42	03/03/2008	—	—	—	—	—	—	—
	02/14/2012	—	—	—	—	—	[6]≤0.092	—

Table 5. Volatile organic compounds (VOCs) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3A*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit: MADCHOW. Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, CDPH maximum contaminant level; HAL-US, USEPA Lifetime Health Advisory level; NL-CA, CDPH notification level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; nv, no value; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; ≤, less than or equal to; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Fire retardant	Gasoline hydrocarbon					
		Bromochloro-methane (µg/L) (77297)	Methyl *tert*-butyl ether (MTBE) (µg/L) (78032)	Benzene (µg/L) (34030)	4-Isopropyltoluene (*p*-isopropyltoluene) (µg/L) (77356)	Styrene (µg/L) (77128)	1,2,4-Trimethyl-benzene (µg/L) (77222)	Ethylbenzene (µg/L) (34371)
Mojave study unit								
MOJO-01	02/04/2008	—	—	—	—	—	—	—
	03/08/2011	—	—	—	—	—	[6]≤0.017	—
MOJO-09	02/07/2008	—	—	—	—	—	—	—
	03/08/2011	—	—	—	—	—	—	—
MOJO-11	02/07/2008	—	—	—	—	—	—	—
	03/09/2011	—	—	—	—	—	—	—
MOJO-16	02/13/2008	—	—	—	—	—	—	—
	03/10/2011	—	—	—	—	—	—	—
MOJO-34	03/17/2008	—	—	—	—	—	—	—
	03/10/2011	—	—	—	—	—	—	—
MOJO-48	04/01/2008	—	—	—	—	—	—	—
	03/09/2011	—	—	—	—	—	—	—
MOJO-49	04/01/2008	—	—	—	—	—	—	—
	03/07/2011	—	—	—	—	—	[6]≤0.025	—
Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit								
BV-05	10/29/2009	—	—	—	—	—	—	—
	10/18/2012	—	—	—	—	0.029	—	—
CD-02	12/15/2008	—	—	—	—	—	—	—
	10/16/2012	—	—	—	—	—	—	—
CD-05	12/17/2008	—	—	—	—	—	—	—
	10/16/2012	—	—	—	—	—	—	—

Table 5. Volatile organic compounds (VOCs) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3A*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit: MADCHOW. Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, CDPH maximum contaminant level; HAL-US, USEPA Lifetime Health Advisory level; NL-CA, CDPH notification level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; nv, no value; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; ≤, less than or equal to; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Fire retardant	Gasoline hydrocarbon					
		Bromochloro-methane (µg/L) (77297)	Methyl *tert*-butyl ether (MTBE) (µg/L) (78032)	Benzene (µg/L) (34030)	4-Isopropyltoluene (*p*-isopropyltoluene) (µg/L) (77356)	Styrene (µg/L) (77128)	1,2,4-Trimethyl-benzene (µg/L) (77222)	Ethylbenzene (µg/L) (34371)
Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit—Continued								
LUB-05	12/04/2008	—	—	—	—	—	—	—
	10/17/2012	—	—	—	—	—	—	—
LUB-07	12/09/2008	—	—	—	—	—	—	—
	10/17/2012	—	—	—	—	—	—	—
LUB-11	12/11/2008	—	—	—	—	—	—	—
	10/15/2012	—	—	—	—	—	—	—
Coastal Los Angeles Basin study unit								
CLABCB-12	08/29/2006	—	—	—	—	—	—	—
	08/25/2010	—	—	—	—	—	[6]≤0.012	—
CLABCB-13	08/29/2006	—	0.13	—	—	—	—	—
	08/23/2010	—	—	—	—	—	—	—
CLABCB-14	08/29/2006	—	—	—	—	—	—	—
	08/23/2010	—	—	—	—	—	—	—
CLABCB-17	09/14/2006	—	E0.09	—	—	—	—	—
	08/25/2010	—	0.15	—	—	—	—	—
CLABDA-02	08/08/2006	—	E0.14	—	—	—	—	—
	08/24/2010	—	—	—	—	—	—	—
CLABOC-13	08/28/2006	—	E0.09	—	—	—	—	—
	08/26/2010	—	—	—	—	—	—	—
CLABOC-14	08/31/2006	—	—	—	—	—	—	—
	08/26/2010	—	—	—	—	—	—	—

Table 5. Volatile organic compounds (VOCs) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3A*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit: MADCHOW. Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, CDPH maximum contaminant level; HAL-US, USEPA Lifetime Health Advisory level; NL-CA, CDPH notification level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; nv, no value; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; ≤, less than or equal to; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Fire retardant	Gasoline hydrocarbon					
		Bromochloro-methane (µg/L) (77297)	Methyl *tert*-butyl ether (MTBE) (µg/L) (78032)	Benzene (µg/L) (34030)	4-Isopropyltoluene (*p*-isopropyltoluene) (µg/L) (77356)	Styrene (µg/L) (77128)	1,2,4-Trimethyl-benzene (µg/L) (77222)	Ethylbenzene (µg/L) (34371)
Coastal Los Angeles Basin study unit—Continued								
CLABWB-03	08/30/2006	—	—	—	—	—	—	—
	08/24/2010	—	—	—	—	—	—	—
Upper Santa Ana Watershed study unit								
USAWB-01	11/27/2006	—	—	—	—	—	—	—
	04/20/2009	—	—	—	—	—	—	—
USAWB-04	11/28/2006	—	—	—	—	—	—	—
	05/06/2009	—	—	—	—	—	—	—
USAWB-12	12/13/2006	—	—	—	—	—	—	—
	04/22/2009	—	—	—	—	—	—	—
USAWB-14	12/14/2006	—	—	—	—	—	—	—
	04/14/2009	—	—	—	—	—	—	—
USAWB-17	01/10/2007	—	E0.61	—	—	—	—	—
	04/23/2009	—	E0.15	—	—	—	—	—
USAWC-02	01/29/2007	—	—	—	—	—	—	—
	04/30/2009	—	—	—	—	—	—	—
USAWC-08	01/31/2007	—	—	—	—	—	—	—
	04/28/2009	—	—	—	—	—	—	—
USAWC-10	02/01/2007	—	—	—	—	—	—	—
	04/27/2009	—	—	—	—	—	—	—
USAWC-21	02/14/2007	—	—	—	—	—	—	—
	04/13/2009	—	—	—	—	—	—	—

Table 5. Volatile organic compounds (VOCs) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3A*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit: MADCHOW. Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, CDPH maximum contaminant level; HAL-US, USEPA Lifetime Health Advisory level; NL-CA, CDPH notification level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; nv, no value; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; ≤, less than or equal to; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Fire retardant	Gasoline hydrocarbon					
		Bromochloro-methane (µg/L) (77297)	Methyl *tert*-butyl ether (MTBE) (µg/L) (78032)	Benzene (µg/L) (34030)	4-Isopropyltoluene (*p*-isopropyltoluene) (µg/L) (77356)	Styrene (µg/L) (77128)	1,2,4-Trimethyl-benzene (µg/L) (77222)	Ethylbenzene (µg/L) (34371)
Upper Santa Ana Watershed study unit—Continued								
USAWC-23	02/15/2007	—	—	—	—	—	—	—
	04/16/2009	—	—	—	—	—	—	—
USAWR-08	01/10/2007	—	E0.08	—	—	—	[6]≤0.045	—
	04/21/2009	—	E0.10	—	—	—	—	—
USAWR-12	01/29/2007	—	—	—	—	—	[6]≤0.341	—
	04/29/2009	—	—	—	—	—	—	—
USAWS-01	01/22/2007	—	—	—	—	—	—	—
	05/07/2009	—	—	—	—	—	—	—
USAWS-08	01/24/2007	—	—	—	—	—	[6]≤0.357	—
	05/07/2009	—	—	—	—	—	—	—
USAWY-06	01/09/2007	—	—	—	—	—	[6]≤0.134	—
	05/05/2009	—	—	—	—	—	—	—
USAWY-07	01/11/2007	—	—	—	—	—	—	—
	05/04/2009	—	—	—	—	—	—	—
Santa Clara River Valley study unit								
SCRV-06	04/04/2007	—	—	—	—	—	—	—
	04/26/2011	—	—	—	—	—	—	—
SCRV-08	04/04/2007	—	—	—	—	—	—	—
	04/26/2011	—	—	—	—	—	—	—
SCRV-17	04/11/2007	—	—	—	—	—	—	—
	04/27/2011	—	—	—	—	—	—	—

Table 5. Volatile organic compounds (VOCs) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3A*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit: MADCHOW. Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, CDPH maximum contaminant level; HAL-US, USEPA Lifetime Health Advisory level; NL-CA, CDPH notification level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; nv, no value; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; ≤, less than or equal to; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Fire retardant	Gasoline hydrocarbon					
		Bromochloro-methane (µg/L) (77297)	Methyl *tert*-butyl ether (MTBE) (µg/L) (78032)	Benzene (µg/L) (34030)	4-Isopropyltoluene (*p*-isopropyltoluene) (µg/L) (77356)	Styrene (µg/L) (77128)	1,2,4-Trimethyl-benzene (µg/L) (77222)	Ethylbenzene (µg/L) (34371)
Santa Clara River Valley study unit—Continued								
SCRV-18	04/11/2007	—	—	—	—	—	—	—
	04/27/2011	—	—	—	—	—	—	—
SCRV-32	04/18/2007	—	—	—	—	—	—	—
	04/25/2011	—	—	—	—	—	—	—
SCRV-36	04/19/2007	—	—	—	—	—	—	—
	04/28/2011	—	—	—	—	—	—	—

Table 5. Volatile organic compounds (VOCs) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3A*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit: MADCHOW. Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, CDPH maximum contaminant level; HAL-US, USEPA Lifetime Health Advisory level; NL-CA, CDPH notification level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; nv, no value; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; ≤, less than or equal to; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Gasoline hydrocarbon			Naturally occurring	Detections per sample	VOC detection summary (wells with at least one VOC)
		Toluene (µg/L) (34010)	*m*-Xylene plus *p*-Xylene (µg/L) (85795)	*o*-Xylene (µg/L) (77135)	Carbon disulfide (µg/L) (77041)		
Benchmark type[1]		MCL-CA	MCL-CA	MCL-CA	NL-CA	—	—
Benchmark level		10	[8]1,750	[8]1,750	160	—	—
SRL[2]		0.69	0.33	0.12	0.03	—	—
Minimum and maximum LRL 2006–13		0.018, 0.02	0.06, 0.08	0.032, 0.04	0.038, 0.1	—	—
Number of wells with detections 2006–10		0	0	0	0	—	38
Number of wells with detections 2009–13		0	0	0	0	—	40
Detection frequency (percent) 2006–10		0.0	0.0	0.0	0.0	—	40.9
Detection frequency (percent) 2009–13		0.0	0.0	0.0	0.0	—	43.0
Kern County Subbasin study unit							
KERN-02	01/10/2006	—	—	—	—	3	na
	02/11/2010	—	—	—	—	4	na
KERN-20	02/13/2006	—	—	—	—	0	na
	02/10/2010	—	—	—	[6]≤0.025	0	na
KERN-21	02/13/2006	—	—	—	—	2	na
	03/16/2010	[6]≤0.02	[6]≤0.05	[4]E0.015	—	4	na
KERN-29	02/28/2006	—	—	—	—	0	na
	02/10/2010	—	—	—	—	0	na

Table 5. Volatile organic compounds (VOCs) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3A*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit: MADCHOW. Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, CDPH maximum contaminant level; HAL-US, USEPA Lifetime Health Advisory level; NL-CA, CDPH notification level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; nv, no value; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; ≤, less than or equal to; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Gasoline hydrocarbon			Naturally occurring	Detections per sample	VOC detection summary (wells with at least one VOC)
		Toluene (µg/L) (34010)	*m*-Xylene plus *p*-Xylene (µg/L) (85795)	*o*-Xylene (µg/L) (77135)	Carbon disulfide (µg/L) (77041)		
				Kern County Subbasin study unit—Continued			
KERN-33	03/01/2006	—	—	—	—	0	na
	02/09/2010	—	—	—	—	0	na
				Central Eastside San Joaquin Basin study unit			
CE-QPC-02	03/22/2006	—	—	—	[6]≤0.025	4	na
	03/10/2010	—	—	—	—	2	na
MER-11	04/12/2006	—	—	—	—	0	na
	01/28/2010	—	—	—	—	1	na
MER-14	04/17/2006	—	—	—	—	0	na
	01/27/2010	—	—	—	—	0	na
MOD-07	03/21/2006	—	—	—	—	10	na
	01/26/2010	—	—	—	—	6	na
TRLK-03	03/21/2006	—	—	—	—	0	na
	01/28/2010	—	—	—	—	2	na
TRLK-05	03/22/2006	—	—	—	—	1	na
	01/25/2010	—	—	—	—	1	na
				Middle Sacramento Valley study unit			
ESAC-01	06/29/2006	—	—	—	—	0	na
	08/11/2010	—	—	—	—	4	na
ESAC-19	07/20/2006	—	—	—	—	0	na
	08/10/2010	—	—	—	—	0	na

Table 5. Volatile organic compounds (VOCs) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3A*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit: MADCHOW. Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, CDPH maximum contaminant level; HAL-US, USEPA Lifetime Health Advisory level; NL-CA, CDPH notification level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; nv, no value; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; ≤, less than or equal to; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Gasoline hydrocarbon			Naturally occurring	Detections per sample	VOC detection summary (wells with at least one VOC)
		Toluene (µg/L) (34010)	*m*-Xylene plus *p*-Xylene (µg/L) (85795)	*o*-Xylene (µg/L) (77135)	Carbon disulfide (µg/L) (77041)		
Middle Sacramento Valley study unit—Continued							
ESAC-34	08/17/2006	—	—	—	—	0	na
	08/12/2010	—	—	—	—	0	na
WSAC-03	07/11/2006	—	—	—	—	3	na
	08/10/2010	—	—	—	—	1	na
WSAC-08	07/18/2006	—	—	—	—	0	na
	08/12/2010	—	—	—	—	0	na
WSAC-17	08/01/2006	—	—	—	—	1	na
	08/09/2010	—	—	—	—	0	na
WSAC-19	08/01/2006	—	—	—	—	0	na
	08/11/2010	—	—	—	—	0	na
WSAC-32	08/21/2006	—	—	—	—	0	na
	08/09/2010	—	—	—	—	0	na
Northern Sacramento Valley study unit							
NSAC-09	11/06/2007	—	—	—	—	1	na
	01/11/2011	—	—	—	—	0	na
NSAC-16	12/06/2007	—	—	—	—	0	na
	01/12/2011	—	—	—	—	0	na
RED-01	10/01/2007	—	—	—	—	0	na
	01/11/2011	—	—	—	—	0	na
RED-12	11/08/2007	—	—	—	—	1	na
	01/10/2011	[6]≤0.02	—	—	—	1	na

Table 5. Volatile organic compounds (VOCs) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3A*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit: MADCHOW. Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, CDPH maximum contaminant level; HAL-US, USEPA Lifetime Health Advisory level; NL-CA, CDPH notification level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; nv, no value; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; ≤, less than or equal to; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Gasoline hydrocarbon			Naturally occurring	Detections per sample	VOC detection summary (wells with at least one VOC)
		Toluene (µg/L) (34010)	*m*-Xylene plus *p*-Xylene (µg/L) (85795)	*o*-Xylene (µg/L) (77135)	Carbon disulfide (µg/L) (77041)		
Madera-Chowchilla study unit							
MADCHOW-03	04/15/2008	—	—	—	—	4	na
	03/15/2011	—	—	—	—	9	na
MADCHOW-05	04/16/2008	—	—	—	—	1	na
	03/15/2011	—	—	—	—	0	na
MADCHOW-24	05/13/2008	—	—	—	—	0	na
	03/16/2011	—	—	—	—	0	na
MADCHOW-28	05/19/2008	—	—	—	—	0	na
	03/16/2011	—	—	—	—	0	na
Western San Joaquin Valley study unit							
DM-12	03/11/2010	—	—	—	—	0	na
	04/02/2013	—	—	—	—	0	na
DM-19	04/14/2010	—	—	—	—	0	na
	04/02/2013	—	—	—	—	0	na
DM-26	06/17/2010	—	—	—	—	0	na
	04/03/2013	—	—	—	—	1	na
WS-07	06/10/2010	—	—	—	—	0	na
	04/03/2013	—	—	—	—	0	na
Owens and Indian Wells Valleys study unit							
OIW-05	10/18/2006	—	—	—	—	0	na
	10/27/2010	—	—	—	—	1	na

Table 5. Volatile organic compounds (VOCs) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3A*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit: MADCHOW. Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, CDPH maximum contaminant level; HAL-US, USEPA Lifetime Health Advisory level; NL-CA, CDPH notification level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; nv, no value; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; ≤, less than or equal to; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Gasoline hydrocarbon			Naturally occurring	Detections per sample	VOC detection summary (wells with at least one VOC)
		Toluene (µg/L) (34010)	*m*-Xylene plus *p*-Xylene (µg/L) (85795)	*o*-Xylene (µg/L) (77135)	Carbon disulfide (µg/L) (77041)		
Owens and Indian Wells Valleys study unit—Continued							
OIW-07	10/19/2006	—	—	—	—	0	na
	10/27/2010	—	—	—	—	0	na
OV-21	10/03/2006	—	—	—	—	0	na
	10/26/2010	—	—	—	—	0	na
OV-24	12/12/2006	—	—	—	—	1	na
	10/28/2010	—	—	—	—	1	na
OV-29	10/05/2006	—	—	—	—	0	na
	10/28/2010	—	—	—	—	0	na
OV-36	10/25/2006	—	—	—	—	0	na
	10/26/2010	—	—	—	—	0	na
Coachella Valley study unit							
COA-12	03/08/2007	—	—	—	—	0	na
	01/05/2011	—	—	—	—	0	na
COA-14	03/12/2007	—	—	—	—	2	na
	01/04/2011	—	—	—	—	2	na
COA-15	03/14/2007	[6]≤0.02	—	—	—	1	na
	01/06/2011	—	—	—	—	1	na
COA-16	03/15/2007	—	—	—	—	0	na
	01/05/2011	—	—	—	—	0	na

Table 5. Volatile organic compounds (VOCs) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3A*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit: MADCHOW. Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, CDPH maximum contaminant level; HAL-US, USEPA Lifetime Health Advisory level; NL-CA, CDPH notification level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; nv, no value; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; ≤, less than or equal to; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Gasoline hydrocarbon			Naturally occurring	Detections per sample	VOC detection summary (wells with at least one VOC)
		Toluene (µg/L) (34010)	*m*-Xylene plus *p*-Xylene (µg/L) (85795)	*o*-Xylene (µg/L) (77135)	Carbon disulfide (µg/L) (77041)		
Colorado River study unit							
COLOR-03	10/02/2007	—	—	—	—	0	na
	01/04/2011	—	—	—	—	0	na
COLOR-06	10/24/2007	—	—	—	—	0	na
	01/03/2011	—	—	—	—	0	na
COLOR-17	12/11/2007	—	—	—	—	0	na
	01/03/2011	—	—	—	—	0	na
Antelope Valley study unit							
ANT-07	01/29/2008	—	—	—	—	0	na
	02/15/2012	—	—	—	—	4	na
ANT-20	02/05/2008	—	—	—	—	4	na
	02/14/2012	—	—	—	—	3	na
ANT-23	02/06/2008	[6]≤0.02	—	—	—	0	na
	02/13/2012	—	—	—	—	0	na
ANT-24	02/06/2008	—	—	—	—	0	na
	02/16/2012	—	—	—	—	0	na
ANT-33	[9]02/13/2008	—	—	—	—	9	na
	02/15/2012	—	—	—	—	0	na
ANT-42	03/03/2008	[6]≤0.02	—	—	—	0	na
	02/14/2012	—	—	—	—	0	na

Table 5. Volatile organic compounds (VOCs) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3A*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit: MADCHOW. Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, CDPH maximum contaminant level; HAL-US, USEPA Lifetime Health Advisory level; NL-CA, CDPH notification level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; nv, no value; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; ≤, less than or equal to; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Gasoline hydrocarbon			Naturally occurring	Detections per sample	VOC detection summary (wells with at least one VOC)
		Toluene (µg/L) (34010)	*m*-Xylene plus *p*-Xylene (µg/L) (85795)	*o*-Xylene (µg/L) (77135)	Carbon disulfide (µg/L) (77041)		
Mojave study unit							
MOJO-01	02/04/2008	—	—	—	—	0	na
	03/08/2011	—	—	—	—	1	na
MOJO-09	02/07/2008	—	—	—	—	1	na
	03/08/2011	—	—	—	—	0	na
MOJO-11	02/07/2008	—	—	—	—	0	na
	03/09/2011	—	—	—	—	0	na
MOJO-16	02/13/2008	—	—	—	—	0	na
	03/10/2011	—	—	—	—	0	na
MOJO-34	03/17/2008	—	—	—	—	0	na
	03/10/2011	—	—	—	—	0	na
MOJO-48	04/01/2008	—	—	—	—	0	na
	03/09/2011	—	—	—	—	0	na
MOJO-49	04/01/2008	[6]≤0.02	—	—	—	0	na
	03/07/2011	—	—	—	—	0	na
Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit							
BV-05	10/29/2009	—	—	—	—	0	na
	10/18/2012	—	—	—	—	1	na
CD-02	12/15/2008	—	—	—	—	0	na
	10/16/2012	—	—	—	—	0	na
CD-05	12/17/2008	—	—	—	—	0	na
	10/16/2012	—	—	—	—	0	na

Table 5. Volatile organic compounds (VOCs) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3A*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit: MADCHOW. Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, CDPH maximum contaminant level; HAL-US, USEPA Lifetime Health Advisory level; NL-CA, CDPH notification level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; nv, no value; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; ≤, less than or equal to; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Gasoline hydrocarbon			Naturally occurring	Detections per sample	VOC detection summary (wells with at least one VOC)
		Toluene (µg/L) (34010)	*m*-Xylene plus *p*-Xylene (µg/L) (85795)	*o*-Xylene (µg/L) (77135)	Carbon disulfide (µg/L) (77041)		
Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit—Continued							
LUB-05	12/04/2008	—	—	—	—	0	na
	10/17/2012	—	—	—	—	0	na
LUB-07	12/09/2008	—	—	—	—	0	na
	10/17/2012	—	—	—	—	0	na
LUB-11	12/11/2008	—	—	—	—	0	na
	10/15/2012	—	—	—	—	0	na
Coastal Los Angeles Basin study unit							
CLABCB-12	08/29/2006	—	—	—	—	4	na
	08/25/2010	—	—	—	—	3	na
CLABCB-13	08/29/2006	—	—	—	—	8	na
	08/23/2010	—	—	—	—	7	na
CLABCB-14	08/29/2006	—	—	—	—	0	na
	08/23/2010	—	—	—	—	0	na
CLABCB-17	09/14/2006	—	—	—	—	5	na
	08/25/2010	—	—	—	—	6	na
CLABDA-02	08/08/2006	—	—	—	—	13	na
	08/24/2010	—	—	—	—	12	na
CLABOC-13	08/28/2006	—	—	—	—	3	na
	08/26/2010	—	—	—	—	3	na
CLABOC-14	08/31/2006	—	—	—	—	0	na
	08/26/2010	—	—	—	—	0	na

Table 5. Volatile organic compounds (VOCs) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3A*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit: MADCHOW. Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, CDPH maximum contaminant level; HAL-US, USEPA Lifetime Health Advisory level; NL-CA, CDPH notification level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; nv, no value; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; ≤, less than or equal to; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Gasoline hydrocarbon			Naturally occurring	Detections per sample	VOC detection summary (wells with at least one VOC)
		Toluene (µg/L) (34010)	*m*-Xylene plus *p*-Xylene (µg/L) (85795)	*o*-Xylene (µg/L) (77135)	Carbon disulfide (µg/L) (77041)		
Coastal Los Angeles Basin study unit—Continued							
CLABWB-03	08/30/2006	—	—	—	—	2	na
	08/24/2010	—	—	—	—	3	na
Upper Santa Ana Watershed study unit							
USAWB-01	11/27/2006	—	—	—	—	0	na
	04/20/2009	—	—	—	—	0	na
USAWB-04	11/28/2006	—	—	—	—	0	na
	05/06/2009	—	—	—	—	0	na
USAWB-12	12/13/2006	—	—	—	—	1	na
	04/22/2009	—	—	—	—	0	na
USAWB-14	12/14/2006	—	—	—	—	9	na
	04/14/2009	—	—	—	—	8	na
USAWB-17	01/10/2007	—	—	—	—	4	na
	04/23/2009	—	—	—	—	4	na
USAWC-02	01/29/2007	—	—	—	—	4	na
	04/30/2009	—	—	—	—	2	na
USAWC-08	01/31/2007	—	—	—	—	4	na
	04/28/2009	—	—	—	—	3	na
USAWC-10	02/01/2007	—	—	—	—	0	na
	04/27/2009	—	—	—	—	0	na
USAWC-21	02/14/2007	—	—	—	—	1	na
	04/13/2009	—	—	—	—	1	na

Table 5. Volatile organic compounds (VOCs) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3A*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit: MADCHOW. Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, CDPH maximum contaminant level; HAL-US, USEPA Lifetime Health Advisory level; NL-CA, CDPH notification level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; nv, no value; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; ≤, less than or equal to; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Gasoline hydrocarbon			Naturally occurring	Detections per sample	VOC detection summary (wells with at least one VOC)
		Toluene (µg/L) (34010)	*m*-Xylene plus *p*-Xylene (µg/L) (85795)	*o*-Xylene (µg/L) (77135)	Carbon disulfide (µg/L) (77041)		
Upper Santa Ana Watershed study unit—Continued							
USAWC-23	02/15/2007	—	—	—	—	2	na
	04/16/2009	—	—	—	—	2	na
USAWR-08	01/10/2007	—	—	—	—	9	na
	04/21/2009	—	—	—	—	8	na
USAWR-12	01/29/2007	—	—	—	—	1	na
	04/29/2009	—	—	—	—	1	na
USAWS-01	01/22/2007	—	—	—	—	5	na
	05/07/2009	—	—	—	—	3	na
USAWS-08	01/24/2007	—	—	—	—	5	na
	05/07/2009	—	—	—	—	4	na
USAWY-06	01/09/2007	—	—	—	—	2	na
	05/05/2009	—	—	—	—	2	na
USAWY-07	01/11/2007	—	—	—	—	4	na
	05/04/2009	—	—	—	—	7	na
Santa Clara River Valley study unit							
SCRV-06	04/04/2007	—	—	—	—	1	na
	04/26/2011	—	—	—	—	4	na
SCRV-08	04/04/2007	—	—	—	—	0	na
	04/26/2011	—	—	—	—	0	na
SCRV-17	04/11/2007	—	—	—	—	2	na
	04/27/2011	—	—	—	—	3	na

Table 5. Volatile organic compounds (VOCs) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3A*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit: MADCHOW. Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, CDPH maximum contaminant level; HAL-US, USEPA Lifetime Health Advisory level; NL-CA, CDPH notification level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; nv, no value; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; ≤, less than or equal to; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Gasoline hydrocarbon			Naturally occurring	Detections per sample	VOC detection summary (wells with at least one VOC)
		Toluene (µg/L) (34010)	*m*-Xylene plus *p*-Xylene (µg/L) (85795)	*o*-Xylene (µg/L) (77135)	Carbon disulfide (µg/L) (77041)		
Santa Clara River Valley study unit—Continued							
SCRV-18	04/11/2007	—	—	—	—	0	na
	04/27/2011	—	—	—	—	0	na
SCRV-32	04/18/2007	—	—	—	—	0	na
	04/25/2011	—	—	—	—	0	na
SCRV-36	04/19/2007	—	—	—	—	0	na
	04/28/2011	—	—	—	—	0	na

[1] Maximum contaminant level benchmarks are listed as MCL-US when the MCL-US and the MCL-CA are identical and as MCL-CA when the MCL-CA is lower than the MCL-US or no MCL-US exists.

[2] SRLs defined by Fram and others (2012).

[3] The MCL-US benchmark for trihalomethanes is for the sum of chloroform, bromoform, bromodichloromethane, and dibromochloromethane.

[4] The detected concentration was less than the LT-MDL for this constituent. These results are counted as non-detections for the purpose of calculating detection frequencies.

[5] The preferred method for analysis of 1,2-dibromo-3-chloropropane is schedule 1306, which has an LRL of 0.030.

[6] The detected concentrations were less than the SRLs defined by Fram and others (2012). These results are counted as non-detections for the purpose of calculating detection frequencies.

[7] Schedule 2020 is the non-preferred method for 1,2,3-TCP. See *table 7* for results from the preferred method.

[8] The MCL-CA benchmark for *m*- plus *p*-xylene and *o*-xylene is for the sum of all three xylene compounds.

[9] This sample was likely chlorinated, resulting in detections of VOCs that were not in the untreated groundwater.

Table 6A. Pesticides and pesticide degradates (Schedules 2003, 2032, and 2033) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3C*. **GAMA identification number acronyms**: ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, California Department of Public Health maximum contaminant level; HAL-US, USEPA lifetime health advisory level; RSD5-US, USEPA risk-specific dose at a factor of 10^{-5}. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: E, estimated or having a higher degree of uncertainty; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; nc, not collected; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Herbicide						
		Simazine (µg/L) (04035)	Atrazine (µg/L) (39632)	Hexazinone (µg/L) (04025)	Prometon (µg/L) (04037)	Metolachlor (µg/L) (39415)	Tebuthiuron (µg/L) (82670)	Alachlor (µg/L) (46342)
Benchmark type		MCL-US	MCL-CA	HAL-US	HAL-US	HAL-US	HAL-US	MCL-US
Benchmark level		4	1	400	100	700	500	2
LRL[1]		0.005, 0.010	0.007, 0.008	0.008, 0.026	0.010, 0.012	0.006, 0.02	0.016, 0.028	0.005, 0.008
Number of trend wells with detections 2006–10		23	22	2	1	1	2	0
Number of trend wells with detections 2009–13		22	22	3	3	2	1	1
Detection frequency (percent) 2006–10		25	24	2	1	1	2	0
Detection frequency (percent) 2009–13		24	24	3	3	2	1	1
Kern County Subbasin study unit								
KERN-02	01/10/2006	—	—	—	—	—	—	—
	02/11/2010	—	—	—	—	—	—	—
KERN-20	02/13/2006	—	—	—	—	—	—	—
	02/10/2010	—	—	—	—	—	—	—
KERN-21	02/13/2006	—	—	—	—	—	—	—
	03/16/2010	—	—	—	—	—	—	—
KERN-29	02/28/2006	0.017	0.009	—	—	—	—	—
	02/10/2010	E0.032	0.011	—	—	—	—	—

Table 6A. Pesticides and pesticide degradates (Schedules 2003, 2032, and 2033) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3C*. **GAMA identification number acronyms**: ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, California Department of Public Health maximum contaminant level; HAL-US, USEPA lifetime health advisory level; RSD5-US, USEPA risk-specific dose at a factor of 10^{-5}. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: E, estimated or having a higher degree of uncertainty; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; nc, not collected; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Herbicide						
		Simazine (µg/L) (04035)	Atrazine (µg/L) (39632)	Hexazinone (µg/L) (04025)	Prometon (µg/L) (04037)	Metolachlor (µg/L) (39415)	Tebuthiuron (µg/L) (82670)	Alachlor (µg/L) (46342)
Kern County Subbasin study unit—Continued								
KERN-33	03/01/2006	—	E0.004	—	—	—	—	—
	02/09/2010	—	—	—	—	—	—	—
Central Eastside San Joaquin Basin study unit								
CE-QPC-02	03/22/2006	—	E0.007	—	—	—	—	—
	03/10/2010	—	—	—	—	—	—	—
MER-11	04/12/2006	—	—	—	—	—	—	—
	01/28/2010	—	—	—	—	—	—	—
MER-14	04/17/2006	—	—	—	—	—	—	—
	01/27/2010	—	—	—	—	—	—	—
MOD-07	03/21/2006	E0.004	E0.006	—	—	—	—	—
	01/26/2010	—	E0.007	—	—	—	—	—
TRLK-03	03/21/2006	—	—	—	—	—	—	—
	01/28/2010	—	—	—	—	—	—	—
TRLK-05	03/22/2006	—	—	—	—	—	—	—
	01/25/2010	—	—	—	—	—	—	—
Middle Sacramento Valley study unit								
ESAC-01	06/29/2006	E0.003	E0.005	—	—	—	—	—
	08/11/2010	—	E0.006	—	—	E0.007	—	—
ESAC-19	07/20/2006	—	—	—	—	—	—	—
	08/10/2010	—	—	—	—	—	—	—

Table 6A. Pesticides and pesticide degradates (Schedules 2003, 2032, and 2033) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3C*. **GAMA identification number acronyms**: ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, California Department of Public Health maximum contaminant level; HAL-US, USEPA lifetime health advisory level; RSD5-US, USEPA risk-specific dose at a factor of 10^{-5}. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: E, estimated or having a higher degree of uncertainty; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; nc, not collected; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Herbicide						
		Simazine (µg/L) (04035)	Atrazine (µg/L) (39632)	Hexazinone (µg/L) (04025)	Prometon (µg/L) (04037)	Metolachlor (µg/L) (39415)	Tebuthiuron (µg/L) (82670)	Alachlor (µg/L) (46342)
Middle Sacramento Valley study unit—Continued								
ESAC-34	08/17/2006	—	—	—	—	—	—	—
	08/12/2010	—	—	—	—	—	—	—
WSAC-03	07/11/2006	—	—	—	—	—	—	—
	08/10/2010	E0.006	E0.005	—	—	—	—	—
WSAC-08	07/18/2006	—	—	—	—	—	—	—
	08/12/2010	—	—	—	—	—	—	—
WSAC-17	08/01/2006	E0.006	—	E0.008	—	—	—	—
	08/09/2010	0.008	E0.006	E0.008	E0.006	—	—	—
WSAC-19	08/01/2006	—	—	—	—	—	—	—
	08/11/2010	—	—	—	—	—	—	—
WSAC-32	08/21/2006	E0.004	E0.005	—	—	—	—	—
	08/09/2010	—	E0.006	E0.007	—	—	—	—
Northern Sacramento Valley study unit								
NSAC-09	11/06/2007	—	—	—	—	—	—	—
	01/11/2011	—	—	—	—	—	—	—
NSAC-16	12/06/2007	—	E0.007	—	—	—	—	—
	01/12/2011	—	—	—	—	—	—	—
RED-01	10/01/2007	—	—	—	—	—	—	—
	01/11/2011	—	—	—	—	—	—	—
RED-12	11/08/2007	—	—	—	—	—	—	—
	01/10/2011	—	—	—	—	—	—	—

Table 6A. Pesticides and pesticide degradates (Schedules 2003, 2032, and 2033) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3C*. **GAMA identification number acronyms**: ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, California Department of Public Health maximum contaminant level; HAL-US, USEPA lifetime health advisory level; RSD5-US, USEPA risk-specific dose at a factor of 10^{-5}. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: E, estimated or having a higher degree of uncertainty; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; nc, not collected; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Herbicide						
		Simazine (µg/L) (04035)	Atrazine (µg/L) (39632)	Hexazinone (µg/L) (04025)	Prometon (µg/L) (04037)	Metolachlor (µg/L) (39415)	Tebuthiuron (µg/L) (82670)	Alachlor (µg/L) (46342)
Madera-Chowchilla study unit								
MADCHOW-03	04/15/2008	—	—	—	—	—	—	—
	03/15/2011	—	0.006	—	—	—	—	—
MADCHOW-05	04/16/2008	—	—	—	—	—	—	—
	03/15/2011	—	—	—	—	—	—	—
MADCHOW-24	05/13/2008	—	—	—	—	—	—	—
	03/16/2011	0.007	—	—	—	—	—	—
MADCHOW-28	05/19/2008	—	—	—	—	—	—	—
	03/16/2011	—	—	—	—	—	—	—
Western San Joaquin Valley study unit								
DM-12	03/11/2010	—	—	—	—	—	—	—
	04/02/2013	—	—	—	—	—	—	—
DM-19	04/14/2010	—	—	—	—	—	—	—
	04/02/2013	—	—	—	—	—	—	—
DM-26	06/17/2010	0.011	—	—	—	—	—	—
	04/03/2013	0.007	—	—	—	—	—	—
WS-07	06/10/2010	—	—	—	—	—	—	—
	04/03/2013	—	—	—	—	—	—	—
Owens and Indian Wells Valleys study unit								
OIW-05	10/18/2006	—	—	—	—	—	—	—
	10/27/2010	—	—	—	—	—	—	—

Table 6A. Pesticides and pesticide degradates (Schedules 2003, 2032, and 2033) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3C*. **GAMA identification number acronyms**: ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, California Department of Public Health maximum contaminant level; HAL-US, USEPA lifetime health advisory level; RSD5-US, USEPA risk-specific dose at a factor of 10^{-5}. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: E, estimated or having a higher degree of uncertainty; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; nc, not collected; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Herbicide						
		Simazine (µg/L) (04035)	Atrazine (µg/L) (39632)	Hexazinone (µg/L) (04025)	Prometon (µg/L) (04037)	Metolachlor (µg/L) (39415)	Tebuthiuron (µg/L) (82670)	Alachlor (µg/L) (46342)
Owens and Indian Wells Valleys study unit—Continued								
OIW-07	10/19/2006	—	—	—	—	—	—	—
	10/27/2010	—	—	—	—	—	—	—
OV-21	10/03/2006	nc	nc	nc	nc	nc	nc	nc
	10/26/2010	—	—	—	—	—	—	—
OV-24	12/12/2006	E0.004	—	—	—	—	E0.008	—
	10/28/2010	0.004	—	—	—	—	—	—
OV-29	10/05/2006	nc	nc	nc	nc	nc	nc	nc
	10/28/2010	—	—	—	—	—	—	—
OV-36	10/25/2006	—	—	—	—	—	—	—
	10/26/2010	—	0.011	—	—	—	—	—
Coachella Valley study unit								
COA-12	03/08/2007	—	—	—	—	—	—	—
	01/05/2011	na	na	na	na	na	na	na
COA-14	03/12/2007	0.013	E0.006	—	—	—	—	—
	01/04/2011	0.022	0.008	—	—	—	—	—
COA-15	03/14/2007	—	E0.005	—	—	—	—	—
	01/06/2011	na	na	na	na	na	na	na
COA-16	03/15/2007	—	—	—	—	—	—	—
	01/05/2011	—	—	—	—	—	—	—

Table 6A. Pesticides and pesticide degradates (Schedules 2003, 2032, and 2033) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3C*. **GAMA identification number acronyms**: ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, California Department of Public Health maximum contaminant level; HAL-US, USEPA lifetime health advisory level; RSD5-US, USEPA risk-specific dose at a factor of 10^{-5}. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: E, estimated or having a higher degree of uncertainty; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; nc, not collected; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Herbicide						
		Simazine (µg/L) (04035)	Atrazine (µg/L) (39632)	Hexazinone (µg/L) (04025)	Prometon (µg/L) (04037)	Metolachlor (µg/L) (39415)	Tebuthiuron (µg/L) (82670)	Alachlor (µg/L) (46342)
Colorado River study unit								
COLOR-03	10/02/2007	—	—	—	—	—	—	—
	01/04/2011	—	—	—	—	—	—	—
COLOR-06	10/24/2007	—	—	—	—	—	—	—
	01/03/2011	—	—	—	—	—	—	—
COLOR-17	12/11/2007	—	—	—	—	—	—	—
	01/03/2011	—	—	—	—	—	—	—
Antelope Valley study unit								
ANT-07	01/29/2008	—	—	—	—	—	—	—
	02/15/2012	—	—	—	—	—	—	—
ANT-20	02/05/2008	0.008	—	—	—	—	—	—
	02/14/2012	0.006	—	—	—	—	—	—
ANT-23	02/06/2008	—	—	—	—	—	—	—
	02/13/2012	—	—	—	—	—	—	—
ANT-24	02/06/2008	—	—	—	—	—	—	—
	02/16/2012	—	—	—	—	—	—	—
ANT-33	02/13/2008	—	—	—	—	—	—	—
	02/15/2012	—	—	—	—	—	—	—
ANT-42	03/03/2008	—	—	—	—	E0.006	—	—
	02/14/2012	—	—	—	—	—	—	—

Table 6A. Pesticides and pesticide degradates (Schedules 2003, 2032, and 2033) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3C*. **GAMA identification number acronyms**: ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, California Department of Public Health maximum contaminant level; HAL-US, USEPA lifetime health advisory level; RSD5-US, USEPA risk-specific dose at a factor of 10^{-5}. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: E, estimated or having a higher degree of uncertainty; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; nc, not collected; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Herbicide						
		Simazine (µg/L) (04035)	Atrazine (µg/L) (39632)	Hexazinone (µg/L) (04025)	Prometon (µg/L) (04037)	Metolachlor (µg/L) (39415)	Tebuthiuron (µg/L) (82670)	Alachlor (µg/L) (46342)
Mojave study unit								
MOJO-01	02/04/2008	—	—	—	—	—	—	—
	03/08/2011	—	—	—	—	—	—	—
MOJO-09	02/07/2008	0.008	—	—	—	—	—	—
	03/08/2011	0.008	—	—	—	—	—	—
MOJO-11	02/07/2008	—	—	—	—	—	—	—
	03/09/2011	—	—	—	—	—	—	—
MOJO-16	02/13/2008	—	—	—	—	—	—	—
	03/10/2011	—	—	—	—	—	—	—
MOJO-34	03/17/2008	—	—	—	—	—	—	—
	03/10/2011	—	—	—	—	—	—	—
MOJO-48	04/01/2008	—	—	—	—	—	—	—
	03/09/2011	—	—	—	—	—	—	—
MOJO-49	04/01/2008	—	—	—	—	—	—	—
	03/07/2011	—	—	—	—	—	—	—
Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit								
BV-05	10/29/2009	—	—	—	—	—	—	—
	10/18/2012	—	—	—	—	—	—	—
CD-02	12/15/2008	—	—	—	—	—	—	—
	10/16/2012	—	—	—	—	—	—	—
CD-05	12/17/2008	—	—	—	—	—	—	—
	10/16/2012	—	—	—	—	—	—	—

Table 6A. Pesticides and pesticide degradates (Schedules 2003, 2032, and 2033) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3C*. **GAMA identification number acronyms**: ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, California Department of Public Health maximum contaminant level; HAL-US, USEPA lifetime health advisory level; RSD5-US, USEPA risk-specific dose at a factor of 10^{-5}. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: E, estimated or having a higher degree of uncertainty; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; nc, not collected; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Herbicide						
		Simazine (µg/L) (04035)	Atrazine (µg/L) (39632)	Hexazinone (µg/L) (04025)	Prometon (µg/L) (04037)	Metolachlor (µg/L) (39415)	Tebuthiuron (µg/L) (82670)	Alachlor (µg/L) (46342)
Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit—Continued								
LUB-05	12/04/2008	—	—	—	—	—	—	—
	10/17/2012	—	—	—	—	—	—	—
LUB-07	12/09/2008	—	—	—	—	—	—	—
	10/17/2012	—	—	—	—	—	—	—
LUB-11	12/11/2008	—	—	—	—	—	—	—
	10/15/2012	—	—	—	—	—	—	—
Coastal Los Angeles Basin study unit								
CLABCB-12	08/29/2006	E0.004	0.009	—	—	—	—	—
	08/25/2010	E0.007	0.010	—	—	—	—	—
CLABCB-13	08/29/2006	0.117	0.183	—	—	—	—	—
	08/23/2010	0.126	0.144	—	—	—	[2]E0.011	—
CLABCB-14	08/29/2006	—	—	—	—	—	—	—
	08/23/2010	—	—	—	—	—	—	—
CLABCB-17	09/14/2006	0.021	0.045	—	—	—	—	—
	08/25/2010	0.012	0.037	—	[2]E0.004	—	—	—
CLABDA-02	08/08/2006	—	—	—	—	—	—	—
	08/24/2010	—	—	—	—	—	—	—
CLABOC-13	08/28/2006	0.268	0.059	E0.016	0.010	—	E0.013	—
	08/26/2010	0.213	0.046	0.019	0.013	—	E0.028	—
CLABOC-14	08/31/2006	—	—	—	—	—	—	—
	08/26/2010	—	—	—	—	—	—	—

Table 6A. Pesticides and pesticide degradates (Schedules 2003, 2032, and 2033) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3C*. **GAMA identification number acronyms**: ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, California Department of Public Health maximum contaminant level; HAL-US, USEPA lifetime health advisory level; RSD5-US, USEPA risk-specific dose at a factor of 10^{-5}. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: E, estimated or having a higher degree of uncertainty; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; nc, not collected; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Herbicide						
		Simazine (µg/L) (04035)	Atrazine (µg/L) (39632)	Hexazinone (µg/L) (04025)	Prometon (µg/L) (04037)	Metolachlor (µg/L) (39415)	Tebuthiuron (µg/L) (82670)	Alachlor (µg/L) (46342)
Coastal Los Angeles Basin study unit—Continued								
CLABWB-03	08/30/2006	—	—	—	—	—	—	—
	08/24/2010	—	—	—	—	—	—	—
Upper Santa Ana Watershed study unit								
USAWB-01	11/27/2006	0.016	0.009	—	—	—	—	—
	04/20/2009	0.026	0.011	—	—	—	—	—
USAWB-04	11/28/2006	—	—	—	—	—	—	—
	05/06/2009	—	—	—	—	—	—	—
USAWB-12	12/13/2006	E0.006	E0.004	—	—	—	—	—
	04/22/2009	E0.008	—	—	—	—	—	—
USAWB-14	12/14/2006	—	—	—	—	—	—	—
	04/14/2009	—	—	—	—	—	—	—
USAWB-17	01/10/2007	0.124	0.015	—	—	—	—	—
	04/23/2009	0.102	0.009	—	—	—	—	—
USAWC-02	01/29/2007	—	—	—	—	—	—	—
	04/30/2009	—	—	—	—	—	—	—
USAWC-08	01/31/2007	E0.007	0.020	—	—	—	—	—
	04/28/2009	E0.009	0.010	—	—	—	—	—
USAWC-10	02/01/2007	—	—	—	—	—	—	—
	04/27/2009	[2]E0.005	0.034	—	—	E0.007	—	0.009
USAWC-21	02/14/2007	—	—	—	—	—	—	—
	04/13/2009	—	—	—	—	—	—	—

Table 6A. Pesticides and pesticide degradates (Schedules 2003, 2032, and 2033) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3C*. **GAMA identification number acronyms**: ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, California Department of Public Health maximum contaminant level; HAL-US, USEPA lifetime health advisory level; RSD5-US, USEPA risk-specific dose at a factor of 10^{-5}. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: E, estimated or having a higher degree of uncertainty; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; nc, not collected; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Herbicide						
		Simazine (µg/L) (04035)	Atrazine (µg/L) (39632)	Hexazinone (µg/L) (04025)	Prometon (µg/L) (04037)	Metolachlor (µg/L) (39415)	Tebuthiuron (µg/L) (82670)	Alachlor (µg/L) (46342)
Upper Santa Ana Watershed study unit—Continued								
USAWC-23	02/15/2007	—	E0.005	—	—	—	—	—
	04/16/2009	—	E0.004	—	—	—	—	—
USAWR-08	01/10/2007	0.132	0.034	—	—	—	—	—
	04/21/2009	0.115	0.027	—	[2]E0.005	—	—	—
USAWR-12	01/29/2007	—	—	—	—	—	—	—
	04/29/2009	—	—	—	—	—	—	—
USAWS-01	01/22/2007	—	0.014	—	—	—	—	—
	05/07/2009	—	0.015	—	—	—	—	—
USAWS-08	01/24/2007	E0.006	0.008	—	—	—	—	—
	05/07/2009	E0.007	0.008	—	—	—	—	—
USAWY-06	01/09/2007	0.008	0.022	—	—	—	—	—
	05/05/2009	E0.008	0.015	—	—	—	—	—
USAWY-07	01/11/2007	0.008	—	—	—	—	—	—
	05/04/2009	E0.007	—	—	E0.006	—	—	—
Santa Clara River Valley study unit								
SCRV-06	04/04/2007	—	—	—	—	—	—	—
	04/26/2011	—	—	—	—	—	—	—
SCRV-08	04/04/2007	—	—	—	—	—	—	—
	04/26/2011	—	—	—	—	—	—	—
SCRV-17	04/11/2007	E0.006	—	—	—	—	—	—
	04/27/2011	0.006	—	—	[2]0.006	—	—	—

Table 6A. Pesticides and pesticide degradates (Schedules 2003, 2032, and 2033) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3C*. **GAMA identification number acronyms**: ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, California Department of Public Health maximum contaminant level; HAL-US, USEPA lifetime health advisory level; RSD5-US, USEPA risk-specific dose at a factor of 10^{-5}. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: E, estimated or having a higher degree of uncertainty; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; nc, not collected; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Herbicide						
		Simazine (µg/L) (04035)	Atrazine (µg/L) (39632)	Hexazinone (µg/L) (04025)	Prometon (µg/L) (04037)	Metolachlor (µg/L) (39415)	Tebuthiuron (µg/L) (82670)	Alachlor (µg/L) (46342)
Santa Clara River Valley study unit—Continued								
SCRV-18	04/11/2007	—	—	—	—	—	—	—
	04/27/2011	—	—	—	—	—	—	—
SCRV-32	04/18/2007	—	—	—	—	—	—	—
	04/25/2011	—	—	—	—	—	—	—
SCRV-36	04/19/2007	—	—	—	—	—	—	—
	04/28/2011	—	—	—	—	—	—	—

Table 6A. Pesticides and pesticide degradates (Schedules 2003, 2032, and 2033) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3C*. **GAMA identification number acronyms**: ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, California Department of Public Health maximum contaminant level; HAL-US, USEPA lifetime health advisory level; RSD5-US, USEPA risk-specific dose at a factor of 10^{-5}. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: E, estimated or having a higher degree of uncertainty; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; nc, not collected; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Herbicide			Herbicide degradate		Fungicide	Insecticide degradate
		EPTC (*S*-Ethyl depropylthio-carbamate) (µg/L) (82668)	Pendimethalin (µg/L) (82683)	Thiobencarb (µg/L) (82681)	Deethylatrazine (2-Chloro-4-isopropylamino-6-amino-*s*-triazine) (µg/L) (04040)	3,4-Dichloroaniline (µg/L) (61625)	Metalaxyl (µg/L) (61596)	Desulfinyl fipronil (µg/L) (62170)
Benchmark type		na	na	MCL-CA	na	na	na	na
Benchmark level		na	na	70	na	na	na	na
LRL[1]		0.002, 0.0056	0.012, 0.022	0.010, 0.016	0.006, 0.014	0.004, 0.006	0.005, 0.014	0.012
Number of trend wells with detections 2006–10		0	1	0	19	8	1	0
Number of trend wells with detections 2009–13		1	0	0	21	12	1	0
Detection frequency (percent) 2006–10		0	1	0	21	9	2	0
Detection frequency (percent) 2009–13		1	0	0	23	13	2	0
Kern County Subbasin study unit								
KERN-02	01/10/2006	—	—	—	—	—	—	—
	02/11/2010	—	—	—	—	—	—	—
KERN-20	02/13/2006	—	—	—	—	—	—	—
	02/10/2010	—	—	—	—	—	—	—
KERN-21	02/13/2006	—	—	—	—	—	—	—
	03/16/2010	—	—	—	—	—	—	—
KERN-29	02/28/2006	—	—	—	E0.007	E0.005	—	—
	02/10/2010	—	—	—	—	E0.007	—	—

Table 6A. Pesticides and pesticide degradates (Schedules 2003, 2032, and 2033) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3C*. **GAMA identification number acronyms**: ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, California Department of Public Health maximum contaminant level; HAL-US, USEPA lifetime health advisory level; RSD5-US, USEPA risk-specific dose at a factor of 10^{-5}. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: E, estimated or having a higher degree of uncertainty; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; nc, not collected; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Herbicide			Herbicide degradate		Fungicide	Insecticide degradate
		EPTC (*S*-Ethyl depropylthiocarbamate) (µg/L) (82668)	Pendimethalin (µg/L) (82683)	Thiobencarb (µg/L) (82681)	Deethylatrazine (2-Chloro-4-isopropylamino-6-amino-*s*-triazine) (µg/L) (04040)	3,4-Dichloroaniline (µg/L) (61625)	Metalaxyl (µg/L) (61596)	Desulfinyl fipronil (µg/L) (62170)
Kern County Subbasin study unit—Continued								
KERN-33	03/01/2006	—	—	—	E0.007	—	—	—
	02/09/2010	—	—	—	—	—	—	—
Central Eastside San Joaquin Basin study unit								
CE-QPC-02	03/22/2006	nc	—	nc	E0.007	—	—	—
	03/10/2010	nc	—	nc	E0.019	—	—	—
MER-11	04/12/2006	nc	—	nc	—	—	—	—
	01/28/2010	nc	—	nc	—	—	—	—
MER-14	04/17/2006	nc	—	nc	—	—	—	—
	01/27/2010	nc	—	nc	—	—	—	—
MOD-07	03/21/2006	nc	—	nc	E0.011	—	—	—
	01/26/2010	nc	—	nc	E0.023	—	—	—
TRLK-03	03/21/2006	nc	—	nc	—	—	—	—
	01/28/2010	nc	—	nc	—	—	—	—
TRLK-05	03/22/2006	nc	—	nc	—	—	—	—
	01/25/2010	nc	—	nc	[2]E0.006	—	—	—
Middle Sacramento Valley study unit								
ESAC-01	06/29/2006	nc	—	—	[2]E0.006	—	—	—
	08/11/2010	—	—	—	E0.016	—	—	—
ESAC-19	07/20/2006	nc	—	—	—	—	—	—
	08/10/2010	—	—	—	—	—	—	—

Table 6A. Pesticides and pesticide degradates (Schedules 2003, 2032, and 2033) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3C*. **GAMA identification number acronyms**: ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, California Department of Public Health maximum contaminant level; HAL-US, USEPA lifetime health advisory level; RSD5-US, USEPA risk-specific dose at a factor of 10^{-5}. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: E, estimated or having a higher degree of uncertainty; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; nc, not collected; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Herbicide			Herbicide degradate		Fungicide	Insecticide degradate
		EPTC (*S*-Ethyl depropylthio-carbamate) (µg/L) (82668)	Pendimethalin (µg/L) (82683)	Thiobencarb (µg/L) (82681)	Deethylatrazine (2-Chloro-4-isopropylamino-6-amino-*s*-triazine) (µg/L) (04040)	3,4-Dichloroaniline (µg/L) (61625)	Metalaxyl (µg/L) (61596)	Desulfinyl fipronil (µg/L) (62170)
Middle Sacramento Valley study unit—Continued								
ESAC-34	08/17/2006	nc	—	—	—	—	—	—
	08/12/2010	—	—	—	—	—	—	—
WSAC-03	07/11/2006	nc	—	—	—	—	—	—
	08/10/2010	—	—	—	—	—	—	—
WSAC-08	07/18/2006	nc	—	—	E0.007	—	—	—
	08/12/2010	—	—	—	E0.014	—	—	—
WSAC-17	08/01/2006	nc	—	—	—	E0.005	—	—
	08/09/2010	—	—	—	[2]E0.005	E0.006	—	—
WSAC-19	08/01/2006	nc	—	—	—	—	—	—
	08/11/2010	—	—	—	—	—	—	—
WSAC-32	08/21/2006	nc	—	—	[2]E0.006	—	—	—
	08/09/2010	—	—	—	[2]E0.005	—	—	—
Northern Sacramento Valley study unit								
NSAC-09	11/06/2007	nc	—	—	—	—	—	—
	01/11/2011	—	—	—	—	—	—	—
NSAC-16	12/06/2007	nc	—	—	—	—	—	—
	01/12/2011	—	—	—	—	—	—	—
RED-01	10/01/2007	nc	—	—	—	—	—	—
	01/11/2011	—	—	—	—	—	—	—
RED-12	11/08/2007	nc	—	—	—	—	—	—
	01/10/2011	—	—	—	—	—	—	—

Table 6A. Pesticides and pesticide degradates (Schedules 2003, 2032, and 2033) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3C*. **GAMA identification number acronyms**: ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, California Department of Public Health maximum contaminant level; HAL-US, USEPA lifetime health advisory level; RSD5-US, USEPA risk-specific dose at a factor of 10^{-5}. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: E, estimated or having a higher degree of uncertainty; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; nc, not collected; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Herbicide			Herbicide degradate		Fungicide	Insecticide degradate
		EPTC (*S*-Ethyl depropylthio-carbamate) (µg/L) (82668)	Pendimethalin (µg/L) (82683)	Thiobencarb (µg/L) (82681)	Deethylatrazine (2-Chloro-4-isopropylamino-6-amino-*s*-triazine) (µg/L) (04040)	3,4-Dichloroaniline (µg/L) (61625)	Metalaxyl (µg/L) (61596)	Desulfinyl fipronil (µg/L) (62170)
Madera-Chowchilla study unit								
MADCHOW-03	04/15/2008	—	—	—	E0.007	—	—	—
	03/15/2011	—	—	—	E0.009	—	—	—
MADCHOW-05	04/16/2008	—	—	—	—	—	—	—
	03/15/2011	—	—	—	—	—	—	—
MADCHOW-24	05/13/2008	—	—	—	—	—	—	—
	03/16/2011	—	—	—	—	E0.003	—	—
MADCHOW-28	05/19/2008	—	—	—	—	—	—	—
	03/16/2011	—	—	—	—	—	—	—
Western San Joaquin Valley study unit								
DM-12	03/11/2010	—	—	—	—	—	—	—
	04/02/2013	—	—	—	—	—	—	—
DM-19	04/14/2010	—	—	—	—	—	—	—
	04/02/2013	—	—	—	—	—	—	—
DM-26	06/17/2010	—	—	—	E0.008	—	—	—
	04/03/2013	—	—	—	E0.006	—	—	—
WS-07	06/10/2010	—	—	—	—	—	—	—
	04/03/2013	—	—	—	—	—	—	—
Owens and Indian Wells Valleys study unit								
OIW-05	10/18/2006	nc	—	nc	—	—	—	—
	10/27/2010	—	—	—	—	—	—	—

Table 6A. Pesticides and pesticide degradates (Schedules 2003, 2032, and 2033) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3C*. **GAMA identification number acronyms**: ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, California Department of Public Health maximum contaminant level; HAL-US, USEPA lifetime health advisory level; RSD5-US, USEPA risk-specific dose at a factor of 10^{-5}. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: E, estimated or having a higher degree of uncertainty; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; nc, not collected; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Herbicide			Herbicide degradate		Fungicide	Insecticide degradate
		EPTC (*S*-Ethyl depropylthio-carbamate) (µg/L) (82668)	Pendimethalin (µg/L) (82683)	Thiobencarb (µg/L) (82681)	Deethylatrazine (2-Chloro-4-isopropylamino-6-amino-*s*-triazine) (µg/L) (04040)	3,4-Dichloroaniline (µg/L) (61625)	Metalaxyl (µg/L) (61596)	Desulfinyl fipronil (µg/L) (62170)
Owens and Indian Wells Valleys study unit—Continued								
OIW-07	10/19/2006	nc	—	nc	—	—	—	—
	10/27/2010	—	—	—	—	—	—	—
OV-21	10/03/2006	nc	nc	nc	nc	nc	nc	nc
	10/26/2010	—	—	—	—	—	—	—
OV-24	12/12/2006	nc	—	nc	—	—	—	—
	10/28/2010	—	—	—	—	—	—	—
OV-29	10/05/2006	nc	nc	nc	nc	nc	nc	nc
	10/28/2010	—	—	—	—	—	—	—
OV-36	10/25/2006	nc	—	nc	—	—	—	—
	10/26/2010	—	—	—	—	—	—	—
Coachella Valley study unit								
COA-12	03/08/2007	nc	—	nc	—	—	—	—
	01/05/2011	na	na	na	na	na	na	na
COA-14	03/12/2007	nc	—	nc	[2]E0.007	—	—	—
	01/04/2011	—	—	—	E0.007	—	—	—
COA-15	03/14/2007	nc	—	nc	—	—	—	—
	01/06/2011	na	na	na	na	na	na	na
COA-16	03/15/2007	nc	—	nc	—	—	—	—
	01/05/2011	—	—	—	—	—	—	—

Table 6A. Pesticides and pesticide degradates (Schedules 2003, 2032, and 2033) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3C*. **GAMA identification number acronyms**: ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, California Department of Public Health maximum contaminant level; HAL-US, USEPA lifetime health advisory level; RSD5-US, USEPA risk-specific dose at a factor of 10^{-5}. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: E, estimated or having a higher degree of uncertainty; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; nc, not collected; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Herbicide			Herbicide degradate		Fungicide	Insecticide degradate
		EPTC (*S*-Ethyl depropylthio-carbamate) (µg/L) (82668)	Pendimethalin (µg/L) (82683)	Thiobencarb (µg/L) (82681)	Deethylatrazine (2-Chloro-4-isopropylamino-6-amino-*s*-triazine) (µg/L) (04040)	3,4-Dichloroaniline (µg/L) (61625)	Metalaxyl (µg/L) (61596)	Desulfinyl fipronil (µg/L) (62170)
Colorado River study unit								
COLOR-03	10/02/2007	nc	—	nc	—	—	—	—
	01/04/2011	—	—	—	—	—	—	—
COLOR-06	10/24/2007	nc	—	nc	—	—	—	—
	01/03/2011	—	—	—	—	—	—	—
COLOR-17	12/11/2007	nc	—	nc	—	—	—	—
	01/03/2011	—	—	—	—	—	—	—
Antelope Valley study unit								
ANT-07	01/29/2008	nc	—	nc	—	—	—	—
	02/15/2012	0.007	—	—	—	—	—	—
ANT-20	02/05/2008	nc	—	nc	—	—	—	—
	02/14/2012	—	—	—	—	—	—	—
ANT-23	02/06/2008	nc	—	nc	—	—	—	—
	02/13/2012	—	—	—	—	—	—	—
ANT-24	02/06/2008	nc	—	nc	—	—	—	—
	02/16/2012	—	—	—	—	—	—	—
ANT-33	02/13/2008	nc	—	nc	—	—	—	—
	02/15/2012	—	—	—	—	—	—	—
ANT-42	03/03/2008	nc	—	nc	—	—	—	—
	02/14/2012	—	—	—	—	—	—	—

Table 6A. Pesticides and pesticide degradates (Schedules 2003, 2032, and 2033) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3C*. **GAMA identification number acronyms**: ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, California Department of Public Health maximum contaminant level; HAL-US, USEPA lifetime health advisory level; RSD5-US, USEPA risk-specific dose at a factor of 10^{-5}. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: E, estimated or having a higher degree of uncertainty; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; nc, not collected; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Herbicide			Herbicide degradate		Fungicide	Insecticide degradate
		EPTC (*S*-Ethyl depropylthio-carbamate) (µg/L) (82668)	Pendimethalin (µg/L) (82683)	Thiobencarb (µg/L) (82681)	Deethylatrazine (2-Chloro-4-isopropylamino-6-amino-*s*-triazine) (µg/L) (04040)	3,4-Dichloroaniline (µg/L) (61625)	Metalaxyl (µg/L) (61596)	Desulfinyl fipronil (µg/L) (62170)
Mojave study unit								
MOJO-01	02/04/2008	nc	—	nc	—	—	—	—
	03/08/2011	—	—	—	—	—	—	—
MOJO-09	02/07/2008	nc	—	nc	—	—	—	—
	03/08/2011	—	—	—	—	—	—	—
MOJO-11	02/07/2008	nc	—	nc	—	—	—	—
	03/09/2011	—	—	—	—	—	—	—
MOJO-16	02/13/2008	nc	—	nc	—	—	—	—
	03/10/2011	—	—	—	—	—	—	—
MOJO-34	03/17/2008	nc	—	nc	—	—	—	—
	03/10/2011	—	—	—	—	—	—	—
MOJO-48	04/01/2008	nc	—	nc	—	—	—	—
	03/09/2011	—	—	—	—	—	—	—
MOJO-49	04/01/2008	nc	—	nc	—	—	—	—
	03/07/2011	—	—	—	—	—	—	—
Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit								
BV-05	10/29/2009	nc	—	nc	—	—	—	—
	10/18/2012	—	—	—	—	—	—	—
CD-02	12/15/2008	nc	—	nc	—	—	—	—
	10/16/2012	—	—	—	—	—	—	—
CD-05	12/17/2008	nc	—	nc	—	—	—	—
	10/16/2012	—	—	—	—	—	—	—

Table 6A. Pesticides and pesticide degradates (Schedules 2003, 2032, and 2033) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3C*. **GAMA identification number acronyms**: ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, California Department of Public Health maximum contaminant level; HAL-US, USEPA lifetime health advisory level; RSD5-US, USEPA risk-specific dose at a factor of 10^{-5}. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: E, estimated or having a higher degree of uncertainty; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; nc, not collected; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Herbicide			Herbicide degradate		Fungicide	Insecticide degradate
		EPTC (*S*-Ethyl dipropylthiocarbamate) (µg/L) (82668)	Pendimethalin (µg/L) (82683)	Thiobencarb (µg/L) (82681)	Deethylatrazine (2-Chloro-4-isopropylamino-6-amino-*s*-triazine) (µg/L) (04040)	3,4-Dichloroaniline (µg/L) (61625)	Metalaxyl (µg/L) (61596)	Desulfinyl fipronil (µg/L) (62170)
Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit—Continued								
LUB-05	12/04/2008	nc	—	nc	—	—	—	—
	10/17/2012	—	—	—	—	—	—	—
LUB-07	12/09/2008	nc	—	nc	—	—	—	—
	10/17/2012	—	—	—	—	—	—	—
LUB-11	12/11/2008	nc	—	nc	—	—	—	—
	10/15/2012	—	—	—	—	—	—	—
Coastal Los Angeles Basin study unit								
CLABCB-12	08/29/2006	nc	—	nc	E0.008	E0.006	—	—
	08/25/2010	—	—	—	E0.014	E0.004	—	—
CLABCB-13	08/29/2006	nc	—	nc	E0.027	E0.005	E0.006	—
	08/23/2010	—	—	—	E0.088	[2]E0.001	0.004	—
CLABCB-14	08/29/2006	nc	—	nc	—	—	—	—
	08/23/2010	—	—	—	—	—	—	—
CLABCB-17	09/14/2006	nc	—	nc	E0.051	E0.005	—	—
	08/25/2010	—	—	—	E0.122	E0.002	—	—
CLABDA-02	08/08/2006	nc	—	nc	—	—	—	—
	08/24/2010	—	—	—	—	—	—	—
CLABOC-13	08/28/2006	nc	—	nc	E0.011	E0.024	—	—
	08/26/2010	—	—	—	E0.024	E0.025	—	—
CLABOC-14	08/31/2006	nc	—	nc	—	—	—	—
	08/26/2010	—	—	—	—	—	—	—

Table 6A. Pesticides and pesticide degradates (Schedules 2003, 2032, and 2033) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3C*. **GAMA identification number acronyms**: ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, California Department of Public Health maximum contaminant level; HAL-US, USEPA lifetime health advisory level; RSD5-US, USEPA risk-specific dose at a factor of 10^{-5}. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: E, estimated or having a higher degree of uncertainty; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; nc, not collected; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Herbicide			Herbicide degradate		Fungicide	Insecticide degradate
		EPTC (*S*-Ethyl depropylthio-carbamate) (µg/L) (82668)	Pendimethalin (µg/L) (82683)	Thiobencarb (µg/L) (82681)	Deethylatrazine (2-Chloro-4-isopropylamino-6-amino-*s*-triazine) (µg/L) (04040)	3,4-Dichloroaniline (µg/L) (61625)	Metalaxyl (µg/L) (61596)	Desulfinyl fipronil (µg/L) (62170)
Coastal Los Angeles Basin study unit—Continued								
CLABWB-03	08/30/2006	nc	—	nc	—	—	—	—
	08/24/2010	—	—	—	—	—	—	—
Upper Santa Ana Watershed study unit								
USAWB-01	11/27/2006	—	—	—	E0.008	—	—	—
	04/20/2009	—	—	—	E0.013	—	—	—
USAWB-04	11/28/2006	—	—	—	—	—	—	—
	05/06/2009	—	—	—	—	—	—	—
USAWB-12	12/13/2006	—	—	—	[2]E0.005	—	—	—
	04/22/2009	—	—	—	[2]E0.005	E0.002	—	—
USAWB-14	12/14/2006	—	—	—	—	—	—	—
	04/14/2009	—	—	—	—	—	—	—
USAWB-17	01/10/2007	—	0.039	—	E0.011	—	—	—
	04/23/2009	—	—	—	E0.010	—	—	—
USAWC-02	01/29/2007	—	—	—	—	—	—	—
	04/30/2009	—	—	—	—	—	—	—
USAWC-08	01/31/2007	—	—	—	E0.023	E0.004	—	—
	04/28/2009	—	—	—	E0.017	E0.003	—	—
USAWC-10	02/01/2007	—	—	—	—	—	—	—
	04/27/2009	—	—	[2]E0.006	[2]E0.006	E0.009	—	—
USAWC-21	02/14/2007	—	—	—	—	—	—	—
	04/13/2009	—	—	—	—	—	—	—

Table 6A. Pesticides and pesticide degradates (Schedules 2003, 2032, and 2033) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3C*. **GAMA identification number acronyms**: ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, California Department of Public Health maximum contaminant level; HAL-US, USEPA lifetime health advisory level; RSD5-US, USEPA risk-specific dose at a factor of 10^{-5}. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: E, estimated or having a higher degree of uncertainty; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; nc, not collected; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Herbicide			Herbicide degradate		Fungicide	Insecticide degradate
		EPTC (*S*-Ethyl depropylthio-carbamate) (µg/L) (82668)	Pendimethalin (µg/L) (82683)	Thiobencarb (µg/L) (82681)	Deethylatrazine (2-Chloro-4-isopropylamino-6-amino-*s*-triazine) (µg/L) (04040)	3,4-Dichloroaniline (µg/L) (61625)	Metalaxyl (µg/L) (61596)	Desulfinyl fipronil (µg/L) (62170)
Upper Santa Ana Watershed study unit—Continued								
USAWC-23	02/15/2007	—	—	—	E0.006	—	—	—
	04/16/2009	—	—	—	E0.007	—	—	—
USAWR-08	01/10/2007	—	—	—	E0.032	E0.009	—	—
	04/21/2009	—	—	—	E0.039	E0.009	—	—
USAWR-12	01/29/2007	—	—	—	—	—	—	—
	04/29/2009	—	—	—	—	—	—	—
USAWS-01	01/22/2007	—	—	—	E0.016	—	—	—
	05/07/2009	—	—	—	E0.030	—	—	—
USAWS-08	01/24/2007	—	—	—	E0.007	—	—	—
	05/07/2009	—	—	—	E0.011	—	—	—
USAWY-06	01/09/2007	—	—	—	E0.016	—	—	—
	05/05/2009	—	—	—	E0.020	E0.004	—	—
USAWY-07	01/11/2007	—	—	—	—	—	—	[2]E0.003
	05/04/2009	—	—	—	—	—	—	—
Santa Clara River Valley study unit								
SCRV-06	04/04/2007	nc	—	nc	—	—	—	—
	04/26/2011	—	—	—	—	E0.003	—	—
SCRV-08	04/04/2007	nc	—	nc	—	—	—	—
	04/26/2011	—	—	—	—	—	—	—
SCRV-17	04/11/2007	nc	—	nc	[2]E0.007	—	—	—
	04/27/2011	—	—	—	E0.005	—	—	—

Table 6A. Pesticides and pesticide degradates (Schedules 2003, 2032, and 2033) in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3C*. **GAMA identification number acronyms**: ***Kern County Subbasin study unit***: KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, California Department of Public Health maximum contaminant level; HAL-US, USEPA lifetime health advisory level; RSD5-US, USEPA risk-specific dose at a factor of 10^{-5}. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: E, estimated or having a higher degree of uncertainty; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; na, not available; nc, not collected; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Herbicide			Herbicide degradate		Fungicide	Insecticide degradate
		EPTC (*S*-Ethyl depropylthio-carbamate) (µg/L) (82668)	Pendimethalin (µg/L) (82683)	Thiobencarb (µg/L) (82681)	Deethylatrazine (2-Chloro-4-isopropylamino-6-amino-*s*-triazine) (µg/L) (04040)	3,4-Dichloroaniline (µg/L) (61625)	Metalaxyl (µg/L) (61596)	Desulfinyl fipronil (µg/L) (62170)
Santa Clara River Valley study unit—Continued								
SCRV-18	04/11/2007	nc	—	nc	—	—	—	—
	04/27/2011	—	—	—	—	—	—	—
SCRV-32	04/18/2007	nc	—	nc	[2]E0.006	—	—	—
	04/25/2011	—	—	—	E0.006	—	—	—
SCRV-36	04/19/2007	nc	—	nc	—	—	—	—
	04/28/2011	—	—	—	—	—	—	—

[1]The minimum and maximum LRLs used during the study period are listed, except in the case of desulfinyl fipronil which only had one LRL.

[2]The detected concentration was less than the LT-MDL for this compound. These results are counted as non-detections for the purpose of calculating detection frequencies.

Table 6B. Polar pesticides (Schedule 2060) in samples collected from trend wells for seven Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3D*. **GAMA identification number acronyms:** ***Central Eastside San Joaquin Basin study unit***: MER, Merced study area; TRLK, Turlock study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Coachella Valley study unit***: COA. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, California Department of Public Health maximum contaminant level; HAL-US, USEPA Lifetime Health Advisory level; RSD5-US, USEPA risk-specific dose at a factor of 10^{-5}. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: E, estimated or having a higher degree of uncertainty; LT-MDL, long-term method detection level; mm/dd/yyyy, month/day/year; na, not available; nc, not collected; RL, reporting level; USGS, U.S. Geological Survey; USEPA, U.S. Environmental Protection Agency; µg/L, micrograms per liter; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Herbicide						
		Diuron (µg/L) (49300)	Bromacil (µg/L) (04029)	Atrazine[2] (µg/L) (39632)	Bentazon (µg/L) (38711)	Bromoxynil (µg/L) (49311)	Dinoseb (µg/L) (49301)	Diphenamid (µg/L) (04033)
Benchmark type		RSD5-US	HAL-US	MCL-CA	MCL-CA	na	MCL-US	na
Benchmark level		20	70	1	18	na	7	na
RL[1]		0.015, 0.04	0.018, 0.06	0.008, 0.04	0.02, 0.06	0.028, 0.12	0.038, 0.06	0.010, 0.04
Number of trend wells with detections 2006–10		2	2	2	2	0	0	0
Number of trend wells with detections 2009–13		3	2	1	1	0	0	0
Detection frequency (percent) 2006–10		5	5	5	5	0	0	0
Detection frequency (percent) 2009–13		13	8	4	4	0	0	0
Central Eastside San Joaquin Basin study unit								
MER-11	04/12/2006	—	—	—	—	—	—	—
	01/28/2010	nc	nc	nc	nc	nc	nc	nc
TRLK-03	03/21/2006	—	—	—	—	—	—	—
	01/28/2010	nc	nc	nc	nc	nc	nc	nc
TRLK-05	03/22/2006	—	—	—	—	—	—	—
	01/25/2010	nc	nc	nc	nc	nc	nc	nc
Middle Sacramento Valley study unit								
ESAC-01	06/29/2006	—	—	—	—	—	—	—
	08/11/2010	—	—	—	—	—	—	—
ESAC-19	07/20/2006	—	—	—	—	—	—	—
	08/10/2010	—	—	—	—	—	—	—

Table 6B. Polar pesticides (Schedule 2060) in samples collected from trend wells for seven Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3D*. **GAMA identification number acronyms:** ***Central Eastside San Joaquin Basin study unit***: MER, Merced study area; TRLK, Turlock study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Coachella Valley study unit***: COA. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, California Department of Public Health maximum contaminant level; HAL-US, USEPA Lifetime Health Advisory level; RSD5-US, USEPA risk-specific dose at a factor of 10^{-5}. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: E, estimated or having a higher degree of uncertainty; LT-MDL, long-term method detection level; mm/dd/yyyy, month/day/year; na, not available; nc, not collected; RL, reporting level; USGS, U.S. Geological Survey; USEPA, U.S. Environmental Protection Agency; µg/L, micrograms per liter; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Herbicide						
		Diuron (µg/L) (49300)	Bromacil (µg/L) (04029)	Atrazine[2] (µg/L) (39632)	Bentazon (µg/L) (38711)	Bromoxynil (µg/L) (49311)	Dinoseb (µg/L) (49301)	Diphenamid (µg/L) (04033)
Middle Sacramento Valley study unit—Continued								
ESAC-34	08/17/2006	—	—	—	0.10	—	[3]E0.01	—
	08/12/2010	—	—	—	0.15	—	—	—
WSAC-03	07/11/2006	—	—	—	—	—	—	—
	08/10/2010	—	—	—	—	—	—	—
WSAC-08	07/18/2006	—	—	—	—	—	—	—
	08/12/2010	—	—	—	—	—	—	—
WSAC-17	08/01/2006	—	—	—	—	—	—	—
	08/09/2010	—	—	[3]E0.005	—	—	—	—
WSAC-19	08/01/2006	—	—	—	—	—	—	—
	08/11/2010	—	—	—	—	—	—	—
WSAC-32	08/21/2006	—	—	—	E0.01	—	—	—
	08/09/2010	—	—	—	—	—	—	—
Northern Sacramento Valley study unit								
NSAC-09	11/06/2007	—	—	—	—	—	—	—
	01/11/2011	nc	nc	nc	nc	nc	nc	nc
NSAC-16	12/06/2007	—	—	—	—	na	—	na
	01/12/2011	nc	nc	nc	nc	nc	nc	nc
RED-01	10/01/2007	—	—	—	—	—	—	—
	01/11/2011	nc	nc	nc	nc	nc	nc	nc
RED-12	11/08/2007	—	—	—	—	—	—	—
	01/10/2011	nc	nc	nc	nc	nc	nc	nc

Table 6B. Polar pesticides (Schedule 2060) in samples collected from trend wells for seven Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3D*. **GAMA identification number acronyms:** ***Central Eastside San Joaquin Basin study unit***: MER, Merced study area; TRLK, Turlock study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Coachella Valley study unit***: COA. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, California Department of Public Health maximum contaminant level; HAL-US, USEPA Lifetime Health Advisory level; RSD5-US, USEPA risk-specific dose at a factor of 10^{-5}. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: E, estimated or having a higher degree of uncertainty; LT-MDL, long-term method detection level; mm/dd/yyyy, month/day/year; na, not available; nc, not collected; RL, reporting level; USGS, U.S. Geological Survey; USEPA, U.S. Environmental Protection Agency; µg/L, micrograms per liter; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Herbicide						
		Diuron (µg/L) (49300)	Bromacil (µg/L) (04029)	Atrazine[2] (µg/L) (39632)	Bentazon (µg/L) (38711)	Bromoxynil (µg/L) (49311)	Dinoseb (µg/L) (49301)	Diphenamid (µg/L) (04033)
Madera-Chowchilla study unit								
MADCHOW-03	04/15/2008	—	—	—	—	—	—	—
	03/15/2011	nc	nc	nc	nc	nc	nc	nc
MADCHOW-05	04/16/2008	—	—	—	—	—	—	—
	03/15/2011	nc	nc	nc	nc	nc	nc	nc
MADCHOW-24	05/13/2008	—	—	—	—	—	—	—
	03/16/2011	nc	nc	nc	nc	nc	nc	nc
MADCHOW-28	05/19/2008	—	—	—	—	—	—	—
	03/16/2011	nc	nc	nc	nc	nc	nc	nc
Coachella Valley study unit								
COA-12	03/08/2007	—	—	—	—	—	—	—
	01/05/2011	nc	nc	nc	nc	nc	nc	nc
COA-14	03/12/2007	—	—	[3]E0.002	—	—	—	[3]E0.003
	01/04/2011	nc	nc	nc	nc	nc	nc	nc
COA-15	03/14/2007	—	—	—	—	—	—	—
	01/06/2011	nc	nc	nc	nc	nc	nc	nc
COA-16	03/15/2007	—	—	—	—	[3]E0.001	—	—
	01/05/2011	nc	nc	nc	nc	nc	nc	nc
Coastal Los Angeles Basin study unit								
CLABCB-17	09/14/2006	—	—	E0.049	—	—	—	—
	08/25/2010	nc	nc	nc	nc	nc	nc	nc
CLABDA-02	08/08/2006	—	—	—	—	—	—	—
	08/24/2010	nc	nc	nc	nc	nc	nc	nc

Table 6B. Polar pesticides (Schedule 2060) in samples collected from trend wells for seven Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3D*. **GAMA identification number acronyms:** ***Central Eastside San Joaquin Basin study unit***: MER, Merced study area; TRLK, Turlock study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Coachella Valley study unit***: COA. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, California Department of Public Health maximum contaminant level; HAL-US, USEPA Lifetime Health Advisory level; RSD5-US, USEPA risk-specific dose at a factor of 10^{-5}. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: E, estimated or having a higher degree of uncertainty; LT-MDL, long-term method detection level; mm/dd/yyyy, month/day/year; na, not available; nc, not collected; RL, reporting level; USGS, U.S. Geological Survey; USEPA, U.S. Environmental Protection Agency; µg/L, micrograms per liter; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Herbicide						
		Diuron (µg/L) (49300)	Bromacil (µg/L) (04029)	Atrazine[2] (µg/L) (39632)	Bentazon (µg/L) (38711)	Bromoxynil (µg/L) (49311)	Dinoseb (µg/L) (49301)	Diphenamid (µg/L) (04033)
Upper Santa Ana Watershed study unit								
USAWB-01	11/27/2006	—	—	[3]E0.007	—	—	—	—
	04/20/2009	[3]E0.01	[3]E0.01	[3]E0.007	—	—	—	—
USAWB-04	11/28/2006	—	—	—	—	—	—	—
	05/06/2009	—	—	—	—	—	—	—
USAWB-12	12/13/2006	—	[3]E0.01	—	—	—	—	—
	04/22/2009	E0.02	—	—	—	—	—	—
USAWB-14	12/14/2006	—	—	—	—	—	—	—
	04/14/2009	—	—	—	—	—	—	—
USAWB-17	01/10/2007	[3]E0.01	—	[3]E0.010	—	—	—	—
	04/23/2009	[3]E0.01	—	[3]E0.006	—	—	—	—
USAWC-02	01/29/2007	—	—	—	—	—	—	—
	04/30/2009	—	—	—	—	—	—	—
USAWC-08	01/31/2007	E0.03	[3]E0.01	[3]E0.017	—	—	—	[3]E0.0001
	04/28/2009	0.04	—	[3]E0.007	—	—	—	—
USAWC-10	02/01/2007	—	—	—	—	—	—	—
	04/27/2009	—	—	[3]E0.008	—	—	—	—
USAWC-21	02/14/2007	—	[3]E0.01	—	—	—	—	—
	04/13/2009	—	[3]E0.03	—	—	—	—	—
USAWC-23	02/15/2007	—	—	—	—	—	—	—
	04/16/2009	—	—	—	—	—	—	—
USAWR-08	01/10/2007	E0.04	E0.04	E0.025	—	—	—	[3]E0.001
	04/21/2009	0.05	E0.05	E0.036	—	—	—	[3]E0.004
USAWR-12	01/29/2007	—	—	—	—	—	—	—
	04/29/2009	—	—	—	—	—	—	—

Table 6B. Polar pesticides (Schedule 2060) in samples collected from trend wells for seven Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3D*. **GAMA identification number acronyms:** ***Central Eastside San Joaquin Basin study unit***: MER, Merced study area; TRLK, Turlock study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Coachella Valley study unit***: COA. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, California Department of Public Health maximum contaminant level; HAL-US, USEPA Lifetime Health Advisory level; RSD5-US, USEPA risk-specific dose at a factor of 10^{-5}. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: E, estimated or having a higher degree of uncertainty; LT-MDL, long-term method detection level; mm/dd/yyyy, month/day/year; na, not available; nc, not collected; RL, reporting level; USGS, U.S. Geological Survey; USEPA, U.S. Environmental Protection Agency; µg/L, micrograms per liter; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Herbicide						
		Diuron (µg/L) (49300)	Bromacil (µg/L) (04029)	Atrazine[2] (µg/L) (39632)	Bentazon (µg/L) (38711)	Bromoxynil (µg/L) (49311)	Dinoseb (µg/L) (49301)	Diphenamid (µg/L) (04033)
Upper Santa Ana Watershed study unit—Continued								
USAWS-01	01/22/2007	—	—	[3]E0.011	—	—	—	—
	05/07/2009	—	—	[3]E0.012	—	—	—	—
USAWS-08	01/24/2007	[3]E0.02	E0.03	[3]E0.005	—	—	—	—
	05/07/2009	—	E0.05	[3]E0.004	—	—	—	—
USAWY-06	01/09/2007	—	[3]E0.01	[3]E0.014	—	—	—	—
	05/05/2009	—	[3]E0.004	[3]E0.013	—	—	—	—
USAWY-07	01/11/2007	—	—	—	—	—	—	—
	05/04/2009	—	—	—	—	—	—	—

Table 6B. Polar pesticides (Schedule 2060) in samples collected from trend wells for seven Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3D*. **GAMA identification number acronyms:** ***Central Eastside San Joaquin Basin study unit***: MER, Merced study area; TRLK, Turlock study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Coachella Valley study unit***: COA. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, California Department of Public Health maximum contaminant level; HAL-US, USEPA Lifetime Health Advisory level; RSD5-US, USEPA risk-specific dose at a factor of 10^{-5}. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: E, estimated or having a higher degree of uncertainty; LT-MDL, long-term method detection level; mm/dd/yyyy, month/day/year; na, not available; nc, not collected; RL, reporting level; USGS, U.S. Geological Survey; USEPA, U.S. Environmental Protection Agency; µg/L, micrograms per liter; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Herbicide			Herbicide degradate		
		Imazethapyr (µg/L) (50407)	Siduron (µg/L) (38548)	Tebuthiuron[2] (µg/L) (82670)	Deethylatrazine (2-Chloro-4-isopropyl-amino-6-amino-*s*-triazine)[2] (µg/L) (04040)	Deisopropyl atrazine (2-Chloro-6-ethylamino-4-amino-*s*-triazine) (µg/L) (04038)	2-Hydroxy-4-isopropylamino-6-ethylamino-*s*-triazine (µg/L) (50355)
Benchmark type		na	na	HAL-US	na	na	na
Benchmark level		na	na	500	na	na	na
RL[1]		0.038, 0.08	0.02, 0.04	0.026, 0.06	0.028, 0.06	0.06, 0.08	0.032, 0.08
Number of trend wells with detections 2006–10		0	0	0	5	2	1
Number of trend wells with detections 2009–13		0	0	0	1	2	1
Detection frequency (percent) 2006–10		0	0	0	12	5	2
Detection frequency (percent) 2009–13		0	0	0	4	8	4
Central Eastside San Joaquin Basin study unit							
MER-11	04/12/2006	—	—	—	—	—	—
	01/28/2010	nc	nc	nc	nc	nc	nc
TRLK-03	03/21/2006	—	—	—	—	—	—
	01/28/2010	nc	nc	nc	nc	nc	nc
TRLK-05	03/22/2006	—	—	—	—	—	—
	01/25/2010	nc	nc	nc	nc	nc	nc
Middle Sacramento Valley study unit							
ESAC-01	06/29/2006	—	—	—	[3]E0.003	—	—
	08/11/2010	—	—	—	—	—	—
ESAC-19	07/20/2006	—	—	—	—	—	—
	08/10/2010	—	—	—	—	—	—

Table 6B. Polar pesticides (Schedule 2060) in samples collected from trend wells for seven Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3D*. **GAMA identification number acronyms:** ***Central Eastside San Joaquin Basin study unit***: MER, Merced study area; TRLK, Turlock study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Coachella Valley study unit***: COA. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, California Department of Public Health maximum contaminant level; HAL-US, USEPA Lifetime Health Advisory level; RSD5-US, USEPA risk-specific dose at a factor of 10^{-5}. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: E, estimated or having a higher degree of uncertainty; LT-MDL, long-term method detection level; mm/dd/yyyy, month/day/year; na, not available; nc, not collected; RL, reporting level; USGS, U.S. Geological Survey; USEPA, U.S. Environmental Protection Agency; µg/L, micrograms per liter; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Herbicide			Herbicide degradate		
		Imazethapyr (µg/L) (50407)	Siduron (µg/L) (38548)	Tebuthiuron[2] (µg/L) (82670)	Deethylatrazine (2-Chloro-4-isopropyl-amino-6-amino-*s*-triazine)[2] (µg/L) (04040)	Deisopropyl atrazine (2-Chloro-6-ethylamino-4-amino-*s*-triazine) (µg/L) (04038)	2-Hydroxy-4-isopropylamino-6-ethylamino-*s*-triazine (µg/L) (50355)
Middle Sacramento Valley study unit—Continued							
ESAC-34	08/17/2006	—	—	—	—	—	—
	08/12/2010	—	—	—	—	—	—
WSAC-03	07/11/2006	—	—	—	—	—	—
	08/10/2010	—	—	—	—	—	—
WSAC-08	07/18/2006	—	—	—	—	—	—
	08/12/2010	—	—	—	[3]E0.005	—	—
WSAC-17	08/01/2006	—	—	—	—	—	E0.024
	08/09/2010	—	—	—	—	—	E0.020
WSAC-19	08/01/2006	—	—	—	—	—	—
	08/11/2010	—	—	—	—	—	—
WSAC-32	08/21/2006	—	—	—	—	—	—
	08/09/2010	—	—	—	—	—	—
Northern Sacramento Valley study unit							
NSAC-09	11/06/2007	—	—	—	—	—	—
	01/11/2011	nc	nc	nc	nc	nc	nc
NSAC-16	12/06/2007	—	—	—	—	—	—
	01/12/2011	nc	nc	nc	nc	nc	nc
RED-01	10/01/2007	—	—	—	—	—	—
	01/11/2011	nc	nc	nc	nc	nc	nc
RED-12	11/08/2007	—	—	—	—	—	—
	01/10/2011	nc	nc	nc	nc	nc	nc

Table 6B. Polar pesticides (Schedule 2060) in samples collected from trend wells for seven Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3D*. **GAMA identification number acronyms:** ***Central Eastside San Joaquin Basin study unit***: MER, Merced study area; TRLK, Turlock study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Coachella Valley study unit***: COA. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, California Department of Public Health maximum contaminant level; HAL-US, USEPA Lifetime Health Advisory level; RSD5-US, USEPA risk-specific dose at a factor of 10^{-5}. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: E, estimated or having a higher degree of uncertainty; LT-MDL, long-term method detection level; mm/dd/yyyy, month/day/year; na, not available; nc, not collected; RL, reporting level; USGS, U.S. Geological Survey; USEPA, U.S. Environmental Protection Agency; µg/L, micrograms per liter; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Herbicide			Herbicide degradate		
		Imazethapyr (µg/L) (50407)	Siduron (µg/L) (38548)	Tebuthiuron[2] (µg/L) (82670)	Deethylatrazine (2-Chloro-4-isopropyl-amino-6-amino-*s*-triazine)[2] (µg/L) (04040)	Deisopropyl atrazine (2-Chloro-6-ethylamino-4-amino-*s*-triazine) (µg/L) (04038)	2-Hydroxy-4-isopropylamino-6-ethylamino-*s*-triazine (µg/L) (50355)
Madera-Chowchilla study unit							
MADCHOW-03	04/15/2008	—	—	—	—	—	—
	03/15/2011	nc	nc	nc	nc	nc	nc
MADCHOW-05	04/16/2008	—	—	—	—	—	—
	03/15/2011	nc	nc	nc	nc	nc	nc
MADCHOW-24	05/13/2008	—	—	—	—	—	—
	03/16/2011	nc	nc	nc	nc	nc	nc
MADCHOW-28	05/19/2008	—	—	—	—	—	—
	03/16/2011	nc	nc	nc	nc	nc	nc
Coachella Valley study unit							
COA-12	03/08/2007	—	—	—	—	—	—
	01/05/2011	nc	nc	nc	nc	nc	nc
COA-14	03/12/2007	—	—	—	—	—	—
	01/04/2011	nc	nc	nc	nc	nc	nc
COA-15	03/14/2007	—	—	—	—	—	—
	01/06/2011	nc	nc	nc	nc	nc	nc
COA-16	03/15/2007	—	—	—	—	—	—
	01/05/2011	nc	nc	nc	nc	nc	nc
Coastal Los Angeles Basin study unit							
CLABCB-17	09/14/2006	—	—	—	0.062	—	—
	08/25/2010	nc	nc	nc	nc	nc	nc
CLABDA-02	08/08/2006	—	—	—	—	—	—
	08/24/2010	nc	nc	nc	nc	nc	nc

Table 6B. Polar pesticides (Schedule 2060) in samples collected from trend wells for seven Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3D*. **GAMA identification number acronyms:** ***Central Eastside San Joaquin Basin study unit***: MER, Merced study area; TRLK, Turlock study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Coachella Valley study unit***: COA. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, California Department of Public Health maximum contaminant level; HAL-US, USEPA Lifetime Health Advisory level; RSD5-US, USEPA risk-specific dose at a factor of 10^{-5}. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: E, estimated or having a higher degree of uncertainty; LT-MDL, long-term method detection level; mm/dd/yyyy, month/day/year; na, not available; nc, not collected; RL, reporting level; USGS, U.S. Geological Survey; USEPA, U.S. Environmental Protection Agency; µg/L, micrograms per liter; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Herbicide			Herbicide degradate		
		Imazethapyr (µg/L) (50407)	Siduron (µg/L) (38548)	Tebuthiuron[2] (µg/L) (82670)	Deethylatrazine (2-Chloro-4-isopropyl-amino-6-amino-*s*-triazine)[2] (µg/L) (04040)	Deisopropyl atrazine (2-Chloro-6-ethylamino-4-amino-*s*-triazine) (µg/L) (04038)	2-Hydroxy-4-isopropylamino-6-ethylamino-*s*-triazine (µg/L) (50355)
Upper Santa Ana Watershed study unit							
USAWB-01	11/27/2006	—	—	—	[3]E0.006	—	—
	04/20/2009	—	—	—	[3]E0.006	[3]E0.01	—
USAWB-04	11/28/2006	—	—	—	—	—	—
	05/06/2009	—	—	—	—	—	—
USAWB-12	12/13/2006	—	—	—	—	[3]E0.03	—
	04/22/2009	—	—	—	—	—	—
USAWB-14	12/14/2006	—	[3]E0.01	—	—	—	—
	04/14/2009	—	—	—	—	—	—
USAWB-17	01/10/2007	—	[3]E0.01	[3]E0.004	[3]E0.008	E0.06	—
	04/23/2009	—	—	[3]E0.008	[3]E0.005	E0.05	—
USAWC-02	01/29/2007	—	—	—	—	—	—
	04/30/2009	—	—	—	—	—	—
USAWC-08	01/31/2007	—	—	—	0.029	—	—
	04/28/2009	—	—	—	[3]E0.013	—	—
USAWC-10	02/01/2007	—	—	—	—	—	—
	04/27/2009	[3]E0.0008	—	—	—	—	—
USAWC-21	02/14/2007	—	—	—	—	—	—
	04/13/2009	—	—	—	—	—	—
USAWC-23	02/15/2007	—	—	—	[3]E0.004	—	—
	04/16/2009	—	—	—	—	—	—
USAWR-08	01/10/2007	—	[3]E0.01	[3]E0.001	E0.033	E0.05	—
	04/21/2009	—	—	[3]E0.003	E0.036	E0.06	[3]E0.012
USAWR-12	01/29/2007	—	—	—	—	—	—
	04/29/2009	—	—	—	—	—	—

Table 6B. Polar pesticides (Schedule 2060) in samples collected from trend wells for seven Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3D*. **GAMA identification number acronyms:** ***Central Eastside San Joaquin Basin study unit***: MER, Merced study area; TRLK, Turlock study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Coachella Valley study unit***: COA. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. **Benchmark type**: MCL-US, USEPA maximum contaminant level; MCL-CA, California Department of Public Health maximum contaminant level; HAL-US, USEPA Lifetime Health Advisory level; RSD5-US, USEPA risk-specific dose at a factor of 10^{-5}. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: E, estimated or having a higher degree of uncertainty; LT-MDL, long-term method detection level; mm/dd/yyyy, month/day/year; na, not available; nc, not collected; RL, reporting level; USGS, U.S. Geological Survey; USEPA, U.S. Environmental Protection Agency; µg/L, micrograms per liter; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Herbicide			Herbicide degradate		
		Imazethapyr (µg/L) (50407)	Siduron (µg/L) (38548)	Tebuthiuron[2] (µg/L) (82670)	Deethylatrazine (2-Chloro-4-isopropyl-amino-6-amino-*s*-triazine)[2] (µg/L) (04040)	Deisopropyl atrazine (2-Chloro-6-ethylamino-4-amino-*s*-triazine) (µg/L) (04038)	2-Hydroxy-4-isopropylamino-6-ethylamino-*s*-triazine (µg/L) (50355)
Upper Santa Ana Watershed study unit—Continued							
USAWS-01	01/22/2007	—	—	—	0.023	—	—
	05/07/2009	—	—	—	[3]E0.019	—	[3]E0.005
USAWS-08	01/24/2007	—	—	—	[3]E0.007	—	—
	05/07/2009	—	—	—	[3]E0.003	[3]E0.03	—
USAWY-06	01/09/2007	—	[3]E0.004	—	E0.015	—	—
	05/05/2009	—	—	—	[3]E0.011	—	—
USAWY-07	01/11/2007	—	—	[3]E0.001	—	—	—
	05/04/2009	—	—	—	—	—	—

[1]Minimum and maximum RL used during study period.

[2]Schedule 2003/2032/2033 is the preferred method for atrazine, tebuthiuron, and deethylatrazine (*table 6A*). Results from Schedule 2060 are reported here for comparison purposes only.

[3]The detected concentration was less than the LT-MDL for this compound. These results are counted as non-detections for the purpose of calculating detection frequencies.

Table 7. Constituents of special interest in samples collected from trend wells sampled for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3E*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit:*** KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit: MADCHOW. Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit: COA. Colorado River study unit: COLOR. Antelope Valley study unit: ANT. Mojave study unit: MOJO. Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit: SCRV.*** **Benchmark type**: HAL-US, U.S. Environmental Protection Agency Lifetime Health Advisory level; MCL-CA, CDPH maximum contaminant level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; MRL, minimum reporting level; nc, not collected; NWQL, National Water Quality Laboratory; *, value greater than benchmark level; <, less than; —, not detected; µg/L, micrograms per liter]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Perchlorate[2] (µg/L) (61209)	Perchlorate[3] (µg/L) (63790)	1,2,3-Trichloropropane[4] (µg/L) (77443)
Benchmark type[1]		MCL-CA	MCL-CA	HAL-US[5]
Benchmark level		6	6	40
MRL(s)		0.5, 1	0.1	0.005
		Kern County Subbasin study unit		
KERN-02	01/10/2006	<0.5	nc	nc
	02/11/2010	nc	0.48	0.056
KERN-20	02/13/2006	<0.5	nc	nc
	02/10/2010	nc	—	—
KERN-21	02/13/2006	<1	nc	nc
	03/16/2010	nc	0.68	0.025
KERN-29	02/28/2006	<0.5	nc	nc
	02/10/2010	nc	—	—
KERN-33	03/01/2006	<0.5	nc	nc
	02/09/2010	nc	—	0.006
		Central Eastside San Joaquin Basin study unit		
CE-QPC-02	03/22/2006	0.60	nc	nc
	01/26/2010	nc	0.60	0.009
MER-11	04/12/2006	<0.5	nc	—
	01/28/2010	nc	—	—
MER-14	04/17/2006	<0.5	nc	nc
	01/27/2010	nc	0.18	—
MOD-07	03/21/2006	0.80	nc	nc
	01/26/2010	nc	1.21	—
TRLK-03	03/21/2006	0.56	nc	—
	01/28/2010	nc	0.12	—
TRLK-05	03/22/2006	<0.5	nc	0.009
	01/25/2010	nc	0.32	0.007
		Middle Sacramento Valley study unit		
ESAC-01	06/29/2006	<0.5	nc	nc
	08/11/2010	nc	0.43	nc
ESAC-19	07/20/2006	<0.5	nc	—
	08/10/2010	nc	0.13	nc
ESAC-34	08/17/2006	<0.5	nc	—
	08/12/2010	nc	0.11	nc
WSAC-03	07/11/2006	<0.5	nc	—
	08/10/2010	nc	0.31	nc

Table 7. Constituents of special interest in samples collected from trend wells sampled for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3E*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit:*** KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit: MADCHOW. Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit: COA. Colorado River study unit: COLOR. Antelope Valley study unit: ANT. Mojave study unit: MOJO. Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit: SCRV.*** **Benchmark type**: HAL-US, U.S. Environmental Protection Agency Lifetime Health Advisory level; MCL-CA, CDPH maximum contaminant level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; MRL, minimum reporting level; nc, not collected; NWQL, National Water Quality Laboratory; *, value greater than benchmark level; <, less than; —, not detected; µg/L, micrograms per liter]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Perchlorate[2] (µg/L) (61209)	Perchlorate[3] (µg/L) (63790)	1,2,3-Trichloropropane[4] (µg/L) (77443)
Middle Sacramento Valley study unit—Continued				
WSAC-08	07/18/2006	<0.5	nc	—
	08/12/2010	nc	0.26	nc
WSAC-17	08/01/2006	<0.5	nc	—
	08/09/2010	nc	—	nc
WSAC-19	08/01/2006	<0.5	nc	nc
	08/11/2010	nc	—	nc
WSAC-32	08/21/2006	<0.5	nc	nc
	08/09/2010	nc	—	nc
Northern Sacramento Valley study unit				
NSAC-09	11/06/2007	nc	0.21	nc
	01/11/2011	nc	0.15	—
NSAC-16	12/06/2007	nc	0.16	nc
	01/12/2011	nc	0.11	—
RED-01	10/01/2007	nc	0.25	nc
	01/11/2011	nc	0.18	—
RED-12	11/08/2007	nc	—	nc
	01/10/2011	nc	—	—
Madera-Chowchilla study unit				
MADCHOW-03	04/15/2008	nc	—	—
	03/15/2011	nc	0.42	—
MADCHOW-05	04/16/2008	nc	0.63	—
	03/15/2011	nc	1.0	—
MADCHOW-24	05/13/2008	nc	0.30	—
	03/16/2011	nc	0.26	—
MADCHOW-28	05/19/2008	nc	0.91	—
	03/16/2011	nc	1.1	—
Western San Joaquin Valley study unit				
DM-12	03/11/2010	nc	1.3	—
	04/02/2013	nc	1.3	—
DM-19	04/14/2010	nc	—	—
	04/02/2013	nc	—	—
DM-26	06/17/2010	nc	0.46	—
	04/03/2013	nc	0.31	—
WS-07	06/10/2010	nc	—	—
	04/03/2013	nc	—	—

Table 7. Constituents of special interest in samples collected from trend wells sampled for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3E*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit:*** KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit: MADCHOW. Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit: COA. Colorado River study unit: COLOR. Antelope Valley study unit: ANT. Mojave study unit: MOJO. Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit: SCRV.*** **Benchmark type**: HAL-US, U.S. Environmental Protection Agency Lifetime Health Advisory level; MCL-CA, CDPH maximum contaminant level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; MRL, minimum reporting level; nc, not collected; NWQL, National Water Quality Laboratory; *, value greater than benchmark level; <, less than; —, not detected; µg/L, micrograms per liter]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Perchlorate[2] (µg/L) (61209)	Perchlorate[3] (µg/L) (63790)	1,2,3-Trichloropropane[4] (µg/L) (77443)
Owens and Indian Wells Valleys study unit				
OIW-05	10/18/2006	<0.5	nc	—
	10/27/2010	nc	0.59	—
OIW-07	10/19/2006	<0.5	nc	—
	10/27/2010	nc	—	—
OV-21	10/03/2006	<0.5	nc	nc
	10/26/2010	nc	—	—
OV-24	10/04/2006	<0.5	nc	—
	10/28/2010	nc	0.17	—
OV-29	10/05/2006	<0.5	nc	nc
	10/28/2010	nc	0.19	—
OV-36	10/25/2006	<0.5	nc	—
	10/26/2010	nc	—	—
Coachella Valley study unit				
COA-12	03/08/2007	<0.5	nc	nc
	01/05/2011	nc	—	—
COA-14	03/12/2007	<0.5	nc	nc
	01/04/2011	nc	0.51	—
COA-15	03/14/2007	0.85	nc	—
	01/06/2011	nc	0.86	—
COA-16	03/15/2007	0.62	nc	—
	01/05/2011	nc	0.82	—
Colorado River study unit				
COLOR-03	10/02/2007	<1	—	[6]—
	01/04/2011	nc	—	—
COLOR-06	10/24/2007	<0.5	—	[6]—
	01/03/2011	nc	—	—
COLOR-17	12/11/2007	<1	0.87	—
	01/03/2011	nc	0.82	—
Antelope Valley study unit				
ANT-07	01/29/2008	nc	0.47	—
	02/15/2012	nc	0.37	—
ANT-20	02/05/2008	nc	0.86	nc
	02/14/2012	nc	0.26	—
ANT-23	02/06/2008	nc	0.19	nc
	02/13/2012	nc	0.18	—
ANT-24	02/06/2008	nc	0.21	nc
	02/16/2012	nc	0.18	—

Table 7. Constituents of special interest in samples collected from trend wells sampled for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3E*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit:*** KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit: MADCHOW. Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit: COA. Colorado River study unit: COLOR. Antelope Valley study unit: ANT. Mojave study unit: MOJO. Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit: SCRV.*** **Benchmark type**: HAL-US, U.S. Environmental Protection Agency Lifetime Health Advisory level; MCL-CA, CDPH maximum contaminant level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; MRL, minimum reporting level; nc, not collected; NWQL, National Water Quality Laboratory; *, value greater than benchmark level; <, less than; —, not detected; µg/L, micrograms per liter]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Perchlorate[2] (µg/L) (61209)	Perchlorate[3] (µg/L) (63790)	1,2,3-Trichloropropane[4] (µg/L) (77443)
Antelope Valley study unit—Continued				
ANT-33	02/13/2008	nc	1.7	nc
	02/15/2012	nc	1.1	—
ANT-42	03/03/2008	nc	0.80	nc
	02/14/2012	nc	0.94	—
Mojave study unit				
MOJO-01	02/04/2008	nc	—	nc
	03/08/2011	nc	—	—
MOJO-09	02/07/2008	nc	—	nc
	03/08/2011	nc	—	—
MOJO-11	02/07/2008	nc	0.11	nc
	03/09/2011	nc	0.20	—
MOJO-16	02/13/2008	nc	0.12	nc
	03/10/2011	nc	—	—
MOJO-34	03/17/2008	nc	—	nc
	03/10/2011	nc	—	—
MOJO-48	04/01/2008	nc	—	nc
	03/09/2011	nc	—	—
MOJO-49	04/01/2008	nc	1.7	nc
	03/07/2011	nc	1.6	—
Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit				
BV-05	10/29/2009	nc	—	nc
	10/18/2012	nc	—	—
CD-02	12/15/2008	nc	0.59	nc
	10/16/2012	nc	0.54	—
CD-05	12/17/2008	nc	0.44	nc
	10/16/2012	nc	0.47	—
LUB-05	12/04/2008	nc	0.55	nc
	10/17/2012	nc	0.53	—
LUB-07	12/09/2008	nc	0.28	nc
	10/17/2012	nc	0.28	—
LUB-11	12/11/2008	nc	0.64	nc
	10/15/2012	nc	0.82	—
Coastal Los Angeles Basin study unit				
CLABCB-12	08/29/2006	0.60	nc	nc
	08/25/2010	nc	0.32	nc
CLABCB-13	08/29/2006	1.1	nc	nc
	08/23/2010	nc	0.88	nc

Table 7. Constituents of special interest in samples collected from trend wells sampled for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3E*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit:*** KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit: MADCHOW. Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit: COA. Colorado River study unit: COLOR. Antelope Valley study unit: ANT. Mojave study unit: MOJO. Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit: SCRV.*** **Benchmark type**: HAL-US, U.S. Environmental Protection Agency Lifetime Health Advisory level; MCL-CA, CDPH maximum contaminant level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; MRL, minimum reporting level; nc, not collected; NWQL, National Water Quality Laboratory; *, value greater than benchmark level; <, less than; —, not detected; µg/L, micrograms per liter]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Perchlorate[2] (µg/L) (61209)	Perchlorate[3] (µg/L) (63790)	1,2,3-Trichloropropane[4] (µg/L) (77443)
Coastal Los Angeles Basin study unit—Continued				
CLABCB-14	08/29/2006	<0.5	nc	nc
	08/23/2010	nc	—	nc
CLABCB-17	09/14/2006	1.8	nc	nc
	08/25/2010	nc	1.2	nc
CLABDA-02	08/08/2006	1.90	nc	nc
	08/24/2010	nc	1.8	nc
CLABOC-13	08/28/2006	<0.5	nc	nc
	08/26/2010	nc	0.14	nc
CLABOC-14	08/31/2006	<0.5	nc	nc
	08/26/2010	nc	—	nc
CLABWB-03	08/30/2006	<0.5	nc	nc
	08/24/2010	nc	—	nc
Upper Santa Ana Watershed study unit				
USAWB-01	11/27/2006	1.2	nc	nc
	04/20/2009	nc	1.3	nc
USAWB-04	11/28/2006	<0.5	nc	—
	05/06/2009	nc	0.54	nc
USAWB-12	12/13/2006	1.8	nc	nc
	04/22/2009	nc	1.9	nc
USAWB-14	12/14/2006	<0.5	nc	—
	04/14/2009	nc	0.40	nc
USAWB-17	01/10/2007	0.63	nc	nc
	04/23/2009	nc	0.80	nc
USAWC-02	01/29/2007	1.9	nc	nc
	04/30/2009	nc	3.0	nc
USAWC-08	01/31/2007	2.5	nc	—
	04/28/2009	nc	3.2	nc
USAWC-10	02/01/2007	<0.5	nc	nc
	04/27/2009	nc	0.40	nc
USAWC-21	02/14/2007	1.3	nc	—
	04/13/2009	nc	1.7	nc
USAWC-23	02/15/2007	2.0	nc	0.069
	04/16/2009	nc	2.8	nc
USAWR-08	01/10/2007	2.6	nc	—
	04/21/2009	nc	2.9	nc
USAWR-12	01/29/2007	8.8*	nc	—
	04/29/2009	nc	8.9*	nc

Table 7. Constituents of special interest in samples collected from trend wells sampled for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3E*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit:*** KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit: MADCHOW. Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit: COA. Colorado River study unit: COLOR. Antelope Valley study unit: ANT. Mojave study unit: MOJO. Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit: SCRV.*** **Benchmark type**: HAL-US, U.S. Environmental Protection Agency Lifetime Health Advisory level; MCL-CA, CDPH maximum contaminant level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; MRL, minimum reporting level; nc, not collected; NWQL, National Water Quality Laboratory; *, value greater than benchmark level; <, less than; —, not detected; µg/L, micrograms per liter]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Perchlorate[2] (µg/L) (61209)	Perchlorate[3] (µg/L) (63790)	1,2,3-Trichloropropane[4] (µg/L) (77443)
Upper Santa Ana Watershed study unit—Continued				
USAWS-01	01/22/2007	3.1	nc	nc
	05/07/2009	nc	4.8	nc
USAWS-08	01/24/2007	6.0	nc	—
	05/07/2009	nc	7.9*	nc
USAWY-06	01/09/2007	1.8	nc	—
	05/05/2009	nc	2.6	nc
USAWY-07	01/11/2007	0.60	nc	nc
	05/04/2009	nc	0.91	nc
Santa Clara River Valley study unit				
SCRV-06	04/04/2007	<1	nc	nc
	04/26/2011	nc	0.19	—
SCRV-08	04/04/2007	<0.5	nc	nc
	04/26/2011	nc	—	—
SCRV-17	04/11/2007	<0.5	nc	nc
	04/27/2011	nc	0.25	—
SCRV-18	04/11/2007	1.0	nc	nc
	04/27/2011	nc	—	—
SCRV-32	04/18/2007	<1	nc	nc
	04/25/2011	nc	0.70	—
SCRV-36	04/19/2007	<0.5	nc	nc
	04/28/2011	nc	0.18	—

[1]Maximum contaminant level benchmarks are listed as MCL-US when the MCL-US and the MCL-CA are identical and as MCL-CA when the MCL-CA is lower than the MCL-US or no MCL-US exists.

[2]Prior to October 1, 2007, perchlorate analyses were performed on unfiltered samples by Montgomery Watson Harza (MWH) Laboratories (*table A1*). The nominal MRLs were 0.25 or 0.5 µg/L; some higher salinity samples were diluted for analysis and had an MRL of 1 µg/L.

[3]After August 15, 2007, perchlorate analyses were performed on filtered samples by Weck Laboratories, Inc. (Weck; *table A1*).

[4]1,2,3-Trichloropropane (1,2,3-TCP) analyses were performed by MWH prior to October 1, 2007, and by Weck after that date. Additonally, all samples were analyzed for 1,2,3-TCP by the USGS NWQL laboratory schedule 2020 with no detections found by that analytical method, which had a LRL ranging from 0.12 to 0.18 µg/L.

[5]In some earlier reports in this series, the NL-CA (0.005 µg/L) was used as the comparison benchmark for 1,2,3-TCP.

[6]1,2,3-TCP was analyzed for this sample both by MWH and Weck, but not detected by either laboratory.

Table 8. Nutrients in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3F*. **GAMA well identification number acronyms: Kern County Subbasin study unit:** KERN. ***Central Eastside San Joaquin Basin study unit:*** MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: HAL-US, USEPA Lifetime Health Advisory level; MCL-US, USEPA maximum contaminant level; MCL-CA, CDPH maximum contaminant level. Benchmark type, benchmark level, and RL as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; LRL, laboratory reporting level; mg/L, milligrams per liter; mm/dd/yyyy, month/day/year; na, not available; nc, not collected; nv, no value in category; RL, reporting limit; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; *, value greater than benchmark level; —, not detected; +, plus; ≤, less than or equal to]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Ammonia (as nitrogen) (mg/L) (00608)	Nitrite (as nitrogen) (mg/L) (00613)	Nitrate plus nitrite (as nitrogen) (mg/L) (00631)	Total nitrogen (ammonia + nitrate + nitrite + organic nitrogen) (mg/L) (62854)	Orthophosphate (as phosphorus) (mg/L) (00671)
Benchmark type[1]		HAL-US	MCL-US	MCL-US	na	na
Benchmark level		[2]24.7	1	10	na	na
SRL[4]		0.014	nv	0.001	nv	nv
LRL[3]		0.010, 0.02	0.0023	0.04, 0.08	0.06, 0.1	0.006, 0.008
Kern County Subbasin study unit						
KERN-02	01/10/2006	nc	nc	nc	nc	nc
	02/11/2010	—	0.020	6.08	6.51	0.034
KERN-20	02/13/2006	nc	nc	nc	nc	nc
	02/10/2010	0.141	—	—	0.15	0.053
KERN-21	02/13/2006	nc	nc	nc	nc	nc
	03/16/2010	—	0.015	11.9*	12.2	0.055
KERN-29	02/28/2006	nc	nc	nc	nc	nc
	02/10/2010	—	E0.001	0.28	0.25	0.031
KERN-33	03/01/2006	nc	nc	nc	nc	nc
	02/09/2010	—	E0.001	0.56	0.53	0.042
Central Eastside San Joaquin Basin study unit						
CE-QPC-02	03/22/2006	nc	nc	nc	nc	nc
	01/26/2010	—	—	3.99	4.05	0.079
MER-11	04/12/2006	—	—	0.78	0.83	0.030
	01/28/2010	—	—	0.95	0.99	0.048
MER-14	04/17/2006	nc	nc	nc	nc	nc
	01/27/2010	0.020	—	1.11	1.19	0.051
MOD-07	03/21/2006	nc	nc	nc	nc	nc
	01/26/2010	—	—	4.93	4.76	0.040
TRLK-03	03/21/2006	—	—	1.44	1.54	0.046
	01/28/2010	—	—	0.43	0.43	0.073
TRLK-05	03/22/2006	—	—	2.69	2.70	0.009
	01/25/2010	—	—	2.87	2.88	0.034
Middle Sacramento Valley study unit						
ESAC-01	06/29/2006	nc	nc	nc	nc	nc
	08/11/2010	E0.016	—	4.33	4.49	0.103
ESAC-19	07/20/2006	—	—	0.50	0.45	0.090
	08/10/2010	—	—	0.54	0.56	0.096

Table 8. Nutrients in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3F*. **GAMA well identification number acronyms: Kern County Subbasin study unit:** KERN. ***Central Eastside San Joaquin Basin study unit:*** MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: HAL-US, USEPA Lifetime Health Advisory level; MCL-US, USEPA maximum contaminant level; MCL-CA, CDPH maximum contaminant level. Benchmark type, benchmark level, and RL as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; LRL, laboratory reporting level; mg/L, milligrams per liter; mm/dd/yyyy, month/day/year; na, not available; nc, not collected; nv, no value in category; RL, reporting limit; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; *, value greater than benchmark level; —, not detected; +, plus; ≤, less than or equal to]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Ammonia (as nitrogen) (mg/L) (00608)	Nitrite (as nitrogen) (mg/L) (00613)	Nitrate plus nitrite (as nitrogen) (mg/L) (00631)	Total nitrogen (ammonia + nitrate + nitrite + organic nitrogen) (mg/L) (62854)	Orthophosphate (as phosphorus) (mg/L) (00671)
Middle Sacramento Valley study unit—Continued						
ESAC-34	08/17/2006	—	—	0.89	0.91	0.108
	08/12/2010	—	—	0.82	0.83	0.112
WSAC-03	07/11/2006	—	—	3.38	3.30	0.036
	08/10/2010	E0.018	—	2.77	2.86	0.043
WSAC-08	07/18/2006	E0.006	—	3.43	3.23	0.031
	08/12/2010	0.020	—	3.33	3.33	0.033
WSAC-17	08/01/2006	—	—	0.73	0.72	0.257
	08/09/2010	—	—	0.18	0.20	0.226
WSAC-19	08/01/2006	nc	nc	nc	nc	nc
	08/11/2010	[4]≤0.012	—	0.17	0.17	0.100
WSAC-32	08/21/2006	nc	nc	nc	nc	nc
	08/09/2010	—	—	0.95	0.97	0.062
Northern Sacramento Valley study unit						
NSAC-09	11/06/2007	—	—	0.98	1.01	0.052
	01/11/2011	—	—	0.62	0.65	0.058
NSAC-16	12/06/2007	—	—	1.06	1.14	0.139
	01/12/2011	0.019	—	1.06	1.09	0.148
RED-01	10/01/2007	—	E0.001	0.80	0.79	0.128
	01/11/2011	—	—	0.78	0.79	0.133
RED-12	11/08/2007	[4]≤0.012	0.021	0.09	0.09	0.156
	01/10/2011	0.017	0.007	0.11	0.13	0.154
Madera-Chowchilla study unit						
MADCHOW-03	04/15/2008	—	—	0.78	0.81	0.058
	03/15/2011	—	—	1.15	1.19	0.063
MADCHOW-05	04/16/2008	—	—	2.88	2.96	0.033
	03/15/2011	—	—	3.22	3.29	0.037
MADCHOW-24	05/13/2008	—	—	2.78	2.84	0.024
	03/16/2011	—	—	2.02	2.13	0.043
MADCHOW-28	05/19/2008	—	—	8.57	9.17	0.053
	03/16/2011	—	—	8.27	8.50	0.045
Western San Joaquin Valley study unit						
DM-12	03/11/2010	—	—	6.02	6.57	0.027
	04/02/2013	—	—	5.17	5.35	0.023

Table 8. Nutrients in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3F*. **GAMA well identification number acronyms: Kern County Subbasin study unit:** KERN. ***Central Eastside San Joaquin Basin study unit:*** MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: HAL-US, USEPA Lifetime Health Advisory level; MCL-US, USEPA maximum contaminant level; MCL-CA, CDPH maximum contaminant level. Benchmark type, benchmark level, and RL as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; LRL, laboratory reporting level; mg/L, milligrams per liter; mm/dd/yyyy, month/day/year; na, not available; nc, not collected; nv, no value in category; RL, reporting limit; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; *, value greater than benchmark level; —, not detected; +, plus; ≤, less than or equal to]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Ammonia (as nitrogen) (mg/L) (00608)	Nitrite (as nitrogen) (mg/L) (00613)	Nitrate plus nitrite (as nitrogen) (mg/L) (00631)	Total nitrogen (ammonia + nitrate + nitrite + organic nitrogen) (mg/L) (62854)	Orthophosphate (as phosphorus) (mg/L) (00671)
Western San Joaquin Valley study unit—Continued						
DM-19	04/14/2010	—	—	1.22	1.24	0.022
	04/02/2013	[4]≤0.010	—	1.31	1.36	0.017
DM-26	06/17/2010	—	—	7.06	7.56	0.029
	04/03/2013	—	—	5.88	6.04	0.025
WS-07	06/10/2010	0.262	E0.001	—	0.29	0.028
	04/03/2013	0.251	—	—	0.27	0.020
Owens and Indian Wells Valleys study unit						
OIW-05	10/18/2006	—	—	1.80	1.74	0.025
	10/27/2010	—	—	1.77	1.79	0.047
OIW-07	10/19/2006	E0.018	0.006	1.45	1.50	0.018
	10/27/2010	0.102	0.005	0.57	0.69	0.036
OV-21	10/03/2006	—	—	0.10	0.09	0.050
	10/26/2010	—	—	0.09	0.08	0.061
OV-24	12/12/2006	—	—	0.48	0.49	0.020
	10/28/2010	—	—	0.47	0.49	0.028
OV-29	10/05/2006	0.020	—	0.45	0.45	0.017
	10/28/2010	[4]≤0.010	—	0.47	0.46	0.032
OV-36	10/25/2006	0.020	—	0.10	0.10	0.054
	10/26/2010	[4]≤0.010	—	0.10	0.10	0.057
Coachella Valley study unit						
COA-12	03/08/2007	0.133	E0.002	—	0.19	0.020
	01/05/2011	0.148	0.003	—	0.14	0.021
COA-14	03/12/2007	—	—	4.54	4.57	0.012
	01/04/2011	—	0.002	5.55	5.68	0.020
COA-15	03/14/2007	—	—	1.23	1.19	0.018
	01/06/2011	—	0.002	1.34	1.35	0.025
COA-16	03/15/2007	—	—	3.98	4.04	E0.006
	01/05/2011	—	0.002	5.12	5.14	0.012
Colorado River study unit						
COLOR-03	10/02/2007	0.300	E0.001	—	0.38	0.054
	01/04/2011	0.324	0.001	—	0.38	0.060
COLOR-06	10/24/2007	0.207	—	—	0.19	0.016
	01/03/2011	0.208	—	—	0.24	0.020

Table 8. Nutrients in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3F*. **GAMA well identification number acronyms: Kern County Subbasin study unit:** KERN. ***Central Eastside San Joaquin Basin study unit:*** MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: HAL-US, USEPA Lifetime Health Advisory level; MCL-US, USEPA maximum contaminant level; MCL-CA, CDPH maximum contaminant level. Benchmark type, benchmark level, and RL as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; LRL, laboratory reporting level; mg/L, milligrams per liter; mm/dd/yyyy, month/day/year; na, not available; nc, not collected; nv, no value in category; RL, reporting limit; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; *, value greater than benchmark level; —, not detected; +, plus; ≤, less than or equal to]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Ammonia (as nitrogen) (mg/L) (00608)	Nitrite (as nitrogen) (mg/L) (00613)	Nitrate plus nitrite (as nitrogen) (mg/L) (00631)	Total nitrogen (ammonia + nitrate + nitrite + organic nitrogen) (mg/L) (62854)	Orthophosphate (as phosphorus) (mg/L) (00671)
Colorado River study unit—Continued						
COLOR-17	12/11/2007	—	—	3.29	3.25	0.007
	01/03/2011	—	—	3.43	3.32	0.013
Antelope Valley study unit						
ANT-07	01/29/2008	—	E0.001	1.34	1.42	0.014
	02/15/2012	—	0.001	1.19	1.24	0.016
ANT-20	02/05/2008	nc	nc	nc	nc	nc
	02/14/2012	—	—	0.73	0.68	0.087
ANT-23	02/06/2008	nc	nc	nc	nc	nc
	02/13/2012	[4]≤0.010	0.003	0.56	0.49	0.026
ANT-24	02/06/2008	nc	nc	nc	nc	nc
	02/16/2012	—	—	0.38	0.40	0.015
ANT-33	02/13/2008	nc	nc	nc	nc	nc
	02/15/2012	—	—	1.37	1.43	0.034
ANT-42	03/03/2008	nc	nc	nc	nc	nc
	02/14/2012	—	—	4.04	4.04	0.016
Mojave study unit						
MOJO-01	02/04/2008	nc	nc	nc	nc	nc
	03/08/2011	—	—	0.57	0.56	0.013
MOJO-09	02/07/2008	nc	nc	nc	nc	nc
	03/08/2011	—	—	0.34	0.34	0.021
MOJO-11	02/07/2008	nc	nc	nc	nc	nc
	03/09/2011	—	—	0.75	0.76	0.012
MOJO-16	02/13/2008	—	—	0.40	0.40	0.008
	03/10/2011	—	—	0.41	0.40	0.009
MOJO-34	03/17/2008	nc	nc	nc	nc	nc
	03/10/2011	—	—	1.87	1.88	0.045
MOJO-48	04/01/2008	nc	nc	nc	nc	nc
	03/09/2011	—	—	1.25	1.26	0.022
MOJO-49	04/01/2008	—	—	4.19	4.43	0.015
	03/07/2011	—	—	4.35	4.35	0.034
Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit						
BV-05	10/29/2009	nc	nc	nc	nc	nc
	10/18/2012	—	—	0.44	0.47	0.009

Table 8. Nutrients in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3F*. **GAMA well identification number acronyms: Kern County Subbasin study unit:** KERN. ***Central Eastside San Joaquin Basin study unit:*** MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: HAL-US, USEPA Lifetime Health Advisory level; MCL-US, USEPA maximum contaminant level; MCL-CA, CDPH maximum contaminant level. Benchmark type, benchmark level, and RL as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; LRL, laboratory reporting level; mg/L, milligrams per liter; mm/dd/yyyy, month/day/year; na, not available; nc, not collected; nv, no value in category; RL, reporting limit; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; *, value greater than benchmark level; —, not detected; +, plus; ≤, less than or equal to]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Ammonia (as nitrogen) (mg/L) (00608)	Nitrite (as nitrogen) (mg/L) (00613)	Nitrate plus nitrite (as nitrogen) (mg/L) (00631)	Total nitrogen (ammonia + nitrate + nitrite + organic nitrogen) (mg/L) (62854)	Orthophosphate (as phosphorus) (mg/L) (00671)
Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit—Continued						
CD-02	12/15/2008	nc	nc	nc	nc	nc
	10/16/2012	—	—	1.37	1.44	0.022
CD-05	12/17/2008	nc	nc	nc	nc	nc
	10/16/2012	—	—	2.86	3.01	0.018
LUB-05	12/04/2008	—	—	1.03	1.04	0.012
	10/17/2012	—	—	1.19	1.22	0.013
LUB-07	12/09/2008	—	—	1.57	1.51	0.011
	10/17/2012	—	—	1.54	1.60	0.010
LUB-11	12/11/2008	—	E0.001	4.10	4.06	0.017
	10/15/2012	—	0.001	4.01	4.13	0.019
Coastal Los Angeles Basin study unit						
CLABCB-12	08/29/2006	nc	nc	nc	nc	nc
	08/25/2010	0.379	0.014	0.22	0.63	0.036
CLABCB-13	08/29/2006	nc	nc	nc	nc	nc
	08/23/2010	—	—	1.83	1.91	0.045
CLABCB-14	08/29/2006	nc	nc	nc	nc	nc
	08/23/2010	0.404	—	—	0.41	0.020
CLABCB-17	09/14/2006	—	—	2.78	2.70	0.025
	08/25/2010	—	—	2.84	2.94	0.030
CLABDA-02	08/08/2006	0.007	—	6.51	6.84	0.110
	08/24/2010	—	0.003	6.54	6.66	0.109
CLABOC-13	08/28/2006	nc	nc	nc	nc	nc
	08/26/2010	—	E0.002	3.08	3.13	0.130
CLABOC-14	08/31/2006	nc	nc	nc	nc	nc
	08/26/2010	0.022	—	—	—	0.028
CLABWB-03	08/30/2006	nc	nc	nc	nc	nc
	08/24/2010	1.27	—	—	1.32	0.049
Upper Santa Ana Watershed study unit						
USAWB-01	11/27/2006	nc	nc	nc	nc	nc
	04/20/2009	—	0.007	2.36	2.27	0.020
USAWB-04	11/28/2006	—	—	2.73	2.82	0.018
	05/06/2009	—	—	2.58	2.57	0.023

Table 8. Nutrients in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3F*. **GAMA well identification number acronyms: Kern County Subbasin study unit:** KERN. ***Central Eastside San Joaquin Basin study unit:*** MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: HAL-US, USEPA Lifetime Health Advisory level; MCL-US, USEPA maximum contaminant level; MCL-CA, CDPH maximum contaminant level. Benchmark type, benchmark level, and RL as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; LRL, laboratory reporting level; mg/L, milligrams per liter; mm/dd/yyyy, month/day/year; na, not available; nc, not collected; nv, no value in category; RL, reporting limit; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; *, value greater than benchmark level; —, not detected; +, plus; ≤, less than or equal to]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Ammonia (as nitrogen) (mg/L) (00608)	Nitrite (as nitrogen) (mg/L) (00613)	Nitrate plus nitrite (as nitrogen) (mg/L) (00631)	Total nitrogen (ammonia + nitrate + nitrite + organic nitrogen) (mg/L) (62854)	Orthophosphate (as phosphorus) (mg/L) (00671)
Upper Santa Ana Watershed study unit—Continued						
USAWB-12	12/13/2006	nc	nc	nc	nc	nc
	04/22/2009	—	—	4.36	4.57	0.021
USAWB-14	12/14/2006	—	—	2.27	2.21	0.028
	04/14/2009	—	—	2.27	2.39	0.035
USAWB-17	01/10/2007	nc	nc	nc	nc	nc
	04/23/2009	—	—	3.91	4.09	0.027
USAWC-02	01/29/2007	—	—	2.95	2.86	0.039
	04/30/2009	—	—	4.02	4.12	0.045
USAWC-08	01/31/2007	—	—	11.5*	12.5	0.016
	04/28/2009	—	—	15.8*	16.9	0.019
USAWC-10	02/01/2007	nc	nc	nc	nc	nc
	04/27/2009	—	—	5.43	5.72	0.015
USAWC-21	02/14/2007	—	—	5.88	5.94	0.043
	04/13/2009	—	—	6.82	6.77	0.048
USAWC-23	02/15/2007	—	—	8.38	8.82	0.015
	04/16/2009	—	—	8.96	8.96	0.019
USAWR-08	01/10/2007	—	—	9.19	10.2	0.017
	04/21/2009	—	—	9.70	10.1	0.020
USAWR-12	01/29/2007	—	0.003	17.5*	17.7	0.020
	04/29/2009	—	—	16.4*	16.8	0.021
USAWS-01	01/22/2007	nc	nc	nc	nc	nc
	05/07/2009	—	—	11.0*	10.4	0.088
USAWS-08	01/24/2007	—	—	13.7*	14.1	0.075
	05/07/2009	—	—	14.1*	14.2	0.074
USAWY-06	01/09/2007	—	—	7.38	8.18	0.024
	05/05/2009	—	—	8.62	8.66	0.026
USAWY-07	01/11/2007	nc	nc	nc	nc	nc
	05/04/2009	—	—	4.94	4.88	0.052
Santa Clara River Valley study unit						
SCRV-06	04/04/2007	—	0.006	12.9*	13.5	0.048
	04/26/2011	0.029	0.002	4.90	4.97	0.062
SCRV-08	04/04/2007	nc	nc	nc	nc	nc
	04/26/2011	0.329	—	—	0.34	0.040

Table 8. Nutrients in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3F*. **GAMA well identification number acronyms: Kern County Subbasin study unit:** KERN. ***Central Eastside San Joaquin Basin study unit:*** MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: HAL-US, USEPA Lifetime Health Advisory level; MCL-US, USEPA maximum contaminant level; MCL-CA, CDPH maximum contaminant level. Benchmark type, benchmark level, and RL as of August 1, 2013. **Other abbreviations**: CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; LRL, laboratory reporting level; mg/L, milligrams per liter; mm/dd/yyyy, month/day/year; na, not available; nc, not collected; nv, no value in category; RL, reporting limit; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; *, value greater than benchmark level; —, not detected; +, plus; ≤, less than or equal to]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Ammonia (as nitrogen) (mg/L) (00608)	Nitrite (as nitrogen) (mg/L) (00613)	Nitrate plus nitrite (as nitrogen) (mg/L) (00631)	Total nitrogen (ammonia + nitrate + nitrite + organic nitrogen) (mg/L) (62854)	Orthophosphate (as phosphorus) (mg/L) (00671)
Santa Clara River Valley study unit—Continued						
SCRV-17	04/11/2007	nc	nc	nc	nc	nc
	04/27/2011	—	—	3.34	3.50	0.047
SCRV-18	04/11/2007	nc	nc	nc	nc	nc
	04/27/2011	0.091	—	0.04	0.11	0.055
SCRV-32	04/18/2007	nc	nc	nc	nc	nc
	04/25/2011	—	0.008	3.26	3.31	0.053
SCRV-36	04/19/2007	nc	nc	nc	nc	nc
	04/28/2011	0.015	0.004	2.10	2.17	0.048

[1]Maximum contaminant level benchmarks are listed as MCL-US when the MCL-US and MCL-CA are identical and as MCL-CA when the MCL-CA is lower than the MCL-US or no MCL-US exists.

[2]The HAL-US is 30 mg/L "as ammonia." To facilitate comparison to the analytical results, we converted and reported this HAL-US as 24.7 mg/L "as nitrogen."

[3]Minimum and maximum LRL used during the study period, or only LRL used during the study period.

[4]Study reporting levels were established on the basis of detections in field blanks collected by the GAMA Priority Basin Project during GAMA trend sampling and GAMA sampling that was done at about the same time as GAMA trend sampling.

Table 9. Major and minor ions and dissolved solids in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3G*. **GAMA well identification number acronyms:** ***Kern County Subbasin study unit:*** KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level. Benchmark type, benchmark level, and RL as of August 1, 2013. **Other abbreviations**: E, estimated or having a higher degree of uncertainty; LRL, laboratory reporting level; mg/L, milligrams per liter; mm/dd/yyyy, month/day/year; na, not available; nc, not collected; RL, reporting limit; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; *, concentration is greater than benchmark level; **, concentration is greater than the upper benchmark level; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Calcium (mg/L) (00915)	Magnesium (mg/L) (00925)	Potassium (mg/L) (00935)	Sodium (mg/L) (00930)	Bromide (mg/L) (71870)	Chloride (mg/L) (00940)	Fluoride (mg/L) (00950)	Iodide (mg/L) (71865)	Sulfate (mg/L) (00945)	Silica (mg/L) (00955)	Total dissolved solids (TDS) (mg/L) (70300)
Benchmark type[1]		na	na	na	na	na	SMCL-CA[3]	MCL-CA	na	SMCL-CA[3]	na	SMCL-CA[3]
Benchmark level		na	na	na	na	na	250 (500)	2	na	250 (500)	na	500 (1,000)
LRL[2]		0.02, 0.044	0.008, 0.022	0.02, 0.16	0.06, 0.20	0.01, 0.02	0.06, 0.20	0.04, 0.12	0.001, 0.002	0.09, 0.18	0.018, 0.058	10, 20
Kern County Subbasin study unit												
KERN-02	01/10/2006	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	02/11/2010	19.3	1.57	1.63	60.9	0.202	39.1	0.30	nc	33.8	20.8	258
KERN-20	02/13/2006	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	02/10/2010	7.33	0.295	0.58	102	0.188	35.9	3.08	nc	100	44.6	377
KERN-21	02/13/2006	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	03/16/2010	133	0.366	0.62	177	0.335	249	E0.05	nc	357	18	1,070**
KERN-29	02/28/2006	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	02/10/2010	12.2	2.48	1.97	24.1	—	2.90	0.18	nc	8.53	54.5	171
KERN-33	03/01/2006	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	02/09/2010	37.8	7.34	3.94	41.3	0.089	19.4	0.30	nc	42.4	24.1	280
Central Eastside San Joaquin Basin study unit												
CE-QPC-02	03/22/2006	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	01/26/2010	22.1	14.4	3.95	18.4	0.024	11.4	0.17	nc	10.4	68.4	254
MER-11	04/12/2006	26.3	9.09	3.67	19.2	0.030	5.86	0.18	0.005	19.0	44.6	202
	01/28/2010	25.2	8.73	3.52	17.9	0.031	6.12	0.14	nc	20.4	42.2	208
MER-14	04/17/2006	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	01/27/2010	11.8	2.19	12.4	41.6	0.083	19.5	0.22	nc	9.27	72.9	255
MOD-07	03/21/2006	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	01/26/2010	77	18.5	7.04	86.8	0.526	152	0.09	nc	67.5	50.8	615*
TRLK-03	03/21/2006	7.51	2.78	1.85	58.2	0.051	12.1	0.28	0.034	2.24	49	232
	01/28/2010	7.02	2.86	1.55	58.3	0.057	14.9	0.24	nc	1.09	46	232
TRLK-05	03/22/2006	21.7	4.90	3.45	23.3	0.052	12.5	0.16	0.003	5.13	57.7	205
	01/25/2010	21.0	4.92	3.57	22.9	0.057	14.8	0.14	nc	5.50	54.4	202

Table 9. Major and minor ions and dissolved solids in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3G*. **GAMA well identification number acronyms:** ***Kern County Subbasin study unit:*** KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level. Benchmark type, benchmark level, and RL as of August 1, 2013. **Other abbreviations**: E, estimated or having a higher degree of uncertainty; LRL, laboratory reporting level; mg/L, milligrams per liter; mm/dd/yyyy, month/day/year; na, not available; nc, not collected; RL, reporting limit; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; *, concentration is greater than benchmark level; **, concentration is greater than the upper benchmark level; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Calcium (mg/L) (00915)	Magnesium (mg/L) (00925)	Potassium (mg/L) (00935)	Sodium (mg/L) (00930)	Bromide (mg/L) (71870)	Chloride (mg/L) (00940)	Fluoride (mg/L) (00950)	Iodide (mg/L) (71865)	Sulfate (mg/L) (00945)	Silica (mg/L) (00955)	Total dissolved solids (TDS) (mg/L) (70300)
Middle Sacramento Valley study unit												
ESAC-01	06/29/2006	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	08/11/2010	29.1	21.4	1.06	21.2	0.085	31.7	0.14	E0.002	27.1	62.2	293
ESAC-19	07/20/2006	38.1	17.8	3.46	24.7	E0.013	9.66	0.24	—	25.0	69.5	303
	08/10/2010	39.9	18.4	3.54	25.1	0.045	11.5	0.25	—	24.0	66.8	310
ESAC-34	08/17/2006	50.3	34.4	1.83	26.9	0.077	13.5	0.11	0.003	38.6	62.4	392
	08/12/2010	51.3	35.3	1.84	26.8	0.074	13.5	0.10	0.003	36.8	60.1	409
WSAC-03	07/11/2006	32.3	16.2	0.70	12.8	—	7.11	0.10	—	20.8	28.9	210
	08/10/2010	27.8	15.7	0.79	13.8	0.023	8.00	0.13	—	16.2	29.4	193
WSAC-08	07/18/2006	67.5	19.7	0.84	17.9	0.052	21.4	E0.09	E0.001	25.8	19.5	317
	08/12/2010	66.4	18.9	0.81	17.5	0.055	20.3	0.09	E0.001	25.0	18.9	315
WSAC-17	08/01/2006	27.3	23.4	1.62	29.7	E0.014	7.38	0.12	0.008	20.6	37.6	273
	08/09/2010	27.2	25.4	1.45	39.4	0.051	14.7	0.17	0.010	26.1	36.7	311
WSAC-19	08/01/2006	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	08/11/2010	31.6	23.4	2.90	47.9	0.188	59.1	0.30	0.017	18.0	51.4	351
WSAC-32	08/21/2006	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	08/09/2010	40.9	23.9	1.23	21.4	0.026	5.25	0.17	0.004	10.1	27.9	267
Northern Sacramento Valley study unit												
NSAC-09	11/06/2007	20.7	8.55	1.93	23.2	E0.019	4.52	0.15	—	3.31	42.3	192
	01/11/2011	22.2	8.08	2.35	25.6	0.018	3.80	0.12	—	2.83	49.2	179
NSAC-16	12/06/2007	12.7	9.77	3.86	30.0	0.034	11.4	0.17	—	9.30	69.1	205
	01/12/2011	13.6	10.2	4.01	31.3	0.034	11.1	0.15	—	9.13	72.4	208
RED-01	10/01/2007	13.0	8.61	1.39	14.7	E0.011	3.21	0.17	—	1.27	49.0	151
	01/11/2011	14.3	9.23	1.53	16.2	0.015	3.26	0.14	—	1.40	55.0	143
RED-12	11/08/2007	14.0	8.59	1.76	22.6	0.037	9.53	E0.09	0.010	4.90	49.0	184
	01/10/2011	15.6	9.01	1.86	24.6	0.033	8.95	0.10	0.010	4.57	54.7	182

Table 9. Major and minor ions and dissolved solids in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3G*. **GAMA well identification number acronyms:** ***Kern County Subbasin study unit:*** KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level. Benchmark type, benchmark level, and RL as of August 1, 2013. **Other abbreviations**: E, estimated or having a higher degree of uncertainty; LRL, laboratory reporting level; mg/L, milligrams per liter; mm/dd/yyyy, month/day/year; na, not available; nc, not collected; RL, reporting limit; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; *, concentration is greater than benchmark level; **, concentration is greater than the upper benchmark level; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Calcium (mg/L) (00915)	Magnesium (mg/L) (00925)	Potassium (mg/L) (00935)	Sodium (mg/L) (00930)	Bromide (mg/L) (71870)	Chloride (mg/L) (00940)	Fluoride (mg/L) (00950)	Iodide (mg/L) (71865)	Sulfate (mg/L) (00945)	Silica (mg/L) (00955)	Total dissolved solids (TDS) (mg/L) (70300)
Madera-Chowchilla study unit												
MADCHOW-03	04/15/2008	16.6	4.63	2.78	20.8	0.042	17.4	E0.12	E0.001	4.05	60.7	172
	03/15/2011	17.3	5.31	3.24	20.6	0.035	16.9	0.11	—	4.32	60.8	174
MADCHOW-05	04/16/2008	19.9	6.60	1.86	24.2	0.065	15.0	0.24	0.002	7.43	73.8	222
	03/15/2011	19.4	6.60	1.78	23.3	0.057	13.8	0.21	—	6.94	74.1	222
MADCHOW-24	05/13/2008	23.0	4.50	2.15	26.9	0.070	29.1	0.12	E0.002	4.94	33.4	199
	03/16/2011	34.3	8.77	3.08	18.7	0.043	14.9	0.12	—	5.75	71.5	233
MADCHOW-28	05/19/2008	145	35.7	6.77	60.9	0.211	152	E0.09	0.007	26.7	63.6	773*
	03/16/2011	146	34.7	7.27	62.9	0.184	130	0.05	0.004	28.1	70.6	747*
Western San Joaquin Valley study unit												
DM-12	03/11/2010	70.5	26.8	2.04	118	0.382	105	0.17	0.005	210	26.8	722*
	04/02/2013	72.4	26.8	1.86	114	0.373	104	0.15	0.010	216	22.5	724*
DM-19	04/14/2010	83.5	39.6	1.97	218	0.590	147	0.34	0.657	545**	32.6	1,200**
	04/02/2013	92.1	39.1	1.80	214	0.590	170	0.30	0.791	616**	27.6	1,190**
DM-26	06/17/2010	88.5	47.8	1.59	99	0.431	136	0.28	0.018	139	25.4	764*
	04/03/2013	75.6	42.8	1.46	112	0.454	128	0.22	0.034	128	23.6	730*
WS-07	06/10/2010	65.1	9.78	1.83	200	0.154	39.0	0.29	0.095	487*	26.6	909*
	04/03/2013	43.2	5.46	1.26	164	0.158	32.8	0.36	0.087	406*	25.4	748*
Owens and Indian Wells Valleys study unit												
OIW-05	10/18/2006	32.3	5.33	2.08	45.3	0.126	27.0	0.93	—	46.0	38.5	288
	10/27/2010	33.1	5.53	2.07	47.3	0.127	26.6	0.95	0.001	46.8	37.3	283
OIW-07	10/19/2006	12.5	2.44	1.77	83.4	0.175	72.9	0.81	0.046	28.8	35.1	298
	10/27/2010	14.0	1.88	1.83	148	0.244	162	0.81	0.057	43.1	40.7	508*
OV-21	10/03/2006	9.62	2.26	1.14	8.18	—	1.03	0.14	—	3.12	33.6	87
	10/26/2010	10.3	2.42	1.07	7.79	—	0.97	0.15	—	3.30	33.7	95
OV-24	12/12/2006	26.3	6.53	2.92	9.03	—	2.95	0.11	E0.001	7.10	23.6	146
	10/28/2010	26.2	6.26	2.86	8.66	—	3.48	0.11	0.002	5.86	23.8	140

Table 9. Major and minor ions and dissolved solids in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3G*. **GAMA well identification number acronyms:** ***Kern County Subbasin study unit:*** KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level. Benchmark type, benchmark level, and RL as of August 1, 2013. **Other abbreviations**: E, estimated or having a higher degree of uncertainty; LRL, laboratory reporting level; mg/L, milligrams per liter; mm/dd/yyyy, month/day/year; na, not available; nc, not collected; RL, reporting limit; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; *, concentration is greater than benchmark level; **, concentration is greater than the upper benchmark level; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Calcium (mg/L) (00915)	Magnesium (mg/L) (00925)	Potassium (mg/L) (00935)	Sodium (mg/L) (00930)	Bromide (mg/L) (71870)	Chloride (mg/L) (00940)	Fluoride (mg/L) (00950)	Iodide (mg/L) (71865)	Sulfate (mg/L) (00945)	Silica (mg/L) (00955)	Total dissolved solids (TDS) (mg/L) (70300)
Owens and Indian Wells Valleys study unit—Continued												
OV-29	10/05/2006	44.5	6.70	5.75	24.1	E0.014	4.82	1.33	—	17.7	45.2	254
	10/28/2010	43.1	5.94	5.14	22.9	0.021	3.51	1.30	—	14.5	44.1	236
OV-36	10/25/2006	42.8	16.2	2.26	34.1	0.060	17.6	0.42	0.022	18.1	36.2	297
	10/26/2010	43.3	16.1	2.23	34.6	0.065	18.1	0.37	0.017	18.6	37.2	289
Coachella Valley study unit												
COA-12	03/08/2007	15.6	1.14	1.63	155	0.089	50.5	[4]6.99*	0.080	174	14.9	509*
	01/05/2011	14.9	1.17	1.69	170	0.087	51.4	8.22*	0.090	184	16.1	519*
COA-14	03/12/2007	50.2	8.70	3.69	20.5	0.060	13.0	[4]0.53	—	35.5	20.7	259
	01/04/2011	54.0	9.37	3.68	21.1	0.073	17.5	0.51	—	38.8	21.7	266
COA-15	03/14/2007	38.3	5.77	7.09	49.5	0.113	29.5	[4]0.57	—	69.0	19.4	302
	01/06/2011	41.6	6.25	7.69	54.0	0.121	30.9	0.55	—	68.1	21.1	312
COA-16	03/15/2007	31.7	6.28	8.36	224	0.302	88.9	[4]3.21*	0.022	385*	16.8	840*
	01/05/2011	41.0	8.04	9.54	256	0.333	103	2.71*	0.020	406*	18.0	929*
Colorado River study unit												
COLOR-03	10/02/2007	137	32.8	7.57	278	0.244	333*	0.33	0.027	336*	19.0	1,380**
	01/04/2011	136	32.8	7.46	288	0.289	345*	0.31	0.021	350*	20.8	1,390**
COLOR-06	10/24/2007	121	32.9	3.05	134	0.113	136	0.29	0.009	298*	16.3	926*
	01/03/2011	126	32.5	2.88	134	0.126	141	0.29	0.008	302*	19.1	943*
COLOR-17	12/11/2007	77.8	16.0	6.34	145	0.161	308*	2.38*	E0.002	58.4	20.5	736*
	01/03/2011	77.4	15.1	5.79	138	0.177	299*	2.16*	0.001	57.4	23.1	729*
Antelope Valley study unit												
ANT-07	01/29/2008	27.1	5.72	1.85	44.9	0.073	19.1	[4]0.50	—	40.1	25.5	240
	02/15/2012	29.1	7.10	1.98	41.1	0.057	22.6	[4]0.36	—	40.0	25.6	244
ANT-20	02/05/2008	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	02/14/2012	41.7	12.8	0.74	31.6	0.080	14.3	[4]0.22	0.002	23.8	35.6	264

Table 9. Major and minor ions and dissolved solids in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3G*. **GAMA well identification number acronyms:** ***Kern County Subbasin study unit:*** KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level. Benchmark type, benchmark level, and RL as of August 1, 2013. **Other abbreviations**: E, estimated or having a higher degree of uncertainty; LRL, laboratory reporting level; mg/L, milligrams per liter; mm/dd/yyyy, month/day/year; na, not available; nc, not collected; RL, reporting limit; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; *, concentration is greater than benchmark level; **, concentration is greater than the upper benchmark level; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Calcium (mg/L) (00915)	Magnesium (mg/L) (00925)	Potassium (mg/L) (00935)	Sodium (mg/L) (00930)	Bromide (mg/L) (71870)	Chloride (mg/L) (00940)	Fluoride (mg/L) (00950)	Iodide (mg/L) (71865)	Sulfate (mg/L) (00945)	Silica (mg/L) (00955)	Total dissolved solids (TDS) (mg/L) (70300)
Antelope Valley study unit—Continued												
ANT-23	02/06/2008	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	02/13/2012	71.9	19.2	4.47	11.7	0.014	2.29	[4]0.21	—	37.3	20.5	342
ANT-24	02/06/2008	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	02/16/2012	43.0	13.9	5.07	42.6	0.023	2.64	[4]0.23	—	144	18.4	341
ANT-33	02/13/2008	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	02/15/2012	59.7	10.6	3.92	246	0.548	286*	[4]0.93	0.005	166	60.0	963*
ANT-42	03/03/2008	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	02/14/2012	57.5	7.63	2.19	45.1	0.193	48.0	[4]0.28	—	41.5	34.6	317
Mojave study unit												
MOJO-01	02/04/2008	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	03/08/2011	7.95	0.818	0.89	33.8	0.018	4.99	0.61	—	8.97	16.1	119
MOJO-09	02/07/2008	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	03/08/2011	46.0	4.63	2.86	178	0.139	76.5	1.52	0.025	265*	30.7	681*
MOJO-11	02/07/2008	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	03/09/2011	21.9	2.32	2.45	63.9	0.020	3.90	0.37	0.007	135	16.0	286
MOJO-16	02/13/2008	10.9	0.574	1.24	28.6	0.026	6.18	0.16	—	2.69	20.2	117
	03/10/2011	11.0	0.568	1.22	29.0	0.027	6.24	0.17	—	2.50	20.2	115
MOJO-34	03/17/2008	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	03/10/2011	26.2	3.91	1.06	16.6	0.052	9.48	0.09	—	7.53	33.6	161
MOJO-48	04/01/2008	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	03/09/2011	8.62	0.928	0.66	77.9	0.020	4.27	1.53	0.030	78.2	19.5	253
MOJO-49	04/01/2008	122	51.0	14.4	463	0.547	214	2.61*	0.012	1,120**	48.6	2,240**
	03/07/2011	135	57.0	15.0	472	0.530	213	2.67*	0.021	1,220**	50.3	2,240**
Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit												
BV-05	10/29/2009	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	10/18/2012	23.7	2.14	3.30	69.2	0.060	44.6	0.35	—	93	18.7	[5]309

Table 9. Major and minor ions and dissolved solids in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3G*. **GAMA well identification number acronyms:** ***Kern County Subbasin study unit:*** KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level. Benchmark type, benchmark level, and RL as of August 1, 2013. **Other abbreviations**: E, estimated or having a higher degree of uncertainty; LRL, laboratory reporting level; mg/L, milligrams per liter; mm/dd/yyyy, month/day/year; na, not available; nc, not collected; RL, reporting limit; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; *, concentration is greater than benchmark level; **, concentration is greater than the upper benchmark level; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Calcium (mg/L) (00915)	Magnesium (mg/L) (00925)	Potassium (mg/L) (00935)	Sodium (mg/L) (00930)	Bromide (mg/L) (71870)	Chloride (mg/L) (00940)	Fluoride (mg/L) (00950)	Iodide (mg/L) (71865)	Sulfate (mg/L) (00945)	Silica (mg/L) (00955)	Total dissolved solids (TDS) (mg/L) (70300)
Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit—Continued												
CD-02	12/15/2008	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	10/16/2012	51.6	11.3	3.70	46.2	0.222	30.1	0.56	—	41.7	24.6	[5]336
CD-05	12/17/2008	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	10/16/2012	26.9	4.61	1.47	24.4	0.080	13.4	0.75	—	15.7	28.6	[5]179
LUB-05	12/04/2008	44.9	36.8	4.75	46.0	0.212	30.0	0.66	—	104	28.1	443
	10/17/2012	44.9	37.4	4.68	45.7	0.230	31.0	0.65	—	106	28.9	[5]444
LUB-07	12/09/2008	8.07	2.27	3.08	188	0.256	51.0	8.49*	0.027	111	26.1	556*
	10/17/2012	8.45	2.42	3.01	183	0.257	53.0	9.08*	0.019	116	24.5	[5]564*
LUB-11	12/11/2008	40.2	13.9	6.13	88.6	0.318	45.8	0.33	0.004	89.1	36.6	438
	10/15/2012	40.5	13.8	5.78	86.7	0.321	46.7	0.30	0.006	90.9	36.7	[5]450
Coastal Los Angeles Basin study unit												
CLABCB-12	08/29/2006	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	08/25/2010	56.0	14.5	3.86	64.2	0.273	56.8	0.38	0.068	71.8	26.3	410
CLABCB-13	08/29/2006	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	08/23/2010	76.2	16.5	2.62	45.7	0.184	49.2	0.37	0.002	94.6	21.7	435
CLABCB-14	08/29/2006	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	08/23/2010	55.7	7.59	2.21	45.4	0.118	24.8	0.25	0.031	69.6	21.6	341
CLABCB-17	09/14/2006	101	20.5	3.47	31.2	0.157	53.2	0.31	E0.002	118	21.7	511*
	08/25/2010	109	21.4	3.53	32.0	0.158	56.4	0.31	E0.002	122	21.3	517*
CLABDA-02	08/08/2006	128	56.4	2.16	74.3	0.390	85.6	0.37	0.006	235	31.8	873*
	08/24/2010	126	55.2	2.09	70.6	0.394	84	0.38	0.005	237	32	859*
CLABOC-13	08/28/2006	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	08/26/2010	96.9	20.3	5.08	82.3	0.217	111	0.52	0.023	140	21.1	640*
CLABOC-14	08/31/2006	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	08/26/2010	42.0	7.31	2.08	36.2	0.037	12.3	0.49	0.005	34.2	17.9	238
CLABWB-03	08/30/2006	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	08/24/2010	107	43.3	11.5	131	0.995	298*	0.29	0.061	125	30.1	912*

Table 9. Major and minor ions and dissolved solids in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3G*. **GAMA well identification number acronyms:** ***Kern County Subbasin study unit:*** KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level. Benchmark type, benchmark level, and RL as of August 1, 2013. **Other abbreviations**: E, estimated or having a higher degree of uncertainty; LRL, laboratory reporting level; mg/L, milligrams per liter; mm/dd/yyyy, month/day/year; na, not available; nc, not collected; RL, reporting limit; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; *, concentration is greater than benchmark level; **, concentration is greater than the upper benchmark level; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Calcium (mg/L) (00915)	Magnesium (mg/L) (00925)	Potassium (mg/L) (00935)	Sodium (mg/L) (00930)	Bromide (mg/L) (71870)	Chloride (mg/L) (00940)	Fluoride (mg/L) (00950)	Iodide (mg/L) (71865)	Sulfate (mg/L) (00945)	Silica (mg/L) (00955)	Total dissolved solids (TDS) (mg/L) (70300)
Upper Santa Ana Watershed study unit												
USAWB-01	11/27/2006	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	04/20/2009	19.5	2.40	1.53	74.7	0.151	36.8	1.07	0.028	47.4	14.8	301
USAWB-04	11/28/2006	42.7	3.66	1.68	14.4	0.031	3.82	0.31	—	16.9	21	184
	05/06/2009	44.8	4.22	1.86	15.6	E0.019	4.22	0.36	—	21.4	22.8	200
USAWB-12	12/13/2006	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	04/22/2009	39.1	8.03	2.01	21.9	0.040	11.6	0.32	—	26.7	31.8	233
USAWB-14	12/14/2006	55.2	6.59	1.89	12.3	0.024	4.65	0.29	—	17.2	24	244
	04/14/2009	54.0	6.67	1.93	12.4	E0.019	4.48	0.28	—	18.0	26.2	231
USAWB-17	01/10/2007	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	04/23/2009	42.4	7.01	2.18	16.9	0.069	16.9	0.22	E0.001	24.2	29.0	242
USAWC-02	01/29/2007	46.7	6.70	1.78	18.1	0.025	7.29	[4]0.26	—	8.38	27.3	226
	04/30/2009	51.2	6.80	1.79	19.8	0.048	8.69	0.26	—	9.24	28.2	242
USAWC-08	01/31/2007	70.6	8.16	2.42	27.7	0.179	46.7	[4]0.17	E0.001	26.8	23.2	369
	04/28/2009	86.4	9.19	2.45	27.1	0.162	46.9	0.13	0.002	28.4	24.2	404
USAWC-10	02/01/2007	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	04/27/2009	23.1	0.881	1.43	64.1	0.058	22.3	0.84	E0.001	34.9	20.9	262
USAWC-21	02/14/2007	46.3	13.6	1.77	21.3	0.035	8.22	[4]0.38	—	41.5	45.9	291
	04/13/2009	48.8	12.9	1.72	19.2	0.033	9.38	0.39	—	42.5	45.8	304
USAWC-23	02/15/2007	57.6	12.4	2.05	17.5	0.126	18.8	[4]0.27	—	34.6	21.8	295
	04/16/2009	57.8	12.4	2.06	17.8	0.134	19.1	0.23	—	34.6	22.8	295
USAWR-08	01/10/2007	105	18.0	4.45	57.8	0.178	64.7	[4]0.57	0.005	101	23.6	600*
	04/21/2009	102	18.0	4.16	50.0	0.174	64.2	0.59	0.005	92.1	24.5	576*
USAWR-12	01/29/2007	133	36.0	2.04	48.0	0.271	92.0	[4]0.30	—	164	28.4	709*
	04/29/2009	142	32.5	2.06	48.1	0.248	85.1	0.29	E0.001	171	30.4	735*
USAWS-01	01/22/2007	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	05/07/2009	58.2	23.2	2.97	66.2	0.523	158	0.43	0.006	45.6	62.7	575*

Table 9. Major and minor ions and dissolved solids in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3G*. **GAMA well identification number acronyms:** ***Kern County Subbasin study unit:*** KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-US, USEPA maximum contaminant level. Benchmark type, benchmark level, and RL as of August 1, 2013. **Other abbreviations**: E, estimated or having a higher degree of uncertainty; LRL, laboratory reporting level; mg/L, milligrams per liter; mm/dd/yyyy, month/day/year; na, not available; nc, not collected; RL, reporting limit; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; *, concentration is greater than benchmark level; **, concentration is greater than the upper benchmark level; —, not detected]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Calcium (mg/L) (00915)	Magnesium (mg/L) (00925)	Potassium (mg/L) (00935)	Sodium (mg/L) (00930)	Bromide (mg/L) (71870)	Chloride (mg/L) (00940)	Fluoride (mg/L) (00950)	Iodide (mg/L) (71865)	Sulfate (mg/L) (00945)	Silica (mg/L) (00955)	Total dissolved solids (TDS) (mg/L) (70300)
Upper Santa Ana Watershed study unit—Continued												
USAWS-08	01/24/2007	60.1	20.6	3.20	56.2	0.632	159	[4]0.44	E0.002	22.9	57.7	513*
	05/07/2009	67.0	23.1	3.13	55.9	0.653	174	0.36	0.002	26.0	60.1	591*
USAWY-06	01/09/2007	53.6	21.7	2.00	42.1	0.180	41.9	[4]0.57	E0.001	20.9	24.6	366
	05/05/2009	56.2	21.2	2.04	42.7	0.180	40.2	0.57	E0.001	21.8	24.6	366
USAWY-07	01/11/2007	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	05/04/2009	62.6	19.6	0.88	32.9	0.064	28.3	0.63	E0.001	33.5	26.1	359
Santa Clara River Valley study unit												
SCRV-06	04/04/2007	210	72.3	5.53	115	2.67	65.3	[4]0.67	0.013	673**	30.4	1,490**
	04/26/2011	187	63.3	5.24	109	1.13	62.9	0.65	0.010	563**	31.6	1,260**
SCRV-08	04/04/2007	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	04/26/2011	100	27.8	4.82	108	0.336	68.3	0.40	0.074	251*	35.7	730*
SCRV-17	04/11/2007	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	04/27/2011	169	44.3	2.91	65.8	0.226	46.2	0.48	0.009	360*	23.8	958*
SCRV-18	04/11/2007	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	04/27/2011	180	46.8	4.81	104	0.604	62.9	0.44	0.091	498*	36.2	1,160**
SCRV-32	04/18/2007	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	04/25/2011	238	88.8	5.74	200	0.974	151	0.46	0.067	812**	45.3	1,830**
SCRV-36	04/19/2007	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	04/28/2011	148	56.7	5.08	85.3	0.345	88.2	0.77	0.005	428*	28.1	1,030**

[1]Maximum contaminant level thresholds are listed as MCL-US when the MCL-US and MCL-CA are identical and as MCL-CA when the MCL-CA is lower than the MCL-US or no MCL-US exists.

[2]Minimum and maximum LRL used during the study period, or only LRL used during the study period.

[3]The SMCL-CAs for chloride, sulfate, and total dissolved solids have recommended and upper threshold values. The upper value is shown in parentheses.

[4]The USGS Branch of Quality Systems determined that results for this constituent from the USGS National Water Quality Laboratory had a positive analytical bias greater than 10 percent at the time of this measurement.

Table 10. Trace elements in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3G*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit:*** KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: HAL-US, USEPA Lifetime Health Advisory level; MCL-US, USEPA maximum contaminant level; AL-US, USEPA action level; MCL-CA, CDPH maximum contaminant level; NL-CA, CDPH notification level; SMCL-CA, CDPH secondary maximum contaminant level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: BQS, USGS Branch of Quality Systems; CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; nc, not collected; nv, no value; NWIS, National Water Information System; NWQL, National Water Quality Laboratory; QC, quality control; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; —, not detected; ≤, less than or equal to]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Aluminum (µg/L) (01106)	Antimony (µg/L) (01095)	Arsenic (µg/L) (01000)	Barium (µg/L) (01005)	Beryllium (µg/L) (01010)	Boron (µg/L) (01020)	Cadmium (µg/L) (01025)	Chromium (µg/L) (01030)	Cobalt (µg/L) (01035)	Copper (µg/L) (01040)	Iron (µg/L) (01046)	Lead (µg/L) (01049)
Benchmark type[4]		MCL-CA	MCL-US	MCL-US	MCL-CA	MCL-US	NL-CA	MCL-US	MCL-CA	nv	AL-US	SMCL-CA	AL-US
Benchmark level		1,000	6	10	1,000	4	1,000	5	50	nv	1,300	300	15
Minimum and maximum LRL 2006–13		1.6, 4.4	0.027, 0.2	0.022, 0.12	0.07, 0.4	0.006, 0.06	2.8, 8	0.016, 0.04	0.04, 0.14	0.010, 0.046	0.4, 1.6	3.2, 8	0.025, 0.12
SRLs[1] applied prior to[2] and as of[3] October 2009		[2]1.6, [3]nv	[2,3]nv	[2,3]nv	[2]0.36, [3]nv	[2,3]nv	[2,3]nv	[2,3]nv	[2]0.42, [3]nv	[2]nv, [3]alldata	[2]1.7, [3]2.1	[2,3]6	[2]0.65, [3]0.82
Kern County Subbasin study unit													
KERN-02	01/10/2006	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	02/11/2010	4.5	0.64	36.1*	57.3	—	232	[6]0.177	0.56	≤0.061	≤0.70	—	≤0.195
KERN-20	02/13/2006	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	02/10/2010	4.0	0.27	140*	12.2	E0.008	946	[6]0.443	—	≤0.025	—	8	≤0.040
KERN-21	02/13/2006	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	03/16/2010	16.3	0.13	1.4	71.2	E0.007	77	[6]0.022	4.3	≤0.325	—	87	≤0.091
KERN-29	02/28/2006	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	02/10/2010	—	0.09	5.3	76.5	—	33	[6]0.159	0.41	≤0.066	≤1.2	—	0.861
KERN-33	03/01/2006	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	02/09/2010	—	0.06	0.13	85.4	—	14	—	—	≤0.329	—	≤4	—
Central Eastside San Joaquin Basin study unit													
CE-QPC-02	03/22/2006	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	01/26/2010	E2.6	E0.04	4.3	91.5	—	37	—	1.8	≤0.106	≤1.6	—	≤0.068
MER-11	04/12/2006	—	—	10.4*	156	—	13	—	≤0.15	0.063	≤0.30	17	≤0.049
	01/28/2010	—	0.08	13.5*	186	—	14	0.038	0.14	≤0.102	—	29	≤0.098
MER-14	04/17/2006	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	01/27/2010	—	0.11	8.7	107	—	74	E0.015	1.9	≤0.216	—	—	≤0.14
MOD-07	03/21/2006	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	01/26/2010	—	E0.08	3.7	199	—	318	—	4.7	≤0.251	—	9	≤0.456

Table 10. Trace elements in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3G*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit:*** KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: HAL-US, USEPA Lifetime Health Advisory level; MCL-US, USEPA maximum contaminant level; AL-US, USEPA action level; MCL-CA, CDPH maximum contaminant level; NL-CA, CDPH notification level; SMCL-CA, CDPH secondary maximum contaminant level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: BQS, USGS Branch of Quality Systems; CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; nc, not collected; nv, no value; NWIS, National Water Information System; NWQL, National Water Quality Laboratory; QC, quality control; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; —, not detected; ≤, less than or equal to]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Aluminum (µg/L) (01106)	Antimony (µg/L) (01095)	Arsenic (µg/L) (01000)	Barium (µg/L) (01005)	Beryllium (µg/L) (01010)	Boron (µg/L) (01020)	Cadmium (µg/L) (01025)	Chromium (µg/L) (01030)	Cobalt (µg/L) (01035)	Copper (µg/L) (01040)	Iron (µg/L) (01046)	Lead (µg/L) (01049)
Central Eastside San Joaquin Basin study unit—Continued													
TRLK-03	03/21/2006	5.6	—	16.8*	49.8	—	238	E0.020	0.71	E0.033	4.4	[7]101	[7]56.8*
	01/28/2010	4.5	0.07	21.4*	51.9	—	285	0.039	0.34	≤0.062	—	17	≤0.066
TRLK-05	03/22/2006	≤1.1	—	8.2	76.1	—	26	—	6.2	E0.039	≤0.40	—	≤0.090
	01/25/2010	—	0.10	8.9	84.2	—	32	—	5.9	≤0.159	≤0.81	—	≤0.060
Middle Sacramento Valley study unit													
ESAC-01	06/29/2006	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	08/11/2010	4.3	E0.04	0.88	64.1	—	39	—	3.2	≤0.027	≤1.2	—	1.42
ESAC-19	07/20/2006	≤1.1	0.38	9.2	147	—	96	—	6.9	—	≤0.72	[5]8	[6]≤0.430
	08/10/2010	6.3	0.37	8.8	151	—	102	—	6.7	≤0.064	3.9	—	≤0.604
ESAC-34	08/17/2006	≤1.2	—	5.6	90.4	—	E6	—	4.6	—	≤0.25	[5]—	[6]≤0.210
	08/12/2010	E1.7	0.06	5.5	111	—	7	—	4.5	≤0.024	—	—	≤0.061
WSAC-03	07/11/2006	—	—	0.48	65.7	—	16	—	1.2	0.081	≤0.80	[5]—	[6]≤0.200
	08/10/2010	6.3	—	0.68	71.7	—	25	—	1.4	≤0.018	—	—	≤0.037
WSAC-08	07/18/2006	—	—	0.24	103	—	160	—	1.2	—	≤0.56	[5]≤3	[6]3.43
	08/12/2010	—	E0.03	0.25	113	—	164	—	1.1	≤0.031	≤1.4	—	≤0.296
WSAC-17	08/01/2006	≤1.0	E0.17	6.7	47.5	—	344	—	0.80	E0.020	≤1.4	[5]—	[6]0.690
	08/09/2010	E2.5	0.18	6.7	38.0	—	364	E0.011	0.30	≤0.029	≤1.3	—	≤0.182
WSAC-19	08/01/2006	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	08/11/2010	4.5	0.10	3.7	93.9	—	426	—	1.4	≤0.017	≤0.51	—	1.12
WSAC-32	08/21/2006	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	08/09/2010	4.1	0.08	3.1	172	—	105	—	4.4	≤0.024	≤1.1	—	1.58
Northern Sacramento Valley study unit													
NSAC-09	11/06/2007	1.6	E0.09	2.2	76.4	—	35	—	5.2	—	—	—	≤0.209
	01/11/2011	2.6	0.10	2.4	65.2	—	35	—	4.6	—	≤1.0	—	≤0.195
NSAC-16	12/06/2007	≤1.4	E0.09	3.4	8.81	—	248	—	6.0	—	—	—	≤0.217
	01/12/2011	2.9	0.09	3.6	8.16	—	261	—	5.3	—	—	—	≤0.175

Table 10. Trace elements in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3G*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit:*** KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: HAL-US, USEPA Lifetime Health Advisory level; MCL-US, USEPA maximum contaminant level; AL-US, USEPA action level; MCL-CA, CDPH maximum contaminant level; NL-CA, CDPH notification level; SMCL-CA, CDPH secondary maximum contaminant level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: BQS, USGS Branch of Quality Systems; CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; nc, not collected; nv, no value; NWIS, National Water Information System; NWQL, National Water Quality Laboratory; QC, quality control; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; —, not detected; ≤, less than or equal to]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Aluminum (µg/L) (01106)	Antimony (µg/L) (01095)	Arsenic (µg/L) (01000)	Barium (µg/L) (01005)	Beryllium (µg/L) (01010)	Boron (µg/L) (01020)	Cadmium (µg/L) (01025)	Chromium (µg/L) (01030)	Cobalt (µg/L) (01035)	Copper (µg/L) (01040)	Iron (µg/L) (01046)	Lead (µg/L) (01049)
Northern Sacramento Valley study unit—Continued													
RED-01	10/01/2007	≤1.3	—	1.4	18.2	—	19	—	2.7	—	≤1.2	—	≤0.182
	01/11/2011	1.8	0.06	1.7	17.1	—	19	—	3.2	—	≤1.1	—	≤0.117
RED-12	11/08/2007	—	—	4.0	123	—	166	—	0.85	E0.011	—	≤5	≤0.244
	01/10/2011	10.2	0.08	4.2	127	—	207	—	—	≤0.477	≤0.65	31	≤0.228
Madera-Chowchilla study unit													
MADCHOW-03	04/15/2008	—	—	1.2	50.9	—	[5]26	—	0.98	—	—	—	≤0.070
	03/15/2011	2.8	—	1.3	55.4	—	34	—	1.4	≤0.021	—	—	≤0.420
MADCHOW-05	04/16/2008	—	—	2.6	81.1	—	[5]21	0.056	1.6	0.021	≤0.76	—	≤0.411
	03/15/2011	2.8	—	2.3	95.9	—	20	0.033	2.0	—	≤1.7	—	≤0.704
MADCHOW-24	05/13/2008	≤1.2	—	1.9	58.9	—	[5]14	E0.022	8.6	E0.013	—	≤5	1.10
	03/16/2011	2.5	0.08	3.4	103	—	25	0.030	0.72	—	—	≤5	≤0.115
MADCHOW-28	05/19/2008	1.9	—	2.0	471	—	[5]20	—	3.7	0.064	≤0.89	—	≤0.099
	03/16/2011	2.3	0.06	2.1	462	—	23	0.016	3.5	≤0.078	≤2.0	6	≤0.186
Western San Joaquin Valley study unit													
DM-12	03/11/2010	—	—	0.50	20.9	—	1,320*	—	11.6	0.067	—	6	1.42
	04/02/2013	2.2	0.03	0.42	23.4	0.056	1,290*	—	13.6	≤0.044	≤1.2	≤6	≤0.301
DM-19	04/14/2010	—	—	0.86	11.3	—	3,220*	[6]0.341	4.8	0.143	—	—	≤0.272
	04/02/2013	2.9	0.05	0.73	13.5	0.141	3,020*	0.244	6.2	≤0.037	6.2	—	1.26
DM-26	06/17/2010	—	E0.05	1.4	53.5	0.014	757	[6]E0.019	13.6	0.19	2.1	7	1.56
	04/03/2013	—	0.08	1.1	40.8	0.323	823	—	13.1	≤0.052	2.5	10	1.01
WS-07	06/10/2010	4.7	—	2.7	20.4	0.018	1,100*	[6]0.106	—	0.117	—	40	—
	04/03/2013	7.5	—	2.4	15.2	0.048	1,020*	0.081	—	—	—	25	—
Owens and Indian Wells Valleys study unit													
OIW-05	10/18/2006	≤0.8	E0.09	2.6	53.8	—	262	—	0.67	—	≤0.36	[5]—	[6]1.05
	10/27/2010	—	0.09	2.7	53.9	0.009	229	0.024	0.67	—	—	—	≤0.030

Table 10. Trace elements in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3G*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit:*** KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: HAL-US, USEPA Lifetime Health Advisory level; MCL-US, USEPA maximum contaminant level; AL-US, USEPA action level; MCL-CA, CDPH maximum contaminant level; NL-CA, CDPH notification level; SMCL-CA, CDPH secondary maximum contaminant level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: BQS, USGS Branch of Quality Systems; CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; nc, not collected; nv, no value; NWIS, National Water Information System; NWQL, National Water Quality Laboratory; QC, quality control; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; —, not detected; ≤, less than or equal to]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Aluminum (µg/L) (01106)	Antimony (µg/L) (01095)	Arsenic (µg/L) (01000)	Barium (µg/L) (01005)	Beryllium (µg/L) (01010)	Boron (µg/L) (01020)	Cadmium (µg/L) (01025)	Chromium (µg/L) (01030)	Cobalt (µg/L) (01035)	Copper (µg/L) (01040)	Iron (µg/L) (01046)	Lead (µg/L) (01049)
Owens and Indian Wells Valleys study unit—Continued													
OV-36	10/25/2006	—	—	0.76	72.9	—	426	E0.020	0.56	E0.020	≤1.2	[5]—	[6]≤0.480
	10/26/2010	1.9	0.04	0.74	69.3	0.011	354	0.018	0.47	≤0.032	≤0.93	6	≤0.309
OV-21	10/03/2006	≤1.6	—	0.34	9.75	—	16	—	≤0.28	—	≤1.6	[5]—	[6]0.750
	10/26/2010	1.9	—	0.31	10.1	—	17	—	0.25	—	—	—	≤0.154
OV-24	12/12/2006	≤1.0	—	0.47	17.3	—	33	—	0.61	E0.020	2.9	[5]9	[6]0.680
	10/28/2010	—	—	0.53	17.0	—	35	—	0.61	≤0.021	≤1.9	21	≤0.334
OV-29	10/05/2006	1.8	0.32	3.5	90.2	—	97	—	2.5	—	3.1	[5]—	[6]2.91
	10/28/2010	2.0	0.34	3.3	89.3	—	99	—	1.9	—	2.5	—	≤0.816
OIW-07	10/19/2006	2.0	0.54	9.7	11.2	—	502	—	≤0.13	—	—	[5]7	[6]≤0.180
	10/27/2010	3.4	0.40	11.8*	12.8	0.060	1,230*	—	—	≤0.035	—	—	≤0.142
Coachella Valley study unit													
COA-12	03/08/2007	4.5	0.07	27.5*	40.2	—	242	0.050	—	—	—	26	≤0.120
	01/05/2011	6.6	0.08	24.3*	42.8	—	265	0.068	0.09	≤0.105	—	78	≤0.207
COA-14	03/12/2007	≤1.2	—	0.29	38.3	—	16	E0.030	3.7	—	≤1.4	≤3	≤0.320
	01/04/2011	—	—	0.30	40.5	—	17	—	3.6	≤0.029	≤1.3	—	≤0.150
COA-15	03/14/2007	3.1	—	0.38	46.2	—	30	0.040	13.4	—	≤0.87	≤4	0.740
	01/06/2011	3.1	—	0.41	47.1	—	31	0.030	12.6	≤0.097	—	≤4	≤0.324
COA-16	03/15/2007	6.9	—	0.86	27.2	—	688	0.080	3.0	—	≤0.40	45	≤0.410
	01/05/2011	4.0	—	0.87	31.4	0.010	677	0.074	2.6	≤0.153	≤0.63	18	≤0.217
Colorado River study unit													
COLOR-03	10/02/2007	—	—	0.23	174	E0.008	196	—	—	0.067	—	197	—
	01/04/2011	—	—	0.28	169	0.012	218	—	—	≤0.063	—	162	≤0.053
COLOR-06	10/24/2007	≤1.0	—	0.07	54.5	—	74	—	—	0.044	—	201	≤0.062
	01/03/2011	—	—	0.09	53.2	0.006	115	—	—	≤0.061	—	197	≤0.018
COLOR-17	12/11/2007	≤1.3	—	1.4	143	E0.004	198	—	10.3	0.056	—	10	≤0.045
	01/03/2011	1.7	—	1.1	140	—	171	—	8.3	≤0.048	—	24	—

Table 10. Trace elements in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3G*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit:*** KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: HAL-US, USEPA Lifetime Health Advisory level; MCL-US, USEPA maximum contaminant level; AL-US, USEPA action level; MCL-CA, CDPH maximum contaminant level; NL-CA, CDPH notification level; SMCL-CA, CDPH secondary maximum contaminant level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: BQS, USGS Branch of Quality Systems; CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; nc, not collected; nv, no value; NWIS, National Water Information System; NWQL, National Water Quality Laboratory; QC, quality control; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; —, not detected; ≤, less than or equal to]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Aluminum (µg/L) (01106)	Antimony (µg/L) (01095)	Arsenic (µg/L) (01000)	Barium (µg/L) (01005)	Beryllium (µg/L) (01010)	Boron (µg/L) (01020)	Cadmium (µg/L) (01025)	Chromium (µg/L) (01030)	Cobalt (µg/L) (01035)	Copper (µg/L) (01040)	Iron (µg/L) (01046)	Lead (µg/L) (01049)
Antelope Valley study unit													
ANT-07	01/29/2008	≤1.0	0.23	9.7	18.2	—	[5]141	E0.035	11.4	—	3.1	≤4	≤0.551
	02/15/2012	—	0.18	8.0	15.0	—	81	[6]0.032	[6]27.7	≤0.061	≤1.8	≤4	≤0.193
ANT-20	02/05/2008	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	02/14/2012	—	0.06	1.9	68.5	—	70	—	[6]1.3	≤0.053	3.5	14	1.05
ANT-23	02/06/2008	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	02/13/2012	—	0.10	0.09	122	—	98	[6]0.017	[6]0.29	≤0.08	2.6	≤5	≤0.207
ANT-24	02/06/2008	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	02/16/2012	—	0.07	0.60	31.6	—	17	—	[6]8.5	≤0.108	—	10	≤0.134
ANT-33	02/13/2008	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	02/15/2012	—	1.11	79.9*	38.0	0.035	1,430*	[6]0.108	[6]3.8	≤0.162	—	12	≤0.063
ANT-42	03/03/2008	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	02/14/2012	—	0.17	8.6	44.2	—	204	—	[6]3.7	≤0.124	≤0.81	10	≤0.440
Mojave study unit													
MOJO-01	02/04/2008	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	03/08/2011	3.4	—	5.7	7.58	—	92	—	3.0	≤0.020	≤0.57	—	≤0.102
MOJO-09	02/07/2008	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	03/08/2011	—	0.20	24.8*	26.2	0.013	579	0.050	0.11	≤0.076	≤1.1	32	≤0.240
MOJO-11	02/07/2008	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	03/09/2011	6.4	0.05	4.2	27.6	—	16	—	0.61	—	—	—	≤0.468
MOJO-16	02/13/2008	4.1	—	0.85	10.0	—	8[5]	—	7.6	—	—	—	≤0.076
	03/10/2011	7.2	—	1.1	9.75	—	8	—	7.6	≤0.036	≤0.82	—	≤0.146
MOJO-34	03/17/2008	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	03/10/2011	8.5	—	0.12	32.4	0.007	7	—	0.39	—	≤0.55	8	≤0.374
MOJO-48	04/01/2008	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	03/09/2011	19.1	0.14	12.2*	4.06	—	171	0.022	0.61	≤0.024	—	—	≤0.127

Table 10. Trace elements in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3G*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit:*** KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: HAL-US, USEPA Lifetime Health Advisory level; MCL-US, USEPA maximum contaminant level; AL-US, USEPA action level; MCL-CA, CDPH maximum contaminant level; NL-CA, CDPH notification level; SMCL-CA, CDPH secondary maximum contaminant level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: BQS, USGS Branch of Quality Systems; CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; nc, not collected; nv, no value; NWIS, National Water Information System; NWQL, National Water Quality Laboratory; QC, quality control; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; —, not detected; ≤, less than or equal to]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Aluminum (µg/L) (01106)	Antimony (µg/L) (01095)	Arsenic (µg/L) (01000)	Barium (µg/L) (01005)	Beryllium (µg/L) (01010)	Boron (µg/L) (01020)	Cadmium (µg/L) (01025)	Chromium (µg/L) (01030)	Cobalt (µg/L) (01035)	Copper (µg/L) (01040)	Iron (µg/L) (01046)	Lead (µg/L) (01049)
Mojave study unit—Continued													
MOJO-49	04/01/2008	E1.8	0.55	27.4*	12.2	—	[5]5,690*	0.104	4.6	0.065	≤1.4	—	1.95
	03/07/2011	—	0.58	29.6*	12.4	0.096	5,330*	0.107	4.5	≤0.098	≤1.8	17	≤0.197
Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit													
BV-05	10/29/2009	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	10/18/2012	5.1	—	2.5	60.0	—	52	0.034	0.07	—	—	≤4	≤0.195
CD-02	12/15/2008	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	10/16/2012	2.3	—	3.0	56.3	—	114	0.021	3.2	≤0.025	≤1.7	—	2.54
CD-05	12/17/2008	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	10/16/2012	2.3	—	2.1	20.1	—	65	—	4.1	—	4.8	—	≤0.180
LUB-05	12/04/2008	—	0.08	3.3	52.2	—	105	0.044	1.2	0.029	≤1.1	[5]18	1.70
	10/17/2012	—	0.05	3.5	54.8	—	114	0.024	1.4	≤0.029	—	9	≤0.056
LUB-07	12/09/2008	—	0.07	7.3	13.4	—	[5]828	0.133	2.3	—	—	[5]≤2	≤0.210
	10/17/2012	2.3	0.05	7.5	15.0	0.023	583	0.113	2.2	—	—	≤4	≤0.206
LUB-11	12/11/2008	—	0.11	10.2*	57.7	—	[5]539	0.025	0.73	0.022	—	[5]13	≤0.072
	10/15/2012	2.3	0.12	10.3*	62.6	0.019	415	0.016	0.72	≤0.025	—	—	≤0.065
Coastal Los Angeles Basin study unit													
CLABCB-12	08/29/2006	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	08/25/2010	—	—	0.12	78.4	—	179	—	—	≤0.064	—	100	≤0.214
CLABCB-13	08/29/2006	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	08/23/2010	—	0.17	2.8	102	—	131	0.022	4.2	≤0.053	≤0.70	—	≤0.086
CLABCB-14	08/29/2006	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	08/23/2010	6.8	E0.04	E0.04	65.4	—	100	0.032	—	≤0.042	—	27	≤0.088
CLABCB-17	09/14/2006	≤0.9	—	1.8	95.6	—	73	—	1.1	0.05	2.3	[5]—	[6]0.950
	08/25/2010	3.6	0.11	1.8	98.8	—	74	—	1.1	≤0.113	4.9	—	≤0.703

Table 10. Trace elements in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3G*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit:*** KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: HAL-US, USEPA Lifetime Health Advisory level; MCL-US, USEPA maximum contaminant level; AL-US, USEPA action level; MCL-CA, CDPH maximum contaminant level; NL-CA, CDPH notification level; SMCL-CA, CDPH secondary maximum contaminant level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: BQS, USGS Branch of Quality Systems; CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; nc, not collected; nv, no value; NWIS, National Water Information System; NWQL, National Water Quality Laboratory; QC, quality control; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; —, not detected; ≤, less than or equal to]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Aluminum (µg/L) (01106)	Antimony (µg/L) (01095)	Arsenic (µg/L) (01000)	Barium (µg/L) (01005)	Beryllium (µg/L) (01010)	Boron (µg/L) (01020)	Cadmium (µg/L) (01025)	Chromium (µg/L) (01030)	Cobalt (µg/L) (01035)	Copper (µg/L) (01040)	Iron (µg/L) (01046)	Lead (µg/L) (01049)
Coastal Los Angeles Basin study unit—Continued													
CLABDA-02	08/08/2006	—	E0.04	0.73	47.6	—	95	0.060	2.4	E0.030	9.7	[5]12	[6]1.14
	08/24/2010	—	E0.05	0.82	41.8	E0.007	105	0.059	2.4	≤0.064	9.7	12	≤0.395
CLABOC-13	08/28/2006	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	08/26/2010	—	0.08	3.1	90.1	E0.007	196	0.045	E0.07	≤0.672	2.9	—	≤0.506
CLABOC-14	08/31/2006	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	08/26/2010	6.7	0.11	1.4	36.8	—	62	—	0.13	≤0.019	—	7	≤0.091
CLABWB-03	08/30/2006	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	08/24/2010	—	—	0.09	127	E0.006	215	—	—	≤0.055	≤0.79	98	≤0.064
Upper Santa Ana Watershed study unit													
USAWB-01	11/27/2006	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	04/20/2009	5.8	—	1.2	18.5	—	147	0.023	1.0	0.041	≤0.67	—	≤0.546
USAWB-04	11/28/2006	1.6	0.07	9.4	13.3	—	14	—	0.88	—	4.2	[5]—	[6]≤0.520
	05/06/2009	—	E0.04	9.5	13.3	—	17	—	0.89	0.076	≤1.0	[5]≤3	≤0.332
USAWB-12	12/13/2006	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	04/22/2009	—	—	0.18	24.0	—	23	0.023	0.64	0.073	2.6	≤4	≤0.372
USAWB-14	12/14/2006	≤1.4	E0.03	1.0	27.3	—	13	—	1.3	—	≤1.3	[5]—	[6]≤0.110
	04/14/2009	—	E0.02	1.0	26.9	—	11	E0.011	1.2	0.071	2.1	—	≤0.340
USAWB-17	01/10/2007	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	04/23/2009	—	—	0.29	19.3	—	91	E0.018	0.43	0.079	3.1	—	≤0.496
USAWC-02	01/29/2007	≤1.1	—	0.82	34.6	—	15	—	2.5	—	1.9	—	≤0.560
	04/30/2009	—	—	0.68	37.4	—	23	E0.016	2.7	0.081	1.7	—	≤0.367
USAWC-08	01/31/2007	—	—	0.95	58.9	—	17	—	4.8	0.080	≤1.5	—	0.910
	04/28/2009	—	—	1.1	67.0	—	17	E0.015	5.0	0.193	≤1.1	—	≤0.199
USAWC-10	02/01/2007	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	04/27/2009	E2.1	0.07	12.7*	44.8	—	554	0.031	5.2	0.027	≤0.98	≤3	≤0.140

Table 10. Trace elements in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3G*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit:*** KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: HAL-US, USEPA Lifetime Health Advisory level; MCL-US, USEPA maximum contaminant level; AL-US, USEPA action level; MCL-CA, CDPH maximum contaminant level; NL-CA, CDPH notification level; SMCL-CA, CDPH secondary maximum contaminant level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: BQS, USGS Branch of Quality Systems; CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; nc, not collected; nv, no value; NWIS, National Water Information System; NWQL, National Water Quality Laboratory; QC, quality control; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; —, not detected; ≤, less than or equal to]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Aluminum (µg/L) (01106)	Antimony (µg/L) (01095)	Arsenic (µg/L) (01000)	Barium (µg/L) (01005)	Beryllium (µg/L) (01010)	Boron (µg/L) (01020)	Cadmium (µg/L) (01025)	Chromium (µg/L) (01030)	Cobalt (µg/L) (01035)	Copper (µg/L) (01040)	Iron (µg/L) (01046)	Lead (µg/L) (01049)
Upper Santa Ana Watershed study unit—Continued													
USAWC-21	02/14/2007	—	—	0.28	86.0	—	26	E0.020	4.2	E0.020	≤0.73	≤3	≤0.220
	04/13/2009	12.6	—	0.31	98.3	—	24	0.034	4.3	0.068	2.6	—	≤0.446
USAWC-23	02/15/2007	—	—	1.7	75.6	—	16	—	9.5	—	≤1.2	≤3	≤0.340
	04/16/2009	—	0.06	1.7	75.5	—	19	E0.010	9.2	0.094	≤1.4	—	≤0.436
USAWR-08	01/10/2007	3.2	E0.03	0.99	75.1	—	195	—	0.73	0.210	≤1.1	≤3	≤0.440
	04/21/2009	—	E0.02	1.2	76.7	—	183	—	0.90	0.396	3.4	—	0.837
USAWR-12	01/29/2007	≤0.8	0.07	1.1	36.2	—	45	E0.020	0.31	0.200	4.7	11	≤0.640
	04/29/2009	E2.5	0.06	1.2	38.4	—	51	0.029	0.29	0.389	3.2	≤3	1.05
USAWS-01	01/22/2007	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	05/07/2009	—	—	0.72	98.8	—	53	E0.014	1.1	0.128	5.3	[5]≤5	≤0.208
USAWS-08	01/24/2007	—	—	0.63	124	—	34	E0.020	1.2	E0.020	4.4	10	0.740
	05/07/2009	—	—	0.85	151	—	38	E0.019	1.4	0.143	3.2	[5]10	≤0.405
USAWY-06	01/09/2007	≤0.9	—	0.20	56.9	—	23	—	7.4	—	≤1.4	—	≤0.370
	05/05/2009	—	—	0.27	57.4	—	22	—	6.8	0.102	2.6	[5]≤2	0.994
USAWY-07	01/11/2007	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	05/04/2009	—	—	0.29	29.6	—	24	E0.013	0.83	0.150	2.4	[5]—	≤0.403
Santa Clara River Valley study unit													
SCRV-06	04/04/2007	1.6	0.14	0.87	51.8	—	759	0.29	≤0.15	E0.030	3.1	14	≤0.640
	04/26/2011	2.8	0.10	1.0	36.7	0.018	608	0.25	0.13	≤0.090	7.7	8	1.07
SCRV-08	04/04/2007	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	04/26/2011	1.9	—	0.62	53.3	0.006	248	0.029	—	≤0.041	—	284	≤0.077
SCRV-17	04/11/2007	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	04/27/2011	—	0.13	0.40	45.6	0.014	430	0.088	0.20	≤0.178	2.2	14	≤0.301
SCRV-18	04/11/2007	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	04/27/2011	1.7	0.04	1.0	26.1	0.012	432	0.045	0.09	≤0.096	≤1.5	168	≤0.457

Table 10. Trace elements in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3G*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit:*** KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: HAL-US, USEPA Lifetime Health Advisory level; MCL-US, USEPA maximum contaminant level; AL-US, USEPA action level; MCL-CA, CDPH maximum contaminant level; NL-CA, CDPH notification level; SMCL-CA, CDPH secondary maximum contaminant level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: BQS, USGS Branch of Quality Systems; CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; nc, not collected; nv, no value; NWIS, National Water Information System; NWQL, National Water Quality Laboratory; QC, quality control; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; —, not detected; ≤, less than or equal to]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Aluminum (µg/L) (01106)	Antimony (µg/L) (01095)	Arsenic (µg/L) (01000)	Barium (µg/L) (01005)	Beryllium (µg/L) (01010)	Boron (µg/L) (01020)	Cadmium (µg/L) (01025)	Chromium (µg/L) (01030)	Cobalt (µg/L) (01035)	Copper (µg/L) (01040)	Iron (µg/L) (01046)	Lead (µg/L) (01049)
Santa Clara River Valley study unit—Continued													
SCRV-32	04/18/2007	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	04/25/2011	2.0	0.06	1.1	12.8	0.032	940	0.105	—	≤0.241	4.6	39	≤0.485
SCRV-36	04/19/2007	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	04/28/2011	—	0.12	0.54	22.0	0.015	492	0.154	0.25	≤0.127	≤2.0	105	1.02

Table 10. Trace elements in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3G*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit:*** KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: HAL-US, USEPA Lifetime Health Advisory level; MCL-US, USEPA maximum contaminant level; AL-US, USEPA action level; MCL-CA, CDPH maximum contaminant level; NL-CA, CDPH notification level; SMCL-CA, CDPH secondary maximum contaminant level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: BQS, USGS Branch of Quality Systems; CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; nc, not collected; nv, no value; NWIS, National Water Information System; NWQL, National Water Quality Laboratory; QC, quality control; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; —, not detected; ≤, less than or equal to]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Lithium (µg/L) (01130)	Manganese (µg/L) (01056)	Molybdenum (µg/L) (01060)	Nickel (µg/L) (01065)	Selenium (µg/L) (01145)	Silver (µg/L) (01075)	Strontium (µg/L) (01080)	Thallium (µg/L) (01057)	Tungsten (µg/L) (01155)	Uranium (µg/L) (22703)	Vanadium (µg/L) (01085)	Zinc (µg/L) (01090)
Benchmark type[4]		nv	SMCL-CA	HAL-US	MCL-CA	MCL-US	SMCL-CA	HAL-US	MCL-US	nv	MCL-US	NL-CA	SMCL-CA
Benchmark level		nv	50	40	100	50	100	4,000	2	nv	30	50	5,000
Minimum and maximum LRL 2006–13		0.22, 1	0.13, 0.30	0.014, 0.4	0.06, 0.2	0.03, 0.08	0.005, 0.20	0.2, 0.8	0.01, 0.04	0.01, 0.06	0.004, 0.04	0.04, 0.16	0.6, 2.8
SRLs[1] applied prior to[2] and as of[3] October 2009		[2,3]nv	[2]0.2, [3]0.66	[2]nv, [3]0.023	[2]0.36, [3]0.21	[2,3]nv	[2,3]nv	[2]0.99, [3]nv	[2,3]nv	[2]0.11, [3]0.023	[2,3]nv	[2]0.1, [3]nv	[2]4.8, [3]6.2
Kern County Subbasin study unit													
KERN-02	01/10/2006	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	02/11/2010	5.92	2.00	22.1	0.22	1.9	—	148	—	nc	0.64	32.5	—
KERN-20	02/13/2006	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	02/10/2010	12.8	4.41	70*	≤0.13	—	—	53.4	—	nc	1.01	11.5	—
KERN-21	02/13/2006	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	03/16/2010	12.6	64.7*	0.76	1.6	2.1	0.012	1,670	—	nc	1.92	4	11.3
KERN-29	02/28/2006	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	02/10/2010	7.46	—	26.3	≤0.16	—	—	98.3	—	nc	0.66	41.5	9.5
KERN-33	03/01/2006	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	02/09/2010	0.74	3.88	0.26	0.33	0.45	—	163	—	nc	0.41	—	—
Central Eastside San Joaquin Basin study unit													
CE-QPC-02	03/22/2006	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	01/26/2010	0.68	—	0.53	0.43	0.11	—	291	—	nc	0.79	17.9	—
MER-11	04/12/2006	1.84	25.8	4.46	1.35	0.15	—	250	—	[8]≤0.13	0.61	4.3	≤1.9
	01/28/2010	1.98	21.9	3.75	0.51	0.06	—	257	—	nc	0.72	3.9	≤1.7
MER-14	04/17/2006	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	01/27/2010	11.3	≤0.32	3.41	0.26	0.31	—	168	0.029	nc	0.93	18.5	≤3.0
MOD-07	03/21/2006	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	01/26/2010	5.40	≤0.44	1.20	1.4	0.24	E0.023	1,190	—	nc	19.9	24.0	—

Table 10. Trace elements in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3G*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit:*** KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: HAL-US, USEPA Lifetime Health Advisory level; MCL-US, USEPA maximum contaminant level; AL-US, USEPA action level; MCL-CA, CDPH maximum contaminant level; NL-CA, CDPH notification level; SMCL-CA, CDPH secondary maximum contaminant level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: BQS, USGS Branch of Quality Systems; CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; nc, not collected; nv, no value; NWIS, National Water Information System; NWQL, National Water Quality Laboratory; QC, quality control; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; —, not detected; ≤, less than or equal to]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Lithium (µg/L) (01130)	Manganese (µg/L) (01056)	Molybdenum (µg/L) (01060)	Nickel (µg/L) (01065)	Selenium (µg/L) (01145)	Silver (µg/L) (01075)	Strontium (µg/L) (01080)	Thallium (µg/L) (01057)	Tungsten (µg/L) (01155)	Uranium (µg/L) (22703)	Vanadium (µg/L) (01085)	Zinc (µg/L) (01090)
Central Eastside San Joaquin Basin study unit—Continued													
TRLK-03	03/21/2006	2.08	9.35	4.44	0.58	0.14	—	137	—	1.44	0.46	12.0	[7]14.7
	01/28/2010	1.61	39.9	5.33	≤0.19	0.04	—	121	—	nc	0.43	10.0	—
TRLK-05	03/22/2006	1.78	—	2.27	0.65	0.43	—	236	—	0.37	1.30	50.1*	≤1.0
	01/25/2010	1.73	≤0.13	2.16	0.40	0.49	—	255	—	nc	1.46	49.3	≤2.4
Middle Sacramento Valley study unit													
ESAC-01	06/29/2006	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	08/11/2010	E0.30	≤0.28	0.35	0.25	1.1	—	206	—	nc	0.15	10.6	9.9
ESAC-19	07/20/2006	4.76	—	1.09	≤0.14	0.60	—	342	—	≤0.07	1.50	22.7	≤3.2
	08/10/2010	4.89	—	1.23	0.21	0.58	E0.005	329	—	nc	1.35	23.2	≤4.4
ESAC-34	08/17/2006	0.85	—	0.47	≤0.10	0.36	—	360	—	≤0.03	3.71	38.5	137
	08/12/2010	0.71	—	0.57	≤0.13	0.34	—	372	—	nc	4.24	40.1	7.6
WSAC-03	07/11/2006	3.71	—	0.99	1.32	0.10	—	368	—	—	0.14	3.9	6.6
	08/10/2010	4.38	—	1.01	≤0.12	0.27	—	338	—	nc	0.13	5.0	—
WSAC-08	07/18/2006	3.86	0.25	0.98	≤0.12	0.09	—	841	—	—	0.54	1.8	10.2
	08/12/2010	3.02	—	1.07	0.53	0.12	—	821	—	nc	0.49	1.9	≤4.0
WSAC-17	08/01/2006	1.30	0.23	3.96	≤0.17	0.57	—	234	—	≤0.07	1.16	18.5	36.4
	08/09/2010	1.18	≤0.34	5.18	0.23	0.12	—	265	—	nc	1.20	18.9	59.7
WSAC-19	08/01/2006	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	08/11/2010	8.48	≤0.22	1.43	≤0.08	0.47	—	427	—	nc	0.71	16.9	≤3.6
WSAC-32	08/21/2006	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	08/09/2010	4.86	—	1.41	≤0.12	0.17	—	591	—	nc	0.89	11.4	—
Northern Sacramento Valley study unit													
NSAC-09	11/06/2007	2.94	0.26	0.77	—	0.84	—	289	—	≤0.087	0.38	17.2	—
	01/11/2011	1.63	—	0.72	—	0.98	—	270	—	nc	0.30	17.5	≤2.9
NSAC-16	12/06/2007	—	0.82	1.16	—	0.06	—	81.2	—	0.562	0.23	19.8	[6]≤3.8
	01/12/2011	—	≤0.23	1.03	—	0.07	—	80.9	—	nc	0.23	17.4	≤4.2

Table 10. Trace elements in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3G*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit:*** KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: HAL-US, USEPA Lifetime Health Advisory level; MCL-US, USEPA maximum contaminant level; AL-US, USEPA action level; MCL-CA, CDPH maximum contaminant level; NL-CA, CDPH notification level; SMCL-CA, CDPH secondary maximum contaminant level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: BQS, USGS Branch of Quality Systems; CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; nc, not collected; nv, no value; NWIS, National Water Information System; NWQL, National Water Quality Laboratory; QC, quality control; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; —, not detected; ≤, less than or equal to]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Lithium (µg/L) (01130)	Manganese (µg/L) (01056)	Molybdenum (µg/L) (01060)	Nickel (µg/L) (01065)	Selenium (µg/L) (01145)	Silver (µg/L) (01075)	Strontium (µg/L) (01080)	Thallium (µg/L) (01057)	Tungsten (µg/L) (01155)	Uranium (µg/L) (22703)	Vanadium (µg/L) (01085)	Zinc (µg/L) (01090)
Northern Sacramento Valley study unit—Continued													
RED-01	10/01/2007	E0.82	—	0.39	—	0.46	—	114	—	≤0.035	0.10	13.8	[6]≤2.6
	01/11/2011	1.04	1.09	0.38	≤0.10	0.45	—	106	—	nc	0.10	14.6	10.0
RED-12	11/08/2007	1.05	313*	1.78	0.31	1.9	—	219	—	≤0.070	0.02	0.59	—
	01/10/2011	1.04	220*	1.77	0.35	0.96	—	200	—	nc	0.02	1.7	≤4.1
Madera-Chowchilla study unit													
MADCHOW-03	04/15/2008	1.13	—	2.21	≤0.11	0.09	—	135	—	—	0.18	19.1	4.9
	03/15/2011	1.19	—	2.09	—	0.12	—	150	—	nc	0.24	20.9	8.3
MADCHOW-05	04/16/2008	1.87	1.92	3.70	≤0.27	0.77	—	160	—	≤0.063	0.28	19.6	301
	03/15/2011	2.04	—	3.29	≤0.14	0.61	—	162	—	nc	0.18	20.7	78.0
MADCHOW-24	05/13/2008	1.62	0.83	2.95	≤0.19	0.24	—	189	—	≤0.090	1.53	23.9	15.4
	03/16/2011	7.54	≤0.59	2.13	≤0.18	0.10	—	252	—	nc	2.80	21.0	58.6
MADCHOW-28	05/19/2008	15.8	≤0.15	0.78	0.65	0.34	—	1,260	—	≤0.094	29.8	13.0	64.9
	03/16/2011	18.2	≤0.32	0.79	0.37	0.27	—	1,160	—	nc	33.9*	14.3	16.7
Western San Joaquin Valley study unit													
DM-12	03/11/2010	52.9	—	1.19	≤0.33	4.5	—	1,040	—	—	3.83	2.2	13.2
	04/02/2013	48.8	—	1.39	0.32	3.7	—	1,170	—	≤0.017	4.40	2.3	23.1
DM-19	04/14/2010	106	E1.42	67.1*	1.6	7.9	—	1,280	—	—	4.04	5.6	—
	04/02/2013	99.9	1.05	81.3*	0.45	8.6	0.006	1,490	—	0.046	4.91	4.5	6.4
DM-26	06/17/2010	28.5	1.00	1.21	1.5	0.83	E0.005	1,120	—	—	4.98	6.6	7.3
	04/03/2013	23.0	2.23	1.52	2.1	0.73	0.016	1,020	—	—	4.47	6.1	≤6.0
WS-07	06/10/2010	24.1	60.1*	22.0	0.56	E0.02	—	525	—	12.8	0.08	0.34	—
	04/03/2013	20.0	43.1	25.4	≤0.16	—	—	387	—	16.4	0.09	0.15	—
Owens and Indian Wells Valleys study unit													
OIW-05	10/18/2006	18.3	—	15.5	—	0.59	—	316	—	0.230	5.05	13.8	≤1.1
	10/27/2010	14.6	≤0.31	20.8	≤0.19	0.65	—	302	—	0.207	5.85	12.1	—

Table 10. Trace elements in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3G*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit:*** KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: HAL-US, USEPA Lifetime Health Advisory level; MCL-US, USEPA maximum contaminant level; AL-US, USEPA action level; MCL-CA, CDPH maximum contaminant level; NL-CA, CDPH notification level; SMCL-CA, CDPH secondary maximum contaminant level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: BQS, USGS Branch of Quality Systems; CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; nc, not collected; nv, no value; NWIS, National Water Information System; NWQL, National Water Quality Laboratory; QC, quality control; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; —, not detected; ≤, less than or equal to]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Lithium (µg/L) (01130)	Manganese (µg/L) (01056)	Molybdenum (µg/L) (01060)	Nickel (µg/L) (01065)	Selenium (µg/L) (01145)	Silver (µg/L) (01075)	Strontium (µg/L) (01080)	Thallium (µg/L) (01057)	Tungsten (µg/L) (01155)	Uranium (µg/L) (22703)	Vanadium (µg/L) (01085)	Zinc (µg/L) (01090)
Owens and Indian Wells Valleys study unit—Continued													
OV-36	10/25/2006	24.7	0.33	11.7	≤0.08	E0.07	—	370	—	0.120	9.26	9.7	≤1.6
	10/26/2010	25.8	≤0.44	12.8	—	0.07	—	339	—	0.115	8.71	9.1	—
OV-21	10/03/2006	1.13	—	3.71	≤0.04	E0.06	—	91.6	—	0.320	1.28	4.8	15.3
	10/26/2010	0.82	—	2.81	—	0.07	—	98.9	—	0.270	0.95	4.2	10.1
OV-24	12/12/2006	1.91	5.82	1.75	≤0.08	0.17	—	123	—	0.120	8.72	2.9	6.2
	10/28/2010	2.09	4.82	1.84	—	0.15	—	118	—	0.147	10.4	3.1	≤2.5
OV-29	10/05/2006	45.8	0.25	5.35	≤0.04	0.31	—	384	—	≤0.080	30.6*	8.2	5.1
	10/28/2010	48.9	—	5.15	—	0.31	—	356	—	0.100	31.2*	7.0	10.3
OIW-07	10/19/2006	67.7	1.24	4.50	—	0.37	—	329	—	2.00	3.54	10.8	—
	10/27/2010	179	3.84	7.15	—	0.17	—	323	—	5.61	3.13	5.7	—
Coachella Valley study unit													
COA-12	03/08/2007	12.9	5.03	37.7	≤0.08	0.13	—	277	—	21.4	3.62	6.1	[6]≤1.1
	01/05/2011	13.3	5.51	39.0	≤0.10	0.09	—	245	—	nc	4.44	6.6	≤2.2
COA-14	03/12/2007	1.21	—	8.97	≤0.05	0.82	—	210	—	0.23	8.99	5.6	[6]≤1.6
	01/04/2011	1.41	≤0.14	8.23	≤0.11	0.91	—	213	—	nc	8.80	5.8	—
COA-15	03/14/2007	1.80	≤0.17	17.9	≤0.05	1.6	—	259	—	1.14	5.58	11.5	[6]≤2.2
	01/06/2011	1.94	≤0.33	16.8	—	1.7	—	249	—	nc	5.85	11.4	≤2.2
COA-16	03/15/2007	5.88	1.56	49.4*	≤0.07	2.2	—	690	—	0.400	4.78	26.3	[6]73.5
	01/05/2011	5.75	1.22	45.8*	≤0.13	3.2	—	815	—	nc	4.95	25.0	146
Colorado River study unit													
COLOR-03	10/02/2007	47.4	1,110*	3.95	0.42	0.04	—	1,360	—	0.293	1.02	0.29	[6]≤1.3
	01/04/2011	56.9	1,130*	3.66	0.25	0.03	—	1,500	—	nc	0.88	0.19	≤1.8
COLOR-06	10/24/2007	50.4	108*	3.09	0.91	E0.03	—	1,610	—	≤0.072	0.08	≤0.09	[6]≤2.7
	01/03/2011	46.6	108*	2.78	0.24	—	—	1,690	—	nc	0.07	0.09	≤2.0
COLOR-17	12/11/2007	77.5	0.48	6.23	1.1	1.9	—	2,520	—	5.71	1.55	9.3	[6]8.2
	01/03/2011	65.3	1.37	5.62	0.35	1.7	—	2,310	—	nc	1.58	7.8	8.1

Table 10. Trace elements in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3G*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit:*** KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: HAL-US, USEPA Lifetime Health Advisory level; MCL-US, USEPA maximum contaminant level; AL-US, USEPA action level; MCL-CA, CDPH maximum contaminant level; NL-CA, CDPH notification level; SMCL-CA, CDPH secondary maximum contaminant level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: BQS, USGS Branch of Quality Systems; CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; nc, not collected; nv, no value; NWIS, National Water Information System; NWQL, National Water Quality Laboratory; QC, quality control; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; —, not detected; ≤, less than or equal to]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Lithium (µg/L) (01130)	Manganese (µg/L) (01056)	Molybdenum (µg/L) (01060)	Nickel (µg/L) (01065)	Selenium (µg/L) (01145)	Silver (µg/L) (01075)	Strontium (µg/L) (01080)	Thallium (µg/L) (01057)	Tungsten (µg/L) (01155)	Uranium (µg/L) (22703)	Vanadium (µg/L) (01085)	Zinc (µg/L) (01090)
Antelope Valley study unit													
ANT-07	01/29/2008	5.43	—	6.79	≤0.21	0.85	—	250	—	1.15	2.45	23.6	—
	02/15/2012	4.68	1.27	5.12	≤0.20	[5]1.1	[6]0.009	313	—	nc	2.73	25.4	≤1.9
ANT-20	02/05/2008	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	02/14/2012	2.84	1.24	1.43	≤0.15	[5]0.61	—	352	—	nc	2.52	15.1	19.1
ANT-23	02/06/2008	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	02/13/2012	5.49	0.92	2.19	0.27	[5]0.36	—	838	—	nc	2.85	2.0	28.2
ANT-24	02/06/2008	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	02/16/2012	3.89	1.33	1.99	0.26	[5]1.5	[6]0.005	610	—	nc	1.28	8.0	18.8
ANT-33	02/13/2008	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	02/15/2012	83.2	0.88	19.2	0.36	[5]3.2	—	751	—	nc	9.70	20.5	7.7
ANT-42	03/03/2008	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	02/14/2012	32.8	1.08	1.90	0.32	[5]1.4	[6]0.007	395	—	nc	5.63	9.5	8.3
Mojave study unit													
MOJO-01	02/04/2008	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	03/08/2011	3.88	—	1.43	—	0.06	—	141	—	nc	2.09	36.0	—
MOJO-09	02/07/2008	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	03/08/2011	26	7.82	26.8	0.24	0.15	—	646	—	nc	8.01	13.0	≤5.3
MOJO-11	02/07/2008	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	03/09/2011	7.65	≤0.14	3.52	—	1.0	—	764	—	nc	0.66	22.9	—
MOJO-16	02/13/2008	1.78	—	—	—	0.07	—	192	—	≤0.044	0.73	27.7	—
	03/10/2011	1.66	—	0.13	—	0.09	—	205	—	nc	0.76	29.3	≤1.4
MOJO-34	03/17/2008	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	03/10/2011	6.00	0.87	0.20	≤0.13	0.09	—	262	—	nc	0.39	1.9	85.3
MOJO-48	04/01/2008	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	03/09/2011	4.43	≤0.16	11.2	—	0.23	—	241	—	nc	1.09	42.9	≤2.5

Table 10. Trace elements in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3G*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit:*** KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: HAL-US, USEPA Lifetime Health Advisory level; MCL-US, USEPA maximum contaminant level; AL-US, USEPA action level; MCL-CA, CDPH maximum contaminant level; NL-CA, CDPH notification level; SMCL-CA, CDPH secondary maximum contaminant level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: BQS, USGS Branch of Quality Systems; CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; nc, not collected; nv, no value; NWIS, National Water Information System; NWQL, National Water Quality Laboratory; QC, quality control; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; —, not detected; ≤, less than or equal to]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Lithium (µg/L) (01130)	Manganese (µg/L) (01056)	Molybdenum (µg/L) (01060)	Nickel (µg/L) (01065)	Selenium (µg/L) (01145)	Silver (µg/L) (01075)	Strontium (µg/L) (01080)	Thallium (µg/L) (01057)	Tungsten (µg/L) (01155)	Uranium (µg/L) (22703)	Vanadium (µg/L) (01085)	Zinc (µg/L) (01090)
Mojave study unit—Continued													
MOJO-49	04/01/2008	429	0.56	55.9*	0.68	3.2	—	8,210*	—	0.151	4.17	10.9	[5]145
	03/07/2011	288	0.73	59.2*	0.24	3.9	0.058	8,640*	—	nc	4.61	10.9	14.7
Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit													
BV-05	10/29/2009	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	10/18/2012	7.30	≤0.21	10.8	≤0.12	0.64	—	311	—	nc	0.27	23.4	≤1.8
CD-02	12/15/2008	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	10/16/2012	12.5	—	9.27	≤0.19	1.3	—	354	—	nc	18.5	11.9	≤1.7
CD-05	12/17/2008	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	10/16/2012	9.05	≤0.55	3.67	≤0.10	0.59	—	250	—	nc	12.5	8.5	≤2.7
LUB-05	12/04/2008	5.88	1.15	9.45	≤0.32	1.9	—	511	—	0.395	7.35	14.3	218
	10/17/2012	6.06	≤0.42	10.5	≤0.19	2.0	—	552	—	nc	7.98	14.9	50.5
LUB-07	12/09/2008	42.1	≤0.17	42.9*	≤0.08	0.51	—	238	—	1.31	12.6	30.0	≤2.6
	10/17/2012	43.5	≤0.19	45.1*	0.27	0.52	—	257	—	nc	12.9	30.9	—
LUB-11	12/11/2008	36.6	0.61	6.70	0.36	3.1	—	697	—	0.285	4.33	12.9	14.2
	10/15/2012	37.2	≤0.45	7.28	≤0.14	3.3	—	754	—	nc	4.54	13.4	6.2
Coastal Los Angeles Basin study unit													
CLABCB-12	08/29/2006	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	08/25/2010	12.2	65.7*	4.69	0.26	0.09	—	409	—	0.296	0.09	0.50	≤3.2
CLABCB-13	08/29/2006	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	08/23/2010	2.63	1.80	4.26	0.45	1.1	—	560	—	0.269	3.31	2.3	—
CLABCB-14	08/29/2006	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	08/23/2010	3.30	17.2	8.45	≤0.20	—	—	473	—	1.80	0.20	E0.13	≤2.1
CLABCB-17	09/14/2006	1.62	0.82	1.96	0.50	1.3	—	769	—	0.110	8.70	4.0	≤4.0
	08/25/2010	1.74	≤0.33	2.18	1.6	1.4	—	772	—	0.100	10.3	4.5	12.3

Table 10. Trace elements in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3G*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit:*** KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: HAL-US, USEPA Lifetime Health Advisory level; MCL-US, USEPA maximum contaminant level; AL-US, USEPA action level; MCL-CA, CDPH maximum contaminant level; NL-CA, CDPH notification level; SMCL-CA, CDPH secondary maximum contaminant level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: BQS, USGS Branch of Quality Systems; CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; nc, not collected; nv, no value; NWIS, National Water Information System; NWQL, National Water Quality Laboratory; QC, quality control; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; —, not detected; ≤, less than or equal to]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Lithium (µg/L) (01130)	Manganese (µg/L) (01056)	Molybdenum (µg/L) (01060)	Nickel (µg/L) (01065)	Selenium (µg/L) (01145)	Silver (µg/L) (01075)	Strontium (µg/L) (01080)	Thallium (µg/L) (01057)	Tungsten (µg/L) (01155)	Uranium (µg/L) (22703)	Vanadium (µg/L) (01085)	Zinc (µg/L) (01090)
Coastal Los Angeles Basin study unit—Continued													
CLABDA-02	08/08/2006	16.3	5.32	8.55	0.57	3.8	—	595	—	—	9.29	4.9	≤4.7
	08/24/2010	19.8	4.41	8.64	0.56	4.9	—	592	—	—	9.72	4.8	≤4.1
CLABOC-13	08/28/2006	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	08/26/2010	5.67	≤0.26	7.70	1.8	0.13	—	656	—	0.382	14.00	4.7	≤6.6
CLABOC-14	08/31/2006	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	08/26/2010	3.12	8.02	5.95	≤0.08	0.25	—	370	—	0.497	3.12	2.2	≤2.2
CLABWB-03	08/30/2006	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	08/24/2010	8.64	61.2*	2.24	0.39	E0.04	—	1,270	—	1.45	0.03	0.43	8.5
Upper Santa Ana Watershed study unit													
USAWB-01	11/27/2006	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	04/20/2009	1.82	≤0.19	7.64	≤0.17	0.32	—	191	—	22.1	2.72	19.9	≤1.5
USAWB-04	11/28/2006	3.22	—	2.11	≤0.11	0.26	—	259	—	47.9	[5]2.07	6.1	7.0
	05/06/2009	3.59	—	2.31	0.39	0.27	E0.004	261	—	4.67	2.31	6.0	≤1.3
USAWB-12	12/13/2006	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	04/22/2009	13.3	0.27	3.33	0.36	0.13	E0.004	321	—	≤0.029	12.8	3.3	8.3
USAWB-14	12/14/2006	1.71	—	3.67	≤0.07	0.34	—	298	—	0.420	[5]3.93	7.0	≤1.8
	04/14/2009	1.42	—	3.48	≤0.28	0.33	—	285	—	0.420	3.66	7.0	≤3.1
USAWB-17	01/10/2007	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	04/23/2009	16.0	≤0.13	1.07	0.52	0.07	E0.005	390	—	0.387	20.5	4.1	8.6
USAWC-02	01/29/2007	2.06	≤0.13	5.04	≤0.05	0.56	—	252	—	0.350	[5]1.59	8.8	[6]≤3.4
	04/30/2009	1.87	—	5.05	0.49	0.64	—	246	—	0.334	1.32	9.2	≤4.2
USAWC-08	01/31/2007	3.61	—	2.99	≤0.07	1.2	—	553	—	0.350	[5]3.49	8.2	[6]≤3.5
	04/28/2009	3.68	—	3.01	0.85	1.2	—	608	—	0.365	3.76	8.5	≤3.4
USAWC-10	02/01/2007	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	04/27/2009	2.55	—	6.83	≤0.12	1.4	—	279	—	3.99	1.06	16.9	≤1.9

Table 10. Trace elements in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3G*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit:*** KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: HAL-US, USEPA Lifetime Health Advisory level; MCL-US, USEPA maximum contaminant level; AL-US, USEPA action level; MCL-CA, CDPH maximum contaminant level; NL-CA, CDPH notification level; SMCL-CA, CDPH secondary maximum contaminant level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: BQS, USGS Branch of Quality Systems; CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; nc, not collected; nv, no value; NWIS, National Water Information System; NWQL, National Water Quality Laboratory; QC, quality control; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; —, not detected; ≤, less than or equal to]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Lithium (µg/L) (01130)	Manganese (µg/L) (01056)	Molybdenum (µg/L) (01060)	Nickel (µg/L) (01065)	Selenium (µg/L) (01145)	Silver (µg/L) (01075)	Strontium (µg/L) (01080)	Thallium (µg/L) (01057)	Tungsten (µg/L) (01155)	Uranium (µg/L) (22703)	Vanadium (µg/L) (01085)	Zinc (µg/L) (01090)
Upper Santa Ana Watershed study unit—Continued													
USAWC-21	02/14/2007	E0.46	0.53	11.7	≤0.11	0.98	E0.050	216	—	0.66	[5]0.26	36.4	[6]≤1.4
	04/13/2009	—	0.23	11.2	≤0.30	1.0	0.009	223	—	≤0.056	0.27	31.3	5.1
USAWC-23	02/15/2007	0.71	—	2.89	≤0.09	3.0	—	365	—	3.11	[5]1.42	6.6	[6]≤4.1
	04/16/2009	E0.70	—	2.90	0.37	3.4	—	380	—	0.305	1.55	6.3	≤2.5
USAWR-08	01/10/2007	7.66	≤0.13	3.22	1.6	0.52	—	713	—	0.420	[5]22.8	4.5	[6]≤2.1
	04/21/2009	5.70	—	3.18	2.7	0.53	—	709	—	0.435	23.3	5.1	5.9
USAWR-12	01/29/2007	2.10	0.81	2.86	0.42	5.1	—	788	—	0.340	[5]0.95	2.8	[6]10.2
	04/29/2009	2.19	0.23	3.49	2.1	6.1	E0.005	939	—	0.428	1.07	3.3	11.0
USAWS-01	01/22/2007	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	05/07/2009	20.9	≤0.37	1.80	0.72	1.7	E0.007	360	—	—	1.33	13.2	7.1
USAWS-08	01/24/2007	24.5	1.11	3.10	≤0.10	1.8	—	325	—	—	[4]0.70	11.8	[6]8.5
	05/07/2009	26.0	0.89	3.09	0.79	1.9	0.009	374	—	—	0.80	13.5	6.3
USAWY-06	01/09/2007	1.20	≤0.10	2.07	≤0.08	0.62	—	301	—	—	[5]1.39	12.0	[6]≤2.8
	05/05/2009	E0.80	0.26	1.87	0.52	0.54	—	286	—	≤0.023	1.38	10.7	5.5
USAWY-07	01/11/2007	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	05/04/2009	E0.54	0.48	2.45	0.87	0.68	—	302	—	0.141	1.29	2.9	≤4.4
Santa Clara River Valley study unit													
SCRV-06	04/04/2007	57.0	17.5	10.9	4.7	20.5	—	1,980	—	≤0.050	17.3	3.2	[6]9.9
	04/26/2011	40.7	58.9*	11.2	2.0	16.5	—	1,640	—	nc	13.5	2.6	15.9
SCRV-08	04/04/2007	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	04/26/2011	33.7	49.7	12.2	≤0.19	0.03	—	961	—	nc	0.08	0.10	7.2
SCRV-17	04/11/2007	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	04/27/2011	40.9	≤0.27	13.0	1.5	4.2	—	1,620	—	nc	7.99	1.1	≤2.0
SCRV-18	04/11/2007	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	04/27/2011	39.9	141*	11.3	0.58	2.9	—	1,210	—	nc	5.41	0.52	8.2

Table 10. Trace elements in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Information about analytes given in *table 3G*. **GAMA identification number acronyms:** ***Kern County Subbasin study unit:*** KERN. ***Central Eastside San Joaquin Basin study unit***: MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: HAL-US, USEPA Lifetime Health Advisory level; MCL-US, USEPA maximum contaminant level; AL-US, USEPA action level; MCL-CA, CDPH maximum contaminant level; NL-CA, CDPH notification level; SMCL-CA, CDPH secondary maximum contaminant level. Benchmark type and benchmark level as of August 1, 2013. **Other abbreviations**: BQS, USGS Branch of Quality Systems; CDPH, California Department of Public Health; E, estimated or having a higher degree of uncertainty; LRL, laboratory reporting level; mm/dd/yyyy, month/day/year; nc, not collected; nv, no value; NWIS, National Water Information System; NWQL, National Water Quality Laboratory; QC, quality control; SRL, study reporting level; USEPA, U.S. Environmental Protection Agency; USGS, U.S. Geological Survey; µg/L, micrograms per liter; *, value greater than benchmark level; —, not detected; ≤, less than or equal to]

GAMA well identification number	Sample dates (mm/dd/yyyy)	Lithium (µg/L) (01130)	Manganese (µg/L) (01056)	Molybdenum (µg/L) (01060)	Nickel (µg/L) (01065)	Selenium (µg/L) (01145)	Silver (µg/L) (01075)	Strontium (µg/L) (01080)	Thallium (µg/L) (01057)	Tungsten (µg/L) (01155)	Uranium (µg/L) (22703)	Vanadium (µg/L) (01085)	Zinc (µg/L) (01090)
Santa Clara River Valley study unit—Continued													
SCRV-32	04/18/2007	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	04/25/2011	76.7	214*	39.0	0.93	8.1	—	2,500	—	nc	20.7	1.8	7.6
SCRV-36	04/19/2007	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	04/28/2011	33.7	9.39	16.3	1.6	1.8	0.006	1,420	—	nc	7.94	2.0	10.2

[1]Values equal to or less than the SRL are reported as less than or equal to the value reported by the laboratory. Values reported with a ≤ symbol in this table have the following field comment included in the USGS NWIS database: result is < or = reported value, based on QC data (including but not limited to field blanks, source-solution blanks, trip blanks, NWQL set blanks, NWQL blank water certificates, and BQS Blind Blank Program data).

[2]SRL based on Olsen and others (2010) and applied to results for samples collected prior to October 2009.

[3]SRL based on Davis and others (in review) and applied to results for samples collected starting in October 2009.

[4]Maximum contaminant level benchmarks are listed as MCL-US when the MCL-US and MCL-CA are identical and as MCL-CA when the MCL-CA is lower than the MCL-US or no MCL-US exists.

[5]The USGS Branch of Quality Systems determined that results for this constituent from the USGS National Water Quality Laboratory had a negative analytical bias greater than 10 percent at the time of this measurement.

[6]The USGS Branch of Quality Systems determined that results for this constituent from the USGS National Water Quality Laboratory had a positive analytical bias greater than 10 percent at the time of this measurement.

[7]Replicate analysis results for this sample were 43 µg/L for iron, 21.4 µg/L for lead, and 7.6 µg/L for zinc.

[8]Study reporting level was established on the basis of detections in field blanks collected by the GAMA Priority Basin Project during initial sampling of this study unit.

Table 11. Isotopic tracers in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Stable isotope ratios of hydrogen, oxygen, and carbon are reported in delta notation (δ), the ratio of a heavier isotope to a more common lighter isotope of that element, relative to a standard reference material. Tritium values less than the reporting level are reported as non-detections (—). Information about analytes given in *table 3H*. **GAMA well identification number acronyms:** ***Kern County Subbasin study unit:*** KERN. ***Central Eastside San Joaquin Basin study unit:*** MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-CA, California Department of Public Health maximum contaminant level. Benchmark type and benchmark level as of April 1, 2010. **Other abbreviations**: C, carbon; CSU, 1-sigma combined standard uncertainty; H, hydrogen; mm/dd/yyyy, month/day/year; MRL, minimum reporting level; na, not available; nc, not collected; O, oxygen; pCi/L, picocuries per liter; ssL_c, sample specific critical level; USGS, U.S. Geological Survey; ±, plus or minus]

GAMA well identification number	Sample dates (mm/dd/yyyy)	$\delta^{2}H$ of water (per mil) (82082)	$\delta^{18}O$ of water (per mil) (82085)	Tritium (pCi/L) (07000)			$\delta^{13}C$ (per mil) (82081)	Carbon-14 (percent modern) (49933)
Benchmark type		na	na		MCL-CA		na	na
Benchmark level		na	na		20,000		na	na
				Result ± CSU	Reporting level	Reporting level type[1]		
Kern County Subbasin study unit								
KERN-02	01/10/2006	–60.4	–8.68	nc	nc	nc	nc	nc
	02/11/2010	–62.0	–8.72	—	0.32	ssL_C	–12.32	47
KERN-20	02/13/2006	–79.6	–10.95	nc	nc	nc	nc	nc
	02/10/2010	–79.0	–10.87	—	0.35	ssL_C	–11.65	2.8
KERN-21	02/13/2006	–88.0	–11.63	nc	nc	nc	nc	nc
	03/16/2010	–87.1	–11.38	2.3 ± 0.41	0.41	ssL_C	–15.28	77
KERN-29	02/28/2006	–92.9	–12.23	nc	nc	nc	nc	nc
	02/10/2010	–92.1	–12.18	14.2 ± 0.57	0.35	ssL_C	–10.68	71
KERN-33	03/01/2006	–67.1	–9.36	nc	nc	nc	nc	nc
	02/09/2010	–66.9	–9.39	0.5 ± 0.32	0.32	ssL_C	–12.10	71
Central Eastside San Joaquin Basin study unit								
CE-QPC-02	03/22/2006	–68.8	–9.27	nc	nc	nc	nc	nc
	01/26/2010	–73.9	–9.95	11.9 ± 0.57	0.38	ssL_C	–16.97	94
MER-11	04/12/2006	–65.7	–8.98	15.4 ± 1.0	1	MRL	–14.10	95
	01/28/2010	–66.3	–9.01	10.1 ± 0.51	0.35	ssL_C	–14.61	94
MER-14	04/17/2006	–64.4	–8.59	nc	nc	nc	nc	nc
	01/27/2010	–63.6	–8.48	—	0.32	ssL_C	–17.15	17
MOD-07	03/21/2006	–80.0	–10.95	nc	nc	nc	nc	nc
	01/26/2010	–77.3	–10.54	10.4 ± 0.54	0.38	ssL_C	–18.84	72
TRLK-03	03/21/2006	–75.1	–10.00	—	1	MRL	–19.30	19
	01/28/2010	–77.9	–10.37	—	0.41	ssL_C	–20.12	13
TRLK-05	03/22/2006	–80.1	–10.89	1.3 ± 0.6	1	MRL	–15.70	27
	01/25/2010	–79.5	–10.82	1.1 ± 0.32	0.32	ssL_C	–15.93	29
Middle Sacramento Valley study unit								
ESAC-01	06/29/2006	–63.1	–8.81	1.9 ± 0.6	1	MRL	nc	nc
	08/11/2010	–60.7	–8.66	5.1 ± 0.38	0.35	ssL_C	–16.98	97
ESAC-19	07/20/2006	–56.3	–7.91	—	1	MRL	–15.46	82
	08/10/2010	–54.7	–7.91	1.0 ± 0.38	0.38	ssL_C	nc	nc
ESAC-34	08/17/2006	–55.9	–7.37	13.4 ± 1.3	1	MRL	–17.47	100
	08/12/2010	–55.8	–7.40	10.5 ± 0.51	0.35	ssL_C	nc	nc
WSAC-03	07/11/2006	–68.1	–9.64	7.4 ± 1.0	1	MRL	–16.32	103
	08/10/2010	–67.0	–9.66	4.3 ± 0.41	0.35	ssL_C	nc	nc

Table 11. Isotopic tracers in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Stable isotope ratios of hydrogen, oxygen, and carbon are reported in delta notation (δ), the ratio of a heavier isotope to a more common lighter isotope of that element, relative to a standard reference material. Tritium values less than the reporting level are reported as non-detections (—). Information about analytes given in *table 3H*. **GAMA well identification number acronyms:** ***Kern County Subbasin study unit:*** KERN. ***Central Eastside San Joaquin Basin study unit:*** MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-CA, California Department of Public Health maximum contaminant level. Benchmark type and benchmark level as of April 1, 2010. **Other abbreviations**: C, carbon; CSU, 1-sigma combined standard uncertainty; H, hydrogen; mm/dd/yyyy, month/day/year; MRL, minimum reporting level; na, not available; nc, not collected; O, oxygen; pCi/L, picocuries per liter; ssL_c, sample specific critical level; USGS, U.S. Geological Survey; ±, plus or minus]

GAMA well identification number	Sample dates (mm/dd/yyyy)	δ^2H of water (per mil) (82082)	$\delta^{18}O$ of water (per mil) (82085)	Tritium (pCi/L) (07000)			$\delta^{13}C$ (per mil) (82081)	Carbon-14 (percent modern) (49933)
Middle Sacramento Valley study unit—Continued								
WSAC-08	07/18/2006	–62.6	–8.61	11.8 ± 1.3	1	MRL	–14.29	23
	08/12/2010	nc	nc	7.4 ± 0.43	0.31	ssL_C	nc	nc
WSAC-17	08/01/2006	–75.9	–10.61	8.6 ± 1.0	1	MRL	–15.50	81
	08/09/2010	–73.8	–10.24	6.1 ± 0.41	0.32	ssL_C	nc	nc
WSAC-19	08/01/2006	–58.7	–8.37	—	1	MRL	nc	nc
	08/11/2010	nc	nc	1.0 ± 0.38	0.38	ssL_C	–15.33	36
WSAC-32	08/21/2006	–74.3	–10.51	8.3 ± 1.0	1	MRL	nc	nc
	08/09/2010	–73.4	–10.34	—	0.32	ssL_C	–17.12	92
Northern Sacramento Valley study unit								
NSAC-09	11/06/2007	–66.0	–9.25	1.9 ± 0.6	1	MRL	–17.38	57
	01/11/2011	–66.7	–9.22	0.37 ± 0.34	na[2]	ssL_C	–17.52	59
NSAC-16	12/06/2007	–71.1	–10.20	2.9 ± 0.6	1	MRL	–16.19	87
	01/12/2011	–73.8	–10.19	2.6 ± 0.41	na[2]	ssL_C	–16.51	88
RED-01	10/01/2007	–64.6	–9.36	—	1	MRL	–19.08	76
	01/11/2011	–65.6	–9.41	—	na[2]	ssL_C	–18.75	76
RED-12	11/08/2007	–65.6	–9.34	4.2 ± 1	1	MRL	–20.60	88
	01/10/2011	–65.2	–9.29	2.9 ± 0.41	na[2]	ssL_C	–20.67	82
Madera-Chowchilla study unit								
MADCHOW-03	04/15/2008	–73.6	–10.16	3.1 ± 0.38	0.32	ssL_C	–17.93	80
	03/15/2011	–73.2	–10.25	4.1 ± 0.46	0.41	ssL_C	–15.22	92
MADCHOW-05	04/16/2008	–59.4	–7.88	1.1 ± 0.35	0.32	ssL_C	–15.44	76
	03/15/2011	–59.4	–7.90	0.7 ± 0.39	0.38	ssL_C	–15.00	74
MADCHOW-24	05/13/2008	–67.7	–9.16	4.7 ± 0.32	0.32	ssL_C	–14.97	54
	03/16/2011	–85.6	–11.40	9.9 ± 0.53	0.33	ssL_C	–13.33	94
MADCHOW-28	05/19/2008	–75.6	–10.39	21.6 ± 0.77	0.32	ssL_C	–12.46	112
	03/16/2011	–77.6	–10.45	11.0 ± 0.54	0.32	ssL_C	–12.94	113
Western San Joaquin Valley study unit								
DM-12	03/11/2010	–61.3	–7.94	3.3 ± 0.41	0.35	ssL_C	–11.98	35
	04/02/2013	–60.5	–7.82	2.0 ± 0.29	0.26	ssL_C	–12.10	35
DM-19	04/14/2010	–68.4	–9.07	—	0.32	ssL_C	–9.94	1.3
	04/02/2013	–67.3	–8.99	—	0.36	ssL_C	–9.82	1.2
DM-26	06/17/2010	–66.4	–8.98	8.4 ± 0.41	0.32	ssL_C	–15.80	100
	04/03/2013	–69.0	–9.08	7.8 ± 0.49	0.33	ssL_C	–15.82	97
WS-07	06/10/2010	–64.3	–8.56	—	0.38	ssL_C	–12.95	5.4
	04/03/2013	–65.7	–8.72	—	0.33	ssL_C	–13.43	4.4

Table 11. Isotopic tracers in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Stable isotope ratios of hydrogen, oxygen, and carbon are reported in delta notation (δ), the ratio of a heavier isotope to a more common lighter isotope of that element, relative to a standard reference material. Tritium values less than the reporting level are reported as non-detections (—). Information about analytes given in *table 3H*. **GAMA well identification number acronyms:** ***Kern County Subbasin study unit:*** KERN. ***Central Eastside San Joaquin Basin study unit:*** MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-CA, California Department of Public Health maximum contaminant level. Benchmark type and benchmark level as of April 1, 2010. **Other abbreviations**: C, carbon; CSU, 1-sigma combined standard uncertainty; H, hydrogen; mm/dd/yyyy, month/day/year; MRL, minimum reporting level; na, not available; nc, not collected; O, oxygen; pCi/L, picocuries per liter; ssL_c, sample specific critical level; USGS, U.S. Geological Survey; ±, plus or minus]

GAMA well identification number	Sample dates (mm/dd/yyyy)	δ^2H of water (per mil) (82082)	δ^{18}O of water (per mil) (82085)	Tritium (pCi/L) (07000)			δ^{13}C (per mil) (82081)	Carbon-14 (percent modern) (49933)
Owens and Indian Wells Valleys study unit								
OIW-05	10/18/2006	–91.5	–12.30	—	1	MRL	–6.83	66
	10/27/2010	–92.0	–12.18	—	na[2]	ssL_C	–6.86	66
OIW-07	10/19/2006	–97.8	–13.00	—	1	MRL	–5.91	3.4
	10/27/2010	–102	–13.41	—	na[2]	ssL_C	–4.87	1.7
OV-21	10/03/2006	–124	–16.59	2.9 ± 0.6	1	MRL	nc	nc
	10/26/2010	–124	–16.70	2.0 ± 0.32	na[2]	ssL_C	–15.27	92
OV-24	10/04/2006	–124	–16.53	23.6 ± 1.6	1	MRL	–14.59	104
	10/28/2010	–124	–16.46	9.8 ± 0.49	na[2]	ssL_C	–15.82	111
OV-29	10/05/2006	–121	–16.10	—	1	MRL	nc	nc
	10/28/2010	–121	–16.01	—	na[2]	ssL_C	–10.04	60
OV-36	10/25/2006	–115	–15.04	16.6 ± 1.3	1	MRL	–7.42	78
	10/26/2010	–116	–14.94	11.8 ± 0.55	na[2]	ssL_C	–7.98	78
Coachella Valley study unit								
COA-12	03/08/2007	–72.2	–10.28	—	1	MRL	–4.94	2.4
	01/05/2011	–71.9	–10.34	—	0.31	ssL_C	–4.60	2.0
COA-14	03/12/2007	–74.4	–10.52	1.0 ± 0.6	1	MRL	–11.04	93
	01/04/2011	–73.8	–10.38	1.8 ± 0.33	0.30	ssL_C	–11.31	94
COA-15	03/14/2007	–69.7	–9.74	—	1	MRL	–11.96	105
	01/06/2011	–69.7	–9.66	0.4 ± 0.34	0.34	ssL_C	–12.14	71
COA-16	03/15/2007	–79.1	–9.97	—	1	MRL	–9.74	70
	01/05/2011	–78.6	–9.84	—	0.26	ssL_C	–9.64	13
Colorado River Valley study unit								
COLOR-03	10/02/2007	–110	–14.16	1.3 ± 0.6	1	MRL	–12.24	84
	01/04/2011	–109	–13.98	2.1 ± 0.30	0.27	ssL_C	–12.51	85
COLOR-06	10/24/2007	–111	–14.46	23.4 ± 1.6	1	MRL	–10.07	86
	01/03/2011	–111	–14.37	19.6 ± 0.73	0.32	ssL_C	–10.49	88
COLOR-17	12/11/2007	–63.4	–8.84	—	1	MRL	–11.32	37
	01/03/2011	–64.7	–8.80	—	0.33	ssL_C	–11.15	38
Antelope Valley study unit								
ANT-07	01/29/2008	–69.5	–9.99	—	1	MRL	–12.33	47
	02/15/2012	–67.6	–9.73	—	0.24	ssL_C	–11.90	45
ANT-20	02/05/2008	–67.7	–9.27	8.0 ± 1.0	1	MRL	nc	nc
	02/14/2012	–68.5	–9.59	10.2 ± 0.42	0.21	ssL_C	–11.79	101
ANT-23	02/06/2008	–73.4	–10.66	9.0 ± 1.0	1	MRL	nc	nc
	02/13/2012	–74.7	–10.72	8.3 ± 0.38	0.22	ssL_C	–13.13	105

Table 11. Isotopic tracers in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Stable isotope ratios of hydrogen, oxygen, and carbon are reported in delta notation (δ), the ratio of a heavier isotope to a more common lighter isotope of that element, relative to a standard reference material. Tritium values less than the reporting level are reported as non-detections (—). Information about analytes given in *table 3H*. **GAMA well identification number acronyms:** ***Kern County Subbasin study unit:*** KERN. ***Central Eastside San Joaquin Basin study unit:*** MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-CA, California Department of Public Health maximum contaminant level. Benchmark type and benchmark level as of April 1, 2010. **Other abbreviations**: C, carbon; CSU, 1-sigma combined standard uncertainty; H, hydrogen; mm/dd/yyyy, month/day/year; MRL, minimum reporting level; na, not available; nc, not collected; O, oxygen; pCi/L, picocuries per liter; ssL_c, sample specific critical level; USGS, U.S. Geological Survey; ±, plus or minus]

GAMA well identification number	Sample dates (mm/dd/yyyy)	δ^2H of water (per mil) (82082)	δ^{18}O of water (per mil) (82085)	Tritium (pCi/L) (07000)			δ^{13}C (per mil) (82081)	Carbon-14 (percent modern) (49933)
Antelope Valley study unit—Continued								
ANT-24	02/06/2008	–83.1	–11.80	—	1	MRL	nc	nc
	02/16/2012	–83.5	–11.72	0.4 ± 0.24	0.23	ssL_C	–12.70	50
ANT-33	02/13/2008	–105	–13.00	—	1	MRL	nc	nc
	02/15/2012	–103	–13.20	—	0.22	ssL_C	–8.81	7
ANT-42	03/03/2008	–70.3	–9.79	—	1	MRL	nc	nc
	02/14/2012	–68.7	–9.76	—	0.18	ssL_C	–12.44	61
Mojave study unit								
MOJO-01	02/04/2008	–63.0	–9.38	—	1	MRL	nc	nc
	03/08/2011	–63.8	–9.43	—	0.47	ssL_C	–10.56	70
MOJO-09	02/07/2008	–71.0	–9.71	2.6 ± 0.6	1	MRL	nc	nc
	03/08/2011	–72.2	–9.96	2.3 ± 0.46	0.44	ssL_C	–12.82	60
MOJO-11	02/07/2008	–82.5	–11.75	—	1	MRL	nc	nc
	03/09/2011	–82.7	–11.69	—	0.41	ssL_C	–11.81	11
MOJO-16	02/13/2008	–57.7	–8.74	—	1	MRL	–13.71	64
	03/10/2011	–59.0	–8.65	—	0.29	ssL_C	–13.55	63
MOJO-34	03/17/2008	–58.1	–8.27	8.3 ± 1.0	1	MRL	nc	nc
	03/10/2011	–58.3	–8.47	5.9 ± 0.41	0.31	ssL_C	–14.51	120
MOJO-48	04/01/2008	–93.1	–12.91	—	1	MRL	nc	nc
	03/09/2011	–94.3	–13.02	—	0.44	ssL_C	–9.08	2.4
MOJO-49	04/01/2008	–88.0	–10.78	—	1	MRL	nc	nc
	03/07/2011	–87.5	–10.77	—	0.29	ssL_C	–4.62	6.0
Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit								
BV-05	10/29/2009	–59.9	–8.83	0.5 ± 0.32	0.32	ssL_C	–11.30	27
	10/18/2012	–60.3	–8.92	—	0.36	ssL_C	–11.36	27
CD-02	12/15/2008	–82.3	–10.99	—	0.45	ssL_C	–9.44	85
	10/16/2012	–82.1	11.20	—	0.36	ssL_C	–9.56	86
CD-05	12/17/2008	–81.6	–11.51	0.5 ± 0.45	0.45	ssL_C	–11.85	79
	10/16/2012	–80.9	–11.55	0.5 ± 0.37	0.36	ssL_C	–11.95	79
LUB-05	12/04/2008	–88.5	–11.94	—	0.38	ssL_C	–9.24	60
	10/17/2012	–87.1	–11.88	—	0.35	ssL_C	–9.27	58
LUB-07	12/09/2008	–95.9	–11.93	—	0.35	ssL_C	–5.82	6.0
	10/17/2012	–95.4	–11.92	—	0.35	ssL_C	–5.82	5.4
LUB-11	12/11/2008	–102	–13.12	—	0.35	ssL_C	–9.33	6.8
	10/15/2012	–101	–13.07	—	0.39	ssL_C	–9.41	6.8

Table 11. Isotopic tracers in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Stable isotope ratios of hydrogen, oxygen, and carbon are reported in delta notation (δ), the ratio of a heavier isotope to a more common lighter isotope of that element, relative to a standard reference material. Tritium values less than the reporting level are reported as non-detections (—). Information about analytes given in *table 3H*. **GAMA well identification number acronyms:** ***Kern County Subbasin study unit:*** KERN. ***Central Eastside San Joaquin Basin study unit:*** MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-CA, California Department of Public Health maximum contaminant level. Benchmark type and benchmark level as of April 1, 2010. **Other abbreviations**: C, carbon; CSU, 1-sigma combined standard uncertainty; H, hydrogen; mm/dd/yyyy, month/day/year; MRL, minimum reporting level; na, not available; nc, not collected; O, oxygen; pCi/L, picocuries per liter; ssL_c, sample specific critical level; USGS, U.S. Geological Survey; ±, plus or minus]

GAMA well identification number	Sample dates (mm/dd/yyyy)	δ^2H of water (per mil) (82082)	$\delta^{18}O$ of water (per mil) (82085)	Tritium (pCi/L) (07000)			$\delta^{13}C$ (per mil) (82081)	Carbon-14 (percent modern) (49933)
Coastal Los Angeles Basin study unit								
CLABCB-12	08/29/2006	–54.4	–7.92	nc	nc	nc	nc	nc
	08/25/2010	–54.3	–7.90	15.8 ± 0.60	na[2]	ssL_C	–14.32	76
CLABCB-13	08/29/2006	–55.1	–7.86	nc	nc	nc	nc	nc
	08/23/2010	–54.6	–7.75	15.2 ± 0.60	na[2]	ssL_C	–13.77	90
CLABCB-14	08/29/2006	–48.5	–7.27	nc	nc	nc	nc	nc
	08/23/2010	–48.5	–7.32	—	na[2]	ssL_C	–13.52	63
CLABCB-17	09/14/2006	–60.7	–8.42	nc	nc	nc	nc	nc
	08/25/2010	–60.6	–8.39	18.0 ± 0.70	na[2]	ssL_C	–13.96	104
CLABDA-02	08/08/2006	–47.3	–7.12	nc	nc	nc	nc	nc
	08/24/2010	–49.8	–7.26	8.7 ± 0.52	na[2]	ssL_C	–15.88	79
CLABOC-13	08/28/2006	–55.4	–7.71	nc	nc	nc	nc	nc
	08/26/2010	–53.4	–7.63	16.6 ± 0.60	na[2]	ssL_C	–13.53	103
CLABOC-14	08/31/2006	–58.2	–8.49	nc	nc	nc	nc	nc
	08/26/2010	–56.6	–8.47	—	na[2]	ssL_C	–11.51	74
CLABWB-03	08/30/2006	–56.0	–7.91	nc	nc	nc	nc	nc
	08/24/2010	–57.6	–7.88	25.1 ± 0.90	na[2]	ssL_C	–17.54	31
Upper Santa Ana Watershed study unit								
USAWB-01	11/27/2006	–58.7	–8.46	nc	nc	nc	nc	nc
	04/20/2009	–58.1	–8.48	0.4 ± 0.32	0.32	ssL_C	–13.63	59
USAWB-04	11/28/2006	–56.7	–8.73	9.3 ± 1.0	1	MRL	–13.36	88
	05/06/2009	–58.9	–8.87	6.2 ± 0.45	0.35	ssL_C	nc	nc
USAWB-12	12/13/2006	–62.5	–9.18	nc	nc	nc	nc	nc
	04/22/2009	–61.9	–9.05	7.9 ± 0.41	0.32	ssL_C	–12.35	104
USAWB-14	12/14/2006	–56.3	–8.68	5.4 ± 0.60	1	MRL	–13.75	85
	04/14/2009	–55.6	–8.66	3.8 ± 0.38	0.32	ssL_C	–13.73	83
USAWB-17	01/10/2007	–57.5	–8.62	nc	nc	nc	nc	nc
	04/23/2009	–57.6	–8.59	8.2 ± 0.41	0.32	ssL_C	–13.57	108
USAWC-02	01/29/2007	–51.7	–7.96	nc	nc	nc	–13.57	80
	04/30/2009	–52.3	–7.92	—	0.32	ssL_C	–13.82	77
USAWC-08	01/31/2007	–53.1	–7.84	1.3 ± 1.0	1	MRL	–13.63	85
	04/28/2009	–53.5	–7.90	0.6 ± 0.35	0.35	ssL_C	–11.34	86
USAWC-10	02/01/2007	–52.8	–8.10	nc	nc	nc	nc	nc
	04/27/2009	–53.5	–8.12	—	0.32	ssL_C	–14.39	64
USAWC-21	02/14/2007	–54.4	–8.12	1.3 ± 1.0	1	MRL	–14.34	86
	04/13/2009	–52.4	–8.15	1.1 ± 0.35	0.32	ssL_C	–14.68	86

Table 11. Isotopic tracers in samples collected from trend wells for 15 Groundwater Ambient Monitoring and Assessment (GAMA) study units in California.—Continued

[The five-digit USGS parameter code below the constituent name is used to uniquely identify a specific constituent or property. Stable isotope ratios of hydrogen, oxygen, and carbon are reported in delta notation (δ), the ratio of a heavier isotope to a more common lighter isotope of that element, relative to a standard reference material. Tritium values less than the reporting level are reported as non-detections (—). Information about analytes given in *table 3H*. **GAMA well identification number acronyms:** ***Kern County Subbasin study unit:*** KERN. ***Central Eastside San Joaquin Basin study unit:*** MOD, Modesto study area; TRLK, Turlock study area; MER, Merced study area; CE-QPC, Uplands study area. ***Middle Sacramento Valley study unit***: ESAC, East study area; WSAC, West study area. ***Northern Sacramento Valley study unit***: NSAC, Northern Sacramento Valley study area; RED, Redding study area. ***Madera-Chowchilla study unit***: MADCHOW. ***Western San Joaquin Valley study unit***: DM, Delta-Mendota Subbasin study area; WS, Westside Subbasin study area. ***Owens and Indian Wells Valleys study unit***: OIW, Indian Wells Valley study area; OV, Owens Valley study area. ***Coachella Valley study unit***: COA. ***Colorado River study unit***: COLOR. ***Antelope Valley study unit***: ANT. ***Mojave study unit***: MOJO. ***Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit***: BV, Borrego Valley study area; CD, Central Desert study area; LUB, Low-Use Basins of the Mojave and Sonoran Deserts study area. ***Coastal Los Angeles Basin study unit***: CLABCB, Central Basin study area; CLABOC, Orange County Coastal Plain study area; CLABWB, West Coast Basin study area; CLABDA, Santa Monica and Hollywood Basins study area. ***Upper Santa Ana Watershed study unit***: USAWB, Bunker Hill/Cajon/Rialto-Colton study area; USAWC, Cucamonga/Chino study area; USAWR, Riverside-Arlington/Temescal study area; USAWS, San Jacinto study area; USAWY, Yucaipa/San Timoteo study area. ***Santa Clara River Valley study unit***: SCRV. **Benchmark type**: MCL-CA, California Department of Public Health maximum contaminant level. Benchmark type and benchmark level as of April 1, 2010. **Other abbreviations**: C, carbon; CSU, 1-sigma combined standard uncertainty; H, hydrogen; mm/dd/yyyy, month/day/year; MRL, minimum reporting level; na, not available; nc, not collected; O, oxygen; pCi/L, picocuries per liter; ssL_c, sample specific critical level; USGS, U.S. Geological Survey; ±, plus or minus]

GAMA well identification number	Sample dates (mm/dd/yyyy)	δ^2H of water (per mil) (82082)	δ^{18}O of water (per mil) (82085)	Tritium (pCi/L) (07000)			δ^{13}C (per mil) (82081)	Carbon-14 (percent modern) (49933)
Upper Santa Ana Watershed study unit—Continued								
USAWC-23	02/15/2007	–62.8	–9.00	—	1	MRL	–10.99	86
	04/16/2009	–59.5	–9.04	—	0.35	ssL_C	–13.67	86
USAWR-08	01/10/2007	–56.4	–8.30	6.7 ± 1.0	1	MRL	–13.62	105
	04/21/2009	–56.0	–8.30	6.3 ± 0.45	0.35	ssL_C	–13.79	102
USAWR-12	01/29/2007	–48.9	–7.11	4.5 ± 1.0	1	MRL	–13.30	82
	04/29/2009	–49.0	–7.12	4.4 ± 0.35	1	ssL_C	–13.05	80
USAWS-01	01/22/2007	–51.8	–7.19	nc	nc	nc	nc	nc
	05/07/2009	–53.3	–7.23	3.9 ± 0.35	0.32	ssL_C	–15.41	96
USAWS-08	01/24/2007	–52.5	–7.45	3.2 ± 1.0	1	MRL	–14.62	96
	05/07/2009	–54.0	–7.49	3.9 ± 0.35	0.32	ssL_C	nc	nc
USAWY-06	01/09/2007	–53.4	–7.86	3.2 ± 1.0	1	MRL	–14.23	90
	05/05/2009	–53.9	–7.92	2.6 ± 0.32	0.32	ssL_C	–14.49	91
USAWY-07	01/11/2007	–56.3	–8.39	nc	nc	nc	nc	nc
	05/04/2009	–57.2	–8.42	3.5 ± 0.32	0.32	ssL_C	–15.04	96
Santa Clara River Valley study unit								
SCRV-06	04/04/2007	–48.2	–7.16	6.7 ± 1.0	1	MRL	nc	nc
	04/26/2011	–50.5	–7.17	5.7 ± 0.45	0.37	ssL_C	–12.38	81
SCRV-08	04/04/2007	–42.4	–6.46	—	1	MRL	nc	nc
	04/26/2011	–42.4	–6.41	0.4 ± 0.37	0.37	ssL_C	–13.94	19
SCRV-17	04/11/2007	–45.1	–6.73	6.7 ± 1.0	1	MRL	nc	nc
	04/27/2011	–40.6	–6.34	5.8 ± 0.40	0.29	ssL_C	–13.39	84
SCRV-18	04/11/2007	–45.8	–7.11	—	1	MRL	nc	nc
	04/27/2011	–47.1	–7.09	—	0.29	ssL_C	–12.66	52
SCRV-32	04/18/2007	–44.1	–6.46	3.2 ± 0.6	1	MRL	nc	nc
	04/25/2011	–43.9	–6.46	1.8 ± 0.36	0.34	ssL_C	–13.89	57
SCRV-36	04/19/2007	–55.8	–7.69	8.3 ± 1.0	1	MRL	nc	nc
	04/28/2011	–52.3	–6.92	9.6 ± 0.49	0.30	ssL_C	–10.89	81

[1]Tritium reporting levels were expressed as MRL before August 2007 and as ssL_C after August 2007.

[2]Reporting levels were not released with these results. Values less than the reported CSU are given as "—" (not detected).

Appendix

This appendix presents the methods used to collect and analyze groundwater samples and to report the resulting water-quality data. Methods used during the initial sampling period are described in published Groundwater Ambient Monitoring and Assessment (GAMA) Program data-series reports for each study unit (Landon and Belitz, 2008; Mathany and others, 2008; Schmitt and others, 2008; Shelton and others, 2008; Bennett and others, 2009; Densmore and others, 2009; Goldrath and others, 2009; Kent and Belitz, 2009; Mathany and Belitz, 2009; Montrella and Belitz, 2009; Schmitt and others, 2009; Shelton and others, 2009; Goldrath and others, 2010; Mathany and others, 2012; and Mathany and others, 2013). In each case, the methods were selected to obtain representative samples of the groundwater from each well and to minimize the potential for contamination of the samples or for bias in the data. Procedures used to collect and assess quality-control (QC) data, and the results of the QC assessments for the resampled trend wells also are presented.

Groundwater samples were collected and quality-assurance (QA) procedures were implemented by using standard and modified USGS protocols from the National Field Manual (NFM) (U.S. Geological Survey, variously dated; Wilde and others, 2004, 2006) and the National Water-Quality Assessment Program (Koterba and others, 1995). The QA plan followed by the National Water Quality Laboratory (NWQL), the primary laboratory used to analyze samples for this study, is described by Pirkey and Glodt (1998), and Maloney (2005).

Sample Collection and Analysis

Prior to sampling, wells were pumped continuously until field measurements of water temperature, dissolved oxygen, pH, and specific conductance were stable (Wilde and others, 2006). Wells were sampled by using Teflon® tubing with brass and stainless-steel fittings attached to a sampling point (usually a hose-bib fitting) on the well-discharge pipe as close to the well head as possible. The sampling point was upstream from water-storage tanks and from the well-head treatment system (if a system existed). If a chlorinating system was attached to the well, the chlorinator was shut off, when possible, before the well was purged and sampled, in order to clear all chlorine out of the system. The absence of free chlorine was verified by using a Hach® field test kit. If residual chlorine was present or if the chlorinator could not be shut off, organic samples (volatile organic compounds [VOCs] and pesticides) were collected in amber bottles containing ascorbic acid and buffer (Wilde and others, 2004). Samples either were collected inside an enclosed chamber that was inside a mobile laboratory and connected to the well head by a 10 to 50 foot length of Teflon® tubing or were collected outdoors by connecting a 1- to 3-foot length of Teflon® tubing to the sampling point (Lane and others, 2003). All fittings and lengths of tubing were cleaned between samples (Wilde, 2004).

For the field measurements, groundwater was pumped through a flow-through chamber (that was attached to the sampling point) fitted with a multi-probe meter, which simultaneously measured the field water-quality indicators dissolved oxygen, temperature, pH, and specific conductance. Field measurements were made in accordance with protocols in the NFM (Wilde, variously dated; Radtke and others, 2005; Ritz and Collins, 2008; Wilde, 2008; Rounds and others, 2013). All sensors on the multi-probe meter were calibrated daily. Measurements of dissolved oxygen, temperature, pH, and specific conductance were recorded at approximately 5-minute (min) intervals, and when these values had remained stable for a minimum of 30 min, samples for laboratory analyses were collected.

Field measurements and instrument calibrations were recorded by hand on field record sheets and electronically in the Personal Computer Field Form (PCFF) program. Analytical service requests for the NWQL also were managed by the PCFF, whereas analytical service requests for other laboratories were entered into laboratory-specific spreadsheets. Information from the PCFF was uploaded directly to the National Water Information System (NWIS) at the end of every week of sample collection.

Prior to sample collection, polyethylene sample bottles were pre-rinsed three times by using deionized water and, then, once with native sample water before sample collection. Samples requiring acidification were acidified to a pH between 2 and 1 with the appropriate acids by using ampoules of certified, traceable, concentrated acids obtained from the NWQL.

Detailed sampling protocols for individual analyses and groups of analytes are described in Koterba and others (1995), the NFM (U.S. Geological Survey, 2006; Wilde and others, 2004), and in the references for analytical methods listed in *table A1*; only brief descriptions are given here. The VOC samples were collected in three 40-milliliter (mL) sample vials that first were purged with three vial volumes of unfiltered groundwater before bottom-filling to eliminate atmospheric contamination. One to one (1:1) hydrochloric acid to water (HCl/H_2O) solution was added as a preservative to the VOC samples. Samples to be submitted for low-level analysis of 1,2,3-TCP were collected in two 40-mL sample vials already containing a 1:1 HCl/H_2O preservative. The NDMA samples were collected in 500-mL baked amber-glass bottles treated with 0.05 grams of sodium thiosulfate ($Na_2S_2O_3$) as a preservative and were filtered at Weck prior to analysis. Perchlorate samples were collected in 125-mL polystyrene bottles, and then two or three 20-mL aliquots of groundwater were filtered through a 0.20-micrometer (µm) pore-size Corning® syringe-tip disk filter into sterilized 125-mL bottles.

Tritium samples were collected by bottom-filling one 1-liter (L) polyethylene bottle with unfiltered groundwater after first overfilling the bottles with three volumes of unfiltered groundwater. Samples for analysis of stable isotopes of hydrogen and oxygen in water were collected in 60-mL clear-glass bottles filled with unfiltered groundwater, sealed with a conical cap, and secured with electrical tape to prevent leakage and evaporation. Samples for analysis of pesticides (including polar pesticides) and pesticide degradates were collected in 1-L baked amber-glass bottles. These samples were filtered through a 0.7-µm nominal pore-size glass-fiber filter during collection.

Groundwater samples for trace elements, major and minor ions, silica, laboratory alkalinity, and TDS analyses required filling one 500-mL and one 250-mL polyethylene bottle with filtered groundwater (Wilde and others, 2004). The groundwater was filtered by using a 0.45-µm pore-size PALL® unvented capsule filter that was pre-rinsed with 2 L of deionized water, then rinsed with 1 L of groundwater prior to sampling. Bicarbonate and carbonate concentrations were calculated from the laboratory alkalinity and pH values by using the advanced speciation method (*http://or.water.usgs.gov/alk/methods.html*) with $pK_1 = 6.35$, $pK_2 = 10.33$, and $pK_W = 14$. The 250-mL filtered sample to be analyzed for trace elements was preserved with 7.5-Normal (N) nitric acid. Nutrient samples were collected by filtering groundwater into 125-mL brown-polyethylene bottles. Stable isotopes of carbon in dissolved inorganic carbon and carbon-14 abundance samples were filtered and bottom-filled into 500-mL glass bottles that first were overfilled with three bottle volumes of filtered groundwater. These samples had no headspace and were sealed with conical caps to avoid atmospheric contamination.

Temperature-sensitive samples were stored on ice prior to and during shipping to the various laboratories. The non-temperature-sensitive samples for tritium, and the stable isotopes of hydrogen and oxygen in water, were shipped monthly. Temperature-sensitive or time-sensitive samples for VOCs, pesticides (including polar pesticides) and pesticide degradates, perchlorate, NDMA, trace elements, nutrients, major and minor ions, silica, TDS, and laboratory alkalinity were shipped daily whenever possible. The temperature-sensitive samples for stable isotopes of carbon in dissolved inorganic carbon and carbon-14 abundance were stored on ice, archived in a laboratory refrigerator, and shipped after all of the laboratory alkalinity measurements were received.

Six laboratories performed chemical analyses on samples collected during the trend sampling period (*table A1*), but most of the analyses were performed at the NWQL. The NWQL maintains a rigorous QA program (Pirkey and Glodt, 1998; Maloney, 2005). Laboratory QC samples, including method blanks, continuing calibration verification standards, standard reference samples, reagent spikes of target analytes and surrogates, external certified reference materials, and external blind proficiency samples were analyzed regularly. Method detection limits were tested continuously, and laboratory reporting levels updated accordingly. NWQL maintains National Environmental Laboratory Accreditation Program (NELAP) and other certifications (*http://www.nelac-institute.org*). The USGS Branch of Quality Systems (BQS) maintains independent oversight of QA at the NWQL. The BQS documents bias and variability for the NWQL through the use of blind QA samples and publishes periodic data-quality assessment summaries based on the sample results. In this report, footnote comments are provided for results potentially affected by bias or variability based on these summaries. The BQS also runs the National Field Quality Assurance Program (NFQA) that includes annual testing of all USGS field personnel for proficiency in field water-quality measurements (*http://bqs.usgs.gov/nfqa/*). Results of analyses done by the NWQL or laboratories contracted by the NWQL were uploaded directly to the USGS NWIS database. Results of analyses done at other laboratories were compiled in a project database and uploaded from there to the USGS NWIS database.

Data Reporting

The following section details the laboratory reporting conventions and the constituents sampled for trends that are determined by multiple methods or by multiple laboratories.

Reporting Limits

The USGS NWQL uses different conventions for reporting results for organic and inorganic constituents. For organic constituents, a laboratory reporting level (LRL) and a long-term method detection level (LT-MDL) are used as thresholds for reporting analytical results. The LRL is set to minimize the reporting of false negatives (not detecting a compound when it actually is present in a sample) to less than 1 percent (Childress and others, 1999). The LRL usually is set at two times the LT-MDL. The LT-MDL is derived from the standard deviation of at least 24 method detection-limit (MDL) determinations made over an extended period. The MDL is the minimum concentration of a substance that can be measured and reported with 99-percent confidence that the concentration is greater than zero (at the MDL there is less than 1 percent chance of a false positive) (Childress and others, 1999; U.S. Environmental Protection Agency, 2002). Inorganic detections at concentrations less than the LT-MDL are reported as non-detections in the data tables of this report. The USGS NWQL updates LRL and LT-MDL values regularly, and the values, or ranges of values, listed in this report were in effect during the initial sampling period (January 2006 to June 2010) and the trend sampling period (April 2009 to April 2013) of trend wells in the 15 GAMA Priority Basin Project (PBP) study units in this report.

For organic constituents, concentrations between the LRL and the LT-MDL are reported as having a higher degree of uncertainty (coded by the letter "E" preceding the values in the tables and text). For information-rich methods, detections less than the LT-MDL have a high certainty of presence, but the precise concentration is uncertain. Detections of organic compounds at concentrations less than the LT-MDL are reported in the data tables, but are qualified with E-code remarks and footnotes and are not considered detections in the calculations of detection statistics. Information-rich methods are those that utilize gas chromatography or high-performance liquid chromatography (HPLC) with mass spectrometry detection, such as those methods used to analyze VOCs and pesticides. Compounds are identified by the presence of characteristic fragmentation patterns in their mass spectra in addition to being quantified by measurement of peak areas at their associated chromatographic retention times. The E-coded values also can result from detections outside the range of calibration standards, from detections that did not meet all laboratory QC criteria, and from samples that were diluted prior to analysis (Childress and others, 1999).

For most inorganic constituents, the LT-MDL is the threshold used by the NWQL for reporting analytical results. Until October 2010, non-detections of inorganic constituents were reported as less than the LRL, and values between the LT-MDL and the LRL were qualified with E-code remarks. As of October 2010, non-detections of inorganic constituents have been reported in the NWIS database as less than the LT-MDL (except for non-detections of bromide, which are reported as less than the MDL), and the E-code remark was no longer used for inorganic constituents.

For total dissolved solids, perchlorate, and NDMA, results are reported by using minimum reporting levels (MRLs). The MRL is the smallest measurable concentration of a constituent that can be reliably reported by using a given analytical method (Timme, 1995).

For the radiochemical constituents (carbon-14 and tritium), reporting limits are based on sample-specific critical levels (ssL_C) (McCurdy and others, 2008). The critical level is analogous to the LT-MDL used for reporting analytical results for organic and non-radioactive inorganic constituents. For this report, the critical level is defined as the minimum measured activity that indicates a positive detection of the radionuclide in the sample, with less than a 5-percent probability of a false positive detection. Sample-specific critical levels are used for radiochemical measurements because the critical level is sensitive to sample size and sample yield during analytical processing and is dependent on instrument background, on counting times for the sample and background, and on the characteristics of the instrument used and the nuclide measured. An ssL_C is calculated for each sample, and the measured activity in the sample is compared to the ssL_C associated with that sample. Measured activities less than the ssL_C are reported as non-detections in the data tables.

The uncertainties associated with activities of radiochemical constituents are sensitive to sample-specific parameters, including sample size, sample yield during analytical processing, and time elapsed between sample collection and various steps in the analytical procedure, as well as parameters associated with the instrumentation. Therefore, tritium activities are reported as plus or minus the sample-specific combined standard uncertainties (CSU). The CSU is reported at the 68 percent confidence level (1-sigma). Tritium reporting levels were expressed as MRLs before August 2007 and as ssL_C after August 2007. Both reporting level types were used for results from August 2007.

Results for some organic and inorganic constituents are presented by using study reporting levels (SRL) derived from assessment of data from QC samples associated with groundwater samples collected as part of the GAMA-PBP (Olsen and others, 2010; Fram and others, 2012; Davis and others, *2014*). The SRLs are equal to or greater than the reporting levels used by the laboratory. Detections reported by the laboratory with concentrations less than SRLs can have significant contamination bias. Such detections are expressed in the data tables as equal to or less than the reported concentration.

Notation

Stable isotopic compositions of hydrogen, oxygen, and carbon are reported as relative isotope ratios in units of per mil by using the standard delta notation (Coplen and others, 2002):

$$\delta^{i}E = \left[\frac{R_{sample}}{R_{reference}} - 1\right] \times 1{,}000 \text{ per mil} \qquad \text{(A1)}$$

where i is the atomic mass of the heavier isotope of the element,

E is the element (H for hydrogen, O for oxygen, C for carbon),

R_{sample} is the ratio of the abundance of the heavier isotope of the element (^{2}H, ^{18}O, ^{13}C) to the lighter isotope of the element (^{1}H, ^{16}O, ^{12}C) in the sample, and

$R_{reference}$ is the ratio of the abundance of the heavier isotope of the element to the lighter isotope of the element in the reference material.

The reference material for oxygen and hydrogen is Vienna Standard Mean Ocean Water (VSMOW), which is assigned $\delta^{18}O$ and $\delta^{2}H$ values of 0 per mil (note than $\delta^{2}H$ is sometimes written as δD because the common name of the heavier isotope of hydrogen, hydrogen-2, is deuterium) (Coplen and others, 2002). The reference material for carbon is Vienna Pee Dee Belemnite (VPDB), which is assigned a $\delta^{13}C$ value of 0 per mil (Coplen and others, 2002). Positive values indicate enrichment of the heavier isotope, and negative values indicate depletion of the heavier isotope, compared to the ratios observed in the standard reference material.

Constituents on Multiple Analytical Schedules

Fifteen constituents targeted in this study were measured by more than one analytical method or by more than one laboratory (*table A2*). Preferred analytical methods are indicated in the tables of this report. The preferred methods were generally selected on the basis of better performance or sensitivity for the constituent, but, in all cases, results are given for all methods used in the results tables. Six pesticide compounds—atrazine, deethylatrazine, carbaryl, carbofuran, metalaxyl, and tebuthiuron—as well as two VOCs—DBCP and EDB—were analyzed by two different NWQL analytical methods (*table A2*). An additional VOC—1,2,3-TCP—was analyzed by the NWQL as well as by an outside laboratory (Montgomery Watson Harza Laboratory [MWH] for samples collected prior to October 2007 and Weck as of October 2007).

The field water-quality indicators pH and specific conductance were measured in the field and at the NWQL for all samples during the trend sampling period and for most samples collected from trend wells during the initial sampling period. Field measurements of alkalinity were sometimes performed on samples for which alkalinity was also measured by the NWQL. The field measurements are the preferred method for these three water-quality indicators, because field conditions are considered more representative of groundwater conditions (Hem, 1985). However, both methods are reported in this report.

In addition to the 14 constituents measured by more than 1 method for at least some samples during the trend sampling period, perchlorate was measured by 2 laboratories (MWH and Weck) for the initial samples collected from the 3 trend wells in the Colorado River study unit. With the exception of these three samples, perchlorate analysis was performed by either MWH or Weck. Prior to August 2007, perchlorate analysis for GAMA-PBP was performed on unfiltered samples by MWH. After December 2007, perchlorate analysis was performed on filtered samples by Weck. Perchlorate analyses were performed by both laboratories on the three initial Colorado River study unit samples as part of an effort to determine the comparability of results from the two laboratories. Side-by-side results are reported for these three samples.

Quality-Control Methods and Results

The purpose of QC samples is to identify which data represent environmental conditions best and which have been affected by contamination or bias during sample collection, processing, storage, transportation, or laboratory analysis. Four types of QC measurements were evaluated in this study: (1) blank samples were collected to assess positive bias as a result of contamination during sample handling or analysis; (2) replicate samples were collected to assess variability; (3) matrix spike tests were done for organic constituents to assess positive or negative bias; and (4) surrogate compounds were added to samples analyzed for organic constituents to assess potential matrix effects from the chemical composition of each groundwater sample, as well as to assess potential bias of laboratory analytical methods.

Blank Samples

The primary purposes of collecting blanks are to evaluate the magnitude of potential contamination of samples with compounds of interest during sample handling or analysis and to identify and mitigate the sources of sample contamination.

Blank Collection and Analysis

Blanks were collected by using blank water certified by the NWQL to contain less than the reporting levels for selected constituents investigated in the study (National Water Quality Laboratory, written commun., 2009–13). Nitrogen-purged, organic-free blank water was used for blanks of organic constituents, and inorganic-free blank water was used for blanks of inorganic constituents. Two types of blanks (field and source-solution) were collected during the trend sampling period in 2009–13 (*table A3*).

Field blanks were collected to assess potential contamination of samples during collection, processing, transport, and analysis. To collect field blanks at the sampling sites, blank water was either pumped or poured through the sampling equipment (fittings and tubing) used to collect groundwater samples; then, it was processed and transported by using the same protocols used for the groundwater samples. Field blanks were analyzed for VOCs (13 field blanks), pesticides and pesticide degradates (11 field blanks), polar pesticides and degradates (1 field blank), perchlorate (9 field blanks), 1,2,3-TCP (9 field blanks), NDMA (1 field blank), trace elements (13 field blanks), nutrients (13 field blanks), major and minor ions (13 field blanks), silica (13 field blanks), and TDS (13 field blanks).

Source-solution blanks were collected at the beginning of a study unit, or when using a new lot of blank water, to assess potential contamination of samples during transport and analysis and potential contamination of the certified blank water obtained from the NWQL. Source-solution blanks were collected in the field inside the mobile laboratory by pouring blank water directly into sample containers. These samples were then preserved, stored, shipped, and analyzed in the same manner as the groundwater samples. Source-solution blanks were analyzed for VOCs (10 source-solution blanks), perchlorate (7 source-solution blanks), and 1,2,3-TCP (4 source-solution blanks).

Blanks were not collected for isotopic ratios. Isotopic ratios of hydrogen, oxygen, and carbon are an intrinsic property of any of these elements; therefore, a blank does not apply to these ratios. In addition, blanks were not collected for tritium. Tritium is in the atmosphere and would dissolve into any solution used for collecting a blank, making it impractical to collect a blank for tritium.

Blank Sample Results

Blanks were analyzed for 268 constituents. Field blanks were not collected for the four field water-quality indicators (dissolved oxygen, water temperature, pH, specific conductance) or the five isotopic tracers (two stable isotopes of water, tritium, and two isotopes of carbon). Of the 268 constituents for which blanks were collected, 14 constituents were detected in at least 1 field blank (*table A3*). Eleven of the constituents detected in field blanks were VOCs or trace elements for which SRLs have been established by using large sets of GAMA field-blank data. The SRLs were established by Fram and others (2012) to apply to data reporting and interpretive data analysis of GAMA VOC data. Study reporting levels were established by Olsen and others (2010) for trace-element data from samples collected by the GAMA program from May 2004 to September 2009 and by Davis and others (2014) for trace-element data from samples collected starting October 2009. The appropriate SRLs established by these studies were applied to all results in this report.

All of the groundwater detections of five VOCs—ethylbenzene, toluene, *m*-xylene plus *p*-xylene, *o*-xylene, and carbon disulfide—were at concentrations less than the respective SRLs established by Fram and others (2012); thus, these SRLs were applied to the results for these constituents. All but one of the groundwater detections of 1,2,4-trimethylbenzene were at concentrations less than its SRL (*table A3*). Similarly, most of the groundwater detections of copper were at concentrations less than the SRLs established by Olsen and others (2010) and Davis and others (2014), as were a substantial number of groundwater detections of aluminum, lead, nickel, and zinc (*table A3*).

The constituents other than VOCs or trace elements that were detected in at least one field blank during the trend sampling period were the nutrients ammonia, nitrite, and nitrate plus nitrite. Ammonia was detected in two of the trend field blanks, both at a concentration of 0.011 mg/L (*table A3*). Nitrite was detected in one trend field blank at a concentration of 0.0023 mg/L. Nitrate plus nitrite was detected in two trend field blanks at concentrations of 0.02 and 0.09 mg/L. However, 1 or 2 detections out of 13 field blanks collected during trend sampling were not considered sufficient to establish SRLs for the GAMA program. During the same period that the trend samples were collected for the 15 study units that are the subject of this report, 8 GAMA study units were sampled for the first time by using the same sampling protocols as for trend sampling. Collectively, for these 8 GAMA study units, an additional 50 field blanks were collected and analyzed for nutrients, and these additional data, along with those from the 13 field blanks collected during trend sampling, were used to determine whether SRLs needed to be applied to results for ammonia, nitrite, and nitrate plus nitrite in this report. The SRLs for these constituents were set at the 90th percentile concentration at 90 percent confidence or higher in the 63 field blanks by using binomial distribution (BD-90/90) (Olsen and others, 2010; Fram and others, 2012; Davis and others, 2014).

The BD-90/90 concentration established for ammonia by the 63 field blanks was 0.014 mg/L, which set the SRL used in this report at that level (*table A3*). The BD-90/90 concentration for nitrite was a non-detection, so no SRL was established for nitrite in this study. The BD-90/90 concentration establishing the SRL for nitrate plus nitrite was 0.001 mg/L (*table A3*). However, there were no detections of nitrate plus nitrite at concentrations less than 0.001 mg/L, so no results were affected by the establishment of this SRL.

Detections of constituents at concentrations less than SRLs were coded as less than or equal to their measured concentrations in the samples and were counted as non-detections for the purpose of calculating detection frequencies for this report.

Replicate Samples

Sequential replicate samples were collected to assess the precision of the water-quality data. Estimates of data precision are needed to assess whether differences between concentrations in samples are due to differences in groundwater quality (for example, spatial or temporal trends) or to variability that can result from collecting, processing, and analyzing the samples.

Replicate Collection and Analysis

The acceptable limits for differences in measured concentrations between replicate paired samples were determined by using one of two criteria. The criterion selection depended on the magnitude of the measured concentration of a constituent relative to its reporting level. If the concentration of a constituent was less than five times its reporting level, a standard deviation (SD) of less than half the reporting level for the sample pair was considered acceptable. If the concentration of a constituent was greater than or equal to five times its reporting level, a *relative* standard deviation (RSD) of less than 10 percent was considered acceptable. The RSD is defined as the SD divided by the mean concentration for each replicate pair of samples expressed as a percentage. A RSD of less than 10 percent also was used for isotopes, with the exception of tritium. For tritium, the activity in the paired samples could differ by no more than the combined standard uncertainty reported for the samples in order to be acceptable.

When one or both values of a replicate pair were reported as non-detections, variability was evaluated in the following manner. If both values were reported as non-detections, the variability was considered acceptable because the results were perfectly consistent. If one value was reported as a non-detection (less than the reporting level [RL]), and the other value was reported as a detection less than the RL, the variability was considered acceptable because these two values, while not perfectly consistent, were both less than the RL. If one value was reported as a non-detection, and the other value was reported as a detection greater than or equal to the RL, the variability for the pair was considered unacceptable.

Replicate Results

Tables A4A–B summarize the results of replicate analyses for constituents in groundwater samples collected during the trend sampling period that were detected in at least one of the samples of a replicate pair. One or two replicates for 8 constituents indicated unacceptable variability (*tables A4A–B*), including 1 out of 13 replicates for perchlorate; 1 out of 12 replicates for antimony, cadmium, selenium, silver, and nitrite; 2 out of 12 replicates for nickel; and 2 out of 11 replicates for tritium. Environmental detections were not modified on the basis of the replicate analyses.

Matrix Spike Samples

Addition of a known concentration of a constituent (spike) to a replicate environmental sample enables the analyzing laboratory to determine the effect of the matrix, in this case groundwater, on the analytical technique used to measure the constituent. The known compounds added in matrix spikes are the same as those analyzed in the environmental samples. This enables an analysis of matrix interferences on a compound-by-compound basis. For this study, matrix spikes were added by the laboratories performing the analysis rather than in the field. Low matrix-spike recovery can indicate that the compound might not be detected in samples when it is present at very low concentrations. Low and high matrix-spike recoveries can be a concern if the concentration of a compound in a groundwater sample is close to the health-based benchmark; a low recovery could result in a falsely measured concentration less than the health-based benchmark, whereas a high recovery could result in a falsely measured concentration greater than the health-based benchmark. Laboratory matrix spikes were performed for 227 out of the 228 organic constituents sampled in this study, including VOCs, pesticides (including polar pesticides), and pesticide degradates, because the analytical methods for these constituents can be susceptible to matrix interference. For the 10 organic constituents analyzed by 2 methods, laboratory matrix spikes were performed for both methods. During trend sampling, the analysis for NDMA was done for only one study unit, and no matrix spikes were performed for NDMA.

The GAMA-PBP defined the data-quality objective range for acceptable median matrix-spike recoveries as 70–130 percent. For some constituents, an acceptable range of 70–130 percent for median matrix-spike recovery was more restrictive than the acceptable control limits for laboratory set-spike recoveries. Laboratory set spikes are aliquots of laboratory blank water to which the same spike solution used for the matrix spikes has been added. One set spike is analyzed with each set of samples. Acceptable control limits for set spikes are defined relative to the long-term variability in recovery.

Matrix Spike Recoveries

Tables A5A–E present a summary of matrix-spike recoveries of organic constituents analyzed in trend samples. Median matrix-spike recoveries were within acceptable limits for all VOCs (*tables A5A, A5B, A5E*). However, median matrix-spike recoveries for 27 of the 139 pesticide compounds were less than the acceptable limits (*tables A5C–D*), which indicates that these constituents might not have been detected in some samples even if they were present. In addition, median recoveries for eight pesticide compounds were greater than acceptable limits. Despite this indication of positive analytical bias, only one of these eight compounds (tebuthiuron) was detected in unspiked groundwater samples during this study.

Surrogates Compounds

Surrogate compounds are added to samples in the laboratory prior to analysis to evaluate the recovery of similar constituents. Surrogate compounds were added in the laboratory to all groundwater and QC samples that were analyzed by the NWQL for VOCs, pesticides, and pesticide degradates. Surrogates are used to identify general problems that can arise during laboratory sample analysis that could affect the results for all compounds in that sample. Potential problems include matrix interferences (such as high levels of dissolved organic carbon) that can produce a positive or negative bias or incomplete laboratory recovery (possibly because of improper maintenance or calibration of analytical equipment) that produces a negative bias. A 70–130 percent recovery of surrogates, in general, is considered acceptable; values outside this range can indicate problems with the processing or analysis of samples (Connor and others, 1998; Sandstrom and others, 2001) or indicate groundwater matrix interference.

Surrogate Recoveries

Median recoveries were within the acceptable range for all surrogates added to samples for the analyses of VOCs and pesticide compounds (*table A6*). Although some of the surrogates had recoveries that fell outside the acceptable ranges for samples from individual wells on a few occasions, the surrogate-recovery results for submitted groundwater samples were similar to results for surrogates added to field and laboratory blank samples, so it is unlikely that groundwater matrix interferences caused the recoveries to be outside of the acceptable ranges.

References Cited

American Public Health Association, 1998, Standard methods for the examination of water and wastewater (20th ed.): Washington, D.C., American Public Health Association, American Water Works Association, and Water Environment Federation, p. 3-37–3-43.

Bennett, P.A., Bennett, G.L., V, Belitz, Kenneth, 2009, Groundwater quality data for the Northern Sacramento Valley, 2007: Results from the California GAMA program: U.S. Geological Survey Data Series 452, 90 p., *http://pubs.er.usgs.gov/publication/ds452*.

Childress, C.J.O., Foreman, W.T., Connor, B.F., and Maloney, T.J., 1999, New reporting procedures based on long-term method detection levels and some considerations for interpretations of water-quality data provided by the U.S. Geological Survey National Water Quality Laboratory: U.S. Geological Survey Open-File Report 99–193, 19 p., *http://pubs.er.usgs.gov/publication/ofr99193*.

Connor, B.F., Rose, D.L., Noriega, M.C., Murtagh, L.K., and Abney, S.R., 1998, Methods of analysis by the U.S. Geological Survey National Water Quality Laboratory—Determination of 86 volatile organic compounds in water by gas chromatography/mass spectrometry, including detections less than reporting limits: U.S. Geological Survey Open-File Report 97–829, 78 p., *http://pubs.er.usgs.gov/publication/ofr97829*.

Coplen, T.B., Wildman, J.D., and Chen, J., 1991, Improvements in the gaseous hydrogen-water equilibrium technique for hydrogen isotope analysis: Analytical Chemistry, v. 63, p. 910–912.

Coplen, T.B., 1994, Reporting of stable hydrogen, carbon, and oxygen isotopic abundances: Pure and Applied Chemistry, v. 66, p. 273–276.

Coplen, T.B., Hopple, J.A., Bohlke, J.K., Peiser, H.S., Rieder, S.E., Krouse, H.R., Rosman, K.J.R., Ding, T., Vocke, R.D., Jr., Revesz, K.M., Lamberty, A., Taylor, P., and DeBierve, P., 2002, Compilation of minimum and maximum isotope ratios of selected elements in naturally occurring terrestrial materials and reagents: U.S. Geological Survey Water-Resources Investigations Report 01–4222, 98 p., *http://pubs.er.usgs.gov/publication/wri014222*.

Davis, T.A., Olsen, L.D., Fram, M.S., and Belitz, Kenneth, 2014, Updated study reporting levels (SRLs) for trace-element data collected for the California Groundwater Ambient Monitoring and Assessment (GAMA) Priority Basin Project, October 2009–March 2013: U.S. Geological Survey Scientific Investigations Report 2014–5105, 52 p., *http://pubs.er.usgs.gov/publication/sir20145105*.

Densmore, J.N., Fram, M.S., and Belitz, Kenneth, 2009, Ground-water quality data in the Owens and Indian Wells Valleys study unit, 2006: Results from the California GAMA program: U.S. Geological Survey Data Series 427, 86 p., *http://pubs.er.usgs.gov/publication/ds427*.

Donahue, D.J., Linick, T.W., and Jull, A.J.T., 1990, Isotope-ratio and background corrections for accelerator mass spectrometry radiocarbon measurements: Radiocarbon, v. 32, book 2, p. 135–142.

Epstein, S., and Mayeda, T.K., 1953, Variation of O-18 content of water from natural sources: Geochimica et Cosmochimica Acta, v. 4, p. 213–224.

Faires, L.M., 1993, Methods of analysis by the U.S. Geological Survey National Water Quality Laboratory—Determination of metals in water by inductively coupled plasma-mass spectrometry: U.S. Geological Survey Open-File Report 92–634, 28 p., *http://pubs.er.usgs.gov/publication/ofr92634*.

Fishman, M.J. ed., 1993, Methods of analysis by the U.S. Geological Survey National Water Quality Laboratory—Determination of inorganic and organic constituents in water and fluvial sediments: U.S. Geological Survey Open-File Report 93–125, 217 p., *http://pubs.er.usgs.gov/publication/ofr93125*.

Fishman, M.J. ed., and Friedman, L.C., 1989, Methods for determination of inorganic substances in water and fluvial sediments: U.S. Geological Survey Techniques of Water-Resources Investigations, book 5, chap. A1, 545 p., *http://pubs.er.usgs.gov/publication/twri05A1*.

Fram, M.S., Olsen, L.D., and Belitz, Kenneth, 2012, Evaluation of volatile organic compound (VOC) blank data and application of study reporting levels to groundwater data collected for the California GAMA Priority Basin Project, May 2004 through September 2010: U.S. Geological Survey Scientific Investigations Report 2012–5139, 94 p., *http://pubs.er.usgs.gov/publication/sir20125139*.

Furlong, E.T., Anderson, B.D., Werner, S.L., Soliven, P.P., Coffey, L.J., and Burkhardt, M.R., 2001, Methods of analysis by the U.S. Geological Survey National Water Quality Laboratory; Determination of pesticides in water by graphitized carbon-based solid-phase extraction and high-performance liquid chromatography/mass spectrometry: U.S. Geological Survey Water-Resources Investigations Report 2001–4134, 73 p., *http://pubs.er.usgs.gov/publication/wri014134*.

Gagnon, A.R., and Jones, G.A., 1993, AMS-graphite target production methods at the Woods Hole Oceanographic Institution during 1986–1991: Radiocarbon, v. 35, book 2, p. 301–310.

Garbarino, J.R., 1999, Methods of analysis by the U.S. Geological Survey National Water Quality Laboratory—Determination of dissolved arsenic, boron, lithium, selenium, strontium, thallium, and vanadium using inductively coupled plasma-mass spectrometry: U.S. Geological Survey Open-File Report 99–93, 31 p., *http://pubs.er.usgs.gov/publication/ofr9993*.

Garbarino, J.R., Kanagy, L.K., and Cree, M.E., 2006, Determination of elements in natural-water, biota, sediment, and soil samples using collision/reaction cell inductively coupled plasma-mass spectrometry: U.S. Geological Survey Techniques and Methods, book 5, chap. B1, 88 p., *http://pubs.er.usgs.gov/publication/tm5B1*.

Goldrath, D.A., Wright, M.T., and Belitz, Kenneth, 2009, Ground-water quality data in the Coachella Valley study unit, 2007: Results from the California GAMA Program: U.S. Geological Survey Data Series 373, 70 p., *http://pubs.er.usgs.gov/publication/ds373*.

Goldrath, D.A., Wright, M.T., and Belitz, Kenneth, 2010, Groundwater-quality data in the Colorado River study unit, 2007: Results from the California GAMA program: U.S. Geological Survey Data Series 474, 66 p., *http://pubs.er.usgs.gov/publication/ds474*.

Hautman, D.P., Munch, D.J., Eaton, A.D., and Haghani, A.W., 1999, Method 314.0, Determination of perchlorate in drinking water using ion chromatography, Revision 1.0: U.S. Environmental Protection Agency, accessed December 6, 2013, at *http://www.epa.gov/ogwdw/methods/pdfs/methods/met314.pdf*.

Hem, J.D., 1985, Study and interpretation of the chemical characteristics of natural water: U.S. Geological Survey Water-Supply Paper 2254, 263 p., *http://pubs.er.usgs.gov/publication/wsp2254*.

Kent, Robert, and Belitz, Kenneth, 2009, Ground-water quality data in the Upper Santa Ana Watershed study unit, November 2006–March 2007: Results from the California GAMA Program: U.S. Geological Survey Data Series 404, 116 p., *http://pubs.er.usgs.gov/publication/ds404*.

Koterba, M.T., Wilde, F.D., and Lapham, W.W., 1995, Ground-water data-collection protocols and procedures for the National Water-Quality Assessment Program: Collection and documentation of water-quality samples and related data: U.S. Geological Survey Open-File Report 95–399, 113 p., *http://pubs.er.usgs.gov/publication/ofr95399*.

Landon, M.K., and Belitz, Kenneth, 2008, Ground-water quality data in the Central Eastside San Joaquin Basin 2006: Results from the California GAMA Program: U.S. Geological Survey Data Series 325, 88 p., *http://pubs.er.usgs.gov/publication/ds325*.

Lane, S.L., Flanagan, Sarah, and Wilde, F.D., 2003, Selection of equipment for water sampling (ver. 2.0): U.S. Geological Survey Techniques of Water-Resources Investigations, book 9, chap. A2, accessed December 13, 2013, at *http://pubs.water.usgs.gov/twri9A2/*.

Lindley, C.E., Stewart, J.T., and Sandstrom, M.W., 1996, Determination of low concentrations of acetochlor in water by automated solid-phase extraction and gas chromatography with mass selective detection: Journal of AOAC International, v. 79, no. 4, p. 962–966.

Madsen, J.E., Sandstrom, M.W., and Zaugg, S.D., 2003, Methods of analysis by the U.S. Geological Survey National Water Quality Laboratory—A method supplement for the determination of Fipronil and degradates in water by gas chromatography/mass spectrometry: U.S. Geological Survey Open-File Report 02–462, 11 p., *http://pubs.er.usgs.gov/publication/ofr02462*.

Maloney, T.J., ed., 2005, Quality management system, U.S. Geological Survey National Water Quality Laboratory: U.S. Geological Survey Open-File Report 2005–1263, accessed December 6, 2013, at *http://pubs.usgs.gov/of/2005/1263/pdf/OFR2005-1263.pdf*.

Mathany, T.M., and Belitz, Kenneth, 2009, Groundwater quality data in the Mojave study unit, 2008: Results from the California GAMA Program: U.S. Geological Survey Data Series 440, 80 p., *http://pubs.er.usgs.gov/publication/ds440*.

Mathany, T.M., Land, Michael, and Belitz, Kenneth, 2008, Ground-water quality data in the coastal Los Angeles Basin study unit, 2006: Results from the California GAMA Program: U.S. Geological Survey Data Series 387, 98 p., *http://pubs.er.usgs.gov/publication/ds387*.

Mathany, T.M., Wright, M.T., Beuttel, B.S., and Belitz, Kenneth, 2012, Groundwater-quality data in the Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit, 2008–2010: Results from the California GAMA Program: U.S. Geological Survey Data Series 659, 100 p., *http://pubs.er.usgs.gov/publication/ds659*.

Mathany, T.M., Landon, M.K., Shelton, J.L., and Belitz, Kenneth, 2013, Groundwater-quality data in the Western San Joaquin Valley study unit, 2010: Results from the California GAMA Program: U.S. Geological Survey Data Series 706, 102 p., *http://pubs.er.usgs.gov/publication/ds706*.

McCurdy, D.E., Garbarino, J.R., and Mullin, A.H., 2008, Interpreting and reporting radiological water-quality data: U.S. Geological Survey Techniques and Methods, book 5, chap. B6, 33 p., *http://pubs.er.usgs.gov/publication/tm5B6*.

McLain, B.J., 1993, Methods of analysis by the U.S. Geological Survey National Water Quality Laboratory—Determination of Chromium in water by graphite furnace atomic absorption spectrophotometry: U.S. Geological Survey Open-File Report 93–449, 16 p., *http://pubs.er.usgs.gov/publication/ofr93449*.

McNichol, A.P., Gagnon, A.R. Jones, G.A., and Osborne, E.A., 1992, Illumination of a black box—Analysis of gas composition during graphite target preparation, *in* Long, A., and Kra, R.S., eds., Proceedings of the 14th International ^{14}C Conference: Radiocarbon, v. 34, book 3, p. 321–329.

McNichol, A.P., Jones, G.A., Hutton, D.L., and Gagnon, A.R., 1994, The rapid preparation of seawater $\sum CO_2$ for radiocarbon analysis at the National Ocean Sciences AMS Facility: Radiocarbon, v. 36, book 2, p. 237–246.

Montrella, Joseph, and Belitz, Kenneth, 2009, Ground-water quality data in the Santa Clara River Valley study unit, 2007: Results from the California GAMA Program: U.S. Geological Survey Data Series 408, 84 p., *http://pubs.er.usgs.gov/publication/ds408*.

Munch, J.W., ed., 1995, Method 504.1—1,2-Dibromoethane (EDB), 1,2-dibromo-3-chloropropane (DBCP), and 1,2,3-trichoropropane (123TCP) in water by microextraction and gas chromatography, *in* U.S. Environmental Protection Agency, 1995, Methods for the determination of organic compounds in drinking water, supplement III: Washington, D.C., Office of Research and Development, August 1995, rev. 1.1, EPA 600-R-95-131, p. 504, 1–20, accessed June 5, 2014, at *https://dec.alaska.gov/eh/docs/lab/dw/Chem/organics/504.1.pdf*.

Okamoto, H.S., Steeber, W.R., Remoy, J., Hill P., and Perera, S.K., eds., 2002, Determination of 1,2,3-trichloropropane in drinking water by purge and trap gas chromatography/mass spectrometry: California Department of Health Services, Division of Drinking Water and Environmental Management, Sanitation and Radiation Laboratories Branch, accessed December 6, 2013, at *http://www.cdph.ca.gov/certlic/drinkingwater/Documents/Drinkingwaterlabs/TCPbyPT-GCMS.pdf*.

Olsen, L.D., Fram, M.S., and Belitz, Kenneth, 2010, Review of trace-element field-blank data collected for the California Groundwater Ambient Monitoring and Assessment (GAMA) Program, May 2004–January 2008: U.S. Geological Survey Scientific Investigations Report 2009–5220, 47 p., *http://pubs.er.usgs.gov/publication/sir20095220*.

Patton, C.J., and Kryskalla, J.R., 2003, Methods of analysis by the U.S. Geological Survey National Water Quality Laboratory—Evaluation of alkaline persulfate digestion as an alternative to Kjeldahl digestion for determination of total and dissolved nitrogen and phosphorous in water: U.S. Geological Survey Water-Resources Investigations Report 03–4174, 33 p., *http://pubs.er.usgs.gov/publication/wri034174*.

Patton, C.J., and Kryskalla, J.R., 2011, Colorimetric determination of nitrate plus nitrite in water by enzymatic reduction, automated discrete analyzer methods: U.S. Geological Survey Techniques and Methods, book 5, chap. B8, 34 p., *http://pubs.er.usgs.gov/publication/tm5B8*.

Pirkey, K.D., and Glodt, S.R., 1998, Quality control at the U.S. Geological Survey National Water Quality Laboratory: U.S. Geological Survey Fact-Sheet 026–98, 4 p., *http://pubs.er.usgs.gov/publication/fs02698*.

Plomley, J.B., Koester, C.J., and March, R.E., 1994, Determination of NDMA in complex environmental matrices by quadrupole ion storage tandem mass spectrometry enhanced by unidirectional ion ejection: Analytical Chemistry, v. 66, no. 24, p. 4437–4443.

Radtke, D.B., Davis, J.V., and Wilde, F.D., 2005, Specific electrical conductance (ver. 1.2): U.S. Geological Survey Techniques of Water-Resources Investigations, book 9, chap. A6.3, accessed December 13, 2013, at *http://water.usgs.gov/owq/FieldManual/Chapter6/6.3_contents.html*.

Ritz, G.F., and Collins, J.A., 2008, pH (ver. 2.0): U.S. Geological Survey Techniques of Water-Resources Investigations, book 9, chap. A6.4, accessed December 13, 2013, at *http://water.usgs.gov/owq/FieldManual/Chapter6/6.4_contents.html*.

Rounds, S.A., Wilde, F.D., and Ritz, G.F., 2013, Dissolved Oxygen (ver. 3.0): U.S. Geological Survey Techniques of Water-Resources Investigations, book 9, chap. A6.2, accessed December 13, 2013, at *http://water.usgs.gov/owq/FieldManual/Chapter6/6.2_contents.html*.

Sandstrom, M.W., Stroppel, M.E., Foreman, W.T., and Schroeder, M.P., 2001, Methods of analysis by the U.S. Geological Survey National Water Quality Laboratory—Determination of moderate-use pesticides and selected degradates in water by C-18 solid-phase extraction and gas chromatography/mass spectrometry: U.S. Geological Survey Water-Resources Investigations Report 01–4098, 70 p., *http://pubs.er.usgs.gov/publication/wri20014098*.

Schmitt, S.J., Fram, M.S., Dawson, B.J.M., and Belitz, Kenneth, 2008, Ground-water quality data in the Middle Sacramento Valley study unit, 2006—Results from the California GAMA program: U.S. Geological Survey Data Series 358, 100 p., *http://pubs.er.usgs.gov/publication/ds385*.

Schmitt, S.J., Milby Dawson, B.J., and Belitz, Kenneth, 2009, Groundwater-quality data in the Antelope Valley study unit, 2008: Results from the California GAMA program: U.S. Geological Survey Data Series 479, 79 p., *http://pubs.er.usgs.gov/publication/ds479*.

Schneider, R.J., Jones, G.A., McNichol, A.P., von Reden, K.F., Elder, K.A., Huang, K., and Kessel, E.D., 1994, Methods for data screening, flagging, and error analysis at the National Ocean Sciences AMS Facility: Nuclear Instruments and Methods in Physics Research, book 92, p. 172–175.

Shelton, J.L., Pimentel, Isabel, Fram, M.S., and Belitz, Kenneth, 2008, Ground-water quality data in the Kern County subbasin study unit, 2006—Results from the California GAMA Program: U.S. Geological Survey Data Series 337, 75 p., *http://pubs.er.usgs.gov/publication/ds337*.

Shelton, J.L., Fram, M.S., and Belitz, Kenneth, 2009, Groundwater-quality data for the Madera–Chowchilla study unit, 2008: Results from the California GAMA Program: U.S. Geological Survey Data Series 455, 80 p., *http://pubs.er.usgs.gov/publication/ds455*.

Thatcher, L.L., Janzer, V.J., and Edwards, K.W., 1977, Methods for the determination of radioactive substances in water: U.S. Geological Survey Techniques of Water-Resources Investigations, book 5, chap. A5, 95 p.

Timme, P.J., 1995, National Water Quality Laboratory, 1995 services catalog: U.S. Geological Survey Open-File Report 95–352, 120 p., *http://pubs.er.usgs.gov/publication/ofr95352*.

U.S. Environmental Protection Agency, 1986, Quality criteria for water 1986: Washington, D.C., Report 440/5-86-001, Office of Water [variously paged].

U.S. Environmental Protection Agency, 1989, Method 1625C—Semivolatile organic compounds by isotope dilution GSMS: U.S. Environmental Protection Agency, Washington D.C., 68 p., accessed December 6, 2013, at *http://water.epa.gov/scitech/methods/cwa/bioindicators/upload/2007_11_06_methods_method_1625c.pdf*.

U.S. Environmental Protection Agency, 1995, Method 524.2—Measurement of purgeable organic compounds in water by capillary column gas chromatography/mass spectrometry: U.S. Environmental Protection Agency EPA/600/R-95-131, available at *http://www.nemi.gov/*.

U.S. Environmental Protection Agency, 2002, Guidelines for establishing procedures for the analysis of pollutants: U.S. Code of Federal Regulations, Title 40, 136 p.

U.S. Environmental Protection Agency, 2005, Method 331.0—Determination of perchlorate in drinking water by liquid chromatography electrospray ionization mass spectrometry (Revision 1.0): Office of Ground Water and Drinking Water, EPA Document # 815-R-05-007, 34 p., accessed December 6, 2013, at *http://www.epa.gov/safewater/methods/pdfs/methods/met331_0.pdf*.

U.S. Geological Survey, 2006, Collection of water samples (ver. 2.0): U.S. Geological Survey Techniques of Water-Resources Investigations, book 9, chap. A4, accessed June 5, 2014, at *http://pubs.water.usgs.gov/twri9A4/*.

U.S. Geological Survey, variously dated, National field manual for the collection of water-quality data: U.S. Geological Survey Techniques of Water-Resources Investigations, book 9, chap. A1–A9, *http://pubs.water.usgs.gov/twri9A*.

Vogel, J.S., Nelson, D.E., and Southon, J.R., 1987, ^{14}C background levels in an accelerator mass spectrometry system: Radiocarbon, v. 29, book 3, p. 323–333.

Wilde, F.D., ed., 2004, Cleaning of equipment for water sampling (ver. 2.0): U.S. Geological Survey Techniques of Water-Resources Investigations, book 9, chap. A3, accessed December 13, 2013, at *http://water.usgs.gov/owq/FieldManual/chapter3/Ch3_contents.html*.

Wilde, F.D., Radtke, D.B., Gibs, J., and Iwatsubo, R.T., 2004, Processing of water samples (ver. 2.2, with updates through 2009): U.S. Geological Survey Techniques of Water-Resources Investigations, book 9, chap. A5, accessed June 28, 2007, at *http://pubs.water.usgs.gov/twri9A5/*.

Wilde, F.D., Radtke, D.B., Gibs, J., and Iwatsubo, R.T., 2006 Collection of water samples (ver. 2.0): U.S. Geological Survey Techniques of Water-Resources Investigations, book 9, chap. A4, accessed November 5, 2014, at *http://pubs.water.usgs.gov/twri9A4/*.

Wilde, F.D., 2008, Guidelines for field-measured water-quality properties (ver. 2.0): U.S. Geological Survey Techniques of Water-Resources Investigations, book 9, chap. A6, accessed December 13, 2013, at *http://water.usgs.gov/owq/FieldManual/Chapter6/6.0_contents.html*.

Wilde, F.D., ed., variously dated, Field measurements: U.S. Geological Survey Techniques of Water-Resources Investigations, book 9, chap. A6, with sec. 6.0–6.8, accessed June 5, 2014, at *http://pubs.water.usgs.gov/twri9A6/*.

Zaugg, S.D., Sandstrom, M.W., Smith, S.G., and Fehlberg, K.M., 1995, Methods of analysis by the U.S. Geological Survey National Water Quality Laboratory—Determination of pesticides in water by C-18 solid-phase extraction and capillary-column gas chromatography/mass spectrometry with selected-ion monitoring: U.S. Geological Survey Open-File Report 95–181, 49 p., *http://pubs.er.usgs.gov/publication/ofr95181*.

Appendix Tables

Appendix tables are supplied in a downloadable Microscoft Excel® file.

Prepared by the Sacramento Publishing Service Center.

For more information concerning this report, contact:

Director
U.S. Geological Survey
California Water Science Center
6000 J Street, Placer Hall
Sacramento, CA 95819
dc_ca@usgs.gov

or visit our Web site at:
http://ca.water.usgs.gov

ISSN 2327-638X (online)
http://dx.doi.org/10.3133/ds919