

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC HEALTH

IN RE: **ST. NICHOLAS RANCH & RETREAT**
Water System No. 1000377

TO: Mr. Michael Pappas
St. Nicholas Ranch & Retreat
P. O. Box 400
Dunlap, CA 93621-0400

CC: Abbess Markella (including attachments)
Greek Orthodox Monastery of Theotokos
Life Giving Spring
P.O. Box 549
Dunlap, CA 93621

CITATION FOR NONCOMPLIANCE
TOTAL COLIFORM MAXIMUM CONTAMINANT LEVEL VIOLATION

JUNE and OCTOBER 2013

Issued on October 22, 2013

Section 116650, Chapter 4, Part 12, Division 104 of the California Health and Safety Code (CHSC), authorizes the issuance of a citation for failure to comply with a requirement of the California Safe Drinking Water Act, or any regulation, standard, permit, or order issued hereunder.

VIOLATION

The Drinking Water Field Operations Branch of the California Department of Public Health (hereinafter 'Department') hereby issues a Citation to St. Nicholas Ranch and Retreat

1 (hereinafter 'Water System'), for failure to comply with Section 116555(a)(1) of the CHSC
2 and Section 64426.1(b)(2) of Title 22, California Code of Regulations (CCR). Specifically,
3 the Water System (mailing address: P.O. Box 400, Dunlap, CA 93621) failed to comply
4 with the total coliform Maximum Contaminant Level (MCL) during the months of June and
5 October 2013.

6
7 The Water System operates under a domestic water supply permit issued by the Department
8 in August of 2012. St. Nicholas Ranch & Retreat is a non-transient non-community water
9 system serving a population of twenty three (23) residents and ten (10) employees.

10
11 Section 64426.1(b)(2) specifies that a public water system collecting fewer than 40 samples
12 per month is in violation of the total coliform MCL when more than one sample collected
13 during any month is total coliform-positive.

14
15 The Water System is required to collect a minimum of one (1) distribution system
16 bacteriological sample per month. The bacteriological water analysis results submitted by
17 the Water System reported the presence of total coliform bacteria in four (4) of eight (8)
18 samples collected by the Water System in June 2013. Additionally, the Water System
19 reported the presence of total coliform bacteria in six (6) of nine (9) samples collected
20 during October 2013. None of the positive samples showed the presence of fecal coliform
21 or *E. coli* bacteria.

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The following table summarizes the bacteriological monitoring conducted during the months of June, July, August, September and October of 2013.

Collection Date	Number of Samples	Sample Type	Number TC positive	Number E. Coli positive
6/10/13	1	Routine	1	0
6/11/13	6	Dist. + 3 Source Repeats	3 (2 wells positive)	0
6/20/13	5	Well #4 Cycle Test	2	0
6/24/13	5	Well #4 Cycle Test	0	0
6/24/13	5	Well #1 Cycle Test	4	0
6/24/13	1	Routine	0	0
7/1/13	5	Routine	1	0
7/1/13	5	Well #1 Cycle Test	0	0
7/7/13	1	Routine	0	0
7/7/13	5	Well #1 Cycle Test	0	0
8/5/13	1	Routine	0	0
9/4/13	1	Routine	0	0
10/4/13	1	Routine	1	0
10/8/13	6	Dist. + 3 Source Repeats	3 (Dist. only)	0
10/12/13	2	Other (from Storage Tank)	2	0

Due to the above-mentioned total coliform positive samples, the Water System failed the total coliform MCL for the months of June and October 2013. All water samples collected for coliform bacteria during 2011, 2012 and 2013 are summarized in Attachments A and B.

The sources of the contamination are unknown at this time. Although both Well #1 and Well #4 tested positive for total coliform on June 11, 2013, and during cycle tests

1 conducted on June 24 and June 20, respectively, it has been reported by Water System staff
2 that there was a line break that was repaired without subsequent disinfection. Continuous
3 chlorination was implemented on a temporary basis during June 2013. The well cycle test
4 on Well #4 conducted on June 20, 2013 shows that two (2) of the five (5) timed samples
5 were positive for total coliform bacteria and negative for fecal coliform and *E. Coli*
6 bacteria. Another well cycle test was conducted on Well #4 on June 24, 2013 and all five
7 samples were negative for total coliform bacteria. Additionally, the well cycle test
8 conducted on Well #1 on June 24, 2013 showed four (4) of the five (5) timed samples were
9 positive for total coliform bacteria and negative for fecal coliform and *E. Coli* bacteria.
10 Following disinfection of Well #1, two more well cycle tests were conducted, one on July 1,
11 2013 and another on July 7, 2013. All timed samples from those two tests were negative
12 for total coliform bacteria. All routine and well cycle samples collected during July 2013
13 were negative for total coliform bacteria with the exception of one sample at 2-ROU which
14 was repeated and determined to be absent for total coliform bacteria. Chlorine residuals
15 were reported for all samples collected in July 2013 that ranged from 0.34 mg/L to 0.49
16 mg/L. Following the October 2013 total coliform maximum contaminant violation, water
17 system staff have suggested a line break and repair without subsequent disinfection may be
18 the cause of the contamination.

19
20 **The five routine samples required the month following a month with one or more total**
21 **coliform-positive samples were collected during July 2013.**

22
23 The Groundwater Rule adopted by the Department, effective August 18, 2011, requires the
24 collection of a sample for bacteriological evaluation from wells serving the system in
25 response to a coliform positive distribution sample. This requirement was met with the
26 round of repeat sampling conducted by the Water System in both June and October of 2013.

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1 **NOTIFICATION REQUIREMENTS**

2 Section 64426.1(c) requires a public water system to notify the Department and the
3 consumers of the water system, when a violation of Section 64426.1(b)(1) through (4)
4 occurs. Notification to the Department shall be by the end of the business day on which the
5 violation has been determined. If the Department is closed, notification shall be within 24
6 hours of the determination. The Department was notified on June 13, 2013, in accordance
7 with the above-referenced section.

8
9 A Tier 2 Public Notice for violation of paragraph 64426.1(b)(2) shall be given pursuant to
10 Section 64463.4 and 64465. The Tier 2 Public Notice shall include the mandatory health
11 effects language from Appendix 64465-A for a total coliform MCL failure. The appropriate
12 Public Notice template is provided here as Attachment C.

13
14 Section 116450(g) requires that upon receipt of notification from a public water system,
15 schools must notify school employees, students, and parents (if the students are minors),
16 residential rental property owners or managers (including nursing homes and care facilities)
17 must notify their tenants and business property owners, managers or operators must notify
18 employees of businesses located on the property. These secondary notification requirements
19 are also included in the public notice.

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21 Proof of notification is required. The Water System shall complete Attachment D and return
22 it to the Department by **November 15, 2013.**

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DIRECTIVES

The Water System is hereby directed to take the following actions:

1. **The Water System shall immediately enlist the services of a certified treatment operator to conduct a one-time thorough disinfection of the storage tank and distribution system per guidelines established by the American Water Works Association. The recommended dosage should provide a residual of 5 mg/L throughout the storage tank and distribution. The appropriate dosages are provided in Attachment E.**

2. By **October 31, 2013**, the St. Nicholas Ranch water system shall provide public notification of the total coliform Maximum Contaminant Level failure by posting the notice provided as Attachment C in conspicuous locations throughout the area served by the water system. The Water System is additionally required to use one or more of the following notification methods in order to reach persons not likely to be reached by a public posting: publication in a local newspaper or newsletter distributed to customers, e-mailing the public notice to water system customers, post the public notice on the internet, or by delivery to each customer.

By **November 15, 2013**, the Water System shall provide proof of public notification of the total coliform MCL violation by completing Attachment D and returning it to:

Betsy S. Lichti, Senior Sanitary Engineer
Department of Public Health
Drinking Water Field Operations Branch
265 W. Bullard Avenue, Suite 101
Fresno, CA 93704

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3. By **November 15, 2013**, The Water System shall physically sever water lines from any unpermitted water wells, including, but not limited to, those existing on the monastery property. The locations of wells disconnected shall be identified in the report required under Item No. 4.

4. By **November 15, 2013**, the Water System shall complete and submit the enclosed “Positive Total Coliform Investigation” form to the Department that describes the incident and all corrective actions taken, and the results of the investigation. The appropriate investigation report is provided as Attachment F.

5. If any additional violations of the total coliform MCL occur during the next twelve months, the Water System will be required to install continuous chlorination equipment immediately.



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CIVIL PENALTIES

Sections 116650(d) and 116650(e) of the CHSC allow for the assessment of a civil penalty for failure to comply with requirements of the California Safe Drinking Water Act. Failure to comply with any provision of this Citation may result in the Department imposing an administrative penalty of not less than \$100 (one hundred dollars) per day as of the date of violation of any provision of this Citation.

10/22/13
Date

Betsy S. Lichti
Betsy S. Lichti, P.E.
Senior Sanitary Engineer, Fresno District
DRINKING WATER FIELD OPERATIONS BRANCH



BSL/el

- Attachments:
- Attachment A: Bacteriological Distribution Monitoring Report
 - Attachment B: Source Bacteriological Monitoring Report
 - Attachment C: Public Notice
 - Attachment D: Proof of Notification Form
 - Attachment E: Chlorine Dosage Chart
 - Attachment F: Positive Total Coliform Investigation Form

Bacteriological Distribution Monitoring Report

1000377 ST. Nicholas Ranch & Retreat
Distribution System Freq: 1/M

Sample Date	Time	Location	T Coli	E Coli	F Coli	Type	Cl2	Violation	Comment
3/31/2011		No Sample						MR2	5/17/11 Issued Cit 03-23-11C
6/30/2011		No Sample						MR2	8/18/11 Issued Cit 03-23-11C
9/29/2011	17:45	Kitchen SF	16.1	<1.1		Routine			
10/2/2011	14:00	Well #1	<1.1	A		Source Repeat			
10/2/2011	14:10	Well #3	16.1	<1.1		Source Repeat			
10/2/2011	14:15	New Well	<1.1	A		Source Repeat			
10/2/2011	14:35	Kitchen SF	5.1	<1.1		Repeat		MCL	12/27/11 Issued 03-23-11C-1
10/2/2011	14:35	Rm 109	2.2	<1.1		Repeat			
10/2/2011	14:38	Rm 209	1.1	<1.1		Repeat			
10/11/2011	17:26	PL HB 109	<1.1	A		Repeat	0.72		
10/11/2011	17:48	AL HB 209	<1.1	A		Repeat/Routine			
10/11/2011	17:55	DR HB	<1.1	A		Repeat			
1/11/2012	17:15	Office East HB	A	A		Routine			
4/26/2012	17:00	West HB	P	A		Routine			pending invalidation of samp
5/1/2012	14:00	Well #3	A	A		Source Repeat			
5/1/2012	14:05	Well #4	A	A		Source Repeat			
5/1/2012	14:10	Well #1	A	A		Source Repeat			
5/1/2012	14:15	Philoptochos NW HB Original Site	Invalid	Invalid		Repeat			Invalidated
5/1/2012	14:20	Mainiatis NW HB	A	A		Repeat			
5/1/2012	14:25	Apostle W HB	A	A		Repeat			
5/8/2012	9:35	Maniatis NW HB	P	A		Special			
5/8/2012	19:30	Philoptochos W HB Original Site	A	A		Repeat			
5/8/2012	19:40	Apostle W HB	A	A		Repeat			
9/30/2012		No Sample						MR2	11/13/12 Issued EL 03-23-11C
11/25/2012	15:50	HB 1	A	A		Routine			
12/5/2012	15:17	SNR 2-Rou	A	A		Routine			
1/3/2013	10:10	SNR 3 rou	A	A		Routine			
2/1/2013	8:15	SNR 4-rep	P	A		Routine			
2/7/2013	15:10	SNR 4-rep2	A	A		Repeat			
2/7/2013	16:00	SNR 4-rou	A	A		Repeat			
2/7/2013	16:00	SNR 4-rou	A	A		Repeat			
2/7/2013	16:05	SNR 4-rep	A	A		Repeat			
2/7/2013	16:05	SNR 4-rep 1	A	A		Repeat			
2/7/2013	16:10	SNR 4-rep2	A	A		Repeat			
3/7/2013	11:20	SNR 1 rou	A	A		Routine			
3/7/2013	11:25	SNR 2 rou	A	A		Routine			
3/7/2013	11:30	SNR 3 rou	A	A		Routine			
3/7/2013	11:35	SNR 4 rou	A	A		Routine			
3/7/2013	11:40	SNR 1 rou 2	A	A		Routine			
4/18/2013	19:50	SNR 2 rou	A	A		Routine			
5/2/2013	7:15	SNR 3 rou	A	A		Routine			
6/10/2013	8:00	1ROU	P	A		Routine			
6/11/2013	17:00	SNR 1-ROU	A	A		Repeat			
6/11/2013	17:05	SNR 1-REP 1	P	A		Repeat		MCL	
6/11/2013	17:10	SNR 1-REP 2	A	A		Repeat			
6/11/2013	17:15	SNR Well #1	P	A		Source Repeat			
6/11/2013	17:20	SNR Well #3	A	A		Source Repeat			

<i>Sample Date</i>	<i>Time</i>	<i>Location</i>	<i>T Coli</i>	<i>E Coli</i>	<i>F Coli</i>	<i>Type</i>	<i>CI2</i>	<i>Violation</i>	<i>Comment</i>
6/11/2013	17:25	SNR Well #4	P	A		Source Repeat			
6/24/2013	16:15	1ROU	A	A		Routine			
7/1/2013	15:18	1ROU	A	A		Routine	0.35		
7/1/2013	15:20	2ROU	P	A		Routine	0.41		
7/1/2013	15:25	3ROU	A	A		Routine	0.34		
7/1/2013	15:28	4ROU	A	A		Routine	0.42		
7/1/2013	15:32	Rep-1	A	A		Repeat	0.49		
7/7/2013	15:50	2ROU	A	A		Routine	0.35		
8/5/2013	10:00	2ROU	A	A		Routine			
9/4/2013	9:50	3 ROU	A	A		Routine			
10/2/2013	16:20	SNR 4-ROU	P	A		Routine			
10/7/2013	9:10	SNR 4-ROU	P	A		Repeat			
10/7/2013	9:13	SNR 4-REP1	P	A		Repeat			
10/7/2013	9:15	SNR 4-REP2	P	A		Repeat		MCL	
10/7/2013	9:20	SNR Well #1	A	A		Source Repeat			
10/7/2013	9:40	SNR Well #4	A	A		Source Repeat			
10/7/2013	9:45	SNR Well #3	A	A		Source Repeat			

Violation Key

MCL	Exceeds the maximum contaminant level	MR5	Incorrect number of repeat samples as follow-up to a positive sample
MR1	No monthly sample for the report month	MR6	No source sample
MR2	No quarterly sample for the report month	MR7	No summary report submitted
MR3	Incorrect number of routine samples for the report month	MR8	Other comments and/or info
MR4	Did not collect 5 routine samples for previous month's positive sample	MR9	CI2 not reported

Source Bacteriological Monitoring Report

1000377 ST. Nicholas Ranch & Retreat

Sample Date	Time	Source	Sample Type	Test Method	T Coli	E Coli	F Coli	HPC	Violation	Comments
10/2/2011	14:00	Well #1	Well	MPN	<1.1	A				
10/2/2011	14:10	Well #3	Well	MPN	16.1	<1.1				
10/2/2011	14:15	New Well	Well	MPN	<1.1	A				
10/11/2011	17:30	Well #3 Start up	Well Cycle	MPN	>23.0	<1.1				
10/11/2011	17:31	Well #3 - 1 min	Well Cycle	MPN	>23.0	<1.1				
10/11/2011	17:35	Well #3 - 5 min	Well Cycle	MPN	>23.0	<1.1				
10/11/2011	17:45	Well #3 - 15 min	Well Cycle	MPN	>23.0	<1.1				
10/11/2011	18:00	Well #3 - 30 min.	Well Cycle	MPN	>23.0	<1.1				
12/26/2011	17:00	Well #3 Start up	Well Cycle	MPN	P	A				
12/26/2011	17:01	Well #3 1 min.	Well Cycle	P/A	P	A				
12/26/2011	17:05	Well #3 5 min.	Well Cycle	P/A	A	A				
12/26/2011	17:15	Well #3 15 min.	Well Cycle	P/A	A	A				
12/26/2011	17:30	Well #3 30 min.	Well Cycle	P/A	A	A				
2/6/2012	9:00	Well #3 Start up	Well Cycle	MPN	<1.1	<1.1				
2/6/2012	9:01	Well #3 @ 1 min	Well Cycle	MPN	<1.1	<1.1				
2/6/2012	9:05	Well #3 @ 5min	Well Cycle	MPN	<1.1	<1.1				
2/6/2012	9:15	Well #3 @ 15 min	Well Cycle	MPN	<1.1	<1.1				
2/6/2012	9:30	Well #3 @ 30 min	Well Cycle	MPN	<1.1	<1.1				
2/12/2012	15:30	Well #3 Start up	Well Cycle	MPN	<1.1	<1.1				
2/12/2012	15:31	Well #3 @ 1 min.	Well Cycle	MPN	<1.1	<1.1				
2/12/2012	15:35	Well #3 @ 5 min	Well Cycle	MPN	<1.1	<1.1				
2/12/2012	15:45	Well #3 @ 15 min	Well Cycle	MPN	<1.1	<1.1				
2/12/2012	16:00	Well #3 @ 30 min	Well Cycle	MPN	<1.1	<1.1				
6/20/2013	15:45	Well #4 Start	Well Cycle	MPN	<1.1	<1.1				
6/20/2013	15:46	Well #4 1 min	Well Cycle	MPN	1.1	<1.1				
6/20/2013	15:50	Well #4 5 min	Well Cycle	MPN	<1.1	<1.1				
6/20/2013	16:00	Well #4 15 min	Well Cycle	MPN	1.1	<1.1				
6/20/2013	16:15	Well #4 30 min	Well Cycle	MPN	<1.1	<1.1				
6/24/2013	15:00	Well #4 Start	Well Cycle	MPN	<1.1	<1.1				
6/24/2013	15:01	Well #4 1min9	Well Cycle	MPN	<1.1	<1.1				
6/24/2013	15:05	Well #4 5 min	Well Cycle	MPN	<1.1	<1.1				
6/24/2013	15:15	Well #4 15 min	Well Cycle	MPN	<1.1	<1.1				
6/24/2013	15:30	Well #4 30 min	Well Cycle	MPN	<1.1	<1.1				
6/24/2013	15:35	Well #1 Start	Well Cycle	MPN	2.2	<1.1				
6/24/2013	15:36	Well #1 1 min	Well Cycle	MPN	2.2	<1.1				
6/24/2013	15:40	Well #1 5min	Well Cycle	MPN	>23	<1.1				
6/24/2013	15:50	Well #1 15 min	Well Cycle	MPN	5.1	<1.1				
6/24/2013	16:05	Well #1 30 min	Well Cycle	MPN	<1.1	<1.1				
7/1/2013	15:00	Well #1 Start	Well Cycle	MPN	<1.1	<1.1				
7/1/2013	15:01	Well #1 1 min	Well Cycle	MPN	<1.1	<1.1				

1000377 ST. Nicholas Ranch & Retreat

<i>Sample Date</i>	<i>Time</i>	<i>Source</i>	<i>Sample Type</i>	<i>Test Method</i>	<i>T Coli</i>	<i>E Coli</i>	<i>F Coli</i>	<i>HPC</i>	<i>Violation</i>	<i>Comments</i>
7/1/2013	15:05	Well #1	5 min	Well Cycle	MPN	<1.1	<1.1			
7/1/2013	15:15	Well #1	15 min	Well Cycle	MPN	<1.1	<1.1			
7/1/2013	15:30	Well #1	30 min	Well Cycle	MPN	<1.1	<1.1			
7/7/2013	15:30	Well #1	Start	Well Cycle	MPN	<1.1	<1.1			
7/7/2013	15:31	Well #1	1 min	Well Cycle	MPN	<1.1	<1.1			
7/7/2013	15:35	Well #1	5 min	Well Cycle	MPN	<1.1	<1.1			
7/7/2013	15:45	Well #1	15 min	Well Cycle	MPN	<1.1	<1.1			
7/7/2013	16:00	Well #1	30 min	Well Cycle	MPN	<1.1	<1.1			

IMPORTANT INFORMATION ABOUT YOUR DRINKING WATER

Este informe contiene información muy importante sobre su agua potable.
Tradúzcalo o hable con alguien que lo entienda bien.

**St. Nicholas Ranch and Retreat Has Levels of Coliform Bacteria
Above the Drinking Water Standard**

Our water system recently failed a drinking water standard. Although this incident was not an emergency, as our customers, you have a right to know what you should do, what happened and what we did to correct this situation.

We routinely monitor for drinking water contaminants. We took eight samples to test for the presence of coliform bacteria in June 2013. Four of these samples showed the presence of total coliform bacteria. Additionally, well cycle testing showed the presence of total coliform bacteria in Wells 1 and 4. We took nine samples to test for the presence of bacteria in October 2013. Six of those showed the presence of total coliform bacteria. The standard is that no more than one sample per month may show the presence of coliform bacteria.

What should I do?

- **You do not need to boil your water or take other corrective actions.**
- This is not an emergency. If it had been, you would have been notified immediately. Total coliform bacteria are generally not harmful themselves. *Coliforms are bacteria which are naturally present in the environment and are used as an indicator that other, potentially-harmful, bacteria may be present. Coliforms were found in more samples than allowed and this was a warning of potential problems.*
- Usually, coliforms are a sign that there could be a problem with the treatment or distribution system (pipes). Whenever we detect coliform bacteria in any sample, we do follow-up testing to see if other bacteria of greater concern, such as fecal coliform or *E. coli*, are present. **We did not find any of these bacteria in our subsequent testing.**
- People with severely compromised immune systems, infants, and some elderly may be at increased risk. These people should seek advice about drinking water from their health care providers. General guidelines on ways to lessen the risk of infection by microbes are available from EPA's Safe Drinking Water Hotline at 1(800) 426-4791.
- If you have other health issues concerning the consumption of this water, you may wish to consult your doctor.

What happened? What is being done?

[Describe corrective action]. _____
_____.

For more information, please contact _____ [name of contact] at _____ [phone number] or _____ [mailing address].

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this public notice in a public place or distributing copies by hand or mail.

Secondary Notification Requirements

Upon receipt of notification from a person operating a public water system, the following notification must be given within 10 days [Health and Safety Code Section 116450(g)]:

- **SCHOOLS:** Must notify school employees, students, and parents (if the students are minors).
- **RESIDENTIAL RENTAL PROPERTY OWNERS OR MANAGERS** (including nursing homes and care facilities): Must notify tenants.
- **BUSINESS PROPERTY OWNERS, MANAGERS, OR OPERATORS:** Must notify employees of businesses located on the property.



RON CHAPMAN, MD, MPH
Health Officer & Director

State of California—Health and Human Services Agency
California Department of Public Health



EDMUND G. BROWN JR.
Governor

ATTACHMENT D

PROOF OF NOTIFICATION

(Return with copy of notice)

As required by Section 116450 of the California Health and Safety Code, I notified all users of water supplied by the **St. Nicholas Ranch and Retreat** of the failure to meet the **total coliform bacteria MCL** for the months of **June and October 2013** as directed by the Department.

Notification was made on _____ by
(date)

hand delivered and/or mailed and/or posted written notice.
(circle all that apply)

Signature of Water System Representative

Printed Name

Date

DISCLOSURE: Be advised that Section 116725 and 116730 of the California Health and Safety Code state that any person who knowingly makes any false statement on any report or document submitted for the purpose of compliance with the attached order may be liable for a civil penalty not to exceed five thousand dollars (\$5,000) for separate violation for each day that violation continues. In addition, the violators may be prosecuted in criminal court and upon conviction, be punished by a fine of not more than \$25,000 for each day of violation, or be imprisoned in the county jail not to exceed one year, or by both the fine and imprisonment.

Due: November 15, 2013
Total Coliform MCL Failure: June and October 2013
System Number: 1000377
Citation No.: 03-23-13C-047



Do your part to help California save energy. To learn more about saving energy, visit the following web site:
<http://www.fypower.org>

Southern California Drinking Water Field Operations Branch
265 W. Bullard Avenue, Suite 101, Fresno, CA 93704
(559) 447-3300; Fax (559) 447-3304
Internet Address: <http://www.dhs.ca.gov/ps/ddwem/>

APPENDIX B

Chlorine Dosages

This appendix is for information only and is not a part of AWWA C652.

Table B.1 Amounts of chemicals required to give various chlorine concentrations in 100,000 gal (378.5 m³) of water*

Desired Chlorine Concentration in Water <i>mg/L</i>	Chlorine Required <i>lb (kg)</i>		Sodium Hypochlorite Required						Calcium Hydrochlorite Required	
			5 Percent Available Chlorine		10 Percent Available Chlorine		15 Percent Available Chlorine		65 Percent Available Chlorine	
			<i>gal</i>	<i>(L)</i>	<i>gal</i>	<i>(L)</i>	<i>gal</i>	<i>(L)</i>	<i>lb</i>	<i>(kg)</i>
2	1.7	(0.8)	3.9	(14.7)	2.0	(7.6)	1.3	(4.9)	2.6	(1.1)
10	8.3	(3.8)	19.4	(73.4)	9.9	(37.5)	6.7	(25.4)	12.8	(5.8)
50	42.0	(19.1)	97.0	(367.2)	49.6	(187.8)	33.4	(126.4)	64.0	(29.0)

*Amounts of sodium hypochlorite are based on concentrations of available chlorine by volume. For either sodium hypochlorite or calcium hypochlorite, extended or improper storage of chemicals may cause a loss of available chlorine.

Table B.2 Amounts of chemicals required to give various chlorine concentrations in 200 mg/L in various volumes of water*

Volume of Water <i>gal (L)</i>		Chlorine Required <i>lb (kg)</i>		Sodium Hypochlorite Required						Calcium Hydrochlorite Required	
				5 Percent Available Chlorine		10 Percent Available Chlorine		15 Percent Available Chlorine		65 Percent Available Chlorine	
				<i>gal</i>	<i>(L)</i>	<i>gal</i>	<i>(L)</i>	<i>gal</i>	<i>(L)</i>	<i>lb</i>	<i>(kg)</i>
10	(37.9)	0.02	(9.1)	0.04	(0.15)	0.02	(0.08)	0.02	(0.08)	0.03	(13.6)
50	(189.3)	0.1	(45.4)	0.2	(0.76)	0.1	(0.38)	0.07	(0.26)	0.15	(68.0)
100	(378.5)	0.2	(90.7)	0.4	(1.51)	0.2	(0.76)	0.15	(0.57)	0.3	(136.1)
200	(757.1)	0.4	(181.4)	0.8	(3.03)	0.4	(1.51)	0.3	(1.14)	0.6	(272.2)

*Amounts of sodium hypochlorite are based on concentrations of available chlorine by volume. For either sodium hypochlorite or calcium hypochlorite, extended or improper storage of chemicals may cause a loss of available chlorine.

POSITIVE TOTAL COLIFORM INVESTIGATION
Simple Well with Pressure Tank Systems

Attachment F

This form is intended to assist public water systems in completing the investigation required by the California Department of Public Health (Section 64426(b) of Title 22, California Code of Regulations) and may be modified to take into account conditions unique to the system.

ADMINISTRATIVE INFORMATION

PWS Name:	PWS ID NUMBER:
Name	Address
Operator in Responsible Charge (ORC)	Telephone #
Person that collected TC samples if different than ORC	
Owner	
Certified Laboratory for Microbiological Analyses	
Date Investigation Completed:	
Month(s) of Total Coliform MCL Failure:	

INVESTIGATION DETAILS

SOURCE	WELL (name)	WELL (name)	WELL (name)	WELL (name)	COMMENTS
1. Inspect each well head for physical defects and report					
a. Is raw water sample tap upstream from point of disinfection?					
b. Is wellhead vent pipe screened?					
c. Is wellhead seal watertight?					
d. Is well head located in pit or is any piping from the wellhead submerged?					
e. Does the ground surface slope towards well head?					
f. Is there evidence of standing water near the wellhead?					
g. Is there a check valve on the well discharge line? Is the check valve seating properly?					
h. Are there any connections to the raw water piping that could be cross connections? (describe all connections in comments)					
i. Is the wellhead secured to prevent unauthorized access?					
j. To what treatment plant (name) does this well pump?					
k. How often do you take a raw water total coliform (TC) test?					
l. Provide the date and result of the last TC test at this location					

POSITIVE TOTAL COLIFORM INVESTIGATION

Attachment F

DISTRIBUTION SYSTEM	SYSTEM RESPONSES
1. What is the minimum pressure you are maintaining in the distribution system?	
2. Did pressure in the distribution system drop to less than 5 psi prior to experiencing the TCR positive finding.	
3. Has the distribution system been worked on within the last week? (service taps, hydrant flushing, main breaks, main extensions, etc.) If yes, provide details.	
4. Are there any signs of excavations near your distribution system not under the direct control of your maintenance staff?	
5. Did you inspect your distribution system to check for mainline leaks? Do you or did you have a mainline leak?	
6. If there was a mainline leak, when was it repaired?	
7. On what date was the distribution system last flushed?	
8. Is there a written flushing procedure you can provide for our review?	
9. Do you have an active cross connection control program?	
10. What is name and phone number of your Cross-Connection Control Program Coordinator?	
11. Is the review and testing of backflow prevention devices current?	
12. On what date was the last physical survey of the system done to identify cross-connections?	

SAMPLE SITE EVALUATION (Complete for all TC+ or EC+ findings)	Routine Site TC+ or EC+	Upstream Site	Downstream Site	Sample 4 (specify)
1. What is the height of the sample tap above grade? (inches)				
2. Is the sample tap located in an exterior location or is it protected by an enclosure?				
3. Is the sample tap threaded, have a swing arm (kitchen sink) or aerator (sinks)?				
4. Is the sample tap in good condition, free of leaks around the stem or packing?				
5. Can the sample tap be adjusted to the point where a good laminar flow can be achieved without excessive splash?				
6. Is the sample tap and area around the sample tap clean and dry (free of animal droppings, other contaminants or spray irrigation systems)				
7. Is the area around the sample tap free of excessive vegetation or other impediments to sample collection				
8. Describe how the tap was treated in preparation for sample collection (ran water, swabbed with disinfectant, flamed, etc.)				
9. Is this sample tap designated on the sampling plan submitted with this information request?				
10. What were weather conditions at the time of positive sample (rainy, windy, sunny)?				

POSITIVE TOTAL COLIFORM INVESTIGATION

Attachment F

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GENERAL OPERATIONS:	Response
1. Where there any power outages that affected water system facilities during the 30 days prior to the TC+ or EC + findings?	
2. Where there any main breaks, water outages, or low pressure reported in the service area where TC+ or EC+ samples were located.	
3. Does the system have backup power or elevated storage?	
4. During or soon after bacteriological quality problems, did you receive any complaints of any customers' illness suspected of being waterborne? How many?	
5. What were the symptoms of illness if you received complaints about customers being sick?	

ADDITIONAL INFORMATION TO BE SUBMITTED WITH RESPONSES TO THE ABOVE QUESTIONS

1. **Sketch** of System showing all sources, treatment locations, storage tanks, microbiological sampling sites and general layout of the distribution system including the location of all hazardous connections such as the wastewater treatment facility.
2. A set of photographs of the well, pressure tanks, and storage tanks in the system may be submitted if they would show that the contamination is directly related and changes have been made since the last inspection by our Department
3. Name, certification level and certificate number of the Operator in Responsible Charge.
4. Copy of the last cross connection survey performed that identifies the location of all unprotected cross connections.

SUMMARY: BASED ON THE RESULTS OF YOUR INVESTIGATION AND ANY OTHER INFORMATION AT YOUR DISPOSAL, WHAT DO YOU BELIEVE TO BE THE CAUSE OF THE POSITIVE TOTAL COLIFORM SAMPLES FROM YOUR PUBLIC WATER SYSTEM?

CERTIFICATION: I CERTIFY THAT THE INFORMATION SUBMITTED IN RESPONSE TO THE QUESTIONS ABOVE IS ACCURATE TO THE BEST OF MY PROFESSIONAL KNOWLEDGE

NAME: _____ TITLE: _____ DATE: _____