

**Juniper – Riviera County Water District
Public Water System Identification No. 3600222**

**Bacteriological Sample Siting Plan for Compliance with
the Total Coliform Rule and the Ground Water Rule**

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For the:

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1. INTRODUCTION

This Bacteriological Sample Siting Plan (Sampling Plan) is intended to comply with Title 22 of the California Code of Regulations (CCR), Division 4 Environmental Health, and more specifically, with the following sections of the CCR:

- Primary Standards – Bacteriological Quality: Article 3 of Chapter 15 Domestic Water Quality and Monitoring Regulations (Sections 64421 to 64427 of the CCR; April 10, 2017). This article of the CCR refers to the Total Coliform Rule (TCR).
- Revised Total Coliform Rule (Revised TCR): The State Water Resources Control Board (SWRCB) published a draft version of the Revised TCR on February 3, 2017. Until the Revised TCR is finalized and adopted, California water systems need to comply with both the TCR and Revised TCR. Thus this Sampling Plan also includes the compliance requirements of the SWRCB's Draft Revised TCR. However, it may need to be revised if regulatory requirements change during the adoption of the Revised TCR.
- Ground Water Rule (GWR): Article 3.5 of Chapter 15, and Addendum A of the CCR, which correspond to Sections 141.21 to 141.405 of 71 Federal Register 65574 (November 8, 2006), and amended in 71 Federal Register 67427 (November 21, 2006), and 74 Federal Register 30953 (June 29, 2009).

The sections below briefly introduce Juniper-Riviera County Water District (District) before describing the sampling sites and sampling frequency, along with sample handling, analysis and invalidation. Compliance requirements with violations, public notifications and actions to undertake if sample results exceed regulatory requirements are then presented, followed by reporting of results obtained. The last part of this document addresses non-routine sampling and certifications required from the SWRCB for the District.

This Sampling Plan should be updated periodically, i.e., as least every 10 years¹, to account for system changes such as population changes, new housing or commercial development, new sources, change in operation, change in treatment, or any others. This Sampling Plan also need to be reviewed within 30 days if the SWRCB finds it to be no longer representative of the District's system. As mentioned above, it may also need to be revised following the adoption of the Revised TCR. The Sampling Plan must also be available to District staff and SWRCB representatives.

¹ SWRCB's Draft Revised TCR, Section 64422.

2. SYSTEM DESCRIPTION

Juniper-Riviera County Water District (District; System No. 3600222) was formed in 1979 and is headquartered in Apple Valley, California. The District encompasses approximately ten square miles in the southwestern part of the San Bernardino County. It is one of the many systems of the Mojave Water Agency (MWA) (Figure 1).

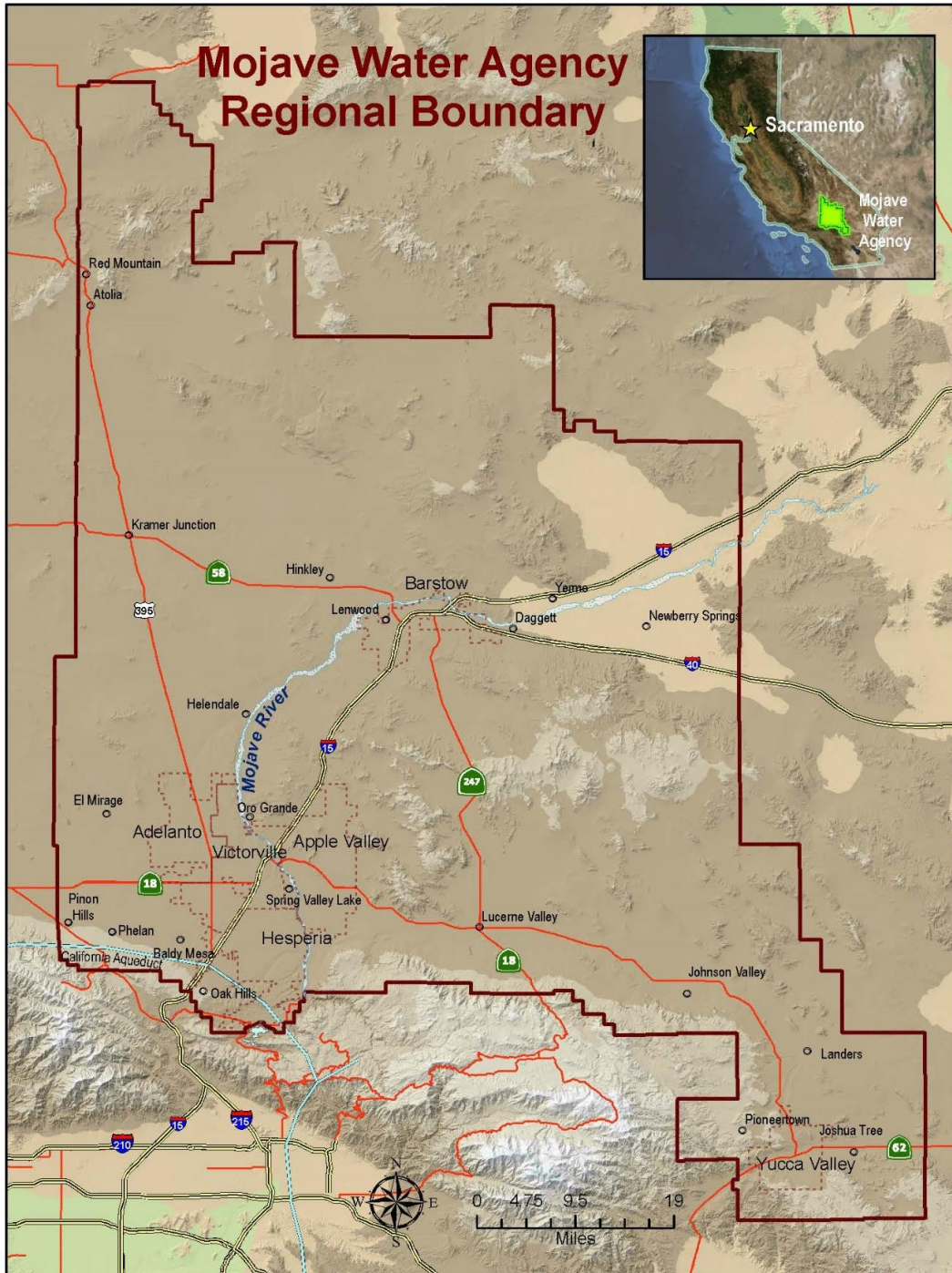


Figure 1: Mojave Water Agency

The District obtains its water from two groundwater wells. Well 1 is the main producer capable of producing a flow rate of 105 gpm, whereas Well 2 can achieve a flow of 50 gpm but is only operated for about two hours each day. Another higher production well, Well 3 is available to the District for emergency use only owing to high arsenic and fluoride content. The District also has an agreement to sell and purchase water from Jubilee Mutual Water Company located in Apple Valley and also a part of the Mojave Water Agency. Since both systems overlay the Oeste sub-basin of the Mojave basin, any unused adjudication for one system is transferred to the other, there is no physical inter-tie between the two.

Groundwater is currently disinfected using 12.5% liquid sodium hypochlorite. A disinfectant residual of 0.5 – 1 ppm is maintained within the distribution system. Both wells use a common distribution system entry point. The District serves 431 people via 250 service connections using approximately 22 miles of distribution pipelines; it is illustrated in Figure 2. The system consists of three bolted steel tanks located at three separate locations and at different elevations: one 75,000-gallon tank (Tank 3; elevation – 4,338 feet), and the remaining two tanks of 50,000 gallons each (elevation of Tank 2 is 3,915 feet and that of Tank 1 is 3,715 feet) for a total system capacity of 175,000 gallons. Tanks 1 and 2 are also equipped with booster pumps – one duty and one standby. All tanks have common inlet and outlet pipes, and they are not equipped with mixers. The entire system is operated and monitored using a central SCADA system.

Each storage tank supplies water to one of the three pressure zones varying in elevation from 3,300 feet to 4,300 feet and separated from the others by two pressure regulating valves. The District's groundwater wells and booster pumps are operated based on water levels in tanks, and time-of-use (TOU) to minimize electricity cost. Well pumps are set to run between 11 pm and 8 am Monday through Friday, and any time and as needed during the weekends and holidays. The pumps fill up all three tanks at night time. They are intertied and equipped with water level sensors that turn off inlet valves when the tank is full. During the day as water level drops in a tank beyond a preset level, booster pumps are turned on to pump water into it from the other tanks. Under this mode of operation, water age (residence time) in the 50,000-gallon tanks is less than one day in the winter and summer. In the 75,000-gallon tank, water age is approximately two days in summer and four days in winter.

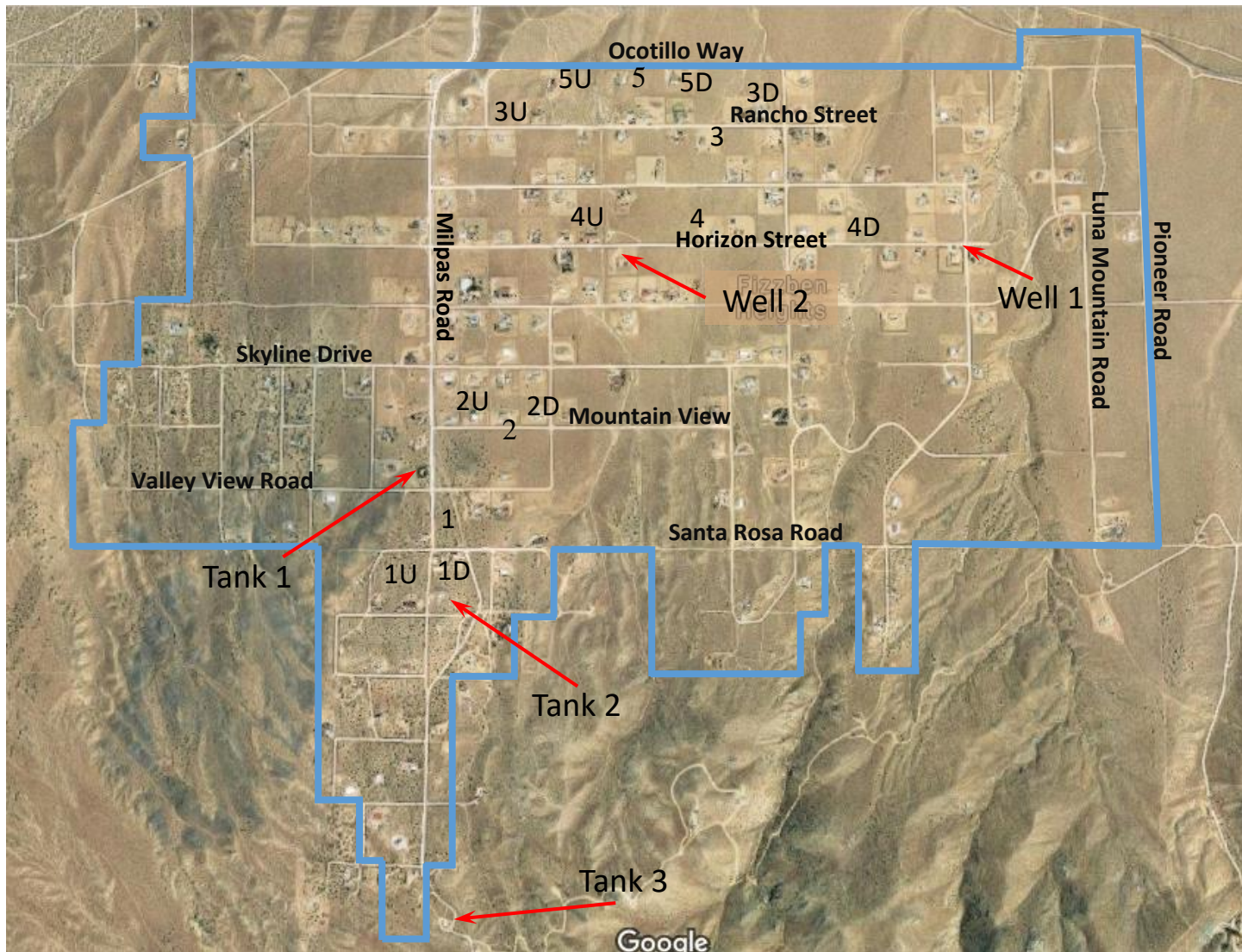


Figure 2: Distribution System of Juniper-Riviera County Water District

3. SAMPLING SITES AND SCHEDULE

3.1. Distribution System

The District’s number of service connections (i.e., 250 connections) and population served (431 people) requires at least one representative sample per calendar month². Water systems are also required to use sampling sites that are representatives of all water sources, pressure zones, and tanks³.

The District has five potential sampling sites to represent all three pressure zones of the distribution system with their respective storage tanks. The five sampling sites are listed in Table 1 and their locations are illustrated in Figure 2. All samples are collected on the second Monday of each month in the early morning.

Table 1: Distribution System Sampling Sites for Bacteriological Compliance Monitoring

Site No.	Sampling Site	Upstream Site ¹	Downstream Site ²
<u>First Pressure Zone:</u>			
1	25715 Santa Rosa Road	25775 Santa Rosa Road	25735 Santa Rosa Road
<u>Second Pressure Zone</u>			
2	APN # 0435-581-07 Mt. View Road	25776 Mt. View Road	25850 Mt. View Road
<u>Third Pressure Zone:</u>			
3	26121 Rancho Street	25880 Rancho Street	26280 Rancho Street
4	APN # 0435-284-08 Horizon Street	25980 Horizon Street	26370 Horizon Street
5	26029 Ocotillo Way	25925 Ocotillo Way	26125 Ocotillo Way

¹ On the map (Figure 2), upstream sampling sites are identified by the site number followed by the letter “U”, i.e., 1U, 2U, 3U, 4U and 5U.

² On the map (Figure 2), downstream sampling sites are identified by the site number followed by the letter “D”, i.e., 1D, 2D, 3D, 4D and 5D.

² CCR, Section 64423.

³ CCR, Section 64422.



Figure 3A (left): Pipe stub in distribution system for sample collection,
Figure 3B (right): S-shaped copper tool

Each sampling site consists of a pipe stub (Figure 3) to which an S-shaped copper tool is attached when collecting samples. The tool is disinfected using a chlorine solution before a sample is collected. If repeat sampling is needed, upstream and downstream samples are collected at customer premises from hose bibs.

All of the District's samples are collected by District staff, i.e., Mr. Lee Logsdon (see Certifications Section for additional information).

3.2. Groundwater Wells

If a routine distribution system sample is positive for total coliform (as described later), the District has to collect groundwater samples at the sources (i.e., wellheads)⁴. In this case, samples are collected directly at the wellheads at a sampling port as shown in Figure 4.

⁴ CCR, Addendum A, Sections 141.400(c), 141.402(a) and 141.403(c).



Figure 4: Example of a District Wellhead with Sampling Tap

4. SAMPLE ANALYSIS

All of the District's samples are analyzed by Geo-Monitor, Inc. (Hesperia, California), which is affiliated with the Clinical Laboratory of San Bernardino, Inc. Geo-Monitor is an approved and certified laboratory by the State of California (Environmental Laboratory Accreditation Program, ELAP, Certification No. 1088), as required by the SWRCB⁵.

Geo-Monitor uses Standard Method 9223 for coliform analysis, which is a presence/absence, enzyme substrate test suitable for the simultaneous detection of total coliform bacteria and *Escherichia coli* (*E. coli*). The test is accepted by the U.S. Environmental Protection Agency (EPA) and the SWRCB. Note that the Revised TCR may require that coliform density be analyzed in repeat samples⁶.

For compliance with the GWR at the wellheads, samples must be analyzed for fecal indicators, i.e., *E. coli*, enterococci, or coliphage⁷.

⁵ CCR, Section 64421.

⁶ Draft Revised TCR, Section 64423.1.

⁷ CCR, Addendum A, Section 141.402(c).

4.1. Forms

The chain-of-custody (COC) form is the only form required by Geo-Monitor. It is shown in Appendix B and can be found at www.clinical-lab.com/ESW/Files/Clinical_Lab_COC_-_PDF.pdf.

The COC form must be entirely filled out. Samples must be designated as routine, repeat, replacement or “other”. It is recommended to notify the laboratory with clear indications if samples are *not* routine, particularly if they are repeat samples because of a positive detection or replacement samples.

4.2. Invalidation

4.2.1. Distribution System

At the District’s request, the SWRCB may invalidate a total coliform-positive sample collected in the distribution system if all repeat sample(s) collected at the same tap as the original total coliform-positive sample are also total coliform-positive(s), and all repeat samples collected within five service connections of the original tap are not total coliform-positive⁸. Alternatively, a total coliform-positive sample can be invalidated if the laboratory did not follow the prescribed analytical methods. A laboratory may also invalidate a total coliform sample in case of interference problems.

If a sample is invalidated, then the District must collect a *replacement sample* from the same location as the original sample within 24 hours of being notified of the interference problem, and have it analyzed for the presence of total coliforms. The District must continue to re-sample at the original site within 24 hours and have the samples analyzed for total coliforms until a valid result is obtained.

As mentioned above, in the event that a sample would be invalidated, the District should document which samples were invalidated, why they were invalidated, who authorized the invalidation; and when replacement samples were collected.

4.2.2. Groundwater Wells

The SWRCB may invalidate a positive sample for fecal indicator collected at a wellhead if the laboratory can provide a written notice that improper sample analysis occurred, or there is substantial evidence that the fecal indicator-positive sample is not related to source water quality⁹. The SWRCB’s decision must be documented in writing.

If the SWRCB invalidates a positive sample for fecal indicator collected at a wellhead, the District must collect another sample at the wellheads within 24 hours of being notified by the SWRCB of its invalidation decision. The District must contact the SWRCB if it cannot

⁸ CCR, Section 64425.

⁹ CCR, Addendum A, Section 141.402(d).

collect a replacement sample within 24 hours (extensions may be granted under specific circumstances). The SWRCB's contact information is provided later.

In the event that a sample would be invalidated, the District should document which samples were invalidated, why they were invalidated, who authorized the invalidation; and when replacement samples were collected.

5. COMPLIANCE REQUIREMENTS

5.1. Distribution System

If a *routine, repeat, or replacement* sample collected in the District's distribution system is positive for total coliforms, then the laboratory must analyze the same sample for *E. coli*¹⁰, and the District must collect at least three repeat samples within 24 hours of being notified of the positive results¹¹. Note that fecal coliform analysis will no longer be accepted under the Revised TCR, and only *E. coli* is accepted as fecal indicator. For the District, the following repeat samples must be collected for each total coliform positive sample:

- At the site where the total coliform positive sample was detected;
- One sample at an upstream site within five (5) service connections;
- One sample at a downstream site within five (5) service connections;
- Source(s), i.e., well(s) that was/were in service when the total coliform positive sample was detected¹². Sample must be analyzed for fecal indicators, i.e., *E. coli*, enterococci, or coliphage. (While waiting for results, the affected well should remain offline.)

All repeat samples must be collected within the same 24-hour time period, and disinfection must *not* be performed before collecting the repeat sample. If the District is unable to meet this timeline requirement, it must notify the SWRCB within 24 hours (extensions may be granted under specific circumstances); the SWRCB's contact information is provided later. The Draft Revised TCR proposes that repeat samples must be analyzed for coliform density¹³. Failure to take all required repeat samples after any total coliform-positive sample may require a Level 1 Assessment under the Revised TCR, as discussed later.

If one or more repeat samples are positive for total coliforms, then the District must collect and have analyzed an additional set of repeat samples as specified above¹⁴. The District must repeat this process until either no coliforms are detected in one complete repeat sample set or the District is in violation, as defined below.

¹⁰ CCR, Section 64423.1.

¹¹ CCR, Section 64424.

¹² CCR, Addendum A, Section 141.402(a).

¹³ Draft Revised TCR, Section 64423.1.

¹⁴ CCR, Section 64424(c).

The District must ensure that the laboratory notifies a District staff within 24 hours whenever a coliform or *E. coli* is detected or a sample is invalidated¹⁵. Similarly, the District must ensure that a contact person is available to receive these results 24 hours per day. The District must also require the laboratory to immediately notify the SWRCB of any positive bacteriological results, particularly if the laboratory cannot make direct contact with the District within 24 hours. The SWRCB's contact information is provided later.

In addition, the State Board also requires that if a water provider that collects fewer than five routine samples per month has total-coliform positive samples, then the provider must collect at least five routine samples in the following month. However, since the District already collects five routine samples per month, additional routine sampling is not needed in the month following a total-coliform detection^{14a}.

5.1.1. Violations

E. coli MCL Violations: The following circumstances are considered *Acute Total Coliform MCL Exceedances* or *E. coli MCL Exceedances* with *immediate* notification to the SWRCB¹⁶ (the SWRCB's contact information is provided later):

1. Following a total coliform positive sample, a repeat sample is positive for *E. coli* (this condition was referred to as an *Acute Total Coliform MCL Exceedance* in the TCR, but it will be referred to as an *E. coli MCL Exceedance* when the Revised TCR is adopted);
2. Following an *E. coli* positive sample, a repeat sample is positive for total coliforms (this condition was referred to as an *Acute Total Coliform MCL Exceedance* in the TCR, but it will be referred to as an *E. coli MCL Exceedance* when the Revised TCR is adopted);
3. Following an *E. coli* positive routine sample, the District fails to collect all required repeat samples (*E. coli* MCL Exceedance);
4. The District fails to test for *E. coli* when any repeat sample tests positive for total coliform (*E. coli* MCL Exceedance).

An *E. coli* MCL Exceedance initiates a Tier 1 Public Notification (additional information about public notifications is provided later). It also requires the District to contact the SWRCB *before the end of the business day* to make arrangements and schedule for a Level 2 Assessment (additional information about this assessment is presented below).

Significant Rise in Bacterial Counts: Under the Revised TCR, the District could experience a *Significant Rise in Bacterial Counts* if a positive *E. coli* sample is detected, or if a total coliform sample is a density greater than 23 Most Probably Number (MPN) per 100 mL, or greater than 23 Colony Forming Units (CFU) per 100 mL¹⁷.

^{14a} CCR, Section 64424(d).

¹⁵ CCR, Section 64423.1.

¹⁶ CCR, Section 64426.1.

¹⁷ Draft Revised TCR, Section 64426.

In this case, the District must:

1. Notify the SWRCB *before the end of the day* on which the District is notified of the test results; the SWRCB's contact information provided later.
2. Conduct an investigation of the physical works and the system operations that may have caused the *Significant Rise in Bacterial Counts*, according to the schedule prescribed by the SWRCB. The investigation must include the operating procedures and records, system pressure losses to less than 5 psi, vandalism and/or unauthorized access to District's facilities, evidences indicating bacteriological contaminations, and community illnesses suspected of being waterborne¹⁸.
3. Submit the findings of the investigation, corrective actions completed, and a proposed timetable for any corrective action not already completed to the SWRCB.
4. Within 24 hours of receiving the notification from the SWRCB determining that a *Significant Rise in Bacterial Counts* occurred, the District must notify the public (Tier 1 Public Notification).

Coliform Treatment Technique Violations: Under the Revised TCR, the District would find itself in a *Coliform Treatment Technique Trigger* (which is referred to as *Total Coliform Maximum Contaminant Level (MCL) Exceedance* in the TCR) in the following circumstances¹⁹:

- If two (2) or more samples are positives for total coliform in a calendar month;
- If the District fails to collect all required repeat samples after a sample tests positive for total coliforms.

All routine, repeat and replacement samples collected in a calendar month should be considered; however, special samples collected after a water system pressure decrease to less than 5 psi do *not* need to be considered.

In the case of a *Coliform Treatment Technique Violation*, the District must:

1. Notify the SWRCB by the end of the next business day at the contact information provided later.
2. Conduct a Level 1 Assessment as soon as possible (additional information about this assessment is presented later).
3. Because a *Coliform Treatment Technique Trigger* is a Tier 2 violation, the District must notify its customers within 30 days (additional information about public notifications is provided later).

Monitoring Violations: The District could find itself in a Tier 3 Violation if it fails to test the same sample for *E. coli* following the detection of a total coliform-positive *routine* sample. In

¹⁸ Other potential sources of contamination are listed in the TCR and Draft Revised TCR, but they do not apply to the District.

¹⁹ Draft Revised TCR, 64426.7.

this case, the District must notify the SWRCB within ten (10) days after learning of the monitoring violation, and conduct a Tier 3 Public Notification as described later. Failure to notify the SWRCB within ten (10) days after learning of a routine monitoring violation could also require the District to conduct a Tier 3 Public Notification.

5.1.2. Assessments

The Revised TCR describes the following two assessments to find and fix potential sanitary defects or system deficiencies.

Level 1 Assessment: A Level 1 Assessment is an “*evaluation to identify the possible presence of sanitary defects, defects in distribution system coliform monitoring practices, and (when possible) the likely reason that the system triggered the assessment*”²⁰.

For the District, a Level 1 Assessment is required if two or more samples are total coliform-positive in a calendar month. Under the Revised TCR, a Level 1 Assessment may also be required if the District fails to collect all required repeat samples after any total coliform-positive sample is detected.

A Level 1 Assessment would require the District to identify a possible cause to a total coliform positive sample, corrective actions completed, and a proposed timetable for any corrective actions not already completed. More specifically, the District would need to carefully inspect the following:

- Inadequacies in sample sites, sampling protocol, and sample processing.
- Atypical events that could affect distributed water quality or indicate that distributed water quality was impaired.
- Changes in distribution system maintenance and operation (including water storage) that could affect distributed water quality.
- Water source considerations that may influence distributed water quality.
- Existing water quality monitoring data.

A Level 1 Assessment can be performed by the District. A template guide is presented in Appendix C and can be found at www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/rtrcr.shtml.

The assessment report must be submitted to the SWRCB within 30 days of learning of the *Coliform Treatment Technique Trigger*, or within 30 days after the District receives results of all bacteriological samples, whichever occurs first. The District has five business days to notify the SWRCB following the completion of each scheduled corrective action. Failure to return the assessment report or to report the completion of the corrective actions will be a violation of the *Coliform Treatment Technique Trigger*, and is subject to a Tier 2 Violation with Public Notification (additional information about public notifications is provided later).

²⁰ Draft Revised TCR, Section 64400.63.

Level 2 Assessment: A Level 2 Assessment is an “*evaluation, that provides a more detailed examination of the system (including the system’s monitoring and operational practices) than does a Level 1 Assessment, through the use of more comprehensive investigation and review of available information, additional internal and external resources, and other relevant practices, to identify the possible presence of sanitary defects, defects in distribution system coliform monitoring practices, and (when possible) the likely reason that the system triggered the assessment*”²¹.

A Level 2 Assessment is required if the District experiences an *Acute Total Coliform MCL Exceedance* or *E. coli MCL Exceedance* as defined above. A Level 2 Assessment is also required if the District experiences a second Level 1 trigger in a rolling 12-month period, except if the SWRCB determines a likely reason for the total-coliform positive samples for the first Level 1 trigger and that the District has corrected the problem.

Similar to the Level 1 Assessment, the Level 2 Assessment would require the District to identify a possible cause to the coliform exceedance, and corrective actions that should be undertaken. A Level 2 Assessment must be conducted by staff of the SWRCB, but District’s staff may be required to fill out certain parts of the template guide, which is presented in Appendix D and can be found at www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/rtcr.shtml.

The Level 2 Assessment must be conducted and the report must be submitted to the SWRCB within 30 days of learning of the *E. coli MCL Exceedance*, or within 30 days after the District receives results of all bacteriological samples, whichever occurs first. Similar to the Level 1 Assessment, The District has five (5) business days to notify the SWRCB following the completion of each scheduled corrective action, and failure to return the assessment or complete the corrective actions will be a violation of the *Coliform Treatment Technique Trigger*. Failure to return the assessment report and/or completion of corrective action report is subject to a Tier 2 Violation with Public Notification.

5.1.3. Public Notifications

An *E. coli MCL Exceedance* (i.e., detection of *E. coli*, or a total coliform-positive sample following the detection of *E. coli*, or failure to test a total coliform-positive sample for *E. coli*, or failure to collect repeat samples following the detection of *E. coli*) triggers a Tier 1 Public Notification. Options to contact the District’s customers are summarized in Figure 5. In this case, the District must notify the SWRCB before the end of the business day.

A *Coliform Treatment Technique Violation* (i.e., if two or more samples are positives for total coliform in a calendar month) triggers a Tier 2 Public Notification using the communication methods presented in Figure 5²². The SWRCB must be notified within 24 hours after learning of the positive result. A Tier 2 Public Notification is also needed if the District fails to submit a Level 1 or Level 2 Assessment report within 30 days, or a report of completion of corrective actions within five (5) business days, as detailed above.

²¹ Draft Revised TCR, Section 64400.64.

²² CCR, Section 64426.1.

Failure to test the same sample for *E. coli* following total coliform-positive *routine* sample can result in a Tier 3 Public Notification using the communication methods presented in Figure 5. The District must also notify the SWRCB within ten (10) days after learning of the monitoring violation, otherwise, the District may be subject to a Tier 3 violation and Public Notification. The SWRCB's contact information is provided later.

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Public Notifications

Tier 1 Public Notification must be sent within 24 hours after learning of the violation or being notified of the violation by the SWRCB. The District must use either one of the following communication methods to reach its customers as quickly as possible:

- Radio or television;
- Posting in conspicuous locations throughout the District's service area;
- Hand delivery to the District's customers; *or*
- Other method approved by the SWRCB.

Tier 2 Public Notification must be sent within 30 days after learning of the violation (extensions up to 60 days are possible by request to the SWRCB) or being notified of the violation by the SWRCB. Suitable communication methods for Tier 2 Public Notifications include the following:

- Mail or direct delivery to each customer receiving a bill including those that provide their drinking water to others (e.g., schools or school systems, apartment building owners, or large private employers); *and*
- One or more of the following methods to reach persons not likely to be reached by a mailing or direct delivery (e.g., renters, students, nursing home patients, prison inmates):
 - Publication in a local newspaper;
 - Posting in conspicuous public places served by the District, or on the Internet; *or*
 - Delivery to community organizations.

Tier 3 Public Notification must be sent within one (1) year after the violation. Unless otherwise directed by the SWRCB in writing, the District must use either one of the following communication methods to reach its customers:

- Mail or direct delivery to each customer receiving a bill including those that provide their drinking water to others (e.g., schools or school systems, apartment building owners, or large private employers); *and*
- One or more of the following methods to reach persons not likely to be reached by a mailing or direct delivery:
 - Publication in a local newspaper;
 - Posting in conspicuous public places served by the water system, or on the Internet; *or*
 - Delivery to community organizations.

Tier 3 Public Notifications must remain in place and be repeated to the public annually for as long as the violation continues, but in no case less than seven days. Instead of individual Tier 3 public notices, a water system may use an annual report (e.g., water quality report, or customer confidence report) to detail all violations and occurrences for the previous twelve (12) months, as long as the water system meets the frequency requirements specified above.

(Source: Section 64463 of the CCR)

Figure 5: Public Notifications

5.2. Groundwater Wells

As mentioned above, the District must collect samples at the wellheads within 24 hours if a sample tests positive for total coliforms; these samples are referred to *triggered source samples*. The well(s) that was/were in service when the total coliform positive sample was detected need to be sampled. Samples must be analyzed for fecal indicators, i.e., *E. coli*, enterococci, or coliphage, but *not* fecal coliforms.

Based on results obtained from well water monitoring, the District may need to initiate actions (i.e., apply treatment techniques or corrective actions) if a sample is positive for fecal indicator, or if the District presents a significant deficiency. Deficiencies can be identified by the SWRCB, or may include but not limited to one of the following²³:

- Defects in design, operation, or maintenance;
- Failure or malfunction of the sources (i.e., wellheads), treatment, storage, or distribution system that the SWRCB determines to be causing, or have potential for causing, the introduction of contamination into the water delivered to consumers.

In the event that the District were to have a positive sample for fecal indicator or a significant deficiency, one or more of the following corrective actions must be implemented²⁴:

- Correct all significant deficiencies;
- Provide an alternate source of water;
- Eliminate the source of contamination; or
- Provide treatment that reliably achieves at least 4-log treatment of viruses (using inactivation, removal, or a State-approved combination of 4-log virus inactivation and removal) before or at the first customer.

The District must consult with the SWRCB regarding the appropriate corrective action to undertake within 30 days of receiving written notice from the SWRCB of a significant deficiency or after being notified of a fecal indicator-positive sample collected at a wellhead²⁵. Within 120 days of receiving written notification from the SWRCB of a significant deficiency or after being notified of a wellhead positive sample for fecal indicator, the District must have completed the corrective action(s) in accordance with the SWRCB's plan review processes, guidance or direction if any, SWRCB-specified interim measures, or any other subsequent SWRCB-approved measures. It should be noted that the District must notify the SWRCB within 30 days of completion of the corrective action(s)²⁶.

²³ CCR, Addendum A, Section 141.403(a).

²⁴ CCR, Addendum A, Sections 141.400(c) and 141.403(a).

²⁵ CCR, Addendum A, Section 141.403(a).

²⁶ CCR, Addendum A, Section 141.405(a).

5.2.1. Violations and Public Notifications

Following the reception of a notice from the SWRCB of a significant deficiency or notification of a valid fecal indicator-positive sample collected in a groundwater well, the District may be in Tier 1 Public Notification and must inform its customers using the communication methods presented in Figure 5. The District must continue to inform the public annually until the significant deficiency is corrected or the fecal contamination in the water source is determined by the SWRCB to be corrected²⁷.

The District may face a *Coliform Treatment Technique* violation and Tier 2 Public Notification if it fails to implement a corrective action within the timeline agreed with the SWRCB, or if it is not in compliance with a SWRCB-approved corrective action plan.

The District may be subject to a monitoring violation and Tier 3 Public Notification for failure to meet the monitoring requirements for its water sources. The District needs to contact the SWRCB within ten (10) days of learning of the monitoring violation; the SWRCB's contact information is provided below.

6. REPORTING AND RECORD KEEPING

All results obtained from samples collected in the distribution system must be tracked on the Coliform Monitoring Worksheet. Geo-Monitor typically prepares this form for the District, but it is the District's ultimate responsible to ensure that it is properly filled out and submitted to the SWRCB. The most recent version of this form is shown in Appendix E, followed by detailed instructions to fill it. The form can also be found at www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/rtrcr.shtml.

The laboratory must report all results to the SWRCB not later than the 10th day of the following month²⁸.

The District must also keep the following records for source water samples²⁹:

- Laboratory reports must be retained by the District for a period of at least five years;
- Documentation of corrective actions triggered by a fecal indicator-positive sample in source water (i.e., wellheads) must be kept for a period of not less than ten (10) years;
- Level 1 and Level 2 Assessments, and documentation of corrective actions taken must be kept for at least five years;
- Documentation of notices to the public must be kept for at least three years;

²⁷ CCR, Addendum A, Section 141.403(a).

²⁸ CCR, Section 64423.1.

²⁹ CCR, Addendum A, Section 141.405(b).

- Records of decisions and sample invalidation must be kept for at least five years, including which samples were invalidated, why they were invalidated, who authorized the invalidation; and when replacement samples were collected.

6.1. Contact Information of the SWRCB

For the District, the SWRCB's contact information is the following:

464 West 4th Street, Suite 437, 4th Floor
San Bernardino, California 92401
Phone: (909) 383-4328
SWRCB on-call engineer: Mr. Wei Chang (909) 383-6029

7. NON-ROUTINE SAMPLINGS

Additional bacteriological samples must be collected in the following circumstances³⁰:

1. After construction or repair of wells;
2. After main installation or repair;
3. After construction, repair, or maintenance of storage facilities; and
4. After any system pressure loss to less than 5 psi. Samples collected shall represent the water quality in the affected portions of the system.

Results from these samples should not be used to determine compliance with the *Coliform Treatment Technique Trigger* or *E. coli MCL Exceedance*³¹, and thus, they should not be reported on the Coliform Monitoring Worksheet.

8. CERTIFICATIONS

District staff that are certified operators are listed in Table 2. Ms. Denise Johnson is the main contact with the SWRCB, and Mr. Lee Logsdon is the water distribution operator.

Mr. Logsdon collects water samples for the District. His training for sample collection was obtained in classes and through webinars.

³⁰ CCR, Section 64421.

³¹ CCR, Section 64426.1.

Table 2: Certified Operators for the District

Name	Title	License		Phone
Denise Johnson	General Manager		Day: Night:	(760) 247-9818 (760) 524-2037
Lee Logsdon	Operation & Maintenance	Treatment Grade 2, No. 26242 Distribution Grade 4, No. 28408	Day: Night:	(760) 247-9818 (760) 900-7757

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APPENDIX A: Additional Resources

Recommended Bacteriological Sampling Procedure

Avoid sampling when it rains or when wind or other meteorological events can compromise sample quality. Use only sterile containers specific for bacteriological sample collection. The following procedure is recommended when collecting bacteriological samples:

- Wash hands carefully before sampling, and/or wear disposal gloves.
- Open sampling faucet fully and flush for at least five minutes.
- Reduce the water flow to avoid splashing, and do not change it during sample collection.
- Remove the seal of the sample container, and remove the cap (do not open the container until ready to collect the sample). The inside part of the cap should not be touched, and the cap should be facing down at all times.
- Do not rinse the container prior to sample collection.
- Replace the container cap immediately after sample collection.
- Fill out sample label and chain-of-custody form completely using waterproof, non-solvent based ink.
- Immediately after sample collection, place samples on an ice chest, on ice packs.
- If sampled water is chlorinated, then chlorine residual should be measured each time a bacteriological sample is collected.
- For drinking water compliance purposes, sample transportation should not exceed six hours, and sample analysis must begin within 30 hours of sample collection.

Ice packs should be placed in zip lock bags to prevent sample contamination in case of leakage. Ice packs and ice chest should be cleaned regularly, and should not be used for purposes other than collection of drinking water samples.

Groundwater Well Disinfection Procedure

If a groundwater well leads to a repeat positive sample for total coliform, or a positive sample for fecal indicator, then the well must be disinfected using the following procedure:

Day 1:

1. Calculate the total volume of standing water in the well, from the bottom of the well to the static water level, and record calculations.

A well depth of 500 feet, well diameter of 12 inches and static water level of 270 feet would have a well volume of approximately 1,350 gallons.

2. Purge the well to waste at least three well volumes, as calculated in Step 1 above (i.e., over 4,000 gallons based on the above calculations).
3. Calculate the quantity of chlorine needed to disinfect the water column with an approximate chlorine *dose* of 75 mg Cl₂/L (i.e., to leave a chlorine *residual* of 50 mg Cl₂/L).

If calcium hypochlorite tablets (HTH, 65% available chlorine) are used, 1.3 lb of chlorine tablets would be required based on the above calculations.

4. Introduce the chlorine tablets into the well casing and pump column.
5. “Bump” the well pump motor (i.e., turn on and shut off) to bring the water column up to the surface and let it fall back down; this “surges” the well to disperse the chlorine throughout the water column and discharge pipe. The well should be “bumped/surged” at least four times.
6. Leave the well off until Day 2.
7. Record all calculations and procedures.

Table 3: Chlorine calculations for well disinfection

Description	Well 1	Well 2	Well 3
Casing Diameter (inches)	10	10	10s
Depth of casing (feet below ground surface, bgs)	700	805	800
Static water level (bgs)	520	545	491
Water volume (gal)	734	1060	1260
Chlorine dose (gal of 12.5% NaOCl)	0.4	0.6	0.8

Day 2:

1. Within 24 hours of completion of Day 1 activities, turn on the well and pump to waste. Measure free chlorine residual immediately and after 15 seconds; record residuals.
2. Continue measuring free chlorine residual every five minutes.
3. Note the duration of pumping until the free chlorine residual is non-detectable (i.e., 0.00 mg Cl₂/L).
4. Continue pumping for at least 15 minutes with a non-detectable free chlorine residual.
5. Begin bacteriological sampling for total coliform at the following intervals:
 - a. 0 minute (i.e., after pumping for 15 minutes with a non-detectable free chlorine residual);
 - b. 1 minute;
 - c. 5 minutes;

- d. 16 minutes.
6. Shut down the well while awaiting results from the laboratory.

Tank Disinfection Procedure

Two methods to disinfectant storage tanks are described here. Because the District's tanks have common inlet and outlet pipes, and mixers are not present in the tanks, chlorine should be introduced upstream of the tanks (i.e., in the inlet pipe while filling the tank) when using Method 1, or Method 2 should be used.

Method 1:

1. Fill the tank to capacity.
2. Add sodium hypochlorite to leave a chlorine residual of at least 10 mg Cl₂/L.
A volume of 4 gallons of sodium hypochlorite at 12.5% available chlorine is required for each of the 50,000-gallon tanks, and 6 gallons for the 75,000-gallon tank.
3. Chlorinated water should be left in the tank for at least 6 hours if chlorine is introduced upstream of the tank, or 24 hours if chlorine is added directly into the tank.

Method 2:

1. Fill the tank to approximately 5% of its capacity.
2. Add sodium hypochlorite to leave a chlorine residual of at least 50 mg Cl₂/L, and let stand for at least 6 hours.
A volume of 1.0 gallon of sodium hypochlorite at 12.5% available chlorine is required for each of the 50,000-gallon tanks and 1.5 gallons for the 75,000-gallon tank.
3. Fill the tank to capacity with fresh water, and let stand for 24 hours.

APPENDIX B: Chain-of-custody Form for Geo-Monitor

Geo-Monitor, Inc.

17152 Darwin Ave Hesperia, CA 92340 (760) 244-3481

Chain of Custody

Client			Client Job No.			Analysis Requested												Turn Around Time			
Address																					
Phone No.		Fax No.		Destination Laboratory																	
Contact		Cell No.		[] Geo-Monitor, Inc																	
System No.		[] Other:																			
Project Name			-----																		
Sampled By			-----																		
Comments			-----																		
Date	Time	Sample Identification			Matrix	No.	Pres.	Type													
Preservatives: (1) Na ₂ S ₂ O ₃ (3) Cold					Sample Types: (1) Routine (2) Repeat (3) Replacement (4) Special (W) Well (D) Distribution																
(2) H ₂ SO ₄ /HNO ₃ (4)					All turn around times are expressed as working days / Not all analyses can be processed as rush																
Relinquished By (Sign)			Print Name / Company			Date / Time			Received By (Sign)			Print Name / Company									
Rec'd at Lab By:					Rec'd Date / Time:					Comments:											
Rec'd on Ice Yes ____ No ____		Rec'd Intact Yes ____ No ____			Receipt Temperature: ____ C																
Shipped Via [] Fed X [] Golden State [] UPS [] Client [] Other _____																					
													Page ____ of ____								

APPENDIX C: Level 1 Assessment Form

REVISED TOTAL COLIFORM RULE (RTCR) – LEVEL 1 ASSESSMENT Simple Systems with a Well and Storage/Pressure Tank and No Treatment



This form is intended to assist public water systems in completing the investigation required by the federal revised Total Coliform Rule (rTCR) [effective April 1, 2016] and may be modified to take into account conditions unique to the water system. **To avoid a violation, an assessment report must be completed and returned to your local regulatory agency no later than 30 days after the trigger date.**

ADMINISTRATIVE INFORMATION

Entity Name: PWSID NUMBER: _____ System Type: _____	Name	System Address & Email	Telephone Number
Operator in Responsible Charge (ORC)			
Person that collected TC samples if different than ORC			
System Owner			
Certified Laboratory for Microbiological Analyses			
Date Investigation Completed:			
Month(s) of Coliform Treatment Technique Trigger:			

INVESTIGATION DETAILS

SOURCE	WELL (name)	WELL (name)	WELL (name)	WELL (name)	COMMENTS <small>(attach additional pages if needed)</small>
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. Are there any connections to the raw water piping that could be cross connections? (describe all connections in comments)					
h. Is the wellhead secured to prevent unauthorized access?					
i. How often do you take a raw water total coliform (TC) test?					
j. Provide the date and result of the last TC test at this location					

STORAGE	TANK (name)	TANK (name)	TANK (name)	TANK (name)	COMMENTS
1. Is each tank locked to prevent unauthorized access?					
2. Are all vents of each tank screened down-turned to prevent dust and dirt from entering the tank?					
3. Is the overflow on each tank screened?					
4. Are there any unsealed openings in the tank such as access doors, water level indicators hatches, etc.?					

REVISED TOTAL COLIFORM RULE (RTCR) – LEVEL 1 ASSESSMENT FORM

Simple Systems with a Well and Pressure Tank and No Treatment

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STORAGE	TANK	TANK	TANK	TANK	COMMENTS
	(name)	(name)	(name)	(name)	
5. Is the roof/cover of the tank sealed and free of any leaks?					
6. Is the tank above ground or buried?					
a. If buried or partially buried, are there provisions to direct surface water away from the site.					
b. Has the interior of the tank been inspected to identify any sanitary defects, such as root intrusion?					
7. Does the tank “float” on the distribution system or are there separate inlet and outlet lines?					
8. What is the measured chlorine residual (total/free) of the water exiting the storage tank today ?					
9. What is the volume of the storage tank in gallons?					
10. Is the tank baffled?					
11. Prior to the TC+ or EC+, what was the previous date item #1-6 were checked and documented?					

PRESSURE TANK	TANK	TANK	TANK	TANK	COMMENTS
	(name)	(name)	(name)	(name)	
1. What is the volume of the pressure tank?					
2. What is the age of the pressure tank?					
3. Is the pressure tank bladder type or air compressor type?					
4. Did the pressure tank(s) deviate from normal operating pressure?					
5. Is the compressor pump running more often than normal?					
6. Is the tank bladder broken and the tank water logged?					
7. Is the tank(s) damaged, rusty, leaking, or has holes?					
8. Was there any recent work performed?					
9. Is the air relief vent (if there is one) on the pressure tank screened and facing downwards?					
10. Can the inside of the pressure tank be visually inspected thru an inspection port? If so, when was the last time it was inspected?					

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 total coliform 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.	

REVISED TOTAL COLIFORM RULE (RTCR) – LEVEL 1 ASSESSMENT FORM

Simple Systems with a Well and Pressure Tank and No Treatment

DISTRIBUTION SYSTEM	SYSTEM RESPONSES
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. Have all backflow prevention devices in the distribution system been tested annually and repaired/replaced if they did not pass and retested afterwards?	
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	4 th Repeat Sample (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 bacteriological sample siting plan (BSSP) as a routine or repeat site?				
10. Were the samples delivered to the laboratory in a cooler and within the allowable holding time?				
11. What were the weather conditions at the time of the positive sample (rainy, windy, sunny)?				

REVISED TOTAL COLIFORM RULE (RTCR) – LEVEL 1 ASSESSMENT FORM

Simple Systems with a Well and Pressure Tank and No Treatment

GENERAL OPERATIONS:	Response
1. Has the sampler(s) who collected the samples received training on proper sampling techniques? If yes, please indicate date of last training.	
2. Does the water system have a written sampling procedure and was it followed?	
3. Where there any power outages that affected water system facilities during the 30 days prior to the TC+ or EC + findings?	
4. Were there any main breaks, water outages, or low pressure reported in the service area from which TC+ or EC+ samples were collected?	
5. Does the system have backup power or elevated storage?	
6. During or soon after bacteriological quality problems, did you receive any complaints of any customers' illness suspected of being waterborne? How many?	
7. What were the symptoms of illness if you received complaints about customers being sick?	

SUMMARY: Based on the results of your assessment and any other available information, what deficiencies do you believe to have caused the positive total coliform sample(s) within your distribution system? *(DO NOT LEAVE BLANK)*

Deficiency #	Deficiency Description
1.	
2.	
3.	
4.	
5.	

CORRECTIVE ACTIONS: What actions have you taken to correct the above mentioned deficiencies? If additional time is needed to correct a deficiency, indicate the date that it will be corrected. *(DO NOT LEAVE BLANK)*

Deficiency #	Corrective Action	Completion/Proposed Date
1.		
2.		
3.		
4.		
5.		

REVISED TOTAL COLIFORM RULE (RTCR) – LEVEL 1 ASSESSMENT FORM
Simple Systems with a Well and Pressure Tank and No Treatment

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CERTIFICATION: I certify under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

NAME: _____ **TITLE:** _____ **DATE:** _____

Upon review of the Level 1 Assessment Form, the local regulatory agency may require submittal of the following additional information:

- Sketch of system showing all sources, all treatment and chlorination 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.
- A set of photographs of the source, 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 the local regulatory agency.
- Name, certification level and certificate number of the Operator in Responsible Charge.
- Copy of the last cross connection survey performed that identifies the location of all unprotected cross connections.

APPENDIX D: Level 2 Assessment Form

REVISED TOTAL COLIFORM RULE (RTCR) – LEVEL 2 ASSESSMENT



This form is intended to assist Division of Drinking Water (DDW) or Local Primacy Agency (LPA) Staff in completing the investigation required by the federal revised Total Coliform Rule (rTCR) [effective April 1, 2016]. If the answer has a large box around it, it is an issue and needs to be described by LPA or DDW in the next column. Please include the question number in the description. The PWS must address each issue described in the Corrective Action column. **To avoid a violation, the water system must submit to DDW/LPA a completed assessment report no later than 30 days after the trigger date.**

PWS ID#:		PWS Name: []			Circle one: CWS / NTNC / TNC	
Operator in Responsible Charge (print name):		Phone:				
Assessment trigger date:		Date Assessment Completed:				
SEASONAL: YES <input type="checkbox"/> NO <input type="checkbox"/>		Reason for Assessment:				
Person who collected TC positive samples:		Contact info for person who collected samples:				
Name of Certified Lab conducting sample analysis:						
Assessment Elements	Y	N	N/A	Issue Description	Corrective Action Taken or Planned to be Taken and Date	
1. Review of the sample sites	Y	N	N/A	Indicate Element number being described.	Indicate Element number being described.	
1.1 Was the sample taken at the routine coliform site? List the name(s) of the positive sample site(s).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
1.2 Was the tap area unsanitary at the time of sampling?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
1.3 Was this sample taken from an outside faucet?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
1.4 Was the sample taken from a swivel tap?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
1.5 Did the tap have a point of use treatment device on it?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
1.6 Does the building where the sample was taken have a point of entry device?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
1.7 Has this location undergone any plumbing replacements or repairs?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
1.8 Are there any possible cross connections around the sample site (including yard hydrants and stock tanks)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
1.9 Is this location near a storage tank or dead end?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
1.10 Have there been any analytical results or any additional samples collected, including source samples, which were positive (not for compliance)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
1.11 Prior to this incident, when was the most recent satisfactory coliform samples taken? Date:						
1.12 Any other sample site issues not previously mentioned?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			

REVISED TOTAL COLIFORM RULE (RTCR) – LEVEL 2 ASSESSMENT

	Y	N	N/A	Indicate Element number being described.	Indicate Element number being described.
2. Review of sample protocol					
2.1 Was the positive sample(s) taken by the operator in responsible charge? Provide name of sampler.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2.2 Is the sampler a regular, trained sampler?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2.3 Was a laboratory-provided TC sample bottle used?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2.4 Was the aerator removed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2.5 Was the water tap flushed for at least 5 minutes?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2.6 Was the tap disinfected or flamed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2.7 Did the sample get too warm prior to being placed on ice?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2.8 Were there other sampler errors? Describe	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2.9 If it is a seasonal system, were there any problems during the most recent start-up procedure?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2.10 Any other sample protocol issues not previously mentioned (e.g. vandalism or unauthorized access)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3. Review of the distribution system.					
3.1 Have any mains or service lines recently been repaired, replaced or installed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3.2 Have fire hydrants or blow offs been recently flushed/used/sheared?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3.3 Have valves been recently exercised to direct flow?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3.4 Any leaks or main breaks noted?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3.5 Are all of the backflow prevention devices operational and maintained?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3.6 Was there a total loss of pressure, low pressure (<20 psi) or changes in water pressure? If yes, when?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3.7 Any areas of the distribution with low disinfectant levels (<0.2 mg/L)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3.8 Any recent pump station failures or repairs?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3.9 Air relief valve leaking?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3.10 Standing water or debris in (air relief) valve vault?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3.11 Any recent power loss?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3.12 Any unprotected cross connections (including yard hydrants and stock tanks)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3.13 Has high turbidity been detected in the distribution system?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3.14 Is there evidence of intentional contamination or vandalism?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3.15 Any other distribution issue not previously mentioned (e.g. other O&M activities that could have introduced coliforms)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

REVISED TOTAL COLIFORM RULE (RTCR) – LEVEL 2 ASSESSMENT

4. Review of storage tank(s) (Note the specific facility if any issues are found)	Y	N	N/A	Indicate Element number being described.	Indicate Element number being described.
4.1 Is there a presence of animals or insects in the tank(s)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4.2 Are there breaches or holes of any sort into tank(s)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4.3 Is there any presence of animal droppings around openings, vents or overflows?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4.4 Is there sediment buildup and floating debris in tank(s)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4.5 Have the tank(s) been cleaned within the last 5 years? If not, list when it was last cleaned.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4.6 Are the vents and overflows protected against entry from animals, insects or other contaminants?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4.7 Are the screens damaged or not properly installed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4.8 Does the reservoir have a common inlet/outlet?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4.9 Is the overflow pipe directly connected to a tank drain, sanitary sewer or storm drain?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4.10 Does the hatch have a solid, water proof, shoebox type lid that is properly sealed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4.11 Was the hatch locked or secured?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4.12 Has the tank been accidentally drained?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4.13 Have there been high flows through the tank?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4.14 Was there high water age in the tank (infrequent water use)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4.15 Was the sample taken when the tank was at the low level mark?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4.16 Failure or improper operation on tank telemetry/altitude valves/controls?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4.17 Any recent repairs on the tank(s)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4.18 Was there any power loss?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4.19 Is the site secured (e.g. fencing, locked gates, etc.)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4.20 Was the tank vandalized or subject to tampering?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4.21 Any other storage tank issues not previously mentioned above?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Pressure Tanks (if applicable)	Y	N	N/A	Indicate Element number being described.	Indicate Element number being described.
4.22 What is the volume of the pressure tank? Attach additional sheets if needed.					
4.23 What is the age of the pressure tank? Attach additional sheets if needed.					
4.24 Does the pressure tank use a bladder and/or air compressor? Attach additional sheets if needed.					
4.25 Did the pressure tank(s) deviate from normal operating pressure?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4.26 Is the compressor pump running more than normal?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

REVISED TOTAL COLIFORM RULE (RTCR) – LEVEL 2 ASSESSMENT

4.27 Is the tank bladder water logged?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4.28 Is the tank damaged, rusty, leaking or have holes?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4.29 Was there any recent work performed on the tank?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4.30 Is the air relief vent (if there one) screened and facing down?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4.31 Can the inside of the pressure tank be visually inspected through an inspection port? If so, when was it last inspected?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
5. Review of treatment process (if applicable)	Y	N	N/A	Indicate Element number being described.	Indicate Element number being described.
5.1 Has the treatment been bypassed altogether at any time or have individual processes been interrupted by power outages or other causes? If yes, provide details on when, which processes and for how long?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
5.2 Have there been any new treatment processes added or new equipment installed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
5.3 Have there been any recent repairs of major unit processes or treatment equipment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
5.4 Have there been any changes in the operational procedures used for treating the water such as, changes in chemical dosages, flow changes, or changes in coagulant chemicals used? If yes, provide details of the change and when it occurred.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
5.5 Has a coagulant been added at all times the plant has been filtering water?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
5.6 Have there been changes in raw water quality?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
5.7 Was the settled water turbidity increasing?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
5.8 Was the finished water turbidity increasing?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
5.9 Have filter clogging algae caused more frequent backwashing?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
5.10 Have there been any failures in adding disinfectant for any length of time?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
5.11 Was water delivered that did not meet CT requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
5.12 What is the entry point chlorine residual today? Free/Total?	mg/L				
5.13 Has there been any vandalism or tampering at the plant?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
5.14 Any other treatment plant issues not previously mentioned above?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Sources – Well(s)	Y	N	N/A	Indicate Element number being described.	Indicate Element number being described.
6. (Note the specific facility if any issues are found)					
6.1 Is there a 50 foot annular seal?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
6.2 Is the surface seal defective or damaged or not water tight?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

REVISED TOTAL COLIFORM RULE (RTCR) – LEVEL 2 ASSESSMENT

6.3 Is there a casing vent?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
6.4 Does the casing and/or air relief vent have a screen to prevent the entry of insects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
6.5 Does the vent and pump to waste terminate in an air gap of at least three pipe diameters above the ground?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
6.6 How is the well used? (Circle if applicable)	Primary	Backup	Emergency		
6.7 Are there any unprotected cross connections at the wellhead?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
6.8 Are there any unprotected openings in the pump or pump assembly?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
6.9 Is the pitless adapter damaged?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
6.10 Are there any exposed holes or cracks near the wellhead? For example electric conduit.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
6.11 Has there been any recent work performed on the pump?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
6.12 Is the wellhead secured to prevent unauthorized access?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
6.13 Have there been any sewer spills, source water spills or other disturbances near the well?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
6.14 Is the wellhead at least 18-inches above grade?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
6.15 Is there evidence of standing water near the wellhead?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
6.16 Is the well pit in standing water or evidence of flooding?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
6.17 Any other well issues not previously mentioned above?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Sources- Spring(s) (Note the specific facility if any issues are found)	Y	N	N/A		
6.18 Is there evidence of flooding or infiltration of surface water runoff around the spring?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
6.19 Is the spring box improperly developed or poorly maintained?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
6.20 Is the spring site secured (e.g. locks, fence, gate, etc).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
6.21 Are there dead animals near the spring?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
6.22 Any other issues about springs not previously mentioned above?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Sources – Surface Water	Y	N	N/A		
6.23 Have there been algae blooms?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
6.24 Has the source water turned over?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
6.25 Have there been any sewer spills, source water spills or other disturbances?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
6.26 Any other source water issues not previously mentioned above?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

REVISED TOTAL COLIFORM RULE (RTCR) – LEVEL 2 ASSESSMENT

Sources-purchased water							
6.27	Water quality issues with supplier?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
6.28	Low disinfectant residual from supplier (typically ≤ 0.2 mg/L)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
6.29	Any other purchased water issues not previously mentioned above?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Applicable to all sources							
6.30	Has an unapproved source been used?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
6.31	Has there been a change in sources?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
6.32	Has there been recent rapid snowmelt, heavy rainfall or flooding?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
6.33	Any evidence of animals near the source?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
6.34	Have there been changes in available source water (e.g. significant drop in water table, reservoir capacity)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
6.35	Is the source water sample for ground water systems E. coli positive? This may indicate that the positive sample is originating from the source and may be a continuous source of contamination.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
6.36	Any other source issues not previously mentioned above?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
7.	General Operations				Indicate Element number being described.	Indicate Element number being described.	
7.1	During or soon after bacteriological quality problems, did you receive any complaints of any customers' illness suspected of being waterborne? How many?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
7.2	What were the symptoms of illness if you received complaints about customers being sick?						
7.3	Were there any extreme weather/natural events (e.g. heat, freezing, raining, windy, fires, earthquakes etc)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
8.	Significant Deficiencies				Indicate Element number being described.	Indicate Element number being described.	
8.1	Are there any unaddressed significant deficiencies? This may indicate that the problem is known and is in the process of being remedied. Include approved corrective action date and status of each corrective action.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			

1. Attach additional sheets if needed.

REVISED TOTAL COLIFORM RULE (RTCR) – LEVEL 2 ASSESSMENT

Additional Comments:

Name of SWRCB-Division of Drinking Water or LPA representative completing the form (PRINTED):

Signature:

Date:

Water system responsible party (PRINTED):

Signature:

Date:

Reserved for Regulatory Agency (DDW / LPA) Review

	Yes	No	Comments
1. Has assessment been successfully completed?	<input type="checkbox"/>	<input type="checkbox"/>	
2. Likely reason for EC+ occurrence has been found.	<input type="checkbox"/>	<input type="checkbox"/>	
3. System has corrected the problem.	<input type="checkbox"/>	<input type="checkbox"/>	
4. Were all issues identified corrected?	<input type="checkbox"/>	<input type="checkbox"/>	
4. Corrective Action Approved?	<input type="checkbox"/>	<input type="checkbox"/>	

APPENDIX E: Coliform Monitoring Worksheet (September 2016)

State Water Resources Control Board

Division of Drinking Water

MONTHLY SUMMARY OF REVISED TOTAL COLIFORM RULE DISTRIBUTION SYSTEM MONITORING (including triggered source monitoring for systems subject to the Groundwater Rule)

System Name	System Number
Sampling Period	
Month	Year

	Number Required	Number Collected	Number Total Coliform Positives	Number E.coli Positives
1. Routine Samples (see note 1)	_____	_____	_____	<input style="width: 40px; height: 20px;" type="text"/>
2. Repeat Samples following samples that are Total Coliform Positive and <i>E.coli</i> Negative (see notes 10 and 11)	_____	_____	_____	<input style="width: 40px; height: 20px;" type="text"/>
3. Repeat Samples following Routine Samples that are Total Coliform Positive and <i>E. coli</i> Positive (see notes 10 and 11)	_____	_____	<input style="width: 40px; height: 20px;" type="text"/>	<input style="width: 40px; height: 20px;" type="text"/>
4. Treatment Technique (TT)/MCL Violation Computation for Total Coliform/ <i>E. coli</i> Positive Samples				
a. Totals (sum of columns)	_____	_____	_____	<input style="width: 40px; height: 20px;" type="text"/>
b. If 40 or more samples collected in month, determine percent of samples that are total coliform positive [(total number positive/total number collected) x 100] = _____ %				
c. Did the system trigger... a Level 2 Assessment TT? (see notes 2, 3, 4, 5 and 6 for trigger info) <i>If a Level 2 Assessment is triggered, see note 8 below.</i>			<input type="checkbox"/> Yes <input type="checkbox"/> No	
a Level 1 Assessment TT? (see note 7 for trigger info) <i>If a Level 1 Assessment is triggered, see note 9 below.</i>			<input type="checkbox"/> Yes <input type="checkbox"/> No	
5. Triggered Source Samples per Groundwater Rule (see notes 12 and 13)				<input style="width: 40px; height: 20px;" type="text"/>
6. Invalidated Samples (Note what samples, if any, were invalidated; who authorized the invalidation; and when replacement samples were collected. Attach additional sheets, if necessary.)				
7. Summary Completed By:				
<input style="width: 400px; height: 30px;" type="text"/>	<input style="width: 250px; height: 30px;" type="text"/>	<input style="width: 100px; height: 30px;" type="text"/>		

NOTES AND INSTRUCTIONS:

1. Routine samples include:
 - a. Samples required pursuant to 22 CCR Section 64423 and any additional samples required by an approved routine sample siting plan established pursuant to 22 CCR Section 64422.
 - b. Extra samples are required for systems collecting less than five routine samples per month that had one or more total coliform positives in previous month;
 - c. Extra samples for systems with high source water turbidities that are using surface water or groundwater under direct influence of surface water and do not practice filtration in compliance with regulations;
2. Note: For a repeat sample following a total coliform positive sample, any *E.coli* positive repeat (boxed entry) **constitutes an MCL violation and requires immediate notification to the Division** (22, CCR, Section 64426.1).
3. Note: For repeat sample following a *E.coli* positive sample, any total coliform positive repeat (boxed entry) **constitutes an MCL violation and requires immediate notification to the Division** (22, CCR, Section 64426.1).
4. Note: Failure to take all required repeat samples following an *E. coli* positive routine sample (22, CCR, Section 64426.1) **constitutes an MCL violation and requires immediate notification to the Division** (22, CCR, Section 64426.1).
5. Note: Failure to test for *E. coli* when any repeat sample tests positive for total coliform (22, CCR, Section 64426.1) **constitutes an MCL violation and requires immediate notification to the Division** (22, CCR, Section 64426.1).
6. Note: Second Level 1 treatment technique trigger in a rolling 12-month period.
7. Total coliform Treatment Technique (TT) Violation (**Notify Department within 24 hours of TT violation**):
 - a. For systems collecting less than 40 samples, if two or more samples are total coliform positive, then the TT is violated and a Level 1 Assessment is required.
 - b. For systems collecting 40 or more samples, if more than 5.0 percent of samples collected are total coliform positive, then the TT is violated and a Level 1 Assessment is required.
8. Contact the Division as soon as practical to arrange for the division to conduct a Level 2 Assessment of the water system. The water system shall complete a Level 2 Assessment and submit it to the Division within 30 days of learning of the trigger exceedance.
9. Conduct a Level 1 Assessment in accordance with as soon as practical that covers the minimum elements (22, CCR, Section 64426.8 (a), (2)). Submit the report to the Division within 30 days of learning of the trigger exceedance.
10. Positive results and their associated repeat samples are to be tracked on the Coliform Monitoring Worksheet.
11. Repeat samples must be collected within 24 hours of being notified of the positive results. For systems collecting more than one routine sample per month, three repeat samples must be collected for each total coliform positive sample. For systems collecting one or fewer routine samples per month, four repeat samples must be collected for each total coliform positive sample. At least three samples shall be taken the month following a total coliform positive.
12. For systems subject to the Groundwater Rule: Positive results and the associated triggered source samples are to be tracked on the Coliform Monitoring Worksheet.
13. For triggered sample(s) required as a result of a total coliform routine positive sample, an *E.coli*-positive triggered sample (boxed entry) **requires immediate notification to the Division, Tier 1 public notification, and corrective action.**

COLIFORM MONITORING WORKSHEET

(COMPLETED FOR POSITIVE ROUTINE SAMPLES, ALL REPEAT SAMPLES, AND ALL TRIGGERED SOURCE SAMPLES)

Page _____ of _____
Report Month _____ Year _____

Routine Samples ⁹			Repeat Samples ⁶				Triggered Source Samples ⁸					
TC+ Sample Date	TC+ Sample Site ID	¹² E. coli Results	Repeat Collection Date	Repeat Sample Site IDs ¹⁰	Coliform Results (Check one box)			Source Sample Date	Groundwater Source(s) Sampled	¹² TC Results	^{11,12} E. coli Results	
					TC-	TC+ BUT E. coli-	TC+ AND E. coli+					
		(+ / -)		1						(+ / -)	(+ / -)	
					2						(+ / -)	(+ / -)
					3						(+ / -)	(+ / -)
					4						(+ / -)	(+ / -)
		(+ / -)		1						(+ / -)	(+ / -)	
					2						(+ / -)	(+ / -)
					3						(+ / -)	(+ / -)
					4						(+ / -)	(+ / -)
		(+ / -)		1						(+ / -)	(+ / -)	
					2						(+ / -)	(+ / -)
					3						(+ / -)	(+ / -)
					4						(+ / -)	(+ / -)
		(+ / -)		1						(+ / -)	(+ / -)	
					2						(+ / -)	(+ / -)
					3						(+ / -)	(+ / -)
					4						(+ / -)	(+ / -)
		(+ / -)		1						(+ / -)	(+ / -)	
					2						(+ / -)	(+ / -)
					3						(+ / -)	(+ / -)
					4						(+ / -)	(+ / -)
		(+ / -)		1						(+ / -)	(+ / -)	
					2						(+ / -)	(+ / -)
					3						(+ / -)	(+ / -)
					4						(+ / -)	(+ / -)
		(+ / -)		1						(+ / -)	(+ / -)	
					2						(+ / -)	(+ / -)
					3						(+ / -)	(+ / -)
					4						(+ / -)	(+ / -)
		(+ / -)		1						(+ / -)	(+ / -)	
					2						(+ / -)	(+ / -)
					3						(+ / -)	(+ / -)
					4						(+ / -)	(+ / -)
		(+ / -)		1						(+ / -)	(+ / -)	
					2						(+ / -)	(+ / -)
					3						(+ / -)	(+ / -)
					4						(+ / -)	(+ / -)
		(+ / -)		1						(+ / -)	(+ / -)	
					2						(+ / -)	(+ / -)
					3						(+ / -)	(+ / -)
					4						(+ / -)	(+ / -)

Comments:

- NOTES AND INSTRUCTIONS:
6. Repeat samples must be collected within 24 hours of being notified of the positive results. For systems collecting more than one routine sample per month, three repeat samples must be collected for each total coliform positive sample. For systems collecting one or fewer routine samples per month, four repeat samples must be collected for each total coliform positive sample.
 8. For triggered sample(s) required as a result of a total coliform routine positive sample, an *E.coli*, enterococci, or coliphage positive triggered sample (boxed entry) **requires immediate notification to the Department, Tier 1 public notification, and corrective action.**
 9. Also include any data for positive samples that occurred in the previous month that led to repeat monitoring occurring in the reporting month. Include location and indicate if the routine sample was either positive or negative for *E.coli* or Fecal Coliforms.
 10. For systems serving ≤ 1000 persons that collect one or fewer routine samples per month, a triggered source water sample may be used as the fourth repeat, as noted in an approved plan, **if E. coli was the indicator used.** Show result in GW source column too.
 11. The Department recommends using *E. coli* (see note 8). If enterococci or coliphage is used, note which in the comment box below
 12. Circle the appropriate result.

Abbreviations: TC = Total Coliform, FC = Fecal Coliform, EC = *E. coli*

QUARTERLY SUMMARY OF RAW GROUNDWATER COLIFORM MONITORING

Samples must be taken prior to chlorination

Water System Name

Water System Number

Sampling Period:

Month

Year

Well Name	Status (On/Off)	Sample Time & Date	Total Coliforms (P/A, CFU or MPN)	<i>E. coli</i> (P/A, CFU or MPN)

APPENDIX F: Instructions for Completing the Revised TCR Reporting Form

SEPT. 2016 –
Revised Total
Coliform Rule

Monthly Summary of Distribution System Coliform Monitoring (Including triggered source monitoring for systems subject to the Groundwater Rule)

INSTRUCTIONS FOR COMPLETING THE REPORTING FORM

Begin by filling in the blanks at the top of the form for system name, system number, sampling month, and year.

1. Routine Samples:

Number Required: This is the number of bacteriological samples the water system is required to collect based on a Division-approved Total Coliform Sample Siting Plan.

Routine samples include:

- Samples required by Section 64422 and 64423.
- Extra samples required for systems collecting less than five routine samples each month that had one or more total coliform positives in the previous month, as required by Section 64424.
- Extra samples for systems with high source water turbidities that are using surface water or groundwater under the direct influence of surface water and do not practice filtration compliant with the regulations.

NOTE: *All other samples collected during the sampling period are one of the following:*

- *repeat samples, to be reported as described below;*
- *special samples, which should be labeled as such, are not used for compliance determinations, and should not be included on the form; or*
- *Groundwater Rule triggered samples, to be reported as described below and only required for system(s) subject to the triggered monitoring requirements of the Groundwater Rule.*

Number Collected: This number should be the same as the “Number Required”. If less, the system is not compliant.

Number of Total Coliform Positives: This includes only total coliform positives from the required routine samples.

NOTE: *All total coliform positive results and their associated repeat samples are to be tracked on the “Coliform Monitoring Worksheet”.*

Number of E. Coli Positives: This includes only the number of *E. Coli* positives from the routine samples collected during the month.

2. Repeat Samples Following Total Coliform Positive Samples:

This refers to the total number of repeat samples collected for total coliform positives during the month.

NOTE: *All repeat samples must be collected within 24-hours of being notified of a total coliform positive result.*

Number Collected:

- For a system that normally collects more than one sample a month, this number should equal three times the number of total coliform positives in line 4(a), unless the system fails the MCL.
- For a system that normally collects one or fewer samples per month, this number should equal four times the number of total coliform positives in line 1.

In either case one of the repeat samples must be collected from the sample tap where the original total coliform-positive was taken. Additionally, one sample must be collected upstream and one sample must be collected downstream, within five service connections (unless there is no upstream and/or downstream connection. Alternatives must be approved by the State Board).

Number of Total Coliform Positives: This includes only total coliform positives resulting from required repeat samples following routine and repeat total coliform positives.

Number of *E. coli* Positives: This includes only the *E. coli* positives resulting from required repeat samples following routine or repeat sample total coliform positives in line 1. If there are one or more *E. coli* positives following any total coliform positive, this constitutes an acute MCL violation.

3. Repeat Samples Following *E. coli* Positive Routine Samples:

This means the total number of repeat samples collected, following a positive *E. coli* test of a routine sample, after repeat samples in line 2 have been collected.

NOTE: *This set of samples is only collected if a sample in line 2 is E. Coli positive.*

Number Collected: This is the total number of repeat samples collected following an *E. coli* positive result in the first repeat sample set. This number should equal three times the number of *E. coli* routine positives in line 1.

Number of Total Coliform Positives: This is the total number of total coliform positives resulting from the repeat sample set. If this number is one or greater it constitutes an acute MCL failure.

Number of *E. coli* Positives: This is the total number of *E. coli* positives resulting from the repeat sample set. If this number is one or greater it constitutes an acute MCL failure.

4. Level 1 Assessment Computation for Total Coliform Positive Samples:

a. **Totals (Sum of columns):** Add the numbers in the vertical columns and fill in the corresponding blank for the “Number Collected” and the “Number of Total Coliform Positives”.

NOTE: *For systems collecting less than 40 samples per month, if two or more samples are total coliform positive, then a Level 1 Assessment is triggered and the State Board must be notified on that day. If the State Board is closed, the State Board must be notified within 24 hours.*

b. **If 40 or more samples are collected each month, determine the percent of samples that are total coliform positive.**

$$\frac{\text{Total number of total coliform positive samples}}{\text{Total number of samples collected}} \times 100 = \text{___}\%$$

Place the percent of total coliform positive samples in the blank on line 4b.

NOTE: *For systems collecting more than 40 samples per month, if more than 5 percent of the samples are total coliform positive, then a Level 1 Assessment is triggered and the State Board must be notified on that day. If the State Board is closed, the State Board must be notified within 24 hours.*

c. **Is system in compliance with *E. coli* MCL? [] yes [] no**

- If the box on line 2 for “Number of *E. coli* Positives” has a number of one or more, then the system is not compliant.
- If either box on line 3 for the “Number of Total Coliform Positive” or “Number *E. coli* Positives” has a number of one or more, then the system is not compliant.

Is system in compliance with the monthly Treatment Technique Trigger? [] yes [] no

- For a system collecting 40 samples or less, if in 4(a) above, the system has two or more samples that are total coliform positive, then the system is required to conduct a Level 1 Assessment.

- If, in 4(b) above, the system has more than 5 percent of the total number of samples collected for the month which are Total Coliform Positive, then the system is required to conduct a Level 1 Assessment.

5. Source Samples Triggered by Routine Samples that are Total Coliform Positive:

This applies **only** to systems subject to triggered source monitoring under the Groundwater Rule.

- NOTE:**
- Triggered source samples must be collected within 24 hours (before or after) of being notified of distribution system total coliform positive results.
 - The triggered source sample indicator used must be either *E. coli*, enterococci, or coliphage (i.e. **not** fecal coliform). **The State Board recommends using *E. coli*.**
 - Triggered source samples are required for routine total coliform positive samples taken pursuant to Section 64422 or 64423 only. "Extra" samples, such as those taken pursuant to Section 64424 do not trigger source monitoring.
 - All triggered monitoring results are to be tracked on the "Coliform Monitoring Worksheet".
 - For systems serving ≤ 1000 persons, a triggered source water sample may be used as the fourth repeat **if *E. coli* was the indicator used.**

- In the blank under "Number Collected", enter the total number of triggered source samples collected. The value entered should be at least one of the following:
 - For systems with no Department-approved representative monitoring plan, the number collected should be equal to ("Number Total Coliform Positives" in line 1) x (the number of groundwater sources operating when routine distribution samples were taken).
 - For systems with a Department-approved Groundwater Rule representative monitoring plan, the number collected should be equal to the number indicated in the approved plan, with the understanding that a source sample must be taken for each routine distribution system total coliform positive.
- In the blank under "Number of Total Coliform Positives", put the total number of triggered source samples that were total coliform positive.
- In the box under "Number *E. coli* Positives" put the total number of triggered source samples that were *E. coli*, enterococci, or coliphage positive. If the number in the box is one or more, the system must immediately notify the Board, provide Tier 1 public notification, and perform corrective action.

6. Invalidated Samples:

If any samples were invalidated, note the following:

- which samples were invalidated;
- why they were invalidated;
- who authorized the invalidation; and
- when replacement samples were collected. Attach written, signed authorization from the lab and any additional sheets if necessary.

7. Summary Completed By:

Provide your signature, title, and the date in the blanks on the report.