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Water-Quality Data for the Lower Russian River Basin, Sonoma County, California, 2003–2004

Data Series 168

U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

Water-Quality Data for the Lower Russian River Basin, Sonoma County, California, 2003–2004

By Robert Anders, Karl Davidek, and Kathryn M. Koczot

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Data Series 168

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

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Conversion Factors, Datum, Water-Quality Information, and Abbreviations

Multiply	By	To obtain
	Length	
inch (in.)	2.54	centimeter (cm)
foot (ft)	0.3048	meter (m)
mile (mi)	1.609	kilometer (km)
	Area	
acre	4,047	square meter (m^2)
square foot (ft^2)	0.09290	square meter (m^2)
square mile (mi^2)	2.590	square kilometer (km^2)
	Volume	
gallon (gal)	3.785	liter (L)
gallon (gal)	0.003785	cubic meter (m^3)
cubic inch (in^3)	16.39	cubic centimeter (cm^3)
	Flow rate	
cubic foot per second (ft^3/s)	0.02832	cubic meter per second (m^3/s)
	Mass	
ounce, avoirdupois (oz)	28.35	gram (g)
pound, avoirdupois (lb)	0.4536	kilogram (kg)

Multiply	By	To obtain
	Length	
millimeter (mm)	0.03937	inch (in.)
	Volume	
liter (L)	0.2642	gallon (gal)

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

°F=(1.8×°C)+32

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).

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).

Abbreviations

ADVM	acoustic Doppler velocity meter
AHTN	acetyl hexamethyl tetrahydronaphthalene
ANC	acid neutralizing capacity
Ag	silver
Al	aluminum
An	antimony
As	arsenic
B	boron
Ba	barium
Be	beryllium
Br	bromide
C	carbon
Ca	calcium
$CaCO_3$	calcium carbonate
Cd	cadmium
Cl	chloride
Co	cobalt
Cr	chromium
Cu	copper
°C	degrees Celsius
DBPs	disinfection-by-products
DEET	N, N-diethyl-meta-toluamide
E	estimated value
F	fluoride
Fe	iron
FNU	formazine nephelometric units

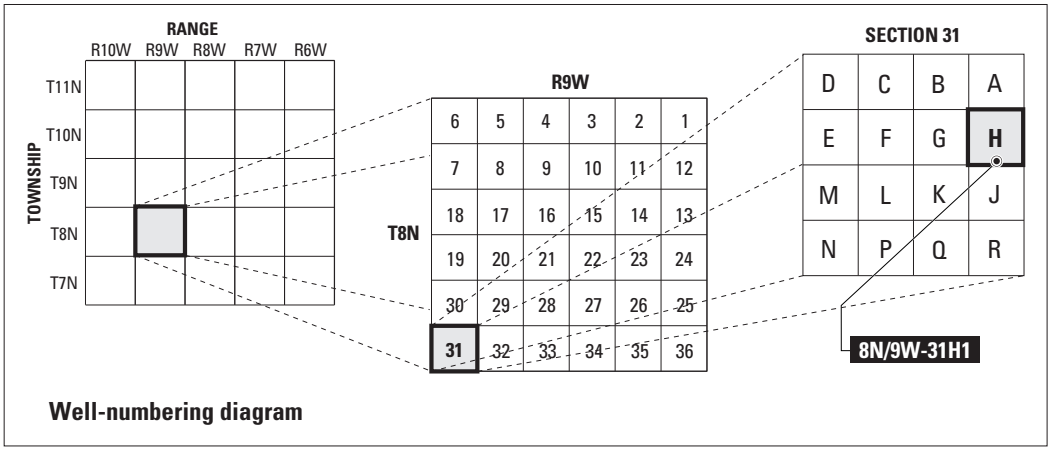
GIS	geographical information system
Hg	mercury
K	potassium
<	less than
L	liter
LRL	laboratory reporting limit
M	measured value
MDL	method detection limit
MF	membrane filtration
Mg	magnesium
mL	milliliter
mm	millimeter
Mn	manganese
Mo	molybdenum
N	nitrogen
Na	sodium
Ni	nickel
NO_2	nitrite
NO_3	nitrate
NTU	nephelometric turbidity units
OWCs	organic wastewater compounds
O_2	oxygen gas
P	phosphorus
PAHs	polyaromatic hydrocarbons
Pb	lead
pH	log hydrogen ion concentration
QC	quality control
RBF	riverbank filtration
SC	specific conductance
Se	selenium
SiO_2	silica
SO_4	sulfate
Sr	strontium
Zn	zinc

Organizations

ASTM	American Society for Testing and Materials
NWIS	(USGS) National Water Information System
NWQL	(USGS) National Water Quality Laboratory
SCWA	Sonoma County Water Agency
USEPA	U.S. Environmental Protection Agency
USGS	U.S. Geological Survey

Well-Numbering System

Wells are identified and numbered according to their location in the rectangular system for the subdivision of public lands. Identification consists of the township number, north or south; the range number, east or west; and the section number. Each section is divided into sixteen 40-acre tracts lettered consecutively (except I and O), beginning with "A" in the northeast corner of the section and progressing in a sinusoidal manner to "R" in the southeast corner. Within the 40-acre tract, wells are sequentially numbered in the order they are inventoried. The final letter refers to the base line and meridian. In California, there are three base lines and meridians; Humboldt (H), Mount Diablo (M), and San Bernardino (S). All wells in the study area are referenced to the Humboldt base line and meridian (H). Well numbers consist of 15 characters and follow the format 008N009W031H001. In this report, well numbers are abbreviated and written 8N/9W-31H1. Wells in the same township and range are referred to only by their section designation, 31H1. The following diagram shows how the number for well 8N/9W-31H1 is derived.



Well-numbering diagram

Water-Quality Data for the Lower Russian River Basin, Sonoma County, California, 2003–2004

By Robert Anders, Karl Davidek, and Kathryn M. Koczot

Abstract

In 2003, the U.S. Geological Survey, in cooperation with the Sonoma County Water Agency, began a study to determine the chemical, microbiological, and isotopic composition of the surface water and ground water in selected areas of the Lower Russian River Basin, Sonoma County, California. This report is a compilation of the hydrologic and water-quality data collected from 10 Russian River sites, 1 gravel-terrace pit site, 12 ground-water sites, 11 tributary sites including Mark West Creek, and 2 estuary sites between the city of Healdsburg and the Pacific Ocean, for the period August 2003 to September 2004.

Field measurements made included streamflow, barometric pressure, dissolved oxygen, pH, specific conductance, and turbidity. Water samples were analyzed for nutrients, major ions, total and dissolved organic carbon, trace elements, mercury, wastewater compounds, total coliform, *Escherichia coli*, Enterococci, *Clostridium perfringens*, and the stable isotopes of hydrogen and oxygen. Discharge measurements and sampling techniques were modified to accommodate the very low summer flows at most of the tributaries, and discharge measurements were made with an acoustic Doppler velocity meter at the estuary river site to overcome the complexities associated with tidal influences.

Introduction

Background

The Russian River originates in central Mendocino County, approximately 15 miles north of Ukiah, flows south through Sonoma County and empties into the Pacific Ocean about 20 miles west of Santa Rosa (*fig. 1*). The main channel of the Russian River has a length of 110 miles and drains approximately 1,485 square miles including much of the Santa Rosa Plain. Water from the Russian River exchanges freely with the underlying alluvial aquifer, and represents the primary source of water resources for Sonoma and northern Marin Counties (Constantz and others, 2003).

Sonoma County has experienced population growth and accelerated land development over the past few decades. The Sonoma County Water Agency (SCWA) is the primary supplier of wholesale drinking water to municipalities and water districts in Sonoma and Marin Counties. The demand for drinking water supplied by the SCWA is expected to increase during the next decade. Currently, the SCWA operates several radial collector wells adjacent to the Russian River that extract water from the underlying alluvial aquifer. Recharge to the alluvial aquifer is augmented by an inflatable dam installed in the river for part of the year, and by several infiltration ponds. By locating the SCWA facility adjacent to the Russian River, the actively managed riverbank filtration (RBF) facility takes advantage of the natural filtration process of the riverbed to treat the river water before it is distributed into the drinking-water system. Russian River water collected at the SCWA's RBF facility requires no additional treatment other than disinfection with chlorine to achieve drinking-water standards and pH adjustment to prevent pipe corrosion.

Owing to the increased demand for drinking water supplied by the SCWA, there is a need to evaluate the continued reliable operation of the SCWA's RBF facility. Therefore, the U.S. Geological Survey (USGS), in cooperation with the SCWA, began a study to determine the chemical, microbiological, and isotopic composition of the surface water and ground water in the vicinity where the Russian River is diverted and treated by riverbank filtration during summer months. Such a study would provide the water-quality data necessary to better understand the capacity of the local riverbed material and underlying alluvial aquifer to effectively reduce or eliminate river-derived contaminants in the area adjacent to the SCWA's collector wells and the infiltration ponds and to establish baseline water-quality during summer flows in the Russian River.

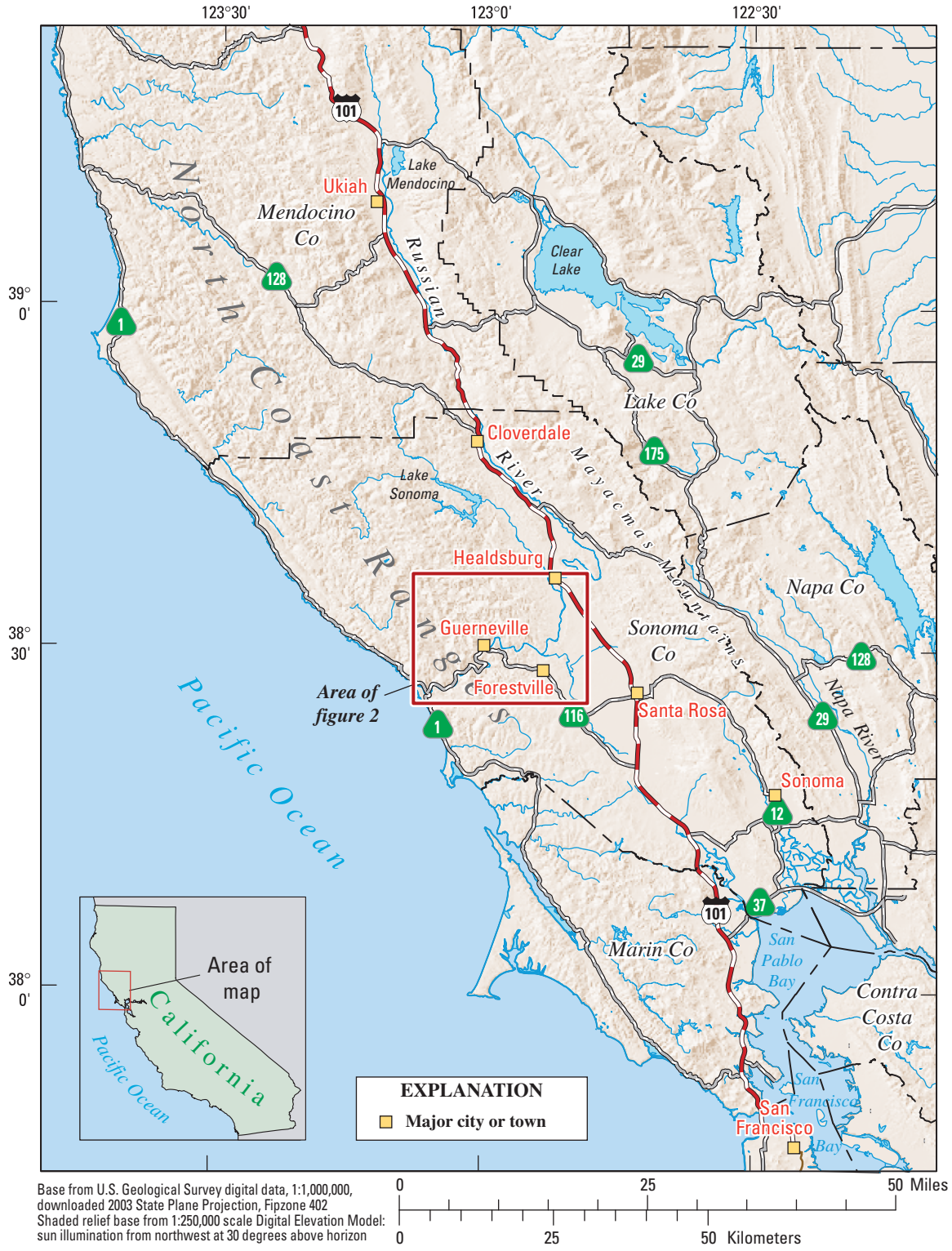


Figure 1. Location of the Russian River in Mendocino and Sonoma Counties, California.

Study Area

The study area for the detailed water-quality investigation within the Lower Russian River Basin starts at the southeast boundary of the Russian River plain, approximately 1 mile south of the town of Healdsburg, upstream of the Dry Creek confluence, and extends to the vicinity of the estuary near Jenner, approximately 12 miles downstream of the town of Guerneville (*fig. 2*). The USGS operates two stream gages (11464000—Russian River near Healdsburg, California, and 11467000—Russian River near Guerneville, California) in this reach that provide real-time stream flow data through the National Water Information System (NWIS). Furthermore, the NWIS contains daily and peak streamflow data measured at these gages dating back to before 1940 as well as historic water-quality data for the period 1951 to the present.

Within the study area, agriculture (primarily vineyards) represents a significant portion of land use adjacent to the Russian River. However, other land uses and facilities include several large abandoned gravel-terrace pits that collect precipitation and surface runoff; residential and resort areas located directly adjacent to the Russian River that use individual, often antiquated, septic systems; wastewater-treatment facilities that discharge treated wastewater effluent into Russian River tributaries and gravel pits located adjacent to the Russian River; and private and municipal well fields that are screened in the shallow alluvial aquifer. All these land uses and facilities could potentially influence the water quality of the Russian River.

At the SCWA's RBF facility there are five radial collector wells that are designed to extract water from the alluvial aquifer beneath the Russian River, with a sixth well scheduled to begin operation in the spring of 2006 (*fig. 2*). To augment the amount of recharge to the alluvial aquifer, the SCWA maintains several infiltration ponds adjacent to the Russian River. An inflatable diversion dam located in this reach of the Russian River creates a backwater which raises the upstream water level, submerges a larger streambed area along the river, and allows river water to be pumped to the infiltration ponds. This increased depth and enlargement of the submerged streambed area, in addition to providing water for the ponds, significantly increases infiltration to the underlying aquifer. The inflatable diversion dam typically is raised in the spring when water demands are increasing and Russian River flows are declining. The dam typically is lowered in the late autumn or early winter after water demands have decreased and Russian River flows are increasing.

Purpose and Scope

The purpose of this report is to present the hydrologic and water-quality data collected from 10 Russian River sites, 1 gravel-terrace pit site, 12 ground-water sites, 11 tributary sites including Mark West Creek, and 2 estuary sites between the city of Healdsburg and the Pacific Ocean, for the period August 2003 to September 2004. The processes that influence water-quality changes during riverbank filtration and the baseline water-quality during summer flows in the Russian River will be discussed in a subsequent report.

The scope of this report focuses on the site selection, sampling methods, and water-quality analyses used to accomplish the following two tasks: (1) collection of water-quality data from surface-water and ground-water sites in the vicinity of the SCWA's RBF facility; and (2) collection of water-quality data from the Russian River between the RFB facility and the Pacific Ocean and tributary and estuary sites during early, middle, and late summer.

Acknowledgments

Funding for the cooperative water-quality investigation was provided by SCWA. The authors acknowledge James Jasperse, Donald Seymour, Christopher Murray, and Jeff Church at SCWA for their assistance in the selection of sampling sites and the collection of water-quality samples. The authors are grateful to James Constantz, Marisa Cox, and Don Rosenberry. Discussions of their recently completed research along the Russian River that concentrated on ground- and surface-water interactions, water quality, and seepage rates in the Russian River channel and the nearby infiltration ponds aided in the selection of sampling sites and types of analyses performed during the study.

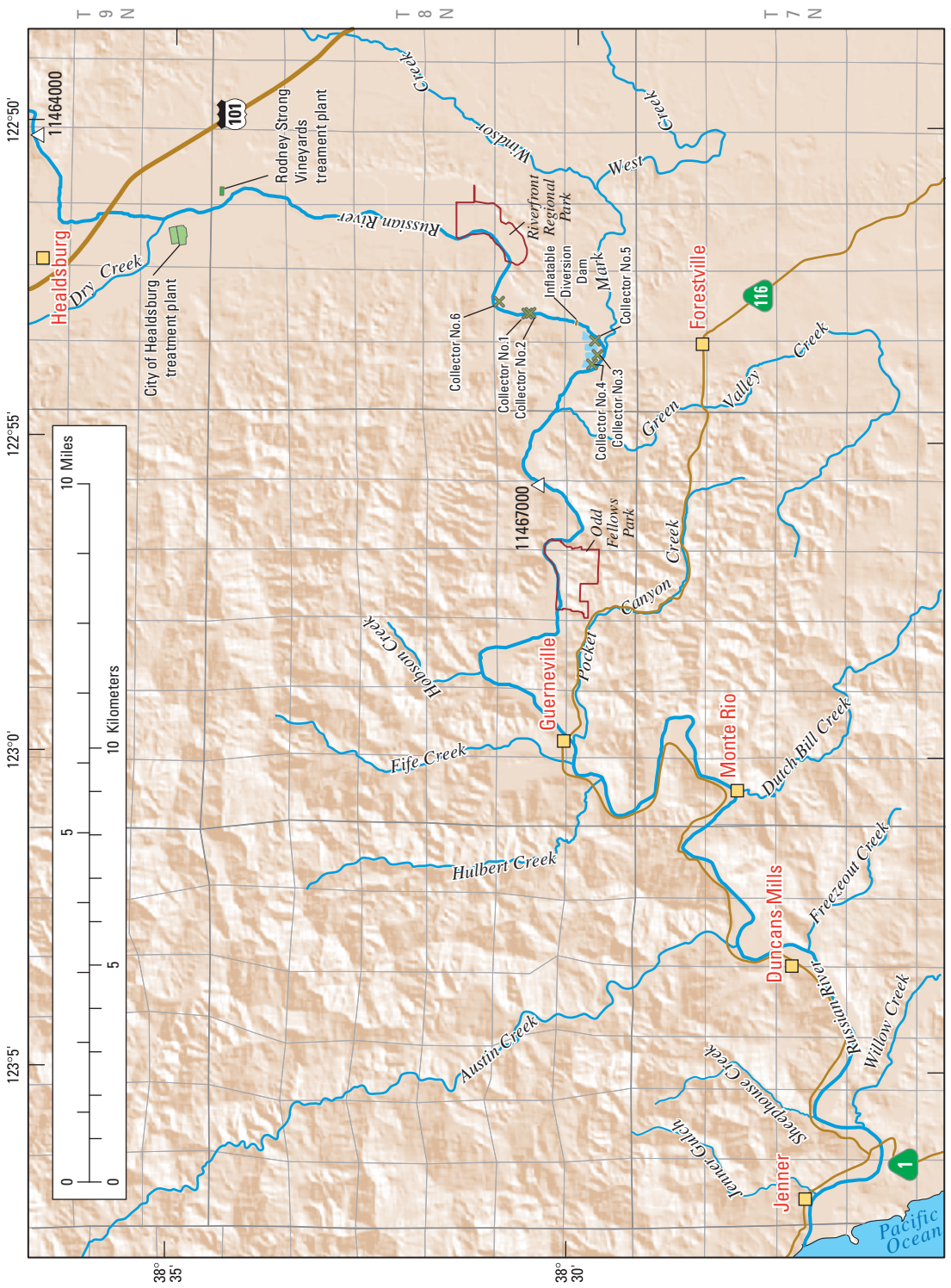


Figure 2. Study area between the city of Healdsburg and the Pacific Ocean in the Lower Russian River Basin, Sonoma County, California.

Site Selection

Table 1 contains a complete list of the station names and station identification numbers (station ID) for the sites sampled between August 2003 and September 2004. Also provided in *table 1* are each station type (specifically, surface-water, ground-water, gravel-terrace pit, or estuary sites) and the task for which the site was sampled.

Surface-Water Sites

Russian River Sites and Gravel-Terrace Pit Site

Ten Russian River sites and a gravel-terrace pit site located between the city of Healdsburg and the Pacific Ocean were sampled twice (except the Russian River at Steelhead Beach site) between August 2003 and September 2004 (*fig. 3*).

Russian River sites and USGS site numbers for Task 1 included: Russian River below Dry Creek near Healdsburg (site 10, USGS 383502122512801), located proximal to the city of Healdsburg's wastewater treatment plant; Russian River at Riverfront Park (site 9, USGS 383132122514901), located 4–5 miles downstream of the city of Healdsburg's wastewater treatment plant; Russian River at Wohler Bridge (site 1, USGS 11465400) which is within the SCWA's RBF facility; and Russian River at Steelhead Beach (site 8, USGS 382959122535601) which is near the SCWA's RBF facility and downstream from the confluence with Mark West Creek (*fig. 3*). An additional surface-water site included in Task 1 was McLaughlin Pond near Windsor (site 35, USGS 38121122512801), located adjacent to the Russian River approximately 1 mile upstream of the SCWA's RFB facility (*fig. 3*). The McLaughlin Pond is one of several large abandoned gravel-terrace pits located in Riverfront Park.

Surface-water sites for Task 2 were located within the residential and resort areas adjacent to the Russian River below the SCWA's RBF facility. These sites include: Russian River near Guerneville (site 2, USGS 11467000), located just downstream of the Hacienda bridge; Russian River at Odd Fellows Park (site 7, USGS 383012122574501); Russian River at Steelhead Beach (site 8, USGS 382959122535601); Russian River at Johnsons Beach (site 3, USGS 11467002); Russian River at Vacation Beach (site 4, USGS 11467006); Russian River at Monte Rio (site 6, USGS 382757123003801); and Russian River at Casini Ranch (site 5, USGS 382754123030501) (*fig. 3*). The Russian River at Casini Ranch site was the furthest downstream site (excluding the estuary site), located near the town of Duncans Mills below the Austin Creek confluence. Casini Ranch is a private campground with private beach access.

Tributary Sites

Twelve tributary sites located between the town of Forestville and the Pacific Ocean were chosen to be sampled three times during the summer of 2004: June, July, and September (*fig. 4*).

The creeks of 10 tributary sites sampled for Task 2 originated from the local hillsides and contained measurable surface flow during the first sampling event in June 2004 (Hobson Creek was dry during the June 2004 sampling). However, several of the tributaries did not maintain measurable surface flow throughout the summer. Tributaries that did not appear to contribute any surface flow to the Russian River were not sampled. The tributary sites sampled only in June include: Green Valley Creek near Mirabel (site 32, USGS 383009122543001), Fife Creek at Guerneville (site 31, USGS 383006123000601), and Sheephouse Creek near Jenner (site 24, USGS 382658123054101 (*fig. 4*). Other sites, such as Pocket Canyon Creek at Guerneville (site 30, USGS 382955122594101), Hulbert Creek near Guerneville (site 29, USGS 382944123002901), and Dutch Bill Creek at Monte Rio (site 27, USGS 382752123003401) were sampled in June and July (*fig. 4*). In addition to Austin Creek near Duncans Mills (site 28, USGS 382815123024601), which appears to maintain surface flow throughout the year, only Willow Creek 1.8 mi upstream of the Russian River (site 23, USGS 382551123041101), Jenner Gulch near Jenner (site 25, USGS 382659123065001), and Freezeout Creek near Duncans Mills (site 26, USGS 382701123025801) contained adequate surface flow to be sampled in June, July, and August (*fig. 4*).

The 11th tributary site sampled for Task 2 was Mark West Creek (site 36, USGS 11466800), a small creek which originates in the Mayacama Mountains to the east of the Santa Rosa Plain and empties into the Russian River at Mirabel Heights between the SCWA's RBF facility and Steelhead Beach (*fig. 4*). It should be noted here that Mark West Creek drains the Laguna de Santa Rosa, which receives seasonal discharge from Santa Rosa's Regional Wastewater Treatment Plant.

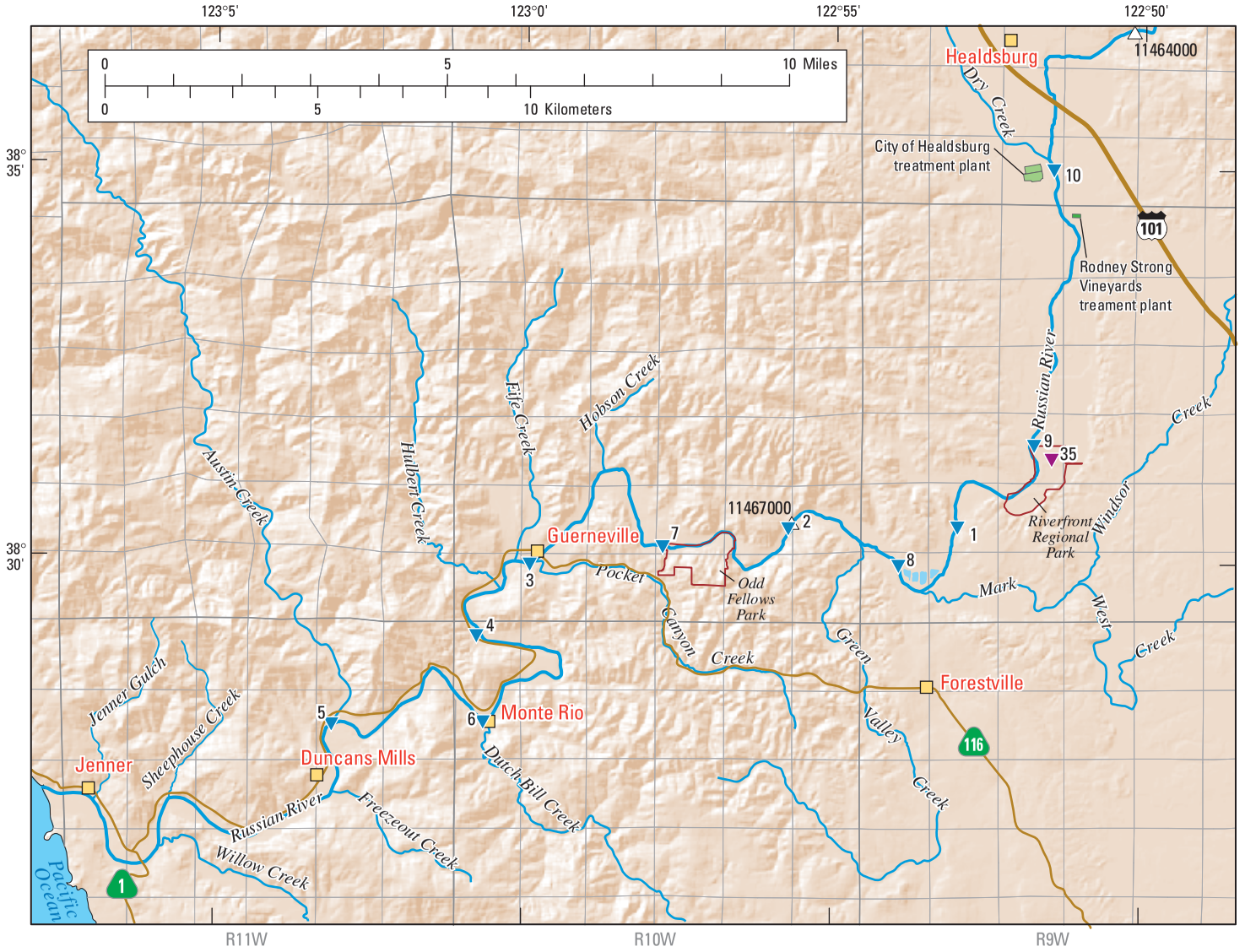
Estuary Sites

The estuary sites, located near the mouth of the Russian River, consisted of a tidally influenced section of the Russian River near Jenner (site 33, USGS 382605123060701), and the Willow Creek Marsh near Jenner (site 34, USGS 382624123054401) (*fig. 4*). The Russian River near Jenner site was sampled four times during the summer of 2004: twice in June during high and low tide and once in July and September. The Willow Creek Marsh was sampled twice in June and once in July.

Table 1. List of all suface-water and ground-water sites sampled between August 2003 and September 2004 in the Lower Russian River Basin, Sonoma County, California, 2003–2004.

[SW, surface-water site; GW, ground-water site; GT gravel-terrace pit site; ES, estuary site]

Map site No.	Station name	Station ID	Station type	Task
1	11465400	Russian River at Wohler Bridge	SW	1
2	11467000	Russian River near Guerneville	SW	2
3	11467002	Russian River at Johnsons Beach	SW	2
4	11467006	Russian River at Vacation Beach	SW	2
5	382754123030501	Russian River at Casini Ranch	SW	2
6	382757123003801	Russian River at Monte Rio	SW	2
7	383012122574501	Russian River at Odd Fellows Park	SW	2
8	382959122535601	Russian River at Steelhead Beach	SW	1, 2
9	383132122514901	Russian River at River Front Park	SW	1
10	383502122512801	Russian River below Dry Creek near Healdsburg	SW	1
11	382944122533501	8N/9W-31H1	GW	1
12	382948122535601	8N/9W-31G3	GW	1
13	383002122530601	8N/9W-32C1	GW	1
14	383003122540401	8N/9W-31C3	GW	1
15	383003122540403	8N/9W-31C5	GW	1
16	383035122525901	8N/9W-29L1	GW	1
17	383045122525701	8N/9W-29F1	GW	1
18	383055122523001	8N/9W-29A2	GW	1
19	383120122514001	8N/9W-21K1	GW	1
20	383132122514501	8N/9W-21F1	GW	1
21	383316122512901	8N/9W-09J2	GW	1
22	383316122512902	8N/9W-09J3	GW	1
23	382551123041101	Willow Creek 1.8 mi upstream Russian River	SW	2
24	382658123054101	Sheephouse Creek near Jenner	SW	2
25	382659123065001	Jenner Gulch at Jenner, California	SW	2
26	382701123025801	Freezeout Creek near Duncans Mills	SW	2
27	382752123003401	Dutch Bill Creek at Monte Rio	SW	2
28	382815123024601	Austin Creek near Duncans Mills	SW	2
29	382944123002901	Hulbert Creek near Guerneville	SW	2
30	382955122594101	Pocket Canyon Creek at Guerneville	SW	2
31	383006123000601	Fife Creek at Guerneville	SW	2
32	383009122543001	Green Valley Creek near Mirabel	SW	2
33	382605123060701	Russian River near Jenner, California	ES	—
34	382624123054401	Willow Creek Marsh near Jenner	ES	—
35	383121122512801	McLaughlin Pond near Windsor	GT	1
36	11466800	Mark West Creek	SW	1, 2



Base from US Geological Survey digital data, 1:24000
Lambert Conformal Conic projection, State Plane FIPS 402, NAVD88.
Shaded relief base from 1:250,000 scale Digital Elevation Model:
sun illumination from northwest at 30 degrees above horizon

EXPLANATION

- City or town
- Infiltration ponds
- 11467000 △ USGS Gaging station and identifier

Sampling sites and identifier—

- ▼ Russian River (10 sites)
- ▼ Gravel-terrace pit (1 site)

Figure 3. Location of 10 Russian River sites and a gravel-terrace pit site between the city of Healdsburg and the Pacific Ocean in the Lower Russian River Basin, Sonoma County, California.

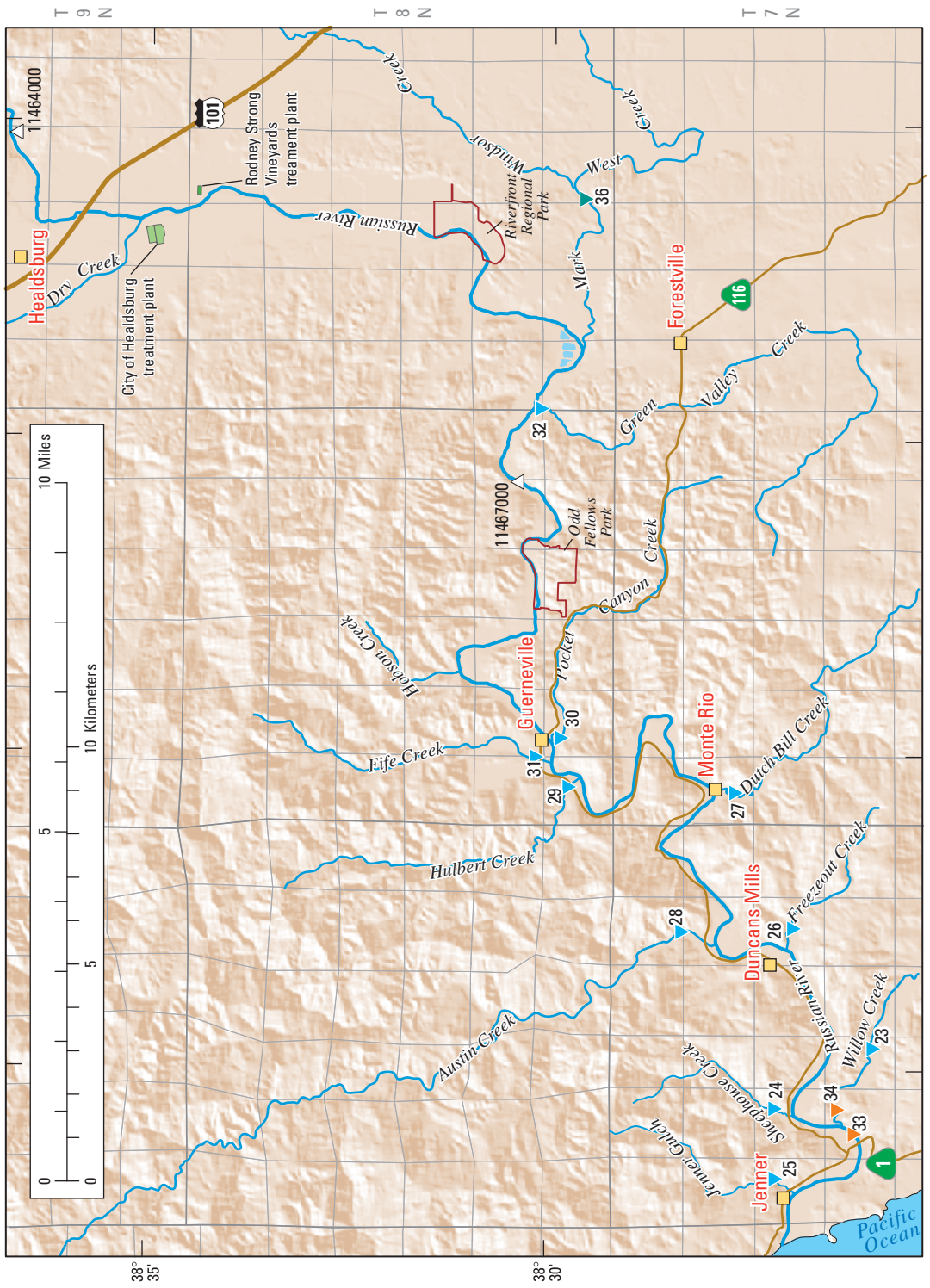


Figure 4. Location of 12 tributary sites between the town of Forestville and the Pacific Ocean in the Lower Russian River Basin, Sonoma County, California.

Ground-Water Sites

Twelve ground-water sites were sampled in the Lower Russian River Basin between August 2003 and September 2004 (*fig. 5*).

All the ground-water sites were monitoring wells selected for Task 1 on the basis of their vertical and horizontal distances from the riverbank. During 2003 most of the wells were within the SWCA's RBF facility (site 13, 8N/9W-32C1; site 16, 8N/9W-29L1; site 18, 8N/9W-29A2; site 17, 8N/9W-29F1) or within the infiltration ponds (site 11, 8N/9W-31H1) (*fig. 5*). It should be noted here that several monitoring wells in the SCWA's RBF facility were potentially influenced by the collector wells and could not be sampled due to lack of water in the well bore.

Additional 2003 monitoring wells were located at Steelhead Beach (site 12, 8N/9W-31G3), Riverfront Park (site 19, 8N/9W-21K1), and adjacent to the Russian River below Dry Creek surface water site (site 21, 8N/9W-9J2) (*fig. 5*). During 2004, monitoring wells previously sampled within the SCWA's RBF facility (site 13, 8N/9W-32C1; site 17, 8N/9W-29F1), or at Steelhead Beach (site 12, 8N/9W-31G3), were replaced with other wells at Steelhead Beach (site 14, 8N/9W-31C3; site 15, 8N/9W-31C5) to obtain greater vertical distribution of ground-water samples (*fig. 5*). Other changes in 2004 included replacing the well in Riverfront Park (site 19, 8N/9W-21K1) with a newly installed well at the park which was shallower and closer to the Russian River channel (site 20, 8N/9W-21F1), as well as adding another well (site 22, 8N/9W-9J3) that was adjacent to the Russian River below the Dry Creek confluence (*fig. 5*).

Methods

Discharge Measurements and Sample Collection

Discharge measurements and surface-water samples from the Russian River were collected from multiple vertical segments across the width of the river channel using depth- and width-integrated sampling methods described by Wilde and Radtke (1998). These methods provided an instantaneous mean discharge-weighted sample that was representative of the entire river cross-section. Sampling equipment consisted of a standard USGS depth-integrated DH-81 hand-held sampler. Water samples for microbiological analysis were collected using sterilized 1-L polyethylene bottles, caps, and nozzles attached to the USGS depth-integrated DH-81 hand-held sampler and chilled prior to shipment. All other water-quality samples were collected using the DH-81 sampler with Teflon 1-L bottles, caps, and nozzles. Water samples for analysis of organic wastewater compounds (OWCs) were poured directly from the Teflon bottles into 1-L baked amber glass bottles and chilled prior to shipment. The remaining water samples for chemical analysis were composited from the Teflon bottles into a pre-rinsed churn splitter and processed inside a mobile water-quality assessment vehicle. Stable isotope samples were collected by dipping a 60-mL glass bottle at the river centroid. At those sites where sufficient flow velocity was absent owing to the presence of seasonal dams, such as at USGS 11465400 (Russian River at Wohler Bridge) or at USGS 11467002 (Russian River at Johnsons Beach), no discharge measurements were made, and water samples were collected directly into the appropriate sample bottles or churn splitter by wading into the center of the river. At the McLaughlin Pond site the water samples were collected from the bank at the southeast corner.

Discharge measurements and water sample collection from Austin Creek and Mark West Creek, which maintained sufficient flow throughout the summer, followed the same field-sampling procedures described above for the Russian River sites. However, special discharge measurements were required for the remaining tributary sites that had water depths too shallow to measure with a current meter. Discharge measurements at those sites with very low flows were made with a Parshall 3-inch flume. Water samples collected at these low-flow sampling sites were obtained using a peristaltic pump and C-flex tubing placed into the tributary at the center of flow and upstream of the flume's discharge. The water samples were dispensed directly into the appropriate sample bottles following the same procedures as described above for the Russian River sites. Water samples for analysis of organic wastewater compounds were collected from the tributary sites during the last sampling event only.

Discharge measurements for the tidally influenced section of the Russian River were made using an acoustic Doppler velocity meter (ADVM) profiler. ADVMs utilize monostatic transducers that send and receive an acoustic pulse (Ruhl and Simpson, 2005). An acoustic pulse of a known frequency is sent out into the water column along the acoustic beam. A fraction of that acoustic pulse is reflected by small particles in the water, returning to the transducer at a frequency that has been shifted owing to the Doppler effect. The index velocity is the water velocity within the acoustic beam and is determined on the basis of the change in the transmitted acoustic frequency and the geometric configuration of the transducers (SonTek Corporation, 2000; Ruhl and Simpson, 2005). For this study, the ADVM profiler was mounted on a mobile, downward-looking platform attached to the side of a small boat, to gather velocity profiles using diverging beams for velocity measurements.

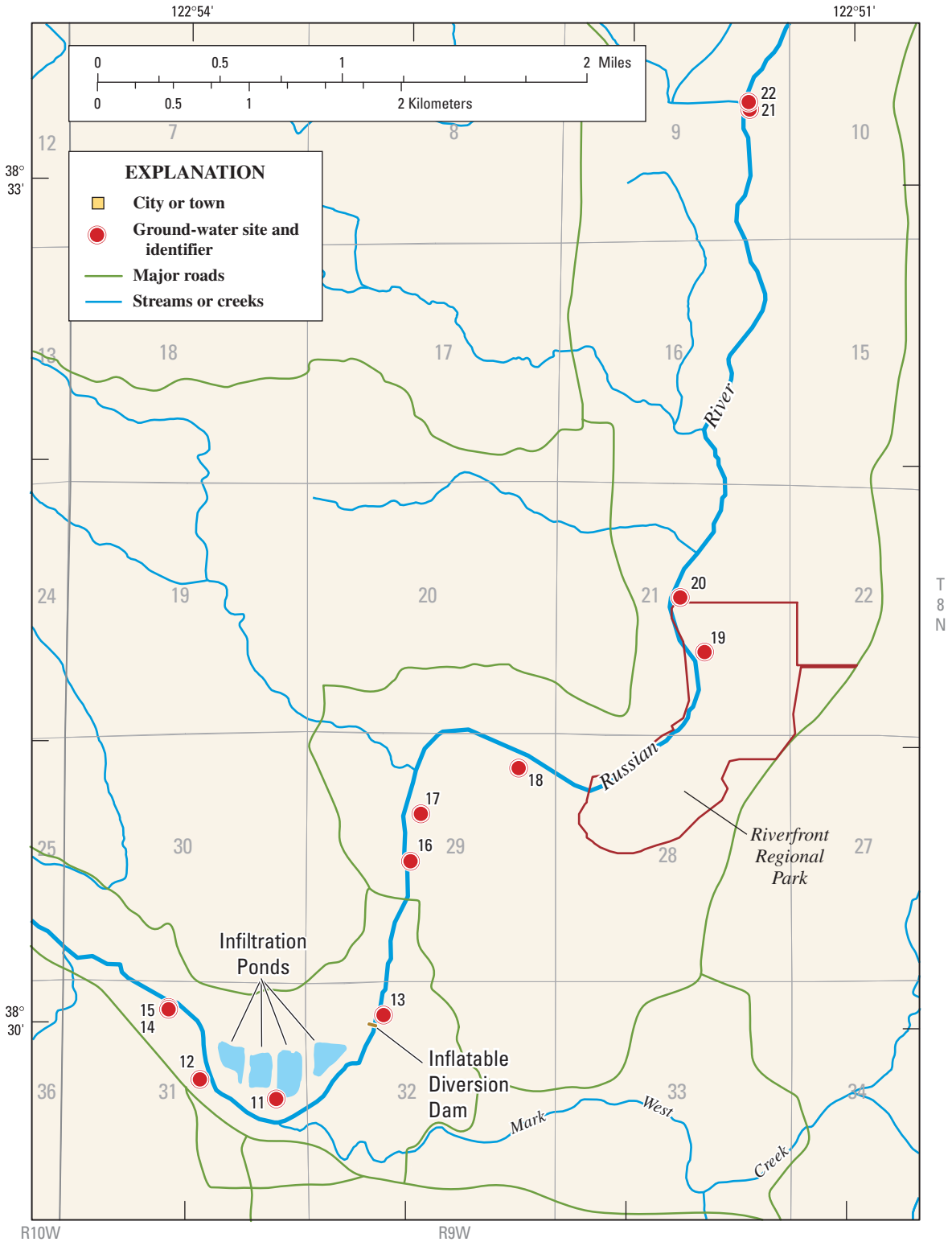


Figure 5. Location of 12 ground-water sites in the Lower Russian River Basin, Sonoma County, California.

Since the velocity measurements required several passes across the river channel, water-quality samples were collected simultaneously using the same apparatus and procedures described previously for the other surface-water samples. Furthermore, attempts were made to collect discharge measurements and water-quality samples during low and high tide. Owing to tidal influences at the Willow Creek Marsh site, discharge measurements and sample collection could only be conducted during low tide while still following the same procedure as described previously for the other tributaries. For the sampling events conducted during high tide, discharge measurements could not be made, and water samples were collected directly into the appropriate sample bottles or churn splitter.

All ground-water samples were collected following USGS field-sampling procedures (Sylvester and others, 1990). Monitoring wells were purged prior to the collection of water samples by removing three casing volumes using a variable-speed submersible Redi-Flo2 sampling pump (Grundfos Pumps Corp., Clovis, California). During the purging process, specific conductance, pH, and temperature were monitored, using a YSI 6600 series multi-parameter sonde, and recorded once all measurements had stabilized. Water samples were collected within a sample chamber through a short length of C-flex tubing attached to the sampling apparatus to avoid any possible environmental contamination. The water samples were dispensed directly into the appropriate sample bottles following the field-sampling procedures described above for the surface-water sites.

Water-Quality Analyses

Field Parameters

Measurements of water temperature, pH, specific conductance, dissolved oxygen, barometric pressure, and turbidity were taken during water sample collection. A YSI 6600 series multi-parameter sonde equipped with a YSI 6560 combination conductivity/temperature sensor, a YSI 6561 pH sensor, a YSI 6562 dissolved oxygen sensor, and a YSI 6026 turbidity sensor was used to collect water-quality parameters at all sites. The YSI 6600 series sonde sensors were calibrated daily prior to use in the field as outlined in the National Field Manual for the Collection of Water-Quality Data (U.S. Geological Survey, variously dated) and in combination with the manufacturer's recommendations. Thermistor accuracy was checked against an ASTM thermometer before field use and differences were within ±0.2°C. The YSI 6560 conductivity sensor was calibrated using a 1,000-µS/cm standard, and then checked with a 100-µS/cm standard to verify accuracy. The YSI 6561 pH sensor was calibrated to three points using buffer solutions of pH 4, 7, and 10. The YSI 6562 dissolved oxygen sensor was calibrated using the dissolved-oxygen-calibration chamber-in-air method. The calibration chamber was set-up with water and allowed to reach 100-percent saturation prior to calibration. The YSI 6026 turbidity probe was calibrated to two-points using standards of 0 and 1,000 FNU. The calibrated sensor was then checked with a 50-FNU standard to confirm sensor accuracy in the range of values expected in the stream.

Common Constituents

Inorganic chemical and nutrient analyses were performed by the USGS National Water-Quality Laboratory (NWQL) in Denver, Colorado, using methods described generally by Fishman (1993) and Struzeski and others (1996). Analyses for dissolved and total organic carbon were performed by the NWQL using methods described by Brenton and Arnett (1993) and Wershaw and others (1987), respectively. Trace elements and mercury were analyzed at the NWQL using methods described by Garbarino (1999) and Garbarino and Damrau (2001).

All water samples for analysis of major and minor inorganic constituents, trace elements, nutrients, dissolved and total organic carbon, and mercury were drawn from the churn splitter (surface-water sites) or collected through a short length of C-flex tubing attached to the sampling apparatus (ground-water sites) or through tubing placed directly into the creek using the peristaltic pump (tributary sites). Whole-water and filtered samples were processed in the field as outlined in the National Field Manual for the Collection of Water-Quality Data (U.S. Geological Survey, variously dated). Whole-water samples for nutrient analysis were distributed into 125-mL, pre-rinsed, clear, polyethylene bottles and acidified to approximately pH 2 by addition of sulfuric acid. Whole-water samples for total organic carbon analysis were distributed into 125-mL, baked, amber glass bottles and placed on ice prior to shipment. Other analyses requiring whole water samples included acid-neutralizing capacity (ANC) measurements.

Samples for dissolved constituents were pressure-filtered in the field through inline 0.45-mm polyether sulfone cartridge filters from Gelman Scientific. Aliquots for analysis of anions were dispensed into 250-mL, clear, polyethylene bottles for storage after the bottle was rinsed three times with sample water. Aliquots for analysis of cations and trace elements were dispensed into 250-mL, acid-rinsed, clear, polyethylene bottles and acidified to approximately pH 2 by addition of nitric acid. Aliquots for nutrient analysis were distributed into 125-mL, pre-rinsed, opaque, polyethylene bottles and placed on ice to minimize microbial alteration. Aliquots for analysis of dissolved organic carbon were dispensed into 125-mL, baked, amber glass bottles and acidified to approximately pH 2 by addition of sulfuric acid. Aliquots for mercury analysis were dispensed into 250-mL, acid-rinsed, clear glass bottles and acidified to approximately pH 2 by addition of hydrochloric acid. For Task 3 sites, water samples were analyzed for trace elements during 2003 only, whereas water samples were analyzed for mercury during 2004 only.

Organic Wastewater Compounds

Water samples also were collected and analyzed for specific constituents known to be present in wastewater or associated with agricultural practices, which we refer to as organic wastewater compounds (OWCs). This suite of constituents includes polyaromatic hydrocarbons (PAHs), disinfection-by-products (DBPs), pesticides and herbicides, as well as personal care and household products such as fragrances and detergents. The OWCs were analyzed by solid-phase extraction and capillary-column gas chromatography/mass spectrometry (Zaugg and others, 2002). This analytical method is able to detect the presence of the target analytes at low levels with a high degree of confidence (Childress and others, 1999). A list of the 63 OWCs analyzed in water samples collected from the Lower Russian River Basin is presented in *table 2*. Also included in table 2 are primary compound uses adopted from Zaugg and others (2002). OWCs not detected during sample analysis are censored at (reported as less than) the laboratory reporting limit (LRL). However, OWCs that are detected and quantified at a concentration below the LRL but above the published (Zaugg and others, 2002) method detection limit (MDL) are reported as the analytical result shown with a remark code, such as an "E" for estimated concentration. Occasionally, OWCs are detected at concentrations below the published MDL; in such instances the results are represented by the remark code "M" (presence was verified, but concentration was not quantified). Most OWC detections in this study were at low-level concentrations greater than the published MDL and less than the LRL ("E" coded detections).

Microbiological Indicators

Water samples were collected in sterilized 1-L polyethylene bottles and shipped overnight on ice for analysis by the USGS Ohio Water Science Center Microbiology Laboratory for the standard bacterial indicators of fecal contamination in surface- and ground-water (Francy and others, 2000). The average time between collection and microbial analysis was about 26 hours, which exceeds the 8-hour ideal holding time, owing to shipping considerations. However, because all of the samples were subjected to the same approximate delay, the results show comparative distributions in microbial populations, and concentrations reported herein should be used for comparative purposes only and not for regulatory purposes. Total coliform bacteria were analyzed using the mENDO method, a method considered suitable for enumerating bacteria in environmental samples (Britton and Greeson, 1989). *Escherichia coli* were analyzed using the modified mTEC method, specifically developed to be used as a measure of recreational water quality (USEPA method 1603; U.S. Environmental Protection Agency, 2002). Other microbiological analysis included the mEI method for the detection of Enterococci (USEPA method 1600; U.S. Environmental Protection Agency, 2000) and the mCP method for the detection of *Clostridium perfringens* (Bisson and Cabelli, 1979; Bisson and Cabelli, 1980).

Oxygen and Hydrogen Isotopes

Stable isotopes of hydrogen and oxygen can be used to distinguish water that originated from different sources. The samples for analysis of stable hydrogen and oxygen isotopes were collected into 60-mL glass bottles and sealed with a polyseal cap to minimize evaporative loss and exchange with the atmosphere. These samples were analyzed at the USGS Isotope Laboratory in Reston, Virginia, using methods described by Epstein and Mayeda (1953) and Coplen and others (1991). Stable hydrogen and oxygen isotopes concentrations are expressed in terms of per mil, relative to Vienna Standard Mean Ocean Water (Gonfiantini, 1984), and the estimate of precision (two-sigma) is 2 and 0.2 per mil, respectively.

Table 2. List and primary uses of 63 organic wastewater compounds analyzed in water samples collected from the Lower Russian River Basin, Sonoma County, California, 2003–2004.

[CAS, Chemical Abstract Service; —, unknown]

Compound	CAS	Use
1,4-Dichlorobenzene	106-46-7	Deodorizer
1-Methylnaphthalene	90-12-0	Fuels
2,6-Dimethylnaphthalene	581-42-0	Fuels
2-Methylnaphthalene	91-57-6	Fuels
3-*beta*-Coprostanol	360-68-9	Fecal sterol
3-Methyl-1H-indole (skatol)	83-34-1	Fragrance
3-*tert*-Butyl-4-hydroxyanisole	25013-16-5	Antioxidant
4-Cumylphenol	599-64-4	Detergent metabolite
4-*n*-Octylphenol	1806-26-4	Detergent metabolite
4-Nonylphenol	—	Detergent metabolite
4-Nonylphenol diethoxylates	—	Detergent metabolite
4-Octylphenol diethoxylates	—	Detergent metabolite
4-Octylphenol monoethoxylates	—	Detergent metabolite
4-*tert*-Octylphenol	140-66-9	Detergent metabolite
5-Methyl-1H-benzotriazole	136-85-6	Anticorrosive
Acetophenone	98-86-2	Fragrance
Acetyl hexamethyl tetrahydronaphthalene (AHTN)	21145-77-7	Fragrance
Anthracene	120-12-7	Combustion product
Anthraquinone	84-65-1	Manufacturing
Benzo[a]pyrene	50-32-8	Combustion product
Benzophenone	119-61-9	Fixative
beta-Sitosterol	83-46-5	Plant sterol
beta-Stigmastanol	19466-47-8	Plant sterol
Bisphenol A	80-05-7	Plasticizer
Bromacil	314-40-9	Herbicide
Caffeine	58-08-2	Stimulant
Camphor	76-22-2	Flavorant
Carbaryl	63-25-2	Insecticide
Carbazole	86-74-8	Insecticide
Chlorpyrifos	2921-88-2	Insecticide
Cholesterol	57-88-5	Plant/animal sterol
Cotinine	486-56-6	Nicotine metabolite
Diazinon	333-41-5	Insecticide
Dichlorvos	62-73-7	Insecticide
d-Limonene	5989-27-5	Fungicide
Fluoranthene	206-44-0	Combustion product
Hexahydrohexamethyl cyclopentabenzopyran (HHCB)	1222-05-5	Fragrance
Indole	120-72-9	Pesticide inert
Isoborneol	124-76-5	Fragrance

Table 2. List and primary uses of 63 organic wastewater compounds analyzed in water samples collected from the Lower Russian River Basin, Sonoma County, California, 2003–2004—Continued.

[CAS, Chemical Abstract Service; —, unknown]

Compound	CAS	Use
Isophorone	78-59-1	Solvent
Isopropylbenzene (cumene)	98-82-8	Fuels
Isoquinoline	119-65-3	Flavorant
Menthol	89-78-1	Fragrance
Metalaxyl	57837-19-1	Fungicide
Methyl salicylate	119-36-8	Liniment
Metolachlor	51218-45-2	Herbicide
N-*N*-diethyl-*meta*-toluamide (DEET)	134-62-3	Insect repellant
Naphthalene	91-20-3	Combustion product
para-Cresol	106-44-5	Wood preservative
Pentachlorophenol	87-86-5	Wood preservative
Phenanthrene	85-01-8	Combustion product
Phenol	108-95-2	Disinfectant
Prometon	1610-18-0	Herbicide
Pyrene	129-00-0	Combustion product
Tetrachloroethene	127-18-4	Solvent, degreaser
Tribromomethane	75-25-2	Chemical intermediate and solvent
Tributyl phosphate	126-73-8	Flame retardant
Triclosan	3380-34-5	Antimicrobial disinfectant
Triethyl citrate	77-93-0	Cosmetics
Triphenyl phosphate	115-86-6	Plasticizer
Tris(2-butoxyethyl) phosphate	78-51-3	Plasticizer
Tris(2-chloroethyl) phosphate	115-96-8	Flame retardant
Tris(dichloroisopropyl) phosphate	13674-87-8	Flame retardant

Quality Control

Quality-control (QC) samples were collected to assess the validity of the water-quality data collected during the study. QC sample types used in this study included the collection of seven field blanks and one sequential replicate sample. All field blanks were collected at the sampling site using inorganic-blank water and were subjected to the same sampling equipment, field processing, preservation, storage and transportation, and laboratory analysis described above for the collection of environmental samples. The sequential replicate sample was collected to evaluate any bias and (or) variability introduced by sampling procedures.

Furthermore, the NWQL uses a three-tiered approach to QC consisting of method performance monitoring, data review and blind sample programs, and performance-evaluation studies. Likewise, the other USGS laboratories mentioned for this study implement QA/QC procedures that include correctly following methods of analysis, media and reagent preparation and storage, and analytical quality-control procedures. The QC data detected in the seven field blanks are presented in *table 3*.

Most of the field blank data indicate that no contamination was introduced by sampling or analytical procedures. The field blank data from Pocket Canyon Creek collected July 20, 2004, indicates possible silica contamination from the C-flex tubing used during the sample collection. The sequential replicate sample collected September 2004 from the Russian River at River Front Park site indicates that a reproducible sample can be collected using procedures described in this report (see table 4).

Discharge Measurements and Water-Quality Data

Field measurements were made of streamflow, barometric pressure, dissolved oxygen, pH, specific conductance, and turbidity. Water samples were analyzed for common chemical constituents, organic wastewater compounds, microbiological indicators and the stable isotopes of deuterium and oxygen. Special discharge measurements and sampling techniques were developed to accommodate the very low flows at most of the tributary creeks and discharge measurements at the estuary river site were made with an acoustic Doppler velocity meter due to tidal influences.

Table 4 presents discharge measurements and water-quality data collected from the 10 Russian River sites in the Lower Russian River Basin, Sonoma County. The discharge measurements and water-quality data collected from 10 tributary sites during June, July, and August 2004 are shown in *table 5*. The discharge measurements and water-quality data collected from the estuary sites, the gravel-pit terrace site, and Mark West Creek are presented in *table 6*. *Table 7* presents water-quality data collected from the 12 ground-water sites.

Summary

The U.S. Geological Survey collected water-quality data from surface-water, ground-water, and tributary sites in the Lower Russian River Basin, Sonoma County, California. The hydrologic and water-quality data collected for the period August 2003 to September 2004 are presented in *tables 4–7* of this report.

The scope of this report focused on the site selection, sampling methods, and water-quality analyses used to accomplish the following two tasks: (1) collection of water-quality data from surface-water and ground-water sites in the vicinity of SCWA's RBF facility; and (2) collection of water-quality data from the Russian River between the RFB facility and the Pacific Ocean, as well as 11 tributaries including Mark West Creek, and estuary sites during early, middle, and late summer. The extensive data presented in this report will be used in a subsequent report to evaluate the continued reliable operation of the SCWA's RBF facility during summer flows in the Russian River.

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Tables

Table 3. Quality-control data detected in field blanks from the Lower Russian River Basin, Sonoma County, California, 2003–2004.

[Number below the constituent or property is the U.S. Geological Survey (USGS) parameter code, which is a 5-digit number used in the USGS National Water Information System (NWIS), to uniquely identify a specific constituent or property; col/100mL, colonies per 100 milliliters; °C, degrees Celsius; E, estimated value; mm, millimeter; M, presence was verified, but concentration was not quantified; MF, membrane filtration; µg/L, micrograms per liter; µS/cm, microsiemens per centimeter; mg/L, milligrams per liter; <, actual value less than value shown; —, no data]

Map site No.	USGS station No.	Station name	Date	Time	pH, lab (standard units) (00403)	Specific conductance lab (µS/cm) (90095)	Calcium, dissolved (mg/L as Ca) (00915)	Magnesium, dissolved (mg/L as Mg) (00925)	Potassium, dissolved (mg/L as K) (00935)
7	383012122574501	Russian River at Odd Fellows Park	08/27/2003	1001	E6.6	E2	0.02	E0.004	<0.16
11	382944122533501	8N/9W-31H1	09/11/2003	1130	6.8	E3	0.03	0.009	<0.16
30	382955122594101	Pocket Canyon Creek at Guerneville	06/03/2004	1001	E7.3	<3	0.05	0.039	<0.16
			07/20/2004	0930	E7.1	<3	0.01	<0.008	<0.16
33	382605123060701	Russian River near Jenner, California	09/01/2004	1200	E7.0	<3	E0.01	<0.008	<0.16
8	382959122535601	Russian River at Steelhead Beach	09/16/2004	0930	7.6	E3	0.01	<0.008	<0.16
16	383035122525901	8N/9W-29L1	09/21/2004	1600	7.5	E3	0.02	<0.008	<0.16

Map site No.	Sodium, dissolved (mg/L as Na) (00930)	Acid neutralizing capacity, lab (mg/L as $CaCO_3$) (90410)	Bromide, dissolved (mg/L as Br) (71870)	Chloride, dissolved (mg/L as Cl) (00940)	Fluoride, dissolved (mg/L as F) (00950)	Silica, dissolved (mg/L as SiO_2) (00955)	Sulfate, dissolved (mg/L as SO_4) (00945)	Solids residue at 180°C dissolved (mg/L) (70300)	Nitrogen, ammonia, dissolved (mg/L as N) (00608)	Nitrogran ammonia + organic, dissolved (mg/L as N) (00623)
7	<0.10	<2	<0.02	<0.20	<0.2	<0.02	<0.2	<10	<0.04	<0.10
11	E0.05	<2	<0.02	<0.20	<0.2	0.04	<0.2	<10	<0.04	<0.10
30	1.06	<2	<0.02	<0.20	<0.2	0.04	<0.2	<10	<0.04	<0.10
	<0.10	<2	<0.02	<0.20	<0.2	9.96	<0.2	<10	<0.040	<0.10
33	<0.10	<2	<0.02	<0.20	<0.2	0.11	<0.2	<10	<0.04	<0.10
8	E0.05	<2	<0.02	<0.20	<0.2	0.13	<0.2	<10	<0.04	<0.10
16	<0.10	<2	<0.02	<0.20	<0.2	0.06	<0.2	<13	<0.04	<0.10

Table 3. Quality-control data detected in field blanks from the Lower Russian River Basin, Sonoma County, California, 2003–2004—Continued.

[Number below the constituent or property is the U.S. Geological Survey (USGS) parameter code, which is a 5-digit number used in the USGS National Water Information System (NWIS), to uniquely identify a specific constituent or property; col/100mL, colonies per 100 milliliters; °C, degrees Celsius; E, estimated value; mm, millimeter; M, presence was verified, but concentration was not quantified; MF, membrane filtration; µg/L, micrograms per liter; µS/cm, microsiemens per centimeter; mg/L, milligrams per liter; <, actual value less than value shown; —, no data]

Map site No.	Nitrogen, ammonia + organic, total (mg/L as N) (00625)	Nitrogen, NO_2+NO_3, dissolved (mg/L as N) (00631)	Nitrogen, nitrite, dissolved (mg/L as N) (60013)	Phosphorous, dissolved (mg/L as P) (00666)	Phosphorous, ortho-phosphate, dissolved (mg/L as P) (00671)	Phosphorous, total (mg/L as P) (00665)	Carbon, organic, dissolved (mg/L as C) (00681)	Carbon, organic, total (mg/L as C) (00680)	*Clostridium perfringens*, mCP MF (col/100 mL) (90915)	Enterococci, mEL MF (col/100 mL) (90909)
7	<0.10	<0.06	<0.008	<0.004	<0.02	<0.004	E0.2	<0.4	—	—
11	<0.10	<0.06	<0.008	<0.004	<0.02	<0.004	<0.3	<0.4	—	—
30	E0.06	<0.06	<0.008	<0.004	<0.02	<0.004	<0.3	<0.4	—	—
	<0.10	<0.04	—	<0.004	—	<0.004	<0.3	<0.4	<1	<1
33	<0.10	<0.06	<0.008	<0.004	<0.02	<0.004	<0.3	<0.4	<1	<1
8	<0.10	<0.06	<0.008	<0.004	<0.02	<0.004	E0.2	<0.4	<1	<1
16	<0.10	<0.06	<0.008	<0.004	<0.02	<0.004	<0.3	<0.4	—	—

Map site No.	*Escherichia coli*, modified mTEC MF (col/100 mL) (90902)	Total coliform, mENDO MF (col/100 mL) (31501)	Aluminum, dissolved (µg/L as Al) (01106)	Antimony, dissolved (µg/L as An) (01095)	Arsenic, dissolved (µg/L as As) (01000)	Barium, dissolved (µg/L as Ba) (01005)	Beryllium, dissolved (µg/L as Be) (01010)	Boron, dissolved (µg/L as B) (01020)	Cadmium, dissolved (µg/L as Cd) (01025)	Chromium, dissolved (µg/L as Cr) (01030)
7	<1	<1	—	—	—	—	—	E4.0	—	—
11	<1	<1	<2	E0.16	<2	<0.050	<0.06	—	<0.04	<0.8
30	—	—	—	—	—	—	—	<7.0	—	—
	<1	<1	—	—	—	—	—	20	—	—
33	<1	<1	—	—	—	—	—	<7.0	—	—
8	<1	<1	—	—	—	—	—	<7.0	—	—
16	—	—	—	—	—	—	—	<7.0	—	—

Table 3. Quality-control data detected in field blanks from the Lower Russian River Basin, Sonoma County, California, 2003–2004—Continued.

[Number below the constituent or property is the U.S. Geological Survey (USGS) parameter code, which is a 5-digit number used in the USGS National Water Information System (NWIS), to uniquely identify a specific constituent or property; col/100mL, colonies per 100 milliliters; °C, degrees Celsius; E, estimated value; mm, millimeter; M, presence was verified, but concentration was not quantified; MF, membrane filtration; µg/L, micrograms per liter; µS/cm, microsiemens per centimeter; mg/L, milligrams per liter; <, actual value less than value shown; —, no data]

Map site No.	Cobalt, dissolved (µg/L as Co) (01035)	Copper, dissolved (µg/L as Cu) (01040)	Iron, dissolved (µg/L as Fe) (01046)	Lead, dissolved (µg/L as Pb) (01049)	Manganese, dissolved (µg/L as Mn) (01056)	Mercury, dissolved (µg/L as Hg) (71890)	Molybdenum, dissolved (µg/L as Mo) (01060)	Nickel, dissolved (µg/L as Ni) (01065)	Selenium, dissolved (µg/L as Se) (01145)	Silver, dissolved (µg/L as Ag) (01075)
7	—	—	<8	—	<0.4	—	—	—	—	—
11	E0.009	<0.2	E4	<0.08	E0.2	—	<0.3	0.94	<3	<0.2
30	—	—	<6	—	<0.8	<0.02	—	—	—	—
	—	—	<6	—	<0.8	<0.02	—	—	—	—
33	—	—	<6	—	<0.8	<0.02	—	—	—	—
8	—	—	<6	—	<0.8	<0.02	—	—	—	—
16	—	—	<6	—	<0.8	<0.02	—	—	—	—

Map site No.	Strontium, dissolved (µg/L as Sr) (01080)	Zinc, dissolved (µg/L as Zn) (01090)	1,4-Dichlorobenzene, dissolved (µg/L) (34572)	1-Methylnaphthalene, dissolved (µg/L) (62054)	2,6-Dimethylnaphthalene, dissolved (µg/L) (62055)	2-methylnaphthalene, dissolved (µg/L) (62056)	3-*beta*-Coprostanol, dissolved (µg/L) (62057)	3-Methyl-1H-indole, dissolved (µg/L) (62058)	3-*tert*-Butyl-4-hydroxyanisole, dissolved (µg/L) (62059)	4-Cumylphenol, dissolved (µg/L) (62060)	4-*n*-Octylphenol, dissolved (µg/L) (62061)
7	—	—	<0.5	<0.5	<0.5	<0.5	<2	<1	<5	<1	<1
11	<0.20	<1.0	<0.5	<0.5	<0.5	<0.5	<2	<1	<5	<1	<1
30	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—
33	—	—	<0.5	<0.5	<0.5	<0.5	<2	<1	<5	<1	<1
8	—	—	<0.5	<0.5	<0.5	<0.5	<2	<1	<5	<1	<1
16	—	—	—	—	—	—	—	—	—	—	—

Table 3. Quality-control data detected in field blanks from the Lower Russian River Basin, Sonoma County, California, 2003–2004—Continued.

[Number below the constituent or property is the U.S. Geological Survey (USGS) parameter code, which is a 5-digit number used in the USGS National Water Information System (NWIS), to uniquely identify a specific constituent or property; col/100mL, colonies per 100 milliliters; °C, degrees Celsius; E, estimated value; mm, millimeter; M, presence was verified, but concentration was not quantified; MF, membrane filtration; µg/L, micrograms per liter; µS/cm, microsiemens per centimeter; mg/L, milligrams per liter; <, actual value less than value shown; —, no data]

Map site No.	4-Nonylphenol, dissolved (µg/L) (62085)	4-Nonylphenol diethoxylates dissolved (µg/L) (62083)	4-Octylphenol diethoxylates dissolved (µg/L) (61705)	4-Octylphenol monoethoxylates dissolved (µg/L) (61706)	4-*tert*-Octylphenol, dissolved (µg/L) (62062)	5-Methyl-1H-benzotriazole, dissolved (µg/L) (62063)	9,10-Anthraquinone, dissolved (µg/L) (62066)	Acetophenone, dissolved (µg/L) (62064)	Acetyl hexamethyl tetrahydronaphthalene, dissolved (µg/L) (62065)	Anthracene, dissolved (µg/L) (34221)
7	<5	<5	<1	<1	<1	<2	<0.5	0.5	<0.5	<0.5
11	<5	<5	<1	<1	<1	<2	<0.5	E0.4	<0.5	<0.5
30	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
33	<5	<5	<1	<1	<1	<2	<0.5	<0.5	<0.5	<0.5
8	<5	<5	<1	<1	<1	<2	<0.5	<0.5	<0.5	<0.5
16	—	—	—	—	—	—	—	—	—	—

Map site No.	Benzo-[*a*]-pyrene, dissolved (µg/L) (34248)	Benzophenone, dissolved (µg/L) (62067)	*beta*-Sitosterol, dissolved (µg/L) (62068)	*beta*-Stigmastanol, dissolved (µg/L) (62086)	Bisphenol A, dissolved (µg/L) (62069)	Bromacil, dissolved (µg/L) (04029)	Caffeine, dissolved (µg/L) (50305)	Camphor, dissolved (µg/L) (62070)	Carbaryl, dissolved (µg/L) (82680)	Carbazole, dissolved (µg/L) (62071)
7	<0.5	<0.5	<2	<2	<1	<0.5	<0.5	<0.5	<1	<0.5
11	<0.5	E0.1	<2	<2	<1	<0.5	<0.5	<0.5	<1	<0.5
30	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
33	<0.5	<0.5	<2	<2	<1	<0.5	<0.5	<0.5	<1	<0.5
8	<0.5	<0.5	<2	<2	<1	<0.5	<0.5	<0.5	<1	<0.5
16	—	—	—	—	—	—	—	—	—	—

Table 3. Quality-control data detected in field blanks from the Lower Russian River Basin, Sonoma County, California, 2003–2004—Continued.

[Number below the constituent or property is the U.S. Geological Survey (USGS) parameter code, which is a 5-digit number used in the USGS National Water Information System (NWIS), to uniquely identify a specific constituent or property; col/100mL, colonies per 100 milliliters; °C, degrees Celsius; E, estimated value; mm, millimeter; M, presence was verified, but concentration was not quantified; MF, membrane filtration; µg/L, micrograms per liter; µS/cm, microsiemens per centimeter; mg/L, milligrams per liter; <, actual value less than value shown; —, no data]

Map site No.	Chlorpyrifos, dissolved (µg/L) (38933)	Cholesterol, dissolved (µg/L) (62072)	Cotinine, dissolved (µg/L) (62005)	Diazinon, dissolved (µg/L) (39572)	Dichlorvos, dissolved (µg/L) (38775)	*d*-Limonene, dissolved (µg/L) (62073)	Fluoranthene, dissolved (µg/L) (34377)	Hexahydrohexamethyl cyclopentabenzopyran, dissolved (µg/L) (62075)	Indole, dissolved (µg/L) (62076)	Isoborneol, dissolved (µg/L) (62077)	Isophorone, dissolved (µg/L) (34409)
7	<0.5	<2	<1.00	<0.5	<1.00	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
11	<0.5	<2	<1.00	<0.5	<1.00	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
30	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—
33	<0.5	<2	<1.00	<0.5	—	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
8	<0.5	<2	<1.00	<0.5	—	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
16	—	—	—	—	—	—	—	—	—	—	—

Map site No.	Isopropylbenzene, dissolved (µg/L) (62078)	Isoquinoline, dissolved (µg/L) (62079)	Menthol, dissolved (µg/L) (62080)	Metalaxyl, dissolved (µg/L) (50359)	Methyl salicylate, dissolved (µg/L) (62081)	Metolachlor, dissolved (µg/L) (39415)	Naphthalene, dissolved (µg/L) (34443)	*N*-*N*-diethyl-*meta*-toluamide, dissolved (µg/L) (62082)	*p*-Cresol dissolved (µg/L) (62084)	Pentachlorophenol, dissolved (µg/L) (34459)	Phenanthrene, dissolved (µg/L) (34462)
7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<2	<0.5
11	<0.5	<0.5	M	<0.5	E0.1	<0.5	<0.5	<0.5	<1	<2	<0.5
30	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—
33	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<2	<0.5
8	M	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	M	<2	<0.5
16	—	—	—	—	—	—	—	—	—	—	—

Table 3. Quality-control data detected in field blanks from the Lower Russian River Basin, Sonoma County, California, 2003–2004—Continued.

[Number below the constituent or property is the U.S. Geological Survey (USGS) parameter code, which is a 5-digit number used in the USGS National Water Information System (NWIS), to uniquely identify a specific constituent or property; col/100mL, colonies per 100 milliliters; °C, degrees Celsius; E, estimated value; mm, millimeter; M, presence was verified, but concentration was not quantified; MF, membrane filtration; µg/L, micrograms per liter; µS/cm, microsiemens per centimeter; mg/L, milligrams per liter; <, actual value less than value shown; —, no data]

Map site No.	Prometon, dissolved (µg/L) (04037)	Pyrene, dissolved (µg/L) (34470)	Tetrachloroethene, dissolved (µg/L) (34476)	Tribromomethane, dissolved (µg/L) (34288)	Tributyl phosphate, dissolved (µg/L) (62089)	Triclosan, dissolved (µg/L) (62090)	Triethyl citrate, dissolved (µg/L) (62091)	Triphenyl phosphate, dissolved (µg/L) (62092)	Tris(2-butoxyethyl) phosphate, dissolved (µg/L) (62093)	Tris(2-chloroethyl) phosphate, dissolved (µg/L) (62087)	Tris(dichloroisopropyl) phosphate, dissolved (µg/L) (62088)
7	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5
11	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5
30	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—
33	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5
8	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5
16	—	—	—	—	—	—	—	—	—	—	—

Table 4. Discharge measurements and water-quality data collected from the 10 Russian River sites in the Lower Russian River Basin, Sonoma County, California, 2003–2004.

[Number below the constituent or property is the U.S. Geological Survey (USGS) parameter code, which is a 5-digit number used in the USGS National Water Information System (NWIS), to uniquely identify a specific constituent or property; col/100mL, colonies per 100 milliliters; °C, degrees Celsius; E, estimated value; ft³/sec, cubic feet per second; Hg, mercury; <, actual value less than value shown; M, presence was verified, but concentration was not quantified; MF, membrane filtration; µg/L, micrograms per liter; µS/cm, microsiemens per centimeter; mg/L, milligrams per liter; mm, millimeter; NTU, nephelometric turbidity units; —, no data]

Map site No.	USGS station No.	Station name	Date	Time	Discharge, instantaneous (ft³/sec) (00061)	Turbidity, field (NTU) (61028)	Barometric pressure (mm of Hg) (00025)
1	11465400	Russian River at Wohler Bridge	09/08/2003	1900	[a]	5.0	756
			09/21/2004	1200	[a]	2.3	765
2	11467000	Russian River near Guerneville	08/27/2003	1330	187[b]	5.5	758
			09/14/2004	1530	95	2.9	757
3	11467002	Russian River at Johnsons Beach	08/25/2003	1800	[a]	8.4	760
			09/15/2004	0800	[a]	6.9	756
4	11467006	Russian River at Vacation Beach	08/26/2003	1130	195	6.5	759
			09/14/2004	1100	122	4.2	759
5	382754123030501	Russian River at Casini Ranch	08/26/2003	1400	183	2.6	759
			09/15/2004	1300	103	0.7	760
6	382757123003801	Russian River at Monte Rio	08/25/2003	1500	207	3.7	760
			09/15/2004	1030	98	2.1	760
7	383012122574501	Russian River at Odd Fellows Park	08/27/2003	1000	182	8.0	758
			09/14/2004	1330	97	5.4	757
8	382959122535601	Russian River at Steelhead Beach	08/27/2003	1530	189	4.2	759
			09/09/2003	1400	231	4.0	758
			09/16/2004	1100	103	2.8	758
9	383132122514901	Russian River at River Front Park	09/10/2003	1600	—	2.8	759
			09/22/2004	1000	234	2.9	763
			09/22/2004[c]	1100	234	3.0	764
10	383502122512801	Russian River below Dry Creek near Healdsburg	09/07/2003	1300	304	2.5	760
			09/23/2004	1530	—	—	—

See footnotes at end of table.

Table 4. Discharge measurements and water-quality data collected from the 10 Russian River sites in the Lower Russian River Basin, Sonoma County, California, 2003–2004—Continued.

[Number below the constituent or property is the U.S. Geological Survey (USGS) parameter code, which is a 5-digit number used in the USGS National Water Information System (NWIS), to uniquely identify a specific constituent or property; col/100mL, colonies per 100 milliliters; °C, degrees Celsius; E, estimated value; ft^3/sec, cubic feet per second; Hg, mercury; <, actual value less than value shown; M, presence was verified, but concentration was not quantified; MF, membrane filtration; µg/L, micrograms per liter; µS/cm, microsiemens per centimeter; mg/L, milligrams per liter; mm, millimeter; NTU, nephelometric turbidity units; —, no data]

Map site No.	Dissolved oxygen, (mg/L as O_2) (00300)	Dissolved oxygen, (percent saturation) (00301)	pH, field (standard units) (00400)	Specific conductance, field (µS/cm) (00095)	Temperature, water (°C) (00010)	Calcium, dissolved (mg/L as Ca) (00915)	Magnesium, dissolved (mg/L as Mg) (00925)	Potassium, dissolved (mg/L as K) (00935)	Sodium, dissolved (mg/L as Na) (00930)	Acid neutralizing capacity, lab (mg/L as $CaCO_3$) (90410)
1	10.5	120	8.5	233	21.5	22.5	12.7	1.0	7.3	105
	9.2	96	7.8	219	17.5	24.6	13.4	1.2	9.6	100
2	9.2	105	8.3	243	22.3	23.5	13.6	1.1	9.9	106
	8.4	98	7.9	229	22.9	22.6	12.5	1.1	7.9	103
3	8.5	101	8.1	238	24.1	23.7	13.8	1.1	8.7	106
	8.6	98	7.9	229	21.9	21.8	12.7	1.2	8.0	102
4	8.2	97	7.9	239	23.6	22.2	13.2	1.1	8.2	107
	8.2	94	7.7	228	22.5	21.3	12.6	1.2	7.8	102
5	10.3	123	8.3	242	24.1	22.9	14.3	1.2	8.9	109
	10.2	119	8.1	231	22.7	20.8	13.2	1.2	8.2	103
6	10.0	120	8.1	241	24.4	22.2	13.6	1.1	8.5	107
	8.8	100	7.6	231	21.8	21.4	13.1	1.2	7.9	103
7	8.3	94	8.0	239	21.8	22.8	13.4	1.2	8.5	107
	8.2	94	7.8	222	21.8	20.9	12.2	1.0	7.4	99
8	9.1	105	8.2	237	22.5	22.7	13.1	1.1	8.6	105
	9.2	101	8.0	246	20.0	23.0	13.1	1.0	8.0	109
	9.6	107	7.8	227	21.0	21.9	11.8	1.2	8.3	101
9	10.0	112	8.2	228	21.2	22.0	12.6	1.0	7.5	102
	10.0	102	7.9	218	16.3	20.9	11.2	1.1	8.1	99
	10.5	108	8.0	217	16.7	21.1	11.4	1.0	8.3	99
10	11.1	122	8.6	225	20.5	21.6	12.4	0.9	7.2	102
	—	—	—	—	—	19.6	10.5	0.8	7.8	96

See footnotes at end of table.

Table 4. Discharge measurements and water-quality data collected from the 10 Russian River sites in the Lower Russian River Basin, Sonoma County, California, 2003–2004—Continued.

[Number below the constituent or property is the U.S. Geological Survey (USGS) parameter code, which is a 5-digit number used in the USGS National Water Information System (NWIS), to uniquely identify a specific constituent or property; col/100mL, colonies per 100 milliliters; °C, degrees Celsius; E, estimated value; ft^3/sec, cubic feet per second; Hg, mercury; <, actual value less than value shown; M, presence was verified, but concentration was not quantified; MF, membrane filtration; µg/L, micrograms per liter; µS/cm, microsiemens per centimeter; mg/L, milligrams per liter; mm, millimeter; NTU, nephelometric turbidity units; —, no data]

Map site No.	Bromide, dissolved (mg/L as Br) (71870)	Chloride, dissolved (mg/L as Cl) (00940)	Fluoride, dissolved (mg/L as F) (00950)	Silica, dissolved (mg/L as SiO_2) (00955)	Sulfate, dissolved (mg/L as SO_4) (00945)	Solids, residue at 180°C, dissolved (mg/L) (70300)	Nitrogen, ammonia, dissolved (mg/L as N) (00608)	Nitrogen, ammonia + organic, dissolved (mg/L as N) (00623)	Nitrogen, ammonia + organic, total (mg/L as N) (00625)	Nitrogen, NO_2+NO_3, dissolved (mg/L as N) (00631)
1	E0.01	5.1	<0.2	13.9	11.1	135	<0.04	0.10	0.14	<0.06
	0.02	4.6	<0.2	18.8	9.2	134	<0.04	0.10	0.15	<0.06
2	E0.01	7.9	<0.2	15.7	11.2	147	<0.04	0.13	0.18	<0.06
	E0.01	5.0	<0.2	16.4	9.5	144	<0.04	0.21	0.15	<0.06
3	E0.01	5.9	<0.2	15.8	11.2	142	<0.04	0.10	0.14	<0.06
	0.02	5.1	<0.2	16.3	9.0	132	<0.04	E0.08	0.10	<0.06
4	E0.01	5.9	<0.2	15	11.3	141	<0.04	0.10	0.13	<0.06
	E0.01	5.0	<0.2	16.1	8.8	139	<0.04	E0.1	E0.08	<0.06
5	E0.02	6.5	<0.2	16.3	11.3	138	<0.04	0.13	0.16	<0.06
	E0.01	5.6	<0.2	16.6	9.0	138	<0.04	0.14	0.15	<0.06
6	0.02	6.1	<0.2	15.4	11.3	142	<0.04	0.11	0.15	<0.06
	<0.02	5.2	<0.2	16.9	9.2	139	<0.04	0.12	0.13	<0.06
7	E0.02	6.0	<0.2	15.2	11.2	137	<0.04	0.13	0.13	<0.06
	E0.01	4.7	<0.2	16.2	8.9	135	<0.04	E0.09	0.10	<0.06
8	<0.02	6.2	<0.2	14.8	11.2	139	<0.04	E0.10	0.15	<0.06
	0.02	6.6	<0.2	14.7	10.9	144	<0.04	0.13	0.16	<0.06
	0.02	5.3	<0.2	16	9.0	139	<0.04	0.11	0.11	<0.06
9	0.02	5.4	<0.2	14.2	10.8	133	<0.04	E0.08	0.13	<0.06
	0.02	4.7	<0.2	16.2	9.0	125	<0.04	0.11	0.18	<0.06
	0.02	4.7	<0.2	16.4	9.0	119	<0.04	0.12	0.14	<0.06
10	E0.01	5.4	<0.2	14	10.7	136	<0.04	0.12	0.11	<0.06
	E0.01	4.4	<0.2	15.3	8.8	128	<0.04	E0.08	0.14	E0.04

See footnotes at end of table.

Table 4. Discharge measurements and water-quality data collected from the 10 Russian River sites in the Lower Russian River Basin, Sonoma County, California, 2003–2004—Continued.

[Number below the constituent or property is the U.S. Geological Survey (USGS) parameter code, which is a 5-digit number used in the USGS National Water Information System (NWIS), to uniquely identify a specific constituent or property; col/100mL, colonies per 100 milliliters; °C, degrees Celsius; E, estimated value; ft^3/sec, cubic feet per second; Hg, mercury; <, actual value less than value shown; M, presence was verified, but concentration was not quantified; MF, membrane filtration; µg/L, micrograms per liter; µS/cm, microsiemens per centimeter; mg/L, milligrams per liter; mm, millimeter; NTU, nephelometric turbidity units; —, no data]

Map site No.	Nitrogen, nitrite, dissolved (mg/L as N) (00613)	Phosphorous, dissolved (mg/L as P) (00666)	Phosphorous, ortho-phosphate, dissolved (mg/L as P) (00671)	Phosphorous, total (mg/L as P) (00665)	Carbon, organic, dissolved (mg/L as C) (00681)	Carbon, organic, total (mg/L as C) (00680)	*Clostridium perfringens*, mCP MF (col/100 mL) (90915)	Enterococci, mEI MF (col/100 mL) (90909)	*Escherichia coli*, modified mTEC MF (col/100 mL) (90902)	Total coliform, mENDO MF (col/100 mL) (31501)
1	<0.008	0.006	<0.02	0.014	1.9	2.4	E12	63	59	35
	<0.008	0.006	<0.02	0.012	1.6	2.8	E1	E7	E5	E28
2	<0.008	0.011	<0.02	0.023	1.9	2.8	E5	E8	E2	50
	<0.008	0.009	<0.02	0.016	1.4	3.5	E5	E10	E4	E3
3	<0.008	0.011	<0.02	0.024	1.9	3.6	E9	E16	E5	35
	<0.008	0.012	<0.02	0.021	1.4	3.1	E11	E31	E15	E180
4	<0.008	0.011	<0.02	0.021	1.9	3.5	E8	E3	E2	58
	<0.008	0.013	<0.02	0.018	1.4	2.5	E5	E12	E10	E90
5	<0.008	0.016	E0.01	0.022	2.0	3.2	E3	E1	E6	22
	<0.008	0.014	<0.02	0.019	0.8	2.0	E5	E4	E11	E32
6	<0.008	0.015	E0.01	0.024	1.7	4.6	E6	E3	E6	40
	<0.008	0.013	<0.02	0.018	1.5	3.2	E2	E5	E39	E67
7	<0.008	0.013	<0.02	0.028	2.0	2.5	E5	E9	E7	47
	<0.008	0.011	<0.02	0.018	1.4	2.9	E6	E43	E19	E40
8	<0.008	0.010	<0.02	0.020	2.1	3.2	E5	E3	E5	47
	<0.008	0.009	<0.02	0.019	1.7	4.3	<1	E12	E18	60
	<0.008	0.011	<0.02	0.017	1.4	2.4	E2	E19	E5	E41
9	<0.008	0.004	<0.02	0.011	1.7	1.8	E5	E4	E9	E3
	<0.008	0.006	<0.02	0.015	1.4	2.0	E2	E12	E10	E97
	<0.008	0.006	<0.02	0.015	1.6	3.5	E4	E15	E11	E63
10	<0.008	0.005	<0.02	0.012	1.7	2.0	<1	E8	E15	36
	<0.008	0.008	<0.02	0.015	1.4	2.1	<1	E8	E4	E27

See footnotes at end of table.

Table 4. Discharge measurements and water-quality data collected from the 10 Russian River sites in the Lower Russian River Basin, Sonoma County, California, 2003–2004—Continued.

[Number below the constituent or property is the U.S. Geological Survey (USGS) parameter code, which is a 5-digit number used in the USGS National Water Information System (NWIS), to uniquely identify a specific constituent or property; col/100mL, colonies per 100 milliliters; °C, degrees Celsius; E, estimated value; ft^3/sec, cubic feet per second; Hg, mercury; <, actual value less than value shown; M, presence was verified, but concentration was not quantified; MF, membrane filtration; µg/L, micrograms per liter; µS/cm, microsiemens per centimeter; mg/L, milligrams per liter; mm, millimeter; NTU, nephelometric turbidity units; —, no data]

Map site No.	Aluminum, dissolved (µg/L as Al) (01106)	Antimony, dissolved (µg/L as An) (01095)	Arsenic, dissolved (µg/L as As) (01000)	Barium, dissolved (µg/L as Ba) (01005)	Beryllium, dissolved (µg/L as Be) (01010)	Boron, dissolved (µg/L as B) (01020)	Cadmium, dissolved (µg/L as Cd) (01025)	Chromium, dissolved (µg/L as Cr) (01030)	Cobalt, dissolved (µg/L as Co) (01035)	Copper, dissolved (µg/L as Cu) (01040)
1	2	<0.3	M	74	<0.06	245	<0.04	<0.8	0.084	0.7
	—	—	—	—	—	233	—	—	—	—
2	—	—	—	—	—	236	—	—	—	—
	—	—	—	—	—	270	—	—	—	—
3	—	—	—	—	—	237	—	—	—	—
	—	—	—	—	—	257	—	—	—	—
4	—	—	—	—	—	222	—	—	—	—
	—	—	—	—	—	249	—	—	—	—
5	—	—	—	—	—	226	—	—	—	—
	—	—	—	—	—	251	—	—	—	—
6	—	—	—	—	—	223	—	—	—	—
	—	—	—	—	—	258	—	—	—	—
7	—	—	—	—	—	230	—	—	—	—
	—	—	—	—	—	251	—	—	—	—
8	—	—	—	226	—	—	—	—	—	—
	E2	<0.3	E2	78	<0.06	243	<0.04	<0.8	0.083	0.7
						228	—	—	—	—
9	E1	<0.3	2	67	<0.06	225	<0.04	<0.8	0.093	0.6
	—	—	—	—	—	233	—	—	—	—
	—	—	—	—	—	234	—	—	—	—
10	2	<0.3	E1	71	<0.06	222	<0.04	<0.8	0.099	0.8
	—	—	—	—	—	236	—	—	—	—

See footnotes at end of table.

Table 4. Discharge measurements and water-quality data collected from the 10 Russian River sites in the Lower Russian River Basin, Sonoma County, California, 2003–2004—Continued.

[Number below the constituent or property is the U.S. Geological Survey (USGS) parameter code, which is a 5-digit number used in the USGS National Water Information System (NWIS), to uniquely identify a specific constituent or property; col/100mL, colonies per 100 milliliters; °C, degrees Celsius; E, estimated value; ft^3/sec, cubic feet per second; Hg, mercury; <, actual value less than value shown; M, presence was verified, but concentration was not quantified; MF, membrane filtration; µg/L, micrograms per liter; µS/cm, microsiemens per centimeter; mg/L, milligrams per liter; mm, millimeter; NTU, nephelometric turbidity units; —, no data]

Map site No.	Iron, dissolved (µg/L as Fe) (01046)	Lead, dissolved (µg/L as Pb) (01049)	Manganese, dissolved (µg/L as Mn) (01056)	Mercury, dissolved (µg/L as Hg) (71890)	Molybdenum, dissolved (µg/L as Mo) (01060)	Nickel, dissolved (µg/L as Ni) (01065)	Selenium, dissolved (µg/L as Se) (01145)	Silver, dissolved (µg/L as Ag) (01075)	Strontium, dissolved (µg/L as Sr) (01080)	Zinc, dissolved (µg/L as Zn) (01090)
1	10	<0.08	5.5	—	0.5	1.53	<3	<0.2	230	2.4
	7	—	7.6	<0.02	—	—	—	—	—	—
2	13	—	10.8	<0.02	—	—	—	—	—	—
	10	—	8.0	—	—	—	—	—	—	—
3	11	—	3.8	<0.02	—	—	—	—	—	—
	7	—	1.5	—	—	—	—	—	—	—
4	10	—	2.7	<0.02	—	—	—	—	—	—
	8	—	1.5	<0.02	—	—	—	—	—	—
5	9	—	8.2	<0.02	—	—	—	—	—	—
	16	—	17.6	—	—	—	—	—	—	—
6	8	—	8.6	<0.02	—	—	—	—	—	—
	9	—	20.6	<0.02	—	—	—	—	—	—
7	17	—	11.8	<0.02	—	—	—	—	—	—
	10	—	7.2	—	—	—	—	—	—	—
8	17	—	7.1	—	—	—	—	—	—	—
	E5	<0.08	7.9	—	0.5	1.61	E2	<0.2	230	<1.0
	13	—	6.1	<0.02	—	—	—	—	—	—
9	14	<0.08	10.2	—	E0.3	1.46	E2	<0.2	206	E0.6
	7	—	7.6	<0.02	—	—	—	—	—	—
	8	—	7.7	<0.02	—	—	—	—	—	—
10	13	<0.08	3.8	—	0.5	1.44	E1	<0.2	216	E0.5
	7	—	3.8	<0.02	—	—	—	—	—	—

See footnotes at end of table.

Table 4. Discharge measurements and water-quality data collected from the 10 Russian River sites in the Lower Russian River Basin, Sonoma County, California, 2003–2004—Continued.

[Number below the constituent or property is the U.S. Geological Survey (USGS) parameter code, which is a 5-digit number used in the USGS National Water Information System (NWIS), to uniquely identify a specific constituent or property; col/100mL, colonies per 100 milliliters; °C, degrees Celsius; E, estimated value; ft^3/sec, cubic feet per second; Hg, mercury; <, actual value less than value shown; M, presence was verified, but concentration was not quantified; MF, membrane filtration; µg/L, micrograms per liter; µS/cm, microsiemens per centimeter; mg/L, milligrams per liter; mm, millimeter; NTU, nephelometric turbidity units; —, no data]

Map site No.	1,4-Dichloro-benzene, dissolved, (µg/L) (34572)	1-Methyl-naphthalene, dissolved (µg/L) (62054)	2, 6-Di-methyl-naphthalene, dissolved (µg/L) (62055)	2-Methyl-naphthalene, dissolved (µg/L) (62056)	3-*beta*-Coprostanol, dissolved (µg/L) (62057)	3-Methyl-1H-indole, dissolved (µg/L) (62058)	3-*tert*-Butyl-4-hydroxy-anisole, dissolved (µg/L) (62059)	4-Cumyl-phenol, dissolved (µg/L) (62060)	4-*n* Octyl-phenol, dissolved (µg/L) (62061)	4-Nonyl-phenol, dissolved (µg/L) (62085)
1	<0.5	<0.5	<0.5	<0.5	<2	<1	<5	<1	<1	<5
	<0.5	<0.5	<0.5	<0.5	<2	<1	<5	<1	<1	<5
2	<0.5	<0.5	<0.5	<0.5	<2	<1	<5	<1	<1	<5
	—	—	—	—	—	—	—	—	—	—
3	<0.5	<0.5	<0.5	<0.5	<2	<1	<5	<1	<1	<5
	<0.5	<0.5	<0.5	<0.5	<2	<1	<5	<1	<1	<5
4	<0.5	<0.5	<0.5	<0.5	<2	<1	<5	<1	<1	<5
	—	—	—	—	—	—	—	—	—	—
5	<0.5	<0.5	<0.5	<0.5	<2	<1	<5	<1	<1	<5
	<0.5	<0.5	<0.5	<0.5	<2	<1	<5	<1	<1	<5
6	<0.5	<0.5	<0.5	<0.5	<2	<1	<5	<1	<1	<5
	<0.5	<0.5	<0.5	<0.5	<2	<1	<5	<1	<1	<5
7	—	—	—	—	—	—	—	—	—	—
	<0.5	<0.5	<0.5	<0.5	<2	<1	<5	<1	<1	<5
8	—	—	—	—	—	—	—	—	—	—
	<0.5	<0.5	<0.5	<0.5	<2	<1	<5	<1	<1	<5
	—	—	—	—	—	—	—	—	—	—
9	<0.5	<0.5	<0.5	<0.5	<2	<1	<5	<1	<1	<5
	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
10	<0.5	<0.5	<0.5	<0.5	<2	<1	<5	<1	<1	<5
	—	—	—	—	—	—	—	—	—	—

See footnotes at end of table.

Table 4. Discharge measurements and water-quality data collected from the 10 Russian River sites in the Lower Russian River Basin, Sonoma County, California, 2003–2004—Continued.

[Number below the constituent or property is the U.S. Geological Survey (USGS) parameter code, which is a 5-digit number used in the USGS National Water Information System (NWIS), to uniquely identify a specific constituent or property; col/100mL, colonies per 100 milliliters; °C, degrees Celsius; E, estimated value; ft^3/sec, cubic feet per second; Hg, mercury; <, actual value less than value shown; M, presence was verified, but concentration was not quantified; MF, membrane filtration; µg/L, micrograms per liter; µS/cm, microsiemens per centimeter; mg/L, milligrams per liter; mm, millimeter; NTU, nephelometric turbidity units; —, no data]

Map site No.	4-Nonyl-phenol di-ethoxylates dissolved (µg/L) (62083)	4-Octyl-phenol di-ethoxylates dissolved (µg/L) (61705)	4-Octylphenol mono-ethoxylates dissolved (µg/L) (61706)	4-*tert*-Octyl-phenol, dissolved (µg/L) (62062)	5-Methyl-1H-benzo-triazole, dissolved (µg/L) (62063)	9,10-Anthra-quinone, dissolved (µg/L) (62066)	Aceto-phenone, dissolved (µg/L) (62064)	Acetyl hexamethyl tetrahydro-naphthalene, dissolved (µg/L) (62065)	Anthracene, dissolved (µg/L) (34221)	Benzo-[*a*]-pyrene, dissolved (µg/L) (34248)
1	<5	<1	<1	<1	<2	<0.5	<0.5	<0.5	<0.5	<0.5
	<5	<1	<1	<1	<2	<0.5	<0.5	<0.5	<0.5	<0.5
2	<5	<1	<1	<1	<2	<0.5	<0.5	<0.5	<0.5	<0.5
	—	—	—	—	—	—	—	—	—	—
3	<5	<1	<1	<1	<2	<0.5	<0.5	<0.5	<0.5	<0.5
	<5	<1	<1	<1	<2	<0.5	<0.5	<0.5	<0.5	<0.5
4	<5	<1	<1	<1	<2	<0.5	<0.5	<0.5	<0.5	<0.5
	—	—	—	—	—	—	—	—	—	—
5	<5	<1	<1	<1	<2	<0.5	<0.5	<0.5	<0.5	<0.5
	<5	<1	<1	<1	<2	<0.5	<0.5	<0.5	<0.5	<0.5
6	<5	<1	<1	<1	<2	<0.5	<0.5	<0.5	<0.5	<0.5
	<5	<1	<1	<1	<2	<0.5	<0.5	<0.5	<0.5	<0.5
7	—	—	—	—	—	—	—	—	—	—
	<5	<1	<1	<1	<2	<0.5	<0.5	<0.5	<0.5	<0.5
8	—	—	—	—	—	—	—	—	—	—
	<5	<1	<1	<1	<2	<0.5	<0.5	<0.5	<0.5	<0.5
	—	—	—	—	—	—	—	—	—	—
9	<5	<1	<1	<1	<2	<0.5	<0.5	<0.5	<0.5	<0.5
	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
10	<5	<1	<1	<1	<2	<0.5	<0.5	<0.5	<0.5	<0.5
	—	—	—	—	—	—	—	—	—	—

See footnotes at end of table.

Table 4. Discharge measurements and water-quality data collected from the 10 Russian River sites in the Lower Russian River Basin, Sonoma County, California, 2003–2004—Continued.

[Number below the constituent or property is the U.S. Geological Survey (USGS) parameter code, which is a 5-digit number used in the USGS National Water Information System (NWIS), to uniquely identify a specific constituent or property; col/100mL, colonies per 100 milliliters; °C, degrees Celsius; E, estimated value; ft^3/sec, cubic feet per second; Hg, mercury; <, actual value less than value shown; M, presence was verified, but concentration was not quantified; MF, membrane filtration; µg/L, micrograms per liter; µS/cm, microsiemens per centimeter; mg/L, milligrams per liter; mm, millimeter; NTU, nephelometric turbidity units; —, no data]

Map site No.	Benzophenone, dissolved (µg/L) (62067)	*beta*-Sitosterol, dissolved (µg/L) (62068)	*beta*-Stigmastanol, dissolved (µg/L) (62086)	Bisphenol A, dissolved (µg/L) (62069)	Bromacil, dissolved (µg/L) (04029)	Caffeine, dissolved (µg/L) (50305)	Camphor, dissolved (µg/L) (62070)	Carbaryl, dissolved (µg/L) (82680)	Carbazole, dissolved (µg/L) (62071)	Chlorpyrifos, dissolved (µg/L) (38933)	Cholesterol, dissolved (µg/L) (62072)
1	<0.5	<2	<2	<1	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<2
	<0.5	<2	<2	<1	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<2
2	<0.5	<2	<2	<1	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<2
	—	—	—	—	—	—	—	—	—	—	—
3	<0.5	<2	<2	<1	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<2
	<0.5	<2	<2	<1	<0.5	M	M	<1	<0.5	<0.5	<2
4	<0.5	<2	<2	<1	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<2
	—	—	—	—	—	—	—	—	—	—	—
5	<0.5	<2	<2	<1	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<2
	<0.5	<2	<2	<1	<0.5	M	<0.5	<1	<0.5	<0.5	<2
6	<0.5	<2	<2	<1	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<2
	<0.5	<2	<2	<1	<0.5	<0.5	<0.5	<1	<0.5	<0.5	M
7	—	—	—	—	—	—	—	—	—	—	—
	<0.5	<2	<2	<1	<0.5	<0.5	M	<1	<0.5	<0.5	<2
8	—	—	—	—	—	—	—	—	—	—	—
	<0.5	<2	<2	<1	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<2
	—	—	—	—	—	—	—	—	—	—	—
9	<0.5	<2	<2	<1	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<2
	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—
10	<0.5	<2	<2	<1	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<2
	—	—	—	—	—	—	—	—	—	—	—

See footnotes at end of table.

Table 4. Discharge measurements and water-quality data collected from the 10 Russian River sites in the Lower Russian River Basin, Sonoma County, California, 2003–2004—Continued.

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Map site No.	Cotinine, dissolved (µg/L) (62005)	Diazinon, dissolved (µg/L) (39572)	Dichlorvos, dissolved (µg/L) (38775)	*d*-Limonene, dissolved (µg/L) (62073)	Fluoranthene, dissolved (µg/L) (34377)	Hexahydrohexamethyl cyclopentabenzopyran, dissolved (µg/L) (62075)	Indole, dissolved (µg/L) (62076)	Isoborneol, dissolved (µg/L) (62077)	Isophorone, dissolved (µg/L) (34409)	Isopropylbenzene, dissolved (µg/L) (62078)	Isoquinoline, dissolved (µg/L) (62079)
1	<1.00	<0.5	<1.00	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	<1.00	<0.5	—	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2	<1.00	<0.5	<1.00	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	—	—	—	—	—	—	—	—	—	—	—
3	<1.00	<0.5	<1.00	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	<1.00	<0.5	—	M	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4	<1.00	<0.5	<1.00	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	—	—	—	—	—	—	—	—	—	—	—
5	<1.00	<0.5	<1.00	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	<1.00	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
6	<1.00	<0.5	<1.00	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	<1.00	<0.5	—	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
7	—	—	—	—	—	—	—	—	—	—	—
	<1.00	<0.5	—	<0.5	<0.5	<0.5	<0.5	<0.5	M	<0.5	<0.5
8	—	—	—	—	—	—	—	—	—	—	—
	<1.00	<0.5	<1.00	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	—	—	—	—	—	—	—	—	—	—	—
9	<1.00	<0.5	<1.00	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—
10	<1.00	<0.5	<1.00	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	—	—	—	—	—	—	—	—	—	—	—

See footnotes at end of table.

Table 4. Discharge measurements and water-quality data collected from the 10 Russian River sites in the Lower Russian River Basin, Sonoma County, California, 2003–2004—Continued.

[Number below the constituent or property is the U.S. Geological Survey (USGS) parameter code, which is a 5-digit number used in the USGS National Water Information System (NWIS), to uniquely identify a specific constituent or property; col/100mL, colonies per 100 milliliters; °C, degrees Celsius; E, estimated value; ft^3/sec, cubic feet per second; Hg, mercury; <, actual value less than value shown; M, presence was verified, but concentration was not quantified; MF, membrane filtration; µg/L, micrograms per liter; µS/cm, microsiemens per centimeter; mg/L, milligrams per liter; mm, millimeter; NTU, nephelometric turbidity units; —, no data]

Map site No.	Menthol, dissolved (µg/L) (62080)	Metalaxyl, dissolved (µg/L) (50359)	Methyl salicylate, dissolved (µg/L) (62081)	Metolachlor, dissolved (µg/L) (39415)	Naphth-alene, dissolved (µg/L) (34443)	*N-N*-diethyl-*meta*-toluamide, dissolved (µg/L) (62082)	*p*-Cresol, dissolved (µg/L) (62084)	Penta-chloro-phenol, dissolved (µg/L) (34459)	Phenan-threne, dissolved (µg/L) (34462)	Prometon, dissolved (µg/L) (04037)	Pyrene, dissolved (µg/L) (34470)
1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<2	<0.5	<0.5	<0.5
	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<2	<0.5	<0.5	<0.5
2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<2	<0.5	<0.5	<0.5
	—	—	—	—	—	—	—	—	—	—	—
3	<0.5	<0.5	<0.5	<0.5	<0.5	M	<1	<2	<0.5	<0.5	<0.5
	<0.5	<0.5	<0.5	<0.5	<0.5	M	<1	<2	<0.5	<0.5	<0.5
4	<0.5	<0.5	<0.5	<0.5	<0.5	E0.1	<1	<2	<0.5	<0.5	<0.5
	—	—	—	—	—	—	—	—	—	—	—
5	<0.5	<0.5	<0.5	<0.5	<0.5	E0.1	<1	<2	<0.5	<0.5	<0.5
	<0.5	<0.5	<0.5	<0.5	<0.5	E0.1	<1	<2	<0.5	<0.5	<0.5
6	<0.5	<0.5	<0.5	<0.5	<0.5	E0.1	<1	<2	<0.5	<0.5	<0.5
	<0.5	<0.5	<0.5	<0.5	<0.5	E0.1	<1	<2	<0.5	<0.5	<0.5
7	—	—	—	—	—	—	—	—	—	—	—
	<0.5	<0.5	<0.5	<0.5	<0.5	M	<1	<2	<0.5	<0.5	<0.5
8	—	—	—	—	—	—	—	—	—	—	—
	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<2	<0.5	<0.5	<0.5
	—	—	—	—	—	—	—	—	—	—	—
9	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<2	<0.5	<0.5	<0.5
	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—
10	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<2	<0.5	<0.5	<0.5
	—	—	—	—	—	—	—	—	—	—	—

See footnotes at end of table.

Table 4. Discharge measurements and water-quality data collected from the 10 Russian River sites in the Lower Russian River Basin, Sonoma County, California, 2003–2004—Continued.

[Number below the constituent or property is the U.S. Geological Survey (USGS) parameter code, which is a 5-digit number used in the USGS National Water Information System (NWIS), to uniquely identify a specific constituent or property; col/100mL, colonies per 100 milliliters; °C, degrees Celsius; E, estimated value; ft³/sec, cubic feet per second; Hg, mercury; <, actual value less than value shown; M, presence was verified, but concentration was not quantified; MF, membrane filtration; µg/L, micrograms per liter; µS/cm, microsiemens per centimeter; mg/L, milligrams per liter; mm, millimeter; NTU, nephelometric turbidity units; —, no data]

Map site No.	Tetra-chloro-ethene, dissolved (µg/L) (34476)	Tri-bromo-methane, dissolved (µg/L) (34288)	Tri-butyl phosphate, dissolved (µg/L) (62089)	Triclosan, dissolved (µg/L) (62090)	Tri-ethyl citrate, dissolved (µg/L) (62091)	Triphenyl phosphate, dissolved (µg/L) (62092)	Tris(2-butoxyethyl) phosphate, dissolved (µg/L) (62093)	Tris(2-chloroethyl) phosphate, dissolved (µg/L) (62087)	Tris (dichloroisopropy) phosphate, dissolved (µg/L) (62088)	Hydrogen-2/1, (per mil) (82082)	Oxygen-18/16 (per mil) (82085)
1	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	—	—
	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	–45.00	–6.59
2	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	–43.88	–6.78
	—	—	—	—	—	—	—	—	—	–46.30	–6.71
3	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	–45.28	–6.76
	M	<0.5	<0.5	M	<0.5	<0.5	<0.5	<0.5	<0.5	–45.60	–6.57
4	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	–46.01	–6.72
	—	—	—	—	—	—	—	—	—	–45.00	–6.64
5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	–44.42	–6.61
	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	–44.30	–6.43
6	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	–44.95	–6.79
	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	–44.60	–6.50
7	—	—	—	—	—	—	—	—	—	–45.80	–6.81
	M	<0.5	<0.5	M	<0.5	<0.5	<0.5	<0.5	<0.5	–45.10	–6.67
8	—	—	—	—	—	—	—	—	—	–46.04	–6.82
	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	–47.24	–6.94
	—	—	—	—	—	—	—	—	—	–45.10	–6.69
9	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	–46.79	–6.92
	—	—	—	—	—	—	—	—	—	–45.90	–6.67
	—	—	—	—	—	—	—	—	—	-45.10	–6.68
10	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	–45.95	–6.87
	—	—	—	—	—	—	—	—	—	–47.20	–6.74

[a]Grab sample.

[b]Daily streamflow measurement obtained from NWISweb.

[c]Sequential replicate sample-see report for description.

Table 5. Discharge measurements and water-quality data collected from 10 tributary sites in the Lower Russian River Basin, Sonoma County, California, 2004.

[Number below the constituent or property is the U.S. Geological Survey (USGS) parameter code, which is a 5-digit number used in the USGS National Water Information System (NWIS), to uniquely identify a specific constituent or property; col/100mL, colonies per 100 milliliters; °C, degrees Celsius; E, estimated value; ft^3/sec, cubic feet per second; Hg, mercury; <, actual value less than value shown; M, presence was verified, but concentration was not quantified; MF, membrane filtration; µg/L, micrograms per liter; µS/cm, microsiemens per centimeter; mg/L, milligrams per liter; mm, millimeter; NTU, nephelometric turbidity units; —, no data]

Map site No.	USGS station no.	Station name	Date	Time	Discharge, instantaneous (ft^3/sec) (00061)	Turbidity, field (NTU) (61028)	Barometric pressure (mm of Hg) (00025)
23	382551123041101	Willow Creek 1.8 mi upstream Russian River	06/06/2004	1200	0.11	0.8	757
			07/21/2004	1330	0.11	0.2	758
			08/31/2004	1300	0.01	0.4	—
24	382658123054101	Sheephouse Creek near Jenner	06/04/2004	1500	0.01	0.2	760
25	382659123065001	Jenner Gulch at Jenner, California	06/06/2004	1530	0.01	0.4	757
			07/21/2004	1000	0.08	0.1	759
			08/31/2004	1030	0.04	0.9	761
26	382701123025801	Freezeout Creek near Duncans Mills	06/04/2004	1230	0.03	0.4	761
			07/21/2004	1530	0.12	1.6	758
			08/30/2004	1630	0.05	0.7	759
27	382752123003401	Dutch Bill Creek at Monte Rio	06/04/2004	1030	0.71	0.1	762
			07/20/2004	1530	0.04	0.3	760
28	382815123024601	Austin Creek near Duncans Mills	06/02/2004	1430	10	0.4	758
			07/19/2004	1300	—	1.3	765
			09/02/2004	1130	0.31	1.0	—
29	382944123002901	Hulbert Creek near Guerneville	06/03/2004	1200	0.35	0.7	758
			07/20/2004	1400	0.06	0.5	760
30	382955122594101	Pocket Canyon Creek at Guerneville	06/03/2004	1000	0.04	1.1	758
			07/20/2004	1130	0.01	1.7	760
31	383006123000601	Fife Creek at Guerneville	06/03/2004	1400	0.01	0.3	758
32	383009122543001	Green Valley Creek near Mirabel	06/02/2004	1130	1.7	1.5	755

Table 5. Discharge measurements and water-quality data collected from 10 tributary sites in the Lower Russian River Basin, Sonoma County, California, 2004—Continued.

[[Number below the constituent or property is the U.S. Geological Survey (USGS) parameter code, which is a 5-digit number used in the USGS National Water Information System (NWIS), to uniquely identify a specific constituent or property; col/100mL, colonies per 100 milliliters; °C, degrees Celsius; E, estimated value; ft^3/sec, cubic feet per second; Hg, mercury; <, actual value less than value shown; M, presence was verified, but concentration was not quantified; MF, membrane filtration; µg/L, micrograms per liter; µS/cm, microsiemens per centimeter; mg/L, milligrams per liter; mm, millimeter; NTU, nephelometric turbidity units; —, no data]

Map site No.	Dissolved oxygen, (mg/L as O_2) (00300)	Dissolved oxygen, (percent saturation) (00301)	pH, field (standard units) (00400)	Specific conductance, field (µS/cm) (00095)	Temperature, water (°C) (00010)	Calcium, dissolved (mg/L as Ca) (00915)	Magnesium, dissolved (mg/L as Mg) (00925)	Potassium, dissolved (mg/L as K) (00935)	Sodium, dissolved (mg/L as Na) (00930)	Acid neutralizing capacity, lab (mg/L as $CaCO_3$) (90410)
23	8.5	82	7.5	238	13.8	19.0	10.3	0.9	14.0	89
	5.7	58	7.2	252	15.8	21.0	11.1	1.0	14.3	99
	2.6	26	7.0	278	15.9	22.6	12.4	1.1	15.6	116
24	9.0	86	7.4	192	13.5	16.2	7.3	0.9	11.3	74
25	9.9	101	7.5	238	16.1	20.5	13.9	0.9	18.5	105
	9.6	94	8.0	311	14.4	22.0	14.9	0.9	19.6	114
	8.8	88	7.7	323	15.1	21.5	15.8	1.5	20.9	118
26	9.1	88	7.6	224	13.7	21.2	10.6	0.9	10.3	98
	7.5	76	7.5	235	16.2	22.4	11.2	0.9	10.3	105
	6.2	64	7.3	249	16.9	23.3	11.5	1.2	12.5	112
27	8.1	78	7.3	234	13.7	14.0	18.0	0.9	7.9	108
	5.3	54	6.9	257	16.1	15.4	19.9	1.0	8.2	120
28	9.8	107	8.0	277	19.5	18.0	21.9	0.7	7.5	134
	10.4	115	8.2	293	20.5	19.4	22.9	0.8	8.0	142
	7.5	70	7.4	319	19.0	19.9	25.6	0.8	7.5	157
29	8.9	88	7.0	154	15.3	14.7	5.7	0.8	7.0	64
	3.4	34	6.6	196	15.7	20.4	7.7	1.1	8.1	88
30	8.4	84	7.1	162	14.9	14.3	6.2	1.1	9.4	67
	4.6	48	—	321	17.4	25.3	19.8	1.4	12.6	136
31	8.1	86	7.8	295	18.0	21.1	20.9	1.0	9.0	141
32	8.0	85	7.7	283	18.0	20.3	13.4	2.1	17.0	101

Table 5. Discharge measurements and water-quality data collected from 10 tributary sites in the Lower Russian River Basin, Sonoma County, California, 2004—Continued.

[Number below the constituent or property is the U.S. Geological Survey (USGS) parameter code, which is a 5-digit number used in the USGS National Water Information System (NWIS), to uniquely identify a specific constituent or property; col/100mL, colonies per 100 milliliters; °C, degrees Celsius; E, estimated value; ft^3/sec, cubic feet per second; Hg, mercury; <, actual value less than value shown; M, presence was verified, but concentration was not quantified; MF, membrane filtration; µg/L, micrograms per liter; µS/cm, microsiemens per centimeter; mg/L, milligrams per liter; mm, millimeter; NTU, nephelometric turbidity units; —, no data]

Map site No.	Bromide, dissolved (mg/L as Br) (71870)	Chloride, dissolved (mg/L as Cl) (00940)	Fluoride, dissolved (mg/L as F) (00950)	Silica, dissolved (mg/L as SiO_2) (00955)	Sulfate, dissolved (mg/L as SO_4) (00945)	Solids, residue at 180°C, dissolved (mg/L) (70300)	Nitrogen, ammonia, dissolved (mg/L as N) (00608)	Nitrogen, ammonia + organic, dissolved (mg/L as N) (00623)	Nitrogen, ammonia + organic, total (mg/L as N) (00625)	Nitrogen, NO_2+NO_3, dissolved (mg/L as N) (00631)
23	0.04	15.3	<0.2	16.6	8.6	150	<0.04	<0.10	E0.08	E0.03
	0.02	16.4	<0.2	16.8	8.7	144	<0.04	E0.07	E0.07	E0.03
	0.03	15.8	<0.2	18.3	4.1	143	<0.04	E0.09	E0.09	<0.06
24	0.03	10.8	<0.2	15.7	7.1	120	<0.04	<0.10	E0.05	E0.04
25	0.04	20.9	<0.2	22.5	11.7	180	<0.04	<0.10	0.12	0.38
	0.03	23.1	<0.2	23.9	14.6	184	<0.04	E0.07	<0.10	0.49
	0.04	22.2	<0.2	26.0	14.0	188	<0.04	E0.10	E0.09	0.43
26	0.04	10.7	<0.2	16.7	3.6	144	<0.04	<0.10	E0.07	E0.03
	0.03	11.1	<0.2	16.4	3.9	134	<0.04	<0.10	<0.1	E0.06
	0.03	11.2	<0.2	17.9	2.8	127	<0.04	E0.07	E0.07	E0.04
27	0.04	8.6	<0.2	21.9	4.3	150	<0.04	<0.10	E0.06	0.07
	0.03	9.0	<0.2	22.6	5.3	145	<0.04	E0.05	<0.10	0.07
28	<0.02	7.1	<0.2	16.7	5.7	156	<0.04	<0.10	E0.10	<0.06
	E0.01	7.9	<0.2	19.1	7.1	168	<0.04	<0.10	<0.10	<0.04
	E0.01	7.7	<0.2	21.5	7.2	168	<0.04	E0.06	<0.10	<0.06
29	<0.02	5.7	<0.2	15.3	5.8	93	<0.04	<0.10	E0.06	0.12
	0.02	5.9	<0.2	16.5	6.2	120	<0.04	<0.10	<0.10	0.15
30	<0.02	8.6	<0.2	17.9	3.8	101	<0.04	E0.07	0.18	E0.05
	0.08	11.5	<0.2	19.6	17.7	182	<0.04	E0.06	E0.07	0.05
31	<0.02	6.5	0.2	19.3	8.5	165	<0.04	E0.07	0.14	<0.06
32	0.03	17.1	<0.2	20.7	17.2	182	<0.04	0.20	0.26	E0.03

Table 5. Discharge measurements and water-quality data collected from 10 tributary sites in the Lower Russian River Basin, Sonoma County, California, 2004—Continued.

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Map site No.	Nitrogen, nitrite, dissolved (mg/L as N) (00613)	Phos-phorous, dissolved (mg/L as P) (00666)	Phosphorous, ortho-phosphate, dissolved (mg/L as P) (00671)	Phos-phorous, total (mg/L as P) (00665)	Carbon, organic, dissolved (mg/L as C) (00681)	Carbon, organic, total (mg/L as C) (00680)	*Clostridium perfringens*, mCP MF (col/100 mL) (90915)	Enterococci, mEI MF (col/100 mL) (90909)	*Escherichia coli*, modified mTEC MF (col/100 mL) (90902)	Total coliform, mENDO MF (col/100 mL) (31501)
23	<0.008	0.020	0.02	0.023	1.7	1.6	E2	E4	26	185
	<0.008	0.022	E0.01	0.025	1.7	2.5	<1	21	28	38
	<0.008	0.028	0.02	0.035	2.0	2.5	E1	E4	E5	E23
24	<0.008	0.023	0.02	0.022	1.0	2.6	—	28	E22	57
25	<0.008	0.025	0.02	0.026	1.3	1.9	E8	29	220	562
	—	0.026	—	0.027	1.0	1.9	E2	350	66	183
	<0.008	0.025	0.02	0.029	1.3	2.0	E12	E83	E240	E560
26	<0.008	0.023	0.02	0.024	1.2	1.9	—	70	280	280
	<0.008	0.025	E0.02	0.024	0.9	5.1	E2	E9	E5	23
	<0.008	0.022	0.02	0.030	1.2	1.6	<1	E7	E2	E42
27	<0.008	0.024	0.02	0.023	0.8	0.9	—	E5	E1	630
	—	0.021	—	0.021	0.7	1.4	<1	<1	E7	46
28	<0.008	0.020	E0.01	0.024	0.7	0.7	<1	E6	E5	E23
	—	0.016	—	0.017	0.8	1.4	E2	67	E11	E18
	<0.008	0.009	<0.02	0.015	0.7	3.7	<1	E62	E3	E5
29	<0.008	0.022	E0.02	0.021	0.5	E0.3	—	26	E16	E3,000
	—	0.019	—	0.018	0.6	E0.4	<1	E7	45	52
30	<0.008	0.036	0.03	0.039	1.8	1.5	—	440	270	850
	—	0.025	—	0.031	1.2	1.4	<1	E16	150	250
31	<0.008	0.033	0.03	0.040	1.2	2.4	—	64	40	1,600
32	<0.008	0.089	0.08	0.097	3.1	3.6	E2	36	71	150

Table 5. Discharge measurements and water-quality data collected from 10 tributary sites in the Lower Russian River Basin, Sonoma County, California, 2004—Continued.

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Map site No.	Boron, dissolved (µg/L as B) (01020)	Iron, dissolved (µg/L as Fe) (01046)	Manganese, dissolved (µg/L as Mn) (01056)	Mercury, dissolved (µg/L as Hg) (71890)	1,4-Dichloro-benzene, dissolved, (µg/L) (34572)	1-Methyl-naphthalene, dissolved (µg/L) (62054)	2, 6-Di-methyl naph-thalene, dissolved (µg/L) (62055)	2-Methyl-naphthalene, dissolved (µg/L) (62056)	3-*beta*-Coprostanol, dissolved (µg/L) (62057)	3-Methyl-1H-indole, dissolved (µg/L) (62058)
23	44	36	43.1	<0.02	—	—	—	—	—	—
	43	32	63.6	<0.02	—	—	—	—	—	—
	46	107	133	<0.02	<0.5	<0.5	<0.5	<0.5	<2	<1
24	111	E4	1.6	<0.02	—	—	—	—	—	—
25	130	<6	1.5	<0.02	—	—	—	—	—	—
	117	<6	1.0	<0.02	—	—	—	—	—	—
	132	E3	2.1	<0.02	E0.2	<0.5	<0.5	<0.5	<2	<1
26	56	7	6.6	<0.02	—	—	—	—	—	—
	57	E4	1.8	<0.02	—	—	—	—	—	—
	72	<6	1.5	<0.02	<0.5	<0.5	<0.5	<0.5	<2	<1
27	40	<6	<0.8	<0.02	—	—	—	—	—	—
	39	<6	0.9	—	—	—	—	—	—	—
28	51	<6	1.9	<0.02	—	—	—	—	—	—
	50	<6	2.1	<0.02	—	—	—	—	—	—
	56	12	15.4	<0.02	<0.5	<0.5	<0.5	<0.5	<2	<1
29	46	<6	1.1	<0.02	—	—	—	—	—	—
	51	E4	3.2	<0.02	—	—	—	—	—	—
30	40	18	17.0	<0.02	—	—	—	—	—	—
	54	17	30.5	E0.01	—	—	—	—	—	—
31	115	<6	9.5	<0.02	—	—	—	—	—	—
32	63	15	12.4	—	—	—	—	—	—	—

Table 5. Discharge measurements and water-quality data collected from 10 tributary sites in the Lower Russian River Basin, Sonoma County, California, 2004—Continued.

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Map site No.	3-*tert*-Butyl-4-hydroxyanisole, dissolved (µg/L) (62059)	4-Cumylphenol, dissolved (µg/L) (62060)	4-*n* Octylphenol, dissolved (µg/L) (62061)	4-Nonylphenol, dissolved (µg/L) (62085)	4-Nonylphenol diethoxylates dissolved (µg/L) (62083)	4-Octylphenol diethoxylates dissolved (µg/L) (61705)	4-Octylphenol monoethoxylates dissolved (µg/L) (61706)	4-*tert*-Octylphenol, dissolved (µg/L) (62062)	5-Methyl-1H-benzotriazole, dissolved (µg/L) (62063)	9,10-Anthraquinone, dissolved (µg/L) (62066)
23	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
	<5	<1	<1	<5	<5	<1	<1	<1	<2	<0.5
24	—	—	—	—	—	—	—	—	—	—
25	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
	<5	<1	<1	<5	<5	<1	<1	<1	<2	<0.5
26	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
	<5	<1	<1	<5	<5	<1	<1	<1	<2	<0.5
27	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
28	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
	<5	<1	<1	<5	<5	<1	<1	<1	<2	<0.5
29	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
30	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
31	—	—	—	—	—	—	—	—	—	—
32	—	—	—	—	—	—	—	—	—	—

Table 5. Discharge measurements and water-quality data collected from 10 tributary sites in the Lower Russian River Basin, Sonoma County, California, 2004—Continued.

[Number below the constituent or property is the U.S. Geological Survey (USGS) parameter code, which is a 5-digit number used in the USGS National Water Information System (NWIS), to uniquely identify a specific constituent or property; col/100mL, colonies per 100 milliliters; °C, degrees Celsius; E, estimated value; ft^3/sec, cubic feet per second; Hg, mercury; <, actual value less than value shown; M, presence was verified, but concentration was not quantified; MF, membrane filtration; µg/L, micrograms per liter; µS/cm, microsiemens per centimeter; mg/L, milligrams per liter; mm, millimeter; NTU, nephelometric turbidity units; —, no data]

Map site No.	Aceto-phenone, dissolved (µg/L) (62064)	Acetyl hexamethyl tetrahydro-naphthalene, dissolved (µg/L) (62065)	Anthracene, dissolved (µg/L) (34221)	Benzo-[*a*]-pyrene, dissolved (µg/L) (34248)	Benzo-phenone, dissolved (µg/L) (62067)	beta-Sitosterol, dissolved (µg/L) (62068)	beta-Stigmastanol, dissolved (µg/L) (62086)	Bisphe-nol A, dissolved (µg/L) (62069)	Bromacil, dissolved (µg/L) (04029)	Caffeine, dissolved (µg/L) (50305)
23	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<2	<1	<0.5	<0.5
24	—	—	—	—	—	—	—	—	—	—
25	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<2	<1	<0.5	<0.5
26	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<2	<1	<0.5	<0.5
27	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
28	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<2	<1	<0.5	<0.5
29	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
30	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
31	—	—	—	—	—	—	—	—	—	—
32	—	—	—	—	—	—	—	—	—	—

Table 5. Discharge measurements and water-quality data collected from 10 tributary sites in the Lower Russian River Basin, Sonoma County, California, 2004—Continued.

[Number below the constituent or property is the U.S. Geological Survey (USGS) parameter code, which is a 5-digit number used in the USGS National Water Information System (NWIS), to uniquely identify a specific constituent or property; col/100mL, colonies per 100 milliliters; °C, degrees Celsius; E, estimated value; ft^3/sec, cubic feet per second; Hg, mercury; <, actual value less than value shown; M, presence was verified, but concentration was not quantified; MF, membrane filtration; µg/L, micrograms per liter; µS/cm, microsiemens per centimeter; mg/L, milligrams per liter; mm, millimeter; NTU, nephelometric turbidity units; —, no data]

Map site No.	Camphor, dissolved (µg/L) (62070)	Carbaryl, dissolved (µg/L) (82680)	Carbazole, dissolved (µg/L) (62071)	Chlorpyrifos, dissolved (µg/L) (38933)	Cholesterol, dissolved (µg/L) (62072)	Cotinine, dissolved (µg/L) (62005)	Diazinon, dissolved (µg/L) (39572)	Dichlorvos, dissolved (µg/L) (38775)	*d*-Limonene, dissolved (µg/L) (62073)	Fluoranthene, dissolved (µg/L) (34377)
23	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
	<0.5	<1	<0.5	<0.5	<2	<1.00	<0.5	—	<0.5	<0.5
24	—	—	—	—	—	—	—	—	—	—
25	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
	<0.5	<1	<0.5	<0.5	<2	<1.00	<0.5	—	<0.5	<0.5
26	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
	<0.5	<1	<0.5	<0.5	<2	<1.00	<0.5	—	<0.5	<0.5
27	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
28	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
	<0.5	<1	<0.5	<0.5	<2	<1.00	<0.5	—	<0.5	<0.5
29	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
30	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
31	—	—	—	—	—	—	—	—	—	—
32	—	—	—	—	—	—	—	—	—	—

Table 5. Discharge measurements and water-quality data collected from 10 tributary sites in the Lower Russian River Basin, Sonoma County, California, 2004—Continued.

[Number below the constituent or property is the U.S. Geological Survey (USGS) parameter code, which is a 5-digit number used in the USGS National Water Information System (NWIS), to uniquely identify a specific constituent or property; col/100mL, colonies per 100 milliliters; °C, degrees Celsius; E, estimated value; ft^3/sec, cubic feet per second; Hg, mercury; <, actual value less than value shown; M, presence was verified, but concentration was not quantified; MF, membrane filtration; µg/L, micrograms per liter; µS/cm, microsiemens per centimeter; mg/L, milligrams per liter; mm, millimeter; NTU, nephelometric turbidity units; —, no data]

Map site No.	Hexahydro-hexamethyl cyclopenta-benzopyran, dissolved (µg/L) (62075)	Indole, dissolved (µg/L) (62076)	Isoborneol, dissolved (µg/L) (62077)	Isophorone, dissolved (µg/L) (34409)	Isopropyl-benzene, dissolved (µg/L) (62078)	Isoquinoline, dissolved (µg/L) (62079)	Menthol, dissolved (µg/L) (62080)	Metalaxyl, dissolved (µg/L) (50359)	Methyl salicylate, dissolved (µg/L) (62081)	Metolachlor, dissolved (µg/L) (39415)
23	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
24	—	—	—	—	—	—	—	—	—	—
25	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
26	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
27	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
28	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
29	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
30	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
31	—	—	—	—	—	—	—	—	—	—
32	—	—	—	—	—	—	—	—	—	—

Table 5. Discharge measurements and water-quality data collected from 10 tributary sites in the Lower Russian River Basin, Sonoma County, California, 2004—Continued.

[Number below the constituent or property is the U.S. Geological Survey (USGS) parameter code, which is a 5-digit number used in the USGS National Water Information System (NWIS), to uniquely identify a specific constituent or property; col/100mL, colonies per 100 milliliters; °C, degrees Celsius; E, estimated value; ft^3/sec, cubic feet per second; Hg, mercury; <, actual value less than value shown; M, presence was verified, but concentration was not quantified; MF, membrane filtration; µg/L, micrograms per liter; µS/cm, microsiemens per centimeter; mg/L, milligrams per liter; mm, millimeter; NTU, nephelometric turbidity units; —, no data]

Map site No.	Naphthalene, dissolved (µg/L) (34443)	*N-N*-diethyl-*meta*-toluamide, dissolved (µg/L) (62082)	*p*-Cresol, dissolved (µg/L) (62084)	Penta-chloro-phenol, dissolved (µg/L) (34459)	Phenan-threne, dissolved (µg/L) (34462)	Prometon, dissolved (µg/L) (04037)	Pyrene, dissolved (µg/L) (34470)	Tetra-chloro-ethene, dissolved (µg/L) (34476)	Tri-bromo-methane, dissolved (µg/L) (34288)	Tri-butyl phosphate, dissolved (µg/L) (62089)
23	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
	<0.5	<0.5	<1	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
24	—	—	—	—	—	—	—	—	—	—
25	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
	<0.5	<0.5	<1	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
26	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
	<0.5	<0.5	<1	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
27	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
28	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
	<0.5	<0.5	<1	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
29	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
30	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
31	—	—	—	—	—	—	—	—	—	—
32	—	—	—	—	—	—	—	—	—	—

Table 5. Discharge measurements and water-quality data collected from 10 tributary sites in the Lower Russian River Basin, Sonoma County, California, 2004—Continued.

[Number below the constituent or property is the U.S. Geological Survey (USGS) parameter code, which is a 5-digit number used in the USGS National Water Information System (NWIS), to uniquely identify a specific constituent or property; col/100mL, colonies per 100 milliliters; °C, degrees Celsius; E, estimated value; ft^3/sec, cubic feet per second; Hg, mercury; <, actual value less than value shown; M, presence was verified, but concentration was not quantified; MF, membrane filtration; µg/L, micrograms per liter; µS/cm, microsiemens per centimeter; mg/L, milligrams per liter; mm, millimeter; NTU, nephelometric turbidity units; —, no data]

Map site No.	Triclosan, dissolved (µg/L) (62090)	Tri-ethyl citrate, dissolved (µg/L) (62091)	Triphenyl phosphate, dissolved (µg/L) (62092)	Tris(2-butoxyethyl) phosphate, dissolved (µg/L) (62093)	Tris(2-chloroethyl) phosphate, dissolved (µg/L) (62087)	Tris(dichloro-isopropy) phosphate, dissolved (µg/L) (62088)	Hydrogen-2/1, (per mil) (82082)	Oxygen-18/16 (per mil) (82085)
23	—	—	—	—	—	—	–31.10	–5.13
	—	—	—	—	—	—	–29.50	–4.92
	<1	<0.5	<0.5	<0.5	<0.5	<0.5	–29.40	–4.88
24	—	—	—	—	—	—	–29.30	–5.10
25	—	—	—	—	—	—	–30.00	–5.08
	—	—	—	—	—	—	–31.10	–5.16
	<1	<0.5	<0.5	<0.5	<0.5	<0.5	–31.00	–5.21
26	—	—	—	—	—	—	–32.10	–5.43
	—	—	—	—	—	—	–31.40	–5.40
	<1	<0.5	<0.5	<0.5	<0.5	<0.5	–31.90	–5.25
27	—	—	—	—	—	—	–32.10	–5.46
	—	—	—	—	—	—	–32.20	–5.46
28	—	—	—	—	—	—	–32.90	–5.49
	—	—	—	—	—	—	–32.40	–5.34
	<1	<0.5	<0.5	<0.5	<0.5	<0.5	–32.40	–5.29
29	—	—	—	—	—	—	–32.70	–5.46
	—	—	—	—	—	—	–34.50	–5.70
30	—	—	—	—	—	—	–33.40	–5.60
	—	—	—	—	—	—	–33.70	–5.60
31	—	—	—	—	—	—	–33.90	–5.67
32	—	—	—	—	—	—	–30.90	–5.08

Table 6. Discharge measurements and water-quality data collected from the estuary sites, a gravel-terrace pit site, and Mark West Creek in the Lower Russian River Basin, Sonoma County, California, 2003–2004.

[Number below the constituent or property is the U.S. Geological Survey (USGS) parameter code, which is a 5-digit number used in the USGS National Water Information System (NWIS), to uniquely identify a specific constituent or property; ADVM, acoustic Doppler velocity meter; col/100mL, colonies per 100 milliliters; °C, degrees Celsius; E, estimated value; ft^3/sec, cubic feet per second; Hg, mercury; <, actual value less than value shown; M, presence was verified, but concentration was not quantified; MF, membrane filtration; µg/L, micrograms per liter; µS/cm, microsiemens per centimeter; mg/L, milligrams per liter; mm, millimeter; NTU, nephelometric turbidity units; —, no data]

Map site No.	USGS station No.	Station name	Date	Time	Discharge, instantaneous (ft^3/sec) (00061)	Turbidity, field (NTU) (61028)	Barometric pressure (mm of Hg) (00025)
		Estuary sites					
33	382605123060701	Russian River near Jenner, California	06/07/2004	1100	–355[b, c]	9.4	758
			06/07/2004	1730	–1,015[b, c]	12	756
			07/22/2004	1330	20.4	3.4	759
			09/01/2004	1330	1,742[b, c]	3.5	760
34	382624123054401	Willow Creek Marsh near Jenner	06/06/2004	1000	0.02	31	757
			06/06/2004	1700	[a]	11	757
			07/22/2004	1045	[a]	3.9	758
		Gravel-terrace pit site					
35	383121122512801	McLaughlin Pond near Windsor	09/10/2003	1430	[a]	3.5	761
			09/22/2004	1500	[a]	16	761
		Mark West Creek					
36	11466800	Mark West Creek near Mirabel Heights	09/07/2003	1730	6.2	41	758
			06/02/2004	1600	11	17	756
			07/19/2004	1530	3.1	14	759
			09/15/2004	1530	1.9	9.5	755

See footnotes at end of table.

Table 6. Discharge measurements and water-quality data collected from the estuary sites, a gravel-terrace pit site, and Mark West Creek in the Lower Russian River Basin, Sonoma County, California, 2003–2004—Continued.

[Number below the constituent or property is the U.S. Geological Survey (USGS) parameter code, which is a 5-digit number used in the USGS National Water Information System (NWIS), to uniquely identify a specific constituent or property; ADVM, acoustic Doppler velocity meter; col/100mL, colonies per 100 milliliters; °C, degrees Celsius; E, estimated value; ft^3/sec, cubic feet per second; Hg, mercury; <, actual value less than value shown; M, presence was verified, but concentration was not quantified; MF, membrane filtration; µg/L, micrograms per liter; µS/cm, microsiemens per centimeter; mg/L, milligrams per liter; mm, millimeter; NTU, nephelometric turbidity units; —, no data]

Map site No.	Dissolved oxygen, (mg/L as O_2) (00300)	Dissolved oxygen, (percent saturation) (00301)	pH, field (standard units) (00400)	Specific conductance, field (µS/cm) (00095)	Temperature, water (°C) (00010)	Calcium, dissolved (mg/L as Ca) (00915)	Magnesium, dissolved (mg/L as Mg) (00925)	Potassium, dissolved (mg/L as K) (00935)	Sodium, dissolved (mg/L as Na) (00930)	Acid neutralizing capacity, lab (mg/L as $CaCO_3$) (90410)
33	7.9	91	8.1	2,940	21.6	48.6	98.4	28.5	693	118
	9.1	106	8.1	19,200	19.3	108	320	99.2	2,560	118
	8.4	97	8.2	1,900	22.0	94.5	280	84.9	2,140	112
	9.5	118	—	33,600	19.5	237	944	376	7,650	110
34	8.6	101	7.7	29,300	17.7	182	542	165	4,190	113
	9.8	116	8.2	14,900	21.3	119	311	95.6	2,450	116
	8.1	92	8.2	12,100	19.6	53.8	120	37	893	113
35	7.9	96	7.2	214	25.2	18.8	13.0	2.5	4.7	68
	7.9	92	7.5	164	22.9	15.1	9.3	1.9	5.0	68
36	7.7	84	7.8	599	19.5	37.8	30.4	3.37	35.3	253
	7.0	81	7.9	519	22.4	36.4	27.6	2.95	32.3	218
	8.2	97	8.0	586	23.6	39.9	32.0	3.13	36.4	253
	8.1	89	7.9	628	20.1	42.1	35.9	3.5	39.8	268

See footnotes at end of table.

Table 6. Discharge measurements and water-quality data collected from the estuary sites, a gravel-terrace pit site, and Mark West Creek in the Lower Russian River Basin, Sonoma County, California, 2003–2004—Continued.

[Number below the constituent or property is the U.S. Geological Survey (USGS) parameter code, which is a 5-digit number used in the USGS National Water Information System (NWIS), to uniquely identify a specific constituent or property; ADVM, acoustic Doppler velocity meter; col/100mL, colonies per 100 milliliters; °C, degrees Celsius; E, estimated value; ft^3/sec, cubic feet per second; Hg, mercury; <, actual value less than value shown; M, presence was verified, but concentration was not quantified; MF, membrane filtration; µg/L, micrograms per liter; µS/cm, microsiemens per centimeter; mg/L, milligrams per liter; mm, millimeter; NTU, nephelometric turbidity units; —, no data]

Map site No.	Bromide, dissolved (mg/L as Br) (71870)	Chloride, dissolved (mg/L as Cl) (00940)	Fluoride, dissolved (mg/L as F) (00950)	Silica, dissolved (mg/L as SiO_2) (00955)	Sulfate, dissolved (mg/L as SO_4) (00945)	Solids, residue at 180°C, dissolved (mg/L) (70300)	Nitrogen, ammonia, dissolved (mg/L as N) (00608)	Nitrogen, ammonia + organic, dissolved (mg/L as N) (00623)	Nitrogen, ammonia + organic, total (mg/L as N) (00625)	Nitrogen, NO_2+NO_3, dissolved (mg/L as N) (00631)
33	4.93	1,330	0.2	14.8	180	2,660	E0.03	0.14	0.21	E0.03
	14.7	4,880	0.4	12.6	630	9,570	E0.03	E0.09	0.11	0.09
	7.15	4,100	0.3	15.2	568	7,810	<0.04	0.14	E0.06	E0.03
	49.4	13,500	0.9	5.2	1,750	25,800	<0.04	0.14	0.30	<0.06
34	29.3	7,610	0.5	10.5	913	15,300	<0.04	<0.10	0.24	E0.03
	14.2	4,550	0.4	12.6	581	8,940	<0.04	E0.06	0.13	<0.06
	6.98	1,780	0.2	13.8	251	3,390	<0.04	0.14	0.18	<0.06
35	—	4.8	<0.2	10.4	30.3	133	<0.04	0.17	0.27	<0.06
	<0.02	2.4	<0.2	10.2	13.5	147	<0.04	0.22	0.37	<0.06
36	0.05	34.5	0.2	38.4	19.3	355	E0.02	0.34	0.46	E0.04
	0.02	29.8	<0.2	35	18.4	318	E0.03	0.28	0.46	E0.05
	0.06	32.7	0.2	35.9	17.3	354	E0.022	0.3	0.4	E0.03
	0.06	37.7	0.2	37.9	16.6	369	<0.04	0.27	0.34	<0.06

See footnotes at end of table.

Table 6. Discharge measurements and water-quality data collected from the estuary sites, a gravel-terrace pit site, and Mark West Creek in the Lower Russian River Basin, Sonoma County, California, 2003–2004—Continued.

[Number below the constituent or property is the U.S. Geological Survey (USGS) parameter code, which is a 5-digit number used in the USGS National Water Information System (NWIS), to uniquely identify a specific constituent or property; ADVM, acoustic Doppler velocity meter; col/100mL, colonies per 100 milliliters; °C, degrees Celsius; E, estimated value; ft^3/sec, cubic feet per second; Hg, mercury; <, actual value less than value shown; M, presence was verified, but concentration was not quantified; MF, membrane filtration; µg/L, micrograms per liter; µS/cm, microsiemens per centimeter; mg/L, milligrams per liter; mm, millimeter; NTU, nephelometric turbidity units; —, no data]

Map site No.	Nitrogen, nitrite, dissolved (mg/L as N) (00613)	Phosphorous, dissolved (mg/L as P) (00666)	Phosphorous, ortho-phosphate, dissolved (mg/L as P) (00671)	Phosphorous, total (mg/L as P) (00665)	Carbon, organic, dissolved (mg/L as C) (00681)	Carbon, organic, total (mg/L as C) (00680)	*Clostridium perfringens*, mCP MF (col/100 mL) (90915)	Enterococci, mEI MF (col/100 mL) (90909)	*Escherichia coli*, modified mTEC MF (col/100 mL) (90902)	Total coliform, mENDO MF (col/100 mL) (31501)
33	<0.008	0.029	0.02	0.036	1.4	5.3	25	E5	E12	E24
	<0.008	0.038	0.03	0.049	0.8	2.9	E9	E1	E14	E10
	<0.008	0.029	E0.02	0.036	1.0	2.0	E2	<1	E4	<1
	<0.008	0.022	0.02	0.043	0.8	1.9	E3	<1	E1	<2
34	<0.008	0.018	E0.01	0.030	0.8	3.6	E4	E11	44	83
	<0.008	0.026	0.02	0.038	1.3	2.5	E14	103	63	100
	<0.008	0.016	<0.02	0.018	1.7	3.0	E5	E6	E11	82
35	<0.008	<0.004	<0.02	0.010	3.3	3.5	E2	E2	E1	600
	<0.008	0.008	<0.02	0.044	3.5	5.0	E1	E50	E1	E760
36	E0.005	0.210	0.18	0.250	4.3	6.7	E15	170	190	650
	<0.008	0.310	0.30	0.360	3.7	7.6	E40	E16	49	110
	—	0.300	—	0.350	3.8	5.0	E30	29	80	212
	<0.008	0.280	0.29	0.300	3.3	4.2	E33	E250	E140	<280

See footnotes at end of table.

Table 6. Discharge measurements and water-quality data collected from the estuary sites, a gravel-terrace pit site, and Mark West Creek in the Lower Russian River Basin, Sonoma County, California, 2003–2004—Continued.

[Number below the constituent or property is the U.S. Geological Survey (USGS) parameter code, which is a 5-digit number used in the USGS National Water Information System (NWIS), to uniquely identify a specific constituent or property; ADVM, acoustic Doppler velocity meter; col/100mL, colonies per 100 milliliters; °C, degrees Celsius; E, estimated value; ft^3/sec, cubic feet per second; Hg, mercury; <, actual value less than value shown; M, presence was verified, but concentration was not quantified; MF, membrane filtration; µg/L, micrograms per liter; µS/cm, microsiemens per centimeter; mg/L, milligrams per liter; mm, millimeter; NTU, nephelometric turbidity units; —, no data]

Map site No.	Aluminum, dissolved (µg/L as Al) (01106)	Antimony, dissolved (µg/L as An) (01095)	Arsenic, dissolved (µg/L as As) (01000)	Barium, dissolved (µg/L as Ba) (01005)	Beryllium, dissolved (µg/L as Be) (01010)	Boron, dissolved (µg/L as B) (01020)	Cadmium, dissolved (µg/L as Cd) (01025)	Chromium, dissolved (µg/L as Cr) (01030)	Cobalt, dissolved (µg/L as Co) (01035)	Copper, dissolved (µg/L as Cu) (01040)
33	—	—	—	—	—	530	—	—	—	—
	—	—	—	—	—	1,390	—	—	—	—
	—	—	—	—	—	1,130	—	—	—	—
	—	—	—	—	—	3,580	—	—	—	—
34	—	—	—	—	—	2,140	—	—	—	—
	—	—	—	—	—	1,360	—	—	—	—
	—	—	—	—	—	620	—	—	—	—
35	3	E0.28	2	73	<0.06	58	<0.04	<0.8	0.053	1.4
	—	—	—	—	—	47	—	—	—	—
36	M	E0.16	3	101	<0.06	219	<0.04	<0.8	0.262	0.8
	—	—	—	—	—	211	—	—	—	—
	—	—	—	—	—	224	—	—	—	—
	—	—	—	—	—	266	—	—	—	—

See footnotes at end of table.

Table 6. Discharge measurements and water-quality data collected from the estuary sites, a gravel-terrace pit site, and Mark West Creek in the Lower Russian River Basin, Sonoma County, California, 2003–2004—Continued.

[Number below the constituent or property is the U.S. Geological Survey (USGS) parameter code, which is a 5-digit number used in the USGS National Water Information System (NWIS), to uniquely identify a specific constituent or property; ADVM, acoustic Doppler velocity meter; col/100mL, colonies per 100 milliliters; °C, degrees Celsius; E, estimated value; ft³/sec, cubic feet per second; Hg, mercury; <, actual value less than value shown; M, presence was verified, but concentration was not quantified; MF, membrane filtration; µg/L, micrograms per liter; µS/cm, microsiemens per centimeter; mg/L, milligrams per liter; mm, millimeter; NTU, nephelometric turbidity units; —, no data]

Map site No.	Iron, dissolved (µg/L as Fe) (01046)	Lead, dissolved (µg/L as Pb) (01049)	Manganese, dissolved (µg/L as Mn) (01056)	Mercury, dissolved (µg/L as Hg) (71890)	Molybdenum, dissolved (µg/L as Mo) (01060)	Nickel, dissolved (µg/L as Ni) (01065)	Selenium, dissolved (µg/L as Se) (01145)	Silver, dissolved (µg/L as Ag) (01075)	Strontium, dissolved (µg/L as Sr) (01080)	Zinc, dissolved (µg/L as Zn) (01090)
33	<19	—	5.2	<0.02	—	—	—	—	—	—
	<96	—	13.6	<0.02	—	—	—	—	—	—
	<64	—	E6	<0.02	—	—	—	—	—	—
	E3	—	9.2	<0.02	—	—	—	—	—	—
34	<128	—	395	<0.02	—	—	—	—	—	—
	<64	—	105	<0.02	—	—	—	—	—	—
	<19	—	6.8	<0.02	—	—	—	—	—	—
35	<8	<0.08	6.0	—	0.4	2.33	E2	<0.2	152	1.4
	12.0	—	20.1	<0.02	—	—	—	—	—	—
36	E4	<0.08	133	—	1.2	3.72	E2	<0.2	250	1.0
	E6	—	192	<0.02	—	—	—	—	—	—
	E3	—	225	<0.02	—	—	—	—	—	—
	E5	—	126	<0.02	—	—	—	—	—	—

See footnotes at end of table.

Table 6. Discharge measurements and water-quality data collected from the estuary sites, a gravel-terrace pit site, and Mark West Creek in the Lower Russian River Basin, Sonoma County, California, 2003–2004—Continued.

[Number below the constituent or property is the U.S. Geological Survey (USGS) parameter code, which is a 5-digit number used in the USGS National Water Information System (NWIS), to uniquely identify a specific constituent or property; ADVM, acoustic Doppler velocity meter; col/100mL, colonies per 100 milliliters; °C, degrees Celsius; E, estimated value; ft^3/sec, cubic feet per second; Hg, mercury; <, actual value less than value shown; M, presence was verified, but concentration was not quantified; MF, membrane filtration; µg/L, micrograms per liter; µS/cm, microsiemens per centimeter; mg/L, milligrams per liter; mm, millimeter; NTU, nephelometric turbidity units; —, no data]

Map site No.	1,4-Dichloro-benzene, dissolved, (µg/L) (34572)	1-Methyl-naphthalene, dissolved (µg/L) (62054)	2, 6-Di-methyl-naphthalene, dissolved (µg/L) (62055)	2-Methyl-naphthalene, dissolved (µg/L) (62056)	3-*beta*-Coprostanol, dissolved (µg/L) (62057)	3-Methyl-1H-indole, dissolved (µg/L) (62058)	3-*tert*-Butyl-4-hydroxyani-sole, dissolved (µg/L) (62059)	4-Cumyl-phenol, dissolved (µg/L) (62060)	4-*n* Octyl-phenol, dissolved (µg/L) (62061)	4-Nonyl-phenol, dissolved (µg/L) (62085)
33	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
	<0.5	<0.5	<0.5	<0.5	<2	<1	<5	<1	<1	<5
34	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
35	<0.5	<0.5	<0.5	<0.5	<2	<1	<5	<1	<1	<5
	—	—	—	—	—	—	—	—	—	—
36	<0.5	<0.5	<0.5	<0.5	<2	<1	<5	<1	<1	<5
	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
	<0.5	<0.5	<0.5	<0.5	M	<1	<5	<1	<1	<5

See footnotes at end of table.

Table 6. Discharge measurements and water-quality data collected from the estuary sites, a gravel-terrace pit site, and Mark West Creek in the Lower Russian River Basin, Sonoma County, California, 2003–2004—Continued.

[Number below the constituent or property is the U.S. Geological Survey (USGS) parameter code, which is a 5-digit number used in the USGS National Water Information System (NWIS), to uniquely identify a specific constituent or property; ADVM, acoustic Doppler velocity meter; col/100mL, colonies per 100 milliliters; °C, degrees Celsius; E, estimated value; ft³/sec, cubic feet per second; Hg, mercury; <, actual value less than value shown; M, presence was verified, but concentration was not quantified; MF, membrane filtration; µg/L, micrograms per liter; µS/cm, microsiemens per centimeter; mg/L, milligrams per liter; mm, millimeter; NTU, nephelometric turbidity units; —, no data]

Map site No.	4-Nonylphenol diethoxylates dissolved (µg/L) (62083)	4-Octylphenol diethoxylates dissolved (µg/L) (61705)	4-Octylphenol monoethoxylates dissolved (µg/L) (61706)	4-*tert*-Octylphenol, dissolved (µg/L) (62062)	5-Methyl-1H-benzotriazole, dissolved (µg/L) (62063)	9,10-Anthraquinone, dissolved (µg/L) (62066)	Acetophenone, dissolved (µg/L) (62064)	Acetyl hexamethyl tetrahydronaphthalene, dissolved (µg/L) (62065)	Anthracene, dissolved (µg/L) (34221)	Benzo-[*a*]-pyrene, dissolved (µg/L) (34248)
33	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
	<5	<1	<1	<1	<2	<0.5	<0.5	<0.5	<0.5	<0.5
34	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
35	<5	<1	<1	<1	<2	<0.5	<0.5	<0.5	<0.5	<0.5
	—	—	—	—	—	—	—	—	—	—
36	<5	<1	<1	<1	<2	<0.5	<0.5	<0.5	<0.5	<0.5
	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
	<5	<1	<1	<1	<2	<0.5	<0.5	<0.5	<0.5	<0.5

See footnotes at end of table.

Table 6. Discharge measurements and water-quality data collected from the estuary sites, a gravel-terrace pit site, and Mark West Creek in the Lower Russian River Basin, Sonoma County, California, 2003–2004—Continued.

[Number below the constituent or property is the U.S. Geological Survey (USGS) parameter code, which is a 5-digit number used in the USGS National Water Information System (NWIS), to uniquely identify a specific constituent or property; ADVM, acoustic Doppler velocity meter; col/100mL, colonies per 100 milliliters; °C, degrees Celsius; E, estimated value; ft^3/sec, cubic feet per second; Hg, mercury; <, actual value less than value shown; M, presence was verified, but concentration was not quantified; MF, membrane filtration; µg/L, micrograms per liter; µS/cm, microsiemens per centimeter; mg/L, milligrams per liter; mm, millimeter; NTU, nephelometric turbidity units; —, no data]

Map site No.	Benzophenone, dissolved (µg/L) (62067)	*beta*-Sitosterol, dissolved (µg/L) (62068)	*beta*-Stigmastanol, dissolved (µg/L) (62086)	Bisphenol A, dissolved (µg/L) (62069)	Bromacil, dissolved (µg/L) (04029)	Caffeine, dissolved (µg/L) (50305)	Camphor, dissolved (µg/L) (62070)	Carbaryl, dissolved (µg/L) (82680)	Carbazole, dissolved (µg/L) (62071)	Chlorpyrifos, dissolved (µg/L) (38933)	Cholesterol, dissolved (µg/L) (62072)
33	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—
	<0.5	<2	<2	<1	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<2
34	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—
35	<0.5	<2	<2	<1	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<2
	—	—	—	—	—	—	—	—	—	—	—
36	<0.5	E1	<2	<1	<0.5	M	<0.5	<1	<0.5	<0.5	M
	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—
	<0.5	M	M	<1	<0.5	<0.5	<0.5	<1	<0.5	<0.5	M

See footnotes at end of table.

Table 6. Discharge measurements and water-quality data collected from the estuary sites, a gravel-terrace pit site, and Mark West Creek in the Lower Russian River Basin, Sonoma County, California, 2003–2004—Continued.

[Number below the constituent or property is the U.S. Geological Survey (USGS) parameter code, which is a 5-digit number used in the USGS National Water Information System (NWIS), to uniquely identify a specific constituent or property; ADVM, acoustic Doppler velocity meter; col/100mL, colonies per 100 milliliters; °C, degrees Celsius; E, estimated value; ft³/sec, cubic feet per second; Hg, mercury; <, actual value less than value shown; M, presence was verified, but concentration was not quantified; MF, membrane filtration; µg/L, micrograms per liter; µS/cm, microsiemens per centimeter; mg/L, milligrams per liter; mm, millimeter; NTU, nephelometric turbidity units; —, no data]

Map site No.	Cotinine, dissolved (µg/L) (62005)	Diazinon, dissolved (µg/L) (39572)	Dichlorvos, dissolved (µg/L) (38775)	*d*-Limonene, dissolved (µg/L) (62073)	Fluoranthene, dissolved (µg/L) (34377)	Hexahydro-hexamethyl cyclopenta-benzopyran, dissolved (µg/L) (62075)	Indole, dissolved (µg/L) (62076)	Isoborneol, dissolved (µg/L) (62077)	Isophorone, dissolved (µg/L) (34409)	Isopropyl-benzene, dissolved (µg/L) (62078)	Isoquinoline, dissolved (µg/L) (62079)
33	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—
	<1.00	<0.5	—	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
34	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—
35	<1.00	<0.5	<1.00	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	—	—	—	—	—	—	—	—	—	—	—
36	<1.00	<0.5	<1.00	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—
	<1.00	<0.5	—	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

See footnotes at end of table.

Table 6. Discharge measurements and water-quality data collected from the estuary sites, a gravel-terrace pit site, and Mark West Creek in the Lower Russian River Basin, Sonoma County, California, 2003–2004—Continued.

[Number below the constituent or property is the U.S. Geological Survey (USGS) parameter code, which is a 5-digit number used in the USGS National Water Information System (NWIS), to uniquely identify a specific constituent or property; ADVM, acoustic Doppler velocity meter; col/100mL, colonies per 100 milliliters; °C, degrees Celsius; E, estimated value; ft³/sec, cubic feet per second; Hg, mercury; <, actual value less than value shown; M, presence was verified, but concentration was not quantified; MF, membrane filtration; µg/L, micrograms per liter; µS/cm, microsiemens per centimeter; mg/L, milligrams per liter; mm, millimeter; NTU, nephelometric turbidity units; —, no data]

Map site No.	Menthol, dissolved (µg/L) (62080)	Metalaxyl, dissolved (µg/L) (50359)	Methyl salicylate, dissolved (µg/L) (62081)	Metolachlor, dissolved (µg/L) (39415)	Naphthalene, dissolved (µg/L) (34443)	*N*-*N*-diethyl-*meta*-toluamide, dissolved (µg/L) (62082)	*p*-Cresol, dissolved (µg/L) (62084)	Pentachlorophenol, dissolved (µg/L) (34459)	Phenanthrene, dissolved (µg/L) (34462)	Prometon, dissolved (µg/L) (04037)	Pyrene, dissolved (µg/L) (34470)
33	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—
	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<2	<0.5	<0.5	<0.5
34	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—
35	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<2	<0.5	<0.5	<0.5
	—	—	—	—	—	—	—	—	—	—	—
36	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<2	<0.5	<0.5	<0.5
	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—
	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<2	<0.5	<0.5	<0.5

See footnotes at end of table.

Table 6. Discharge measurements and water-quality data collected from the estuary sites, a gravel-terrace pit site, and Mark West Creek in the Lower Russian River Basin, Sonoma County, California, 2003–2004—Continued.

[Number below the constituent or property is the U.S. Geological Survey (USGS) parameter code, which is a 5-digit number used in the USGS National Water Information System (NWIS), to uniquely identify a specific constituent or property; ADVM, acoustic Doppler velocity meter; col/100mL, colonies per 100 milliliters; °C, degrees Celsius; E, estimated value; ft³/sec, cubic feet per second; Hg, mercury; <, actual value less than value shown; M, presence was verified, but concentration was not quantified; MF, membrane filtration; µg/L, micrograms per liter; µS/cm, microsiemens per centimeter; mg/L, milligrams per liter; mm, millimeter; NTU, nephelometric turbidity units; —, no data]

Map site No.	Tetra-chloro-ethene, dissolved (µg/L) (34476)	Tri-bromo-methane, dissolved (µg/L) (34288)	Tri-butyl phosphate, dissolved (µg/L) (62089)	Triclosan, dissolved (µg/L) (62090)	Tri-ethyl citrate, dissolved (µg/L) (62091)	Triphenyl phosphate, dissolved (µg/L) (62092)	Tris(2-butoxyethyl) phosphate, dissolved (µg/L) (62093)	Tris(2-chloroethyl) phosphate, dissolved (µg/L) (62087)	Tris(dichloro-isopropy) phosphate, dissolved (µg/L) (62088)	Hydrogen-2/1, (per mil) (82082)	Oxygen-18/16 (per mil) (82085)
33	—	—	—	—	—	—	—	—	—	–39.80	–6.04
	—	—	—	—	—	—	—	—	—	–29.10	–4.59
	—	—	—	—	—	—	—	—	—	–40.20	–5.90
	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	–15.90	–2.55
34	—	—	—	—	—	—	—	—	—	–21.10	–3.30
	—	—	—	—	—	—	—	—	—	–30.40	–4.48
	—	—	—	—	—	—	—	—	—	–36.30	–5.20
35	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	–24.33	–3.18
	—	—	—	—	—	—	—	—	—	–27.10	–3.50
36	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	–34.53	–5.07
	—	—	—	—	—	—	—	—	—	–31.70	–4.86
	—	—	—	—	—	—	—	—	—	–31.30	–4.45
	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	–34.00	–4.54

[a]Grab sample.

[b]Daily streamflow measurement using an ADVM profiler.

[c]Negative discharge measurement are due to flow reversals caused by incoming tides.

Table 7. Water-quality data collected from the 12 ground-water sites in the Lower Russian River Basin, Sonoma County, California, 2003–2004.

[Number below the constituent or property is the U.S. Geological Survey (USGS) parameter code, which is a 5-digit number used in the USGS National Water Information System (NWIS), to uniquely identify a specific constituent or property; col/100mL, colonies per 100 milliliters; °C, degrees Celsius; E, estimated value; Hg, mercury; <, actual value less than value shown; mm, M, presence was verified, but concentration was not quantified; MF, membrane filtration; µg/L, micrograms per liter; µS/cm, microsiemens per centimeter; mg/L, milligrams per liter; millimeter; NTU, nephelometric turbidity units; —, no data]

Map site No.	USGS station no.	Station name	Date	Time	Turbidity, field (NTU) (61028)	Barometric pressure (mm of Hg) (00025)
11	382944122533501	8N/9W-31H1	09/11/2003	1200	0.0	762
			09/21/2004	1400	—	—
12	382948122535601	8N/9W-31G3	09/09/2003	1100	0.5	757
13	383002122530601	8N/9W-32C1	09/08/2003	1230	1.4	760
14	383003122540401	8N/9W-31C3	09/16/2004	1400	0.2	—
15	383003122540403	8N/9W-31C5	09/16/2004	1500	0.1	—
16	383035122525901	8N/9W-29L1	09/08/2003	1430	0.0	760
			09/21/2004	1100	28.0	—
17	383045122525701	8N/9W-29F1	09/08/2003	1800	0.8	756
18	383055122523001	8N/9W-29A2	09/08/2003	1620	1.7	757
			09/23/2004	1000	2.7	—
19	383120122514001	8N/9W-21K1	09/10/2003	1200	0.5	763
20	383132122514501	8N/9W-21F1	09/22/2004	1330	2.1	—
21	383316122512901	8N/9W-09J2	09/11/2003	1500	3.7	761
			09/23/2004	1300	2.4	—
22	383316122512902	8N/9W-09J3	09/23/2004	1345	0.7	—

Table 7. Water-quality data collected from the 12 ground-water sites in the Lower Russian River Basin, Sonoma County, California, 2003–2004—Continued.

[Number below the constituent or property is the U.S. Geological Survey (USGS) parameter code, which is a 5-digit number used in the USGS National Water Information System (NWIS), to uniquely identify a specific constituent or property; col/100mL, colonies per 100 milliliters; °C, degrees Celsius; E, estimated value; Hg, mercury; <, actual value less than value shown; mm, M, presence was verified, but concentration was not quantified; MF, membrane filtration; µg/L, micrograms per liter; µS/cm, microsiemens per centimeter; mg/L, milligrams per liter; millimeter; NTU, nephelometric turbidity units; —, no data]

Map site No.	Dissolved oxygen, (mg/L as O_2) (00300)	Dissolved oxygen, (percent saturation) (00301)	pH, field (standard units) (00400)	Specific conductance, field (µS/cm) (00095)	Temperature, water (°C) (00010)	Calcium, dissolved (mg/L as Ca) (00915)	Magnesium, dissolved (mg/L as Mg) (00925)	Potassium, dissolved (mg/L as K) (00935)	Sodium, dissolved (mg/L as Na) (00930)	Acid neutralizing capacity, lab (mg/L as $CaCO_3$) (90410)
11	7.3	84	7.2	223	22.7	21.7	12.7	1.0	7.9	100
	4.6	—	7.4	229	22.6	21.8	11.7	1.1	8.2	103
12	1.2	12	5.7	246	12.7	17.4	13.6	1.5	13.3	92
13	4.1	47	7.4	229	21.5	21.3	12.5	1.1	7.7	101
14	0.2	—	6.8	279	20.1	25.5	15.9	1.6	10.4	127
15	1.1	—	7.0	231	22.0	21.9	12.0	1.4	8.2	101
16	2.9	30	6.6	263	18.0	23.2	15.6	1.1	7.3	120
	2.4	—	6.8	260	18.8	23.9	15.6	1.3	8.4	119
17	1.4	16	6.9	239	21.5	22.2	13.2	1.2	7.6	108
18	0.5	0	6.6	594	16.5	21.9	39.1	0.9	55.3	293
	0.4	—	6.8	602	16.4	22.7	39.3	0.8	59.5	293
19	0.5	5	7.0	324	16.2	28.9	20.2	1.2	12.5	141
20	3.8	—	6.5	426	15.7	43.0	32.1	1.4	7.3	179
21	3.3	35	6.1	274	17.8	21.8	17.2	0.9	8.3	110
	3.4	—	6.6	284	18.1	21.6	17.3	0.8	9.6	107
22	1.9	—	7.0	220	20.3	18.5	11.9	0.9	8.0	98

Table 7. Water-quality data collected from the 12 ground-water sites in the Lower Russian River Basin, Sonoma County, California, 2003–2004—Continued.

[Number below the constituent or property is the U.S. Geological Survey (USGS) parameter code, which is a 5-digit number used in the USGS National Water Information System (NWIS), to uniquely identify a specific constituent or property; col/100mL, colonies per 100 milliliters; °C, degrees Celsius; E, estimated value; Hg, mercury; <, actual value less than value shown; mm, M, presence was verified, but concentration was not quantified; MF, membrane filtration; µg/L, micrograms per liter; µS/cm, microsiemens per centimeter; mg/L, milligrams per liter; millimeter; NTU, nephelometric turbidity units; —, no data]

Map site No.	Bromide, dissolved (mg/L as Br) (71870)	Chloride, dissolved (mg/L as Cl) (00940)	Fluoride, dissolved (mg/L as F) (00950)	Silica, dissolved (mg/L as SiO_2) (00955)	Sulfate, dissolved (mg/L as SO_4) (00945)	Solids, residue at 180°C, dissolved (mg/L) (70300)	Nitrogen, ammonia, dissolved (mg/L as N) (00608)	Nitrogen, ammonia + organic, dissolved (mg/L as N) (00623)	Nitrogen, ammonia + organic, total (mg/L as N) (00625)	Nitrogen, NO_2+NO_3, dissolved (mg/L as N) (00631)
11	0.03	5.1	<0.2	14.7	10.8	134	0.04	<0.10	E0.06	0.06
	0.04	4.8	<0.2	15.8	9.3	134	<0.04	E0.05	E0.05	0.10
12	0.04	10.8	<0.2	22.0	16.2	139	<0.04	E0.07	E0.08	0.75
13	0.04	5.6	<0.2	15.9	11.3	131	<0.04	<0.10	<0.10	0.08
14	0.03	5.7	<0.2	21.5	9.9	174	0.10	0.20	0.17	<0.06
15	0.02	5.2	<0.2	16.9	9.4	144	<0.04	E0.09	0.10	E0.03
16	0.04	5.6	<0.2	17.1	12.0	155	<0.04	E0.06	<0.10	0.20
	0.04	4.9	<0.2	19.0	11.1	150	<0.04	<0.10	E0.07	0.18
17	0.03	5.5	<0.2	17.9	10.4	141	<0.04	E0.06	E0.08	0.10
18	0.20	11.1	0.3	24.5	26.2	347	0.12	0.19	0.15	<0.06
	0.23	11.5	0.2	25.1	28.0	351	0.14	0.18	0.18	<0.06
19	0.04	9.8	<0.2	23.4	19.3	203	<0.04	<0.10	<0.1	<0.06
20	0.03	4.5	<0.2	25.8	44.1	248	<0.04	<0.10	E0.08	0.94
21	0.27	8.2	<0.2	22.9	23.7	173	<0.04	<0.10	<0.10	0.37
	0.29	7.8	<0.2	24.1	25.8	172	<0.04	<0.10	<0.10	0.47
22	0.03	5.0	<0.2	15.9	9.1	127	<0.04	<0.10	E0.06	0.08

Table 7. Water-quality data collected from the 12 ground-water sites in the Lower Russian River Basin, Sonoma County, California, 2003–2004—Continued.

[Number below the constituent or property is the U.S. Geological Survey (USGS) parameter code, which is a 5-digit number used in the USGS National Water Information System (NWIS), to uniquely identify a specific constituent or property; col/100mL, colonies per 100 milliliters; °C, degrees Celsius; E, estimated value; Hg, mercury; <, actual value less than value shown; mm, M, presence was verified, but concentration was not quantified; MF, membrane filtration; µg/L, micrograms per liter; µS/cm, microsiemens per centimeter; mg/L, milligrams per liter; millimeter; NTU, nephelometric turbidity units; —, no data]

Map site No.	Nitrogen, nitrite, dissolved (mg/L as N) (00613)	Phos-phorous, dissolved (mg/L as P) (00666)	Phosphorous, ortho-phosphate, dissolved (mg/L as P) (00671)	Phosphorous, total (mg/L as P) (00665)	Carbon, organic, dissolved (mg/L as C) (00681)	Carbon, organic, total (mg/L as C) (00680)	*Clostridium perfringens*, mCP MF (col/100 mL) (90915)	Enterococci, mEI MF (col/100 mL) (90909)	*Escherichia coli*, modified mTEC MF (col/100 mL) (90902)	Total coliform, mENDO MF (col/100 mL) (31501)
11	<0.008	0.022	0.02	0.022	0.5	1.1	<1	<1	<1	<1
	<0.008	0.021	E0.02	0.022	0.5	2.4	<1	<1	<1	<1
12	<0.008	0.017	E0.01	0.018	1.3	2.8	<1	<1	<1	<1
13	<0.008	0.021	0.02	0.023	0.6	1.4	<1	<1	<1	E1
14	<0.008	0.047	0.03	0.046	0.9	1.4	<1	<1	<1	<1
15	<0.008	0.066	0.05	0.066	0.8	1.1	<1	<1	<1	<1
16	<0.008	0.011	E0.01	0.014	0.5	0.5	<1	<1	<1	<1
	<0.008	0.014	<0.02	0.039	0.6	2.6	E2	E4	<1	<1
17	<0.008	0.020	E0.02	0.019	0.5	1.0	E1	<1	<1	<1
18	<0.008	0.034	0.03	0.035	0.6	0.7	<1	<1	<1	<1
	<0.008	0.032	0.03	0.033	0.5	0.7	<1	<1	<1	<1
19	<0.008	0.022	0.02	0.022	0.7	0.5	<1	<1	<1	<1
20	<0.008	0.012	<0.02	0.015	0.4	3.3	<1	E1	<1	<1
21	<0.008	0.016	E0.01	0.020	E0.3	1.5	<1	<1	<1	<1
	<0.008	0.022	E0.01	0.020	E0.2	0.5	<1	<1	<1	<1
22	<0.008	0.021	E0.01	0.021	0.7	1.4	<1	E1	<1	<1

Table 7. Water-quality data collected from the 12 ground-water sites in the Lower Russian River Basin, Sonoma County, California, 2003–2004—Continued.

[Number below the constituent or property is the U.S. Geological Survey (USGS) parameter code, which is a 5-digit number used in the USGS National Water Information System (NWIS), to uniquely identify a specific constituent or property; col/100mL, colonies per 100 milliliters; °C, degrees Celsius; E, estimated value; Hg, mercury; <, actual value less than value shown; mm, M, presence was verified, but concentration was not quantified; MF, membrane filtration; µg/L, micrograms per liter; µS/cm, microsiemens per centimeter; mg/L, milligrams per liter; millimeter; NTU, nephelometric turbidity units; —, no data]

Map site No.	Aluminum, dissolved (µg/L as Al) (01106)	Antimony, dissolved (µg/L as An) (01095)	Arsenic, dissolved (µg/L as As) (01000)	Barium, dissolved (µg/L as Ba) (01005)	Beryllium, dissolved (µg/L as Be) (01010)	Boron, dissolved (µg/L as B) (01020)	Cadmium, dissolved (µg/L as Cd) (01025)	Chromium, dissolved (µg/L as Cr) (01030)	Cobalt, dissolved (µg/L as Co) (01035)	Copper, dissolved (µg/L as Cu) (01040)
11	2	<0.3	M	56	<0.06	211	<0.04	E0.6	0.064	0.5
	—	—	—	—	—	220	—	—	—	—
12	E2	<0.3	<2	121	<0.06	73	<0.04	E0.7	0.081	0.7
13	2	<0.3	<2	72	<0.06	237	0.04	E0.5	0.068	0.4
14	—	—	—	—	—	252	—	—	—	—
15	—	—	—	—	—	237	—	—	—	—
16	<2	<0.3	<2	110	<0.06	211	<0.04	E0.8	0.063	0.4
	—	—	—	—	—	217	—	—	—	—
17	M	<0.3	E1	91	<0.06	233	<0.04	E0.7	0.066	0.4
18	<2	<0.3	M	130	<0.06	108	E0.02	<0.8	0.552	0.5
	—	—	—	—	—	116	—	—	—	—
19	<2	<0.3	<2	172	<0.06	318	<0.04	<0.8	0.065	E0.2
20	—	—	—	—	—	115	—	—	—	—
21	<2	<0.3	E1	94	<0.06	98	<0.04	E0.6	0.050	0.3
	—	—	—	—	—	99	—	—	—	—
22	—	—	—	—	—	227	—	—	—	—

Table 7. Water-quality data collected from the 12 ground-water sites in the Lower Russian River Basin, Sonoma County, California, 2003–2004—Continued.

[Number below the constituent or property is the U.S. Geological Survey (USGS) parameter code, which is a 5-digit number used in the USGS National Water Information System (NWIS), to uniquely identify a specific constituent or property; col/100mL, colonies per 100 milliliters; °C, degrees Celsius; E, estimated value; Hg, mercury; <, actual value less than value shown; mm, M, presence was verified, but concentration was not quantified; MF, membrane filtration; µg/L, micrograms per liter; µS/cm, microsiemens per centimeter; mg/L, milligrams per liter; millimeter; NTU, nephelometric turbidity units; —, no data]

Map site No.	Iron, dissolved (µg/L as Fe) (01046)	Lead, dissolved (µg/L as Pb) (01049)	Manganese, dissolved (µg/L as Mn) (01056)	Mercury, dissolved (µg/L as Hg) (71890)	Molybdenum, dissolved (µg/L as Mo) (01060)	Nickel, dissolved (µg/L as Ni) (01065)	Selenium, dissolved (µg/L as Se) (01145)	Silver, dissolved (µg/L as Ag) (01075)	Strontium, dissolved (µg/L as Sr) (01080)	Zinc, dissolved (µg/L as Zn) (01090)
11	<8	<0.08	<0.2	—	0.5	1.01	<3	<0.2	199	<1
	<6	—	<0.8	—	—	—	—	—	—	—
12	<8	<0.08	0.2	—	<0.3	4.01	<3	<0.2	146	<1
13	<8	<0.08	0.8	—	0.5	0.90	<3	<0.2	209	2.6
14	26	—	305	<0.02	—	—	—	—	—	—
15	16	—	292	<0.02	—	—	—	—	—	—
16	E5	<0.08	0.2	—	0.4	1.67	E2	<0.2	228	<1
	<6	—	6.9	<0.02	—	—	—	—	—	—
17	<8	<0.08	0.4	—	0.5	1.39	<3	<0.2	222	1.2
18	<8	<0.08	1,150	—	1.1	2.21	3	<0.2	252	<1
	<6	—	1,210	<0.02	—	—	—	—	—	—
19	33	<0.08	37.4	—	E0.2	0.84	E2	<0.2	276	<1
20	<6	—	<0.8	<0.02	—	—	—	—	—	—
21	<8	<0.08	<0.2	—	<0.3	1.14	E2	<0.2	206	<1
	<6	—	<0.8	E0.01	—	—	—	—	—	—
22	<6	—	<0.8	E0.02	—	—	—	—	—	—

Table 7. Water-quality data collected from the 12 ground-water sites in the Lower Russian River Basin, Sonoma County, California, 2003–2004—Continued.

[Number below the constituent or property is the U.S. Geological Survey (USGS) parameter code, which is a 5-digit number used in the USGS National Water Information System (NWIS), to uniquely identify a specific constituent or property; col/100mL, colonies per 100 milliliters; °C, degrees Celsius; E, estimated value; Hg, mercury; <, actual value less than value shown; mm, M, presence was verified, but concentration was not quantified; MF, membrane filtration; µg/L, micrograms per liter; µS/cm, microsiemens per centimeter; mg/L, milligrams per liter; millimeter; NTU, nephelometric turbidity units; —, no data]

Map site No.	1,4-Dichlorobenzene, dissolved, (µg/L) (34572)	1-Methylnaphthalene, dissolved (µg/L) (62054)	2, 6-Dimethylnaphthalene, dissolved (µg/L) (62055)	2-Methylnaphthalene, dissolved (µg/L) (62056)	3-*beta*-Coprostanol, dissolved (µg/L) (62057)	3-Methyl-1H-indole, dissolved (µg/L) (62058)	3-*tert*-Butyl-4-hydroxyanisole, dissolved (µg/L) (62059)	4-Cumylphenol, dissolved (µg/L) (62060)	4-*n* Octylphenol, dissolved (µg/L) (62061)	4-Nonylphenol, dissolved (µg/L) (62085)
11	—	—	—	—	—	—	—	—	—	—
	<0.5	<0.5	<0.5	<0.5	<2	<1	<5	<1	<1	<5
12	<0.5	<0.5	<0.5	<0.5	<2	<1	<5	<1	<1	<5
13	<0.5	<0.5	<0.5	<0.5	<2	<1	<5	<1	<1	<5
14	—	—	—	—	—	—	—	—	—	—
15	—	—	—	—	—	—	—	—	—	—
16	<0.5	<0.5	<0.5	<0.5	<2	<1	<5	<1	<1	<5
	—	—	—	—	—	—	—	—	—	—
17	<0.5	<0.5	<0.5	<0.5	<2	<1	<5	<1	<1	<5
18	<0.5	<0.5	<0.5	<0.5	<2	<1	<5	<1	<1	<5
	—	—	—	—	—	—	—	—	—	—
19	<0.5	<0.5	<0.5	<0.5	<2	<1	<5	<1	<1	<5
20	—	—	—	—	—	—	—	—	—	—
21	<0.5	<0.5	<0.5	<0.5	<2	<1	<5	<1	<1	<5
	—	—	—	—	—	—	—	—	—	—
22	—	—	—	—	—	—	—	—	—	—

Table 7. Water-quality data collected from the 12 ground-water sites in the Lower Russian River Basin, Sonoma County, California, 2003–2004—Continued.

[Number below the constituent or property is the U.S. Geological Survey (USGS) parameter code, which is a 5-digit number used in the USGS National Water Information System (NWIS), to uniquely identify a specific constituent or property; col/100mL, colonies per 100 milliliters; °C, degrees Celsius; E, estimated value; Hg, mercury; <, actual value less than value shown; mm, M, presence was verified, but concentration was not quantified; MF, membrane filtration; µg/L, micrograms per liter; µS/cm, microsiemens per centimeter; mg/L, milligrams per liter; millimeter; NTU, nephelometric turbidity units; —, no data]

Map site No.	4-Nonyl-phenol di-ethoxylates dissolved (µg/L) (62083)	4-Octyl-phenol di-ethoxylates dissolved (µg/L) (61705)	4-Octylphenol mono-ethoxylates dissolved (µg/L) (61706)	4-*tert*-Octyl-phenol, dissolved (µg/L) (62062)	5-Methyl-1H-benzo-triazole, dissolved (µg/L) (62063)	9,10-Anthra-quinone, dissolved (µg/L) (62066)	Aceto-phenone, dissolved (µg/L) (62064)	Acetyl hexamethyl tetrahydro-naphthalene, dissolved (µg/L) (62065)	Anthracene, dissolved (µg/L) (34221)	Benzo-[*a*]-pyrene, dissolved (µg/L) (34248)
11	—	—	—	—	—	—	—	—	—	—
	<5	<1	<1	<1	<2	<0.5	<0.5	<0.5	<0.5	<0.5
12	<5	<1	<1	<1	<2	<0.5	<0.5	<0.5	<0.5	<0.5
13	<5	<1	<1	<1	<2	<0.5	<0.5	<0.5	<0.5	<0.5
14	—	—	—	—	—	—	—	—	—	—
15	—	—	—	—	—	—	—	—	—	—
16	<5	<1	<1	<1	<2	<0.5	<0.5	<0.5	<0.5	<0.5
	—	—	—	—	—	—	—	—	—	—
17	<5	<1	<1	<1	<2	<0.5	<0.5	<0.5	<0.5	<0.5
18	<5	<1	<1	<1	<2	<0.5	<0.5	<0.5	<0.5	<0.5
	—	—	—	—	—	—	—	—	—	—
19	<5	<1	<1	<1	<2	<0.5	<0.5	<0.5	<0.5	<0.5
20	—	—	—	—	—	—	—	—	—	—
21	<5	<1	<1	<1	<2	<0.5	<0.5	<0.5	<0.5	<0.5
	—	—	—	—	—	—	—	—	—	—
22	—	—	—	—	—	—	—	—	—	—

Table 7. Water-quality data collected from the 12 ground-water sites in the Lower Russian River Basin, Sonoma County, California, 2003–2004—Continued.

[Number below the constituent or property is the U.S. Geological Survey (USGS) parameter code, which is a 5-digit number used in the USGS National Water Information System (NWIS), to uniquely identify a specific constituent or property; col/100mL, colonies per 100 milliliters; °C, degrees Celsius; E, estimated value; Hg, mercury; <, actual value less than value shown; mm, M, presence was verified, but concentration was not quantified; MF, membrane filtration; µg/L, micrograms per liter; µS/cm, microsiemens per centimeter; mg/L, milligrams per liter; millimeter; NTU, nephelometric turbidity units; —, no data]

Map site No.	Benzophenone, dissolved (µg/L) (62067)	*beta*-Sitosterol, dissolved (µg/L) (62068)	*beta*-Stigmastanol, dissolved (µg/L) (62086)	Bisphenol A, dissolved (µg/L) (62069)	Bromacil, dissolved (µg/L) (04029)	Caffeine, dissolved (µg/L) (50305)	Camphor, dissolved (µg/L) (62070)	Carbaryl, dissolved (µg/L) (82680)	Carbazole, dissolved (µg/L) (62071)	Chlorpyrifos, dissolved (µg/L) (38933)	Cholesterol, dissolved (µg/L) (62072)
11	—	—	—	—	—	—	—	—	—	—	—
	<0.5	<2	<2	<1	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<2
12	<0.5	<2	<2	<1	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<2
13	<0.5	<2	<2	<1	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<2
14	—	—	—	—	—	—	—	—	—	—	—
15	—	—	—	—	—	—	—	—	—	—	—
16	<0.5	<2	<2	<1	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<2
	—	—	—	—	—	—	—	—	—	—	—
17	<0.5	<2	<2	<1	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<2
18	<0.5	<2	<2	<1	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<2
	—	—	—	—	—	—	—	—	—	—	—
19	<0.5	<2	<2	<1	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<2
20	—	—	—	—	—	—	—	—	—	—	—
21	<0.5	<2	<2	<1	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<2
	—	—	—	—	—	—	—	—	—	—	—
22	—	—	—	—	—	—	—	—	—	—	—

Table 7. Water-quality data collected from the 12 ground-water sites in the Lower Russian River Basin, Sonoma County, California, 2003–2004—Continued.

[Number below the constituent or property is the U.S. Geological Survey (USGS) parameter code, which is a 5-digit number used in the USGS National Water Information System (NWIS), to uniquely identify a specific constituent or property; col/100mL, colonies per 100 milliliters; °C, degrees Celsius; E, estimated value; Hg, mercury; <, actual value less than value shown; mm, M, presence was verified, but concentration was not quantified; MF, membrane filtration; µg/L, micrograms per liter; µS/cm, microsiemens per centimeter; mg/L, milligrams per liter; millimeter; NTU, nephelometric turbidity units; —, no data]

Map site No.	Cotinine, dissolved (µg/L) (62005)	Diazinon, dissolved (µg/L) (39572)	Dichlorvos, dissolved (µg/L) (38775)	*d*-Limonene, dissolved (µg/L) (62073)	Fluoranthene, dissolved (µg/L) (34377)	Hexahydrohexamethyl cyclopentabenzopyran, dissolved (µg/L) (62075)	Indole, dissolved (µg/L) (62076)	Isoborneol, dissolved (µg/L) (62077)	Isophorone, dissolved (µg/L) (34409)	Isopropylbenzene, dissolved (µg/L) (62078)	Isoquinoline, dissolved (µg/L) (62079)
11	—	—	—	—	—	—	—	—	—	—	—
	<1.00	<0.5	—	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
12	<1.00	<0.5	<1.00	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
13	<1.00	<0.5	<1.00	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
14	—	—	—	—	—	—	—	—	—	—	—
15	—	—	—	—	—	—	—	—	—	—	—
16	<1.00	<0.5	<1.00	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	—	—	—	—	—	—	—	—	—	—	—
17	<1.00	<0.5	<1.00	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
18	<1.00	<0.5	<1.00	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	—	—	—	—	—	—	—	—	—	—	—
19	<1.00	<0.5	<1.00	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
20	—	—	—	—	—	—	—	—	—	—	—
21	<1.00	<0.5	<1.00	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	—	—	—	—	—	—	—	—	—	—	—
22	—	—	—	—	—	—	—	—	—	—	—

Table 7. Water-quality data collected from the 12 ground-water sites in the Lower Russian River Basin, Sonoma County, California, 2003–2004—Continued.

[Number below the constituent or property is the U.S. Geological Survey (USGS) parameter code, which is a 5-digit number used in the USGS National Water Information System (NWIS), to uniquely identify a specific constituent or property; col/100mL, colonies per 100 milliliters; °C, degrees Celsius; E, estimated value; Hg, mercury; <, actual value less than value shown; mm, M, presence was verified, but concentration was not quantified; MF, membrane filtration; µg/L, micrograms per liter; µS/cm, microsiemens per centimeter; mg/L, milligrams per liter; millimeter; NTU, nephelometric turbidity units; —, no data]

Map site No.	Menthol, dissolved (µg/L) (62080)	Metalaxyl, dissolved (µg/L) (50359)	Methyl salicylate, dissolved (µg/L) (62081)	Metolachlor, dissolved (µg/L) (39415)	Naphthalene, dissolved (µg/L) (34443)	*N*-*N*-diethyl-*meta*-toluamide, dissolved (µg/L) (62082)	*p*-Cresol, dissolved (µg/L) (62084)	Pentachlorophenol, dissolved (µg/L) (34459)	Phenanthrene, dissolved (µg/L) (34462)	Prometon, dissolved (µg/L) (04037)	Pyrene, dissolved (µg/L) (34470)
11	—	—	—	—	—	—	—	—	—	—	—
	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<2	<0.5	<0.5	<0.5
12	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<2	<0.5	<0.5	<0.5
13	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<2	<0.5	<0.5	<0.5
14	—	—	—	—	—	—	—	—	—	—	—
15	—	—	—	—	—	—	—	—	—	—	—
16	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<2	<0.5	<0.5	<0.5
	—	—	—	—	—	—	—	—	—	—	—
17	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<2	<0.5	<0.5	<0.5
18	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<2	<0.5	<0.5	<0.5
	—	—	—	—	—	—	—	—	—	—	—
19	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<2	<0.5	<0.5	<0.5
20	—	—	—	—	—	—	—	—	—	—	—
21	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<2	<0.5	<0.5	<0.5
	—	—	—	—	—	—	—	—	—	—	—
22	—	—	—	—	—	—	—	—	—	—	—

Table 7. Water-quality data collected from the 12 ground-water sites in the Lower Russian River Basin, Sonoma County, California, 2003–2004—Continued.

[Number below the constituent or property is the U.S. Geological Survey (USGS) parameter code, which is a 5-digit number used in the USGS National Water Information System (NWIS), to uniquely identify a specific constituent or property; col/100mL, colonies per 100 milliliters; °C, degrees Celsius; E, estimated value; Hg, mercury; <, actual value less than value shown; mm, M, presence was verified, but concentration was not quantified; MF, membrane filtration; µg/L, micrograms per liter; µS/cm, microsiemens per centimeter; mg/L, milligrams per liter; millimeter; NTU, nephelometric turbidity units; —, no data]

Map site No.	Tetra-chloro-ethene, dissolved (µg/L) (34476)	Tri-bromo-methane, dissolved (µg/L) (34288)	Tri-butyl phosphate, dissolved (µg/L) (62089)	Triclosan, dissolved (µg/L) (62090)	Tri-ethyl citrate, dissolved (µg/L) (62091)	Triphenyl phosphate, dissolved (µg/L) (62092)	Tris(2-butoxyethyl) phosphate, dissolved (µg/L) (62093)	Tris(2-chloroethyl) phosphate, dissolved (µg/L) (62087)	Tris(di-chloroiso-propy) phosphate, dissolved (µg/L) (62088)	Hydrogen-2/1, (per mil) (82082)	Oxygen-18/16 (per mil) (82085)
11	—	—	—	—	—	—	—	—	—	–46.79	–6.83
	<0.5	<0.5	<0.5	<1	<0.5	E0.5	<0.5	<0.5	<0.5	–45.80	–6.68
12	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	–36.30	–6.02
13	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	–46.52	–6.86
14	—	—	—	—	—	—	—	—	—	–44.70	–6.62
15	—	—	—	—	—	—	—	—	—	–46.00	–6.76
16	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	–44.90	–6.75
	—	—	—	—	—	—	—	—	—	–44.50	–6.69
17	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	–46.79	–6.94
18	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	E0.3	<0.5	–38.93	–6.26
	—	—	—	—	—	—	—	—	—	–38.70	–6.27
19	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	–38.38	–5.85
20	—	—	—	—	—	—	—	—	—	–35.50	–5.71
21	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	–35.80	–5.45
	—	—	—	—	—	—	—	—	—	–33.70	–5.13
22	—	—	—	—	—	—	—	—	—	–46.00	–6.70