

COST ESTIMATING METHODOLOGY

The State Administrative Manual, section 6607 contains the standard methodology developed for use in estimating costs in regulations. The main components of that methodology are (I) statement of the mandate, (II) background or introductory material, (III) working data, assumptions, and calculations, and (IV) conclusions.

This document presents the cost estimating methodology for the proposed rulemaking – Revised Total Coliform Rule (RTCR) (SBDDW-20-002).

In summary, there are additional costs to the regulated community associated with the adoption of this regulation. The evaluation of potential costs incurred by applicable California public water systems included the following categories: (1) where the proposed regulations set forth requirements substantially identical to the promulgated federal RTCR, (2) where the proposed regulations set forth requirements that are in addition to the federal RTCR and are known as state-only requirements, and (3) where the proposed regulations set forth requirements or changes with no cost impacts.

With respect to Category 1, any costs are already being incurred by applicable California public water systems because they are required to comply with federal regulation, regardless of whether California adopts a parallel regulation. The adoption of the federal RTCR portions of the proposed regulations merely provide California's regulatory agencies with the authority to enforce the regulations, which would otherwise be enforced by the U. S. Environmental Protection Agency (EPA). Although some differences exist between the proposed regulations and the federal RTCR, those differences in Category 1 have no fiscal impact because they (a) simply introduce clarifying language, reorganize federal requirements, or exclude or replace self-regulating language, (b) retain, propose, or organize language for consistency with past and current State Water Resources Control Board (State Water Board) practices and proposed regulations, but maintain the federal intent, (c) exclude federal RTCR language concerning alternatives available to the State Water Board that the State Water Board has opted not to use for reasons specified in the Initial Statement of Reasons, and (d) exclude federal RTCR language because regulatory timeframes have passed or the federal language had no regulatory effect. The proposed regulations also include a 2010 federal Long-Term 2 Enhanced Surface Water Treatment Rule alternative *E. coli* concentration to trigger *Cryptosporidium* monitoring. There is no fiscal impact because the alternative is not mandatory; it is merely an option available to small public water systems (*i.e.*, filtered systems serving fewer than 10,000 persons).

With respect to Category 2, the proposed regulations establish and clarify requirements that are in addition to the federal RTCR and are known as state-only requirements. The proposed regulations (a) establish requirements for bacteriological monitoring, bacteriological reporting, and bacteriological sample siting plans, (b) establish requirements for documentation on trained personnel (sample collector/field tester), public water system notification procedures, and seasonal system start-up procedures; clarify population basis for determining the minimum number of routine bacteriological samples required; and clarify the basis for bacteriological reporting (service connections vs. population), (c) establish requirements for increased bacteriological monitoring of groundwater sources, requests and contents of requests, coliform density determination (if directed by the State Water Board), samples used in a possible significant rise in bacterial count (SRBC) determination, and SRBC report and notification; and eliminate a need for Bacteriological Sample Siting Plan update due to personnel changes, and (d) establish requirements for definitions, bacteriological sample siting plans, an alternative basis for determining the number of routine bacteriological samples required, a timeframe for determining a possible SRBC, SRBC investigation, seasonal systems (water quality reporting, State Water Board approval, and an alternative approach to the seasonal system start-up procedure); clarify bacteriological reporting requirements; and clarify a timeframe for a possible SRBC determination. The costs associated with the proposed regulations are incurred primarily from subcategory (a). The cost for subcategory (b) is negligible because public water systems are likely already complying with or have implemented the proposed regulations. The cost for subcategory (c) is unquantifiable because the actions or former actions required are based on future occurrences of events that are unknown and cannot be predicted. For subcategory (d), there is no cost for defining terms used in regulations, requirements that are no more stringent than existing federal requirements or are optional and not mandatory, clarifying existing requirements, and eliminating an evidence limitation in a SRBC investigation.

With respect to Category 3, the proposed regulations amend existing state regulations for the purpose of making nonsubstantive changes, such as use of upper/lower case, plurals, and taxonomy (*italics*); correcting grammar and punctuation; adding clarifying language; deleting obsolete references and requirements; and deleting redundant requirements. None of these result in additional cost to the regulated community.

A more detailed discussion on the topic of fiscal impact regarding these three categories is provided below.

There are no additional state costs beyond those resulting from complying with the proposed regulations; there is no need to provide additional funding of any state cost.

Note that the proposed regulations apply only to public water systems, as defined pursuant to Health and Safety Code section 116275, which are not businesses or individuals. Public water systems are water companies providing drinking water to the public and, pursuant to Government Code section 11342.610, are exempt from the definition of a small business. As such, there will be no direct economic impact to businesses or individuals. Indirect economic impact will likely occur due to public water systems passing on any increased costs related to the regulations to its ratepayers, which may include businesses or individuals.

I. Statement of the Mandate

The proposed regulations would not impose a mandate on local agencies or school districts that requires state reimbursement. The proposed regulations implement a federal mandate for which the regulated community must comply, regardless of the adoption of this regulation, and establishes and clarifies requirements that are in addition to the federal RTCR and are known as state-only requirements. The proposed regulations will not be a requirement unique to local government and will apply equally to public and private water systems.

Local agencies or school districts currently incur costs in their operation of public water systems. The proposed regulations will not result in a “new program or higher level of service” within the meaning of Article XIII B, section 6 of the California Constitution because the proposed regulations apply generally to all individuals and entities that operate public water systems in California and do not impose unique requirements on local governments (*County of Los Angeles vs. State of California et al*, 43 Cal App 3d 46 (1987)). Similarly, public water systems may pass on the cost of regulation implementation through increasing service fees. Therefore, no state reimbursement of these costs is required.

Local regulatory agencies also may currently incur costs for their responsibility to enforce state regulations related to small public water systems (fewer than 200 service connections) that they regulate. However, local agencies are authorized to assess fees to pay reasonable expenses incurred in enforcing statutes and regulations related to small public water systems (Health & Saf. Code, § 101325). Therefore, no reimbursement of any incidental costs to local agencies in enforcing this regulation would be required (Gov. Code, § 17556(d)).

II. Background or Introductory Material

All suppliers of domestic water to the public are subject to regulations adopted by the U.S. EPA under the Safe Drinking Water Act of 1974, as amended (42 U.S.C. § 300f et seq.), as well as by the State Water Board under the California Safe Drinking Water Act (Health & Saf. Code, div. 104, pt. 12, ch. 4, § 116270 et seq.). California has been granted primary enforcement responsibility (“primacy”) by U.S. EPA for public water systems in California. California has no authority to enforce federal regulations, but only state regulations. Federal law and regulations require that California, in order to receive and maintain primacy, promulgate regulations that are no less stringent than the federal regulations. Pursuant to Health and Safety Code sections 116271, 116350, and 116375, the State Water Board has the responsibility and authority to adopt the subject regulations.

On February 13, 2013, the U.S. EPA promulgated the Revisions to the Total Coliform Rule (aka Revised Total Coliform Rule) (RTCR) (78 Fed. Reg. 10270; amended Feb. 26, 2014, 79 Fed. Reg. 10665), as required by the Safe Drinking Water Act Amendments of 1996. The federal RTCR increases public health protection through the reduction of potential pathways of entry for fecal contamination into distribution systems. The federal RTCR builds on the federal Total Coliform Rule (TCR) to protect public health by ensuring the integrity of the drinking water distribution system and monitoring for the presence of microbial contamination. The federal RTCR applies to public water systems.

The key provisions of the federal RTCR include:

- Setting a maximum contaminant level (MCL) for *E. coli* for protection against potential fecal contamination;
- Setting a coliform treatment technique requirement;
- Requirements for monitoring total coliforms and *E. coli* according to a bacteriological sample siting plan and schedule specific to the public water system;
- Provisions allowing public water systems to transition to the federal RTCR using their existing TCR monitoring frequency, including public water systems on reduced monitoring under the existing TCR;
- Requirements for seasonal systems to monitor and certify the completion of a state-approved start-up procedures;
- Requirements for assessments and corrective action when monitoring results show that public water systems may be vulnerable to contamination;
- Public notification requirements for violations; and
- Specific language for community water systems to include in their Consumer Confidence Reports when they must conduct an assessment or if they incur an *E. coli* MCL violation.

California currently requires public water systems to monitor for total coliforms in the distribution system and comply with the total coliform MCL (Cal. Code Regs., tit. 22, div. 4, ch. 15, § 64421 et seq.).

The proposed rulemaking will include a number of requirements that are in addition to the federal RTCR and are known as state-only requirements. The state-only requirements increase public health protection and build on the federal RTCR to protect public health through improved monitoring for the presence of microbial contamination in groundwater sources and the distribution system; investigation and response to microbial contamination; and ensuring the integrity of the drinking water distribution system. The state-only requirements apply to California public water systems.

The key provisions of the state-only requirements in the proposed RTCR include:

- Requirements for bacteriological monitoring of a groundwater (not Groundwater Under the Direct Influence of Surface Water (GWUDI)) source that is treated with a primary or residual disinfectant on a continuous basis and for revising bacteriological sample siting plans to include the source sample sites;
- Requirements for public water systems on reduced bacteriological monitoring to return to routine bacteriological monitoring;
- Requirements for coliform density determinations of total coliforms and *E. coli*, if directed by the State Water Board;
- For public water systems collecting one sample per month, eliminating the need to submit a monthly summary of a bacteriological monitoring result, and clarifying the monthly summary elements for public water systems collecting more than one sample per month;
- Requirements for a report and corrective action when monitoring results indicate a possible significant rise in bacterial count; and
- Requirements for seasonal system start-up procedure components; actions to be taken prior to serving water to the public; and a provision allowing an alternative to certain start-up procedure components.

The State Water Board also proposes a number of nonsubstantive changes, which are not described in detail due to their minor nature. The nonsubstantive changes will correct use of upper/lower case, plurals, and taxonomy (italics), grammar, punctuation, a typographical error, and subsection and paragraph designations; redesignate sections, subsections, paragraphs, and subsubparagraphs; redesignate referenced federal Code of Federal Regulations sections; update article

and section headings and section references; reorganize existing requirements; add clarifying language; delete obsolete references and requirements; and delete redundant requirements. These nonsubstantive changes have no fiscal impact.

III. Working Data, Assumptions, and Calculations

The evaluation of potential costs incurred by applicable California public water systems is provided for the following categories: (1) where the proposed regulations sets forth requirements substantially identical to promulgated federal RTCR, (2) where the proposed regulations sets forth requirements that are addition to the federal RTCR and are known as state-only requirements, and (3) where the proposed regulations sets forth requirements unrelated to the promulgated federal RTCR.

Category 1 (Substantially Identical to Federal RTCR)

With respect to Category 1, any costs are already being incurred by applicable California public water systems because they are required to comply with federal regulations, regardless of whether California adopts a parallel regulation. The adoption of the RTCR portions of the proposed regulations merely provides California's regulatory agencies with the authority to enforce the regulations, which would otherwise be enforced by the U.S. EPA.

Some differences exist between the proposed regulations and the federal RTCR. A summary of these Category 1 differences is provided in Table 1. These differences have no fiscal impact because they (a) simply introduce clarifying language, reorganize federal requirements, or exclude or replace self-regulating language, (b) retain, propose, or organize language for consistency with past and current State Water Board practices and proposed regulations, but maintain the federal intent, (c) exclude federal RTCR language concerning alternatives available to the State Water Board that the State Water Board has opted not to use for reasons specified in the Initial Statement of Reasons, and (d) exclude federal RTCR language because regulatory timeframes have passed or the federal language had no regulatory effect. The proposed regulations also include a 2010 federal Long-Term 2 Enhanced Surface Water Treatment Rule alternative *E. coli* concentration to trigger *Cryptosporidium* monitoring. There is no fiscal impact because the alternative is not mandatory; it is merely an option available to small public water systems (*i.e.*, filtered systems serving fewer than 10,000 persons). Therefore, there are no working data, assumptions, or calculations to present.

Category 2 (In Addition to the Federal RTCR; aka State-Only Requirements)

With respect to Category 2, the proposed regulations establish and clarify requirements that are in addition to the federal RTCR and are known as state-only requirements. The proposed regulations (a) establish requirements for bacteriological monitoring, bacteriological reporting, and bacteriological sample siting plans, (b) establish requirements for documentation on trained personnel (sample collector/field tester), public water system notification procedures, and seasonal system start-up procedures; clarify population basis for determining the minimum number of routine bacteriological samples required; and clarify basis for bacteriological reporting (service connections vs. population), (c) establish requirements for increased bacteriological monitoring of groundwater sources, requests and contents of requests, coliform density determination (if directed by the State Water Board), and SRBC report and notification; and eliminate a need for Bacteriological Sample Siting Plan update due to personnel changes, and (d) establish requirements for definitions, bacteriological sample siting plans, an alternative basis for determining the number of routine bacteriological samples required, an SRBC investigation, seasonal systems (water quality reporting, State Water Board approval, and an alternative approach to the seasonal system start-up procedure); and clarify bacteriological reporting requirements. The costs associated with the proposed regulations are incurred primarily from subcategory (a). The cost for subcategory (b) is negligible because public water systems are likely already complying with or have implemented the proposed regulations. The cost for subcategory (c) is unquantifiable because the actions or former actions required are based on future occurrences of events that are unknown and cannot be predicted. For subcategory (d), there is no cost for defining terms used in regulations, requirements that are no more stringent than existing requirements or are optional and not mandatory, clarifying existing requirements, and eliminating an evidence limitation in a SRBC investigation. The four subcategories are described in detail below. A summary of the Category 2 requirements and cost impact is provided in Table 1.

Subcategory (a) [cost increase, cost decrease, or loss of previous cost savings]

The primary types of cost for the proposed regulations are for bacteriological monitoring, bacteriological reporting, and revising bacteriological sample siting plans. To estimate these costs, the State Water Board used the working data, tools, assumptions, and calculations described below. Depending on the proposed regulatory requirement, the estimated cost may consist of a one-time cost or annual cost. The estimated annual cost may be a cost increase, cost decrease, or loss of a previous cost saving (*i.e.*, water systems on reduced monitoring under the state TCR are now required to return to routine monitoring). The working data is summarized in Tables 2 through 6. The estimated costs were rounded for ease in review and are summarized in Tables 17 through 21 provided at the end of this document. Estimated total cost for the proposed regulations, by water system ownership, and for Years 1, 2, and 3 are summarized in Tables 22 through 24, respectively. The estimated costs are meant to estimate statewide costs and not the actual cost to a particular public water system.

A. Working Data. The State Water Board used two sources of working data as described below.

State Drinking Water Information System (SDWIS). Information from the State Water Board's SDWIS database was downloaded on August 14, 2017. The information included the number of water systems, sources, service connections, and population served; type of water systems and sources; and ownership. The water systems and sources were grouped based on water system size:

- Small Water Systems (SWS) serve a population that is less than or equal to 1,000 persons; and
- Large Water Systems (LWS) serve a population that is greater than 1,000 persons.

The use of a population of 1,000 persons to represent the division between water system sizes in this document is reflected in the proposed regulations. The number of water systems and sources (where applicable) by water system size specific to a proposed regulatory requirement are summarized in Tables 2 through 6 (see entries where Source of Information = SDWIS Inventory).

Surveys. The State Water Board surveyed the State Water Board District Offices and Local Primacy Agencies to obtain information on:

- For section 64421(b)(2)(A), raw water bacteriological monitoring practices and monitoring frequency for public water systems using groundwater (not GWUDI) sources that are treated with a primary or residual disinfectant on a continuous basis and not monitored pursuant to section 64654.8(b)(1)(B) or as a condition of an amended water supply permit. Initial and follow-up surveys were conducted in July 2015 and May 2017, respectively.
- For section 64423(a)(1), bacteriological monitoring frequency for community water systems using groundwater (not GWUDI) and serving 25 – 1,000 persons per month. The survey was conducted in June 2015.
- For section 64423(a)(2), bacteriological monitoring frequency for nontransient-noncommunity water systems using groundwater (not GWUDI) and serving 25 – 1,000 persons per month. Initial and follow-up surveys were conducted in August 2016 and March 2017, respectively.

The information from the surveys was used to determine the number of water systems and sources that would and would not be impacted by a proposed regulation. Where there is no regulatory impact, there is no cost impact; where there is a regulatory impact, there is a cost impact. The number of water systems and sources (where applicable) by cost impact (yes or no) and water system size are summarized in Tables 2, 3, 4, and 6 (see entries where Source of Information = Survey).

B. Tools. The tools used to estimate the cost of bacteriological monitoring, bacteriological reporting, and revising bacteriological sample siting plans are described below. The tools are meant to develop unit costs for estimating statewide costs; they are not intended to be unit costs for a particular public water system.

Estimated Cost of Bacteriological Monitoring (Estimated Average Unit Monitoring Cost Per Sample). The estimated average unit monitoring cost per sample is used to estimate the annual cost of bacteriological monitoring.

$$A = B \times C$$

Where:

A = estimated annual cost of bacteriological monitoring (\$/year)

B = estimated average unit monitoring cost per sample (\$/sample)

C = number of required samples in a year (samples/year)

To estimate the average unit monitoring cost per sample, the State Water Board used the approach developed by U.S. EPA for the federal RTCR (Technology and Cost Document for the Final Revised Total Coliform Rule, USEPA, Office of Water (4707M), EPA-815-R-12-005, December 2012). The U.S. EPA considered direct and indirect costs in developing the unit cost of labor, sample collection, sample delivery, and sample analysis. These unit costs are used to develop an estimated average unit monitoring cost per sample. General assumptions from the 2012 U.S. EPA document are summarized below; additional assumptions and/or resulting data for the proposed RTCR are noted in Items 1g, 2d, 3b, d, and e, 4c, 5d, and 6b.

1. Unit Cost of Labor

a. Labor costs consist of wage and fringe benefits for technical staff (operators) and managerial staff (engineers).

b. Bureau of Labor Statistics, Occupational Employment Survey (OES) labor rates are nationally representative for use in national economic impact analysis.

c. Fringe benefit multiplier for technical and managerial labor ranges from 1.3 to 1.5 times the OES direct labor dollar across water system size by population served and the two occupational categories.

d. Water systems serving a population greater than 3,300 use a combination of operators (technical) and engineers (managerial), with an 80/20 ratio between the two, respectively. Water systems serving a population of 3,300 or less use 100% (technical labor).

e. Labor rates are escalated from 2003 dollars to 2007 dollars using Bureau of Labor Statistics Employment Cost Index, Series Index CIU20144000000001 (B), Total Compensation, Utilities. Labor rates in 2003 dollars are increased by a factor of 1.17, based on the price index for 4th quarter 2003 (90.2) and 4th quarter 2007 (105.2) (*i.e.*, $105.2 \div 90.2 = 1.17$). [note: 4th quarter 2007 price index is actually 105.6; escalation factor remains unchanged ($105.6 \div 90.2 = 1.17$)]

f. Labor rates by federal RTCR water system size categories are based on SDWIS Fed Inventory 2007 4th quarter freeze.

g. For the proposed RTCR, labor rates are escalated from 2007 dollars to 2017 dollars using the index in Item 1e. Labor rates in 2007 dollars are increased by a factor of 1.33, based on the price index for 4th quarter 2007 (105.2) and 2nd quarter 2017 (140.2) (*i.e.*, $140.2 \div 105.2 = 1.33$). [note: 4th quarter 2007 price index is actually 105.6; escalation factor remains unchanged ($140.2 \div 105.6 = 1.33$). Labor rates by federal RTCR water system size categories are based

on State Water Board SDWIS inventory downloaded on August 14, 2017. Proposed RTCR unit costs of labor range from \$33.38 to \$54.32 per hour across water system size by population served and are shown in Table 7 (in 2017 dollars).

2. Unit Cost of Sample Collection

a. Sample collection cost consist of the labor burden to collect the sample, using proper collection procedures and practices, including gaining access to the sample site, disinfection of the sample tap, sample collection, completion of requisite forms and associated paperwork, and travel to and from the sample site.

b. Water systems collect their own samples as opposed to contracting sample collection.

c. Estimated labor burden ranges from 0.5 to 1.0 hours per sample across water system size by population served.

d. For the proposed RTCR, estimated unit cost of sample collection ranges from \$16.69 to \$54.32 per sample across water system size by population served and are shown in Table 8 (in 2017 dollars).

3. Unit Cost of Sample Delivery

a. For water systems that use certified contract laboratories for analysis, sample delivery cost consists of three types used: FedEx, contract laboratory courier service, and self-delivery. Each type is described below. No delivery cost is applied for water systems that use in-house laboratories.

i. Type 1 (FedEx) – FedEx is deemed to be a reasonable cost basis given the 30-hour sample hold time (from time of sample collection to analysis) and the requirement for a national delivery route. Delivery package consists of a cooler with dimensions of 17" x 12" x 15" sufficient to contain between one and five samples with ice packs at a single price per shipment (except ground next day service which varies with package weight). Delivery distance is 100 miles. FedEx cost obtained from FedEx (date not specified).

ii. Type 2 (Contract Laboratory Courier Service) – Cost is the same for one to five samples in a delivery.

iii. Types 1 (FedEx) and 2 (Contract Laboratory Courier Service) – Cost for a water system taking more than five samples simultaneously or grouped together is the same as the cost of delivering five samples.

iv. Type 3 (Self-Delivery) – Water system employee delivers the samples to a laboratory in a personally-owned vehicle. Drive time is 0.5 hours, based on an average speed of 60 mph and travel distance of 30 miles roundtrip. Personal vehicle use reimbursement rate is \$0.505 per mile from U.S. General Services Administration, March 19, 2008.

b. For the proposed RTCR, updates to the three types provided under Item 3a are described below.

i. Type 1 Update (FedEx) – FedEx cost obtained from FedEx, October 6, 2017. Estimated sample delivery cost per delivery by FedEx is shown in Table 9 (in 2017 dollars).

ii. Type 2 Update (Contract Laboratory Courier Service) – Cost increase over time is comparable to increase in FedEx delivery cost. Ratio of FedEx costs in 2017 dollars to 2007 dollars (2017\$/2007\$) varies from 1.5 to 2.1, depending on type of delivery and number of samples per delivery. Contract laboratory courier service cost escalated from 2007 dollars to 2017 dollars by a factor of 2.1, given lack of economy of scale compared to FedEx. Estimated sample delivery cost per delivery by contract laboratory courier service is shown in Table 9 (in 2017 dollars).

iii. Type 3 Update (Self-Delivery) – Personal vehicle use reimbursement rate is \$0.535 per mile from U.S. General Services Administration, October 2, 2017. Estimated sample delivery cost per delivery by self-delivery is shown in Table 10 (in 2017 dollars).

c. The estimated percentage of water systems using each type of sample delivery ranges from 5% to 20%.

d. For the proposed RTCR, estimated unit cost of sample delivery ranges from \$1.47 to \$67.98 per sample across delivery type used and number of samples in a delivery and are shown in Table 11 (in 2017 dollars).

e. For the proposed RTCR, estimated average unit cost of sample delivery ranges from \$5.25 to \$26.79 per sample across water system size and number of samples in a delivery and are shown in Table 12 (in 2017 dollars). The estimated average unit cost of sample delivery is based on a weighted average incorporating sample delivery type and number of samples in a delivery.

4. Unit Cost of Sample Analysis

a. Standard Methods 9223-B (Chromogenic Substrate Test) is used for the simultaneous analysis of total coliform and *E. coli*. Results are reported in terms of the presence or absence of total coliform/*E. coli*.

b. Sample analysis is performed by a certified contract laboratory or by a water system's in-house staff and laboratory. Sample analysis cost for both types are described below.

i. Type 1 (Certified Contract Laboratory) – Cost consist of the analytical fees charged by the certified contract laboratory. Contract laboratory fees include direct labor, overhead, and operation and maintenance (O&M), and may include the cost of reporting to the State Water Board. In 2008, nine laboratories in seven states were surveyed to obtain sample analysis cost for the simultaneous analysis of total coliform/*E. coli*.

ii. Type 2 (In-House Staff and Laboratory) – Cost consist of labor and O&M. O&M cost include expenses associated with operating a laboratory and performing an approved analytical method in-house (*i.e.*, laboratory facility;

equipment and maintenance; supplies such as reagents, glassware, and sample containers; laboratory certification fees; and proper maintenance of laboratory work stations, e.g., adequate facilities, size, and safety equipment, including safety showers, eyewash stations, and hoods). Estimated labor burden is 0.5 hours per sample. Estimated O&M cost is \$10.09 (in 2007 dollars).

c. For the proposed RTCR, updates to the sample analysis costs provided under Item 4b are described below.

i. Analytical Methods for Drinking Water – In September 2015, the State Water Board contacted the California Department of Public Health, Drinking Water and Radiation Laboratory Branch (CDPH-DWRLB) to request a technical review of the federal RTCR analytical methods for acceptability in California and capability for coliform density determination. The CDPH-DWRLB completed its review and provided its findings in an October 1, 2015, memorandum to the State Water Board. The State Water Board, Environmental Laboratory Accreditation Program (ELAP) added the federal RTCR analytical methods to Field of Testing 101 – Microbiology of Drinking Water. Laboratories obtained accreditation to use the federal RTCR analytical methods, and monitoring under the federal RTCR began on April 1, 2016.

ii. Type 1 Update (Certified Contract Laboratory) – In December 2017, the State Water Board surveyed 45 laboratories accredited by the ELAP for analyzing total coliform and *E. coli* in drinking water using approved methods specified in the federal RTCR. The laboratories are in California, Nevada, and Oregon. The approved methods serve to: (1) per the federal RTCR, determine the presence-absence of total coliforms and *E. coli*, (2) per the proposed RTCR (see section 64423.1(a)), determine the coliform density of total coliforms and *E. coli* present, and (3) determine the presence-absence or coliform density of total coliforms and *E. coli* simultaneously or sequentially. The 45 laboratories provided analytical cost information. The estimated average sample analysis cost for total coliform/*E. coli* (presence/absence) is \$33 per sample, with results ranging from \$15 to \$80 per sample as shown in Table 13 (in 2017 dollars). The estimated average sample analysis cost for total coliform/*E. coli* (coliform density) is \$41 per sample, with results ranging from \$20 to \$95 per sample. The estimated average sample analysis cost of \$33 per sample was used to estimate the cost of raw water bacteriological monitoring and the cost of returning to routine monitoring for community and nontransient-noncommunity water systems, using groundwater (not GWUDI), and serving 25-1,000 persons.

iii. Type 2 Update (In-House Staff and Laboratory) – Estimated O&M costs are escalated from 2007 dollars to 2017 dollars using the present-future worth method, assuming an annual rate of inflation (i) of 2.5% in decimal form (0.025) and a period (n) of 10 years. Estimated sample analysis cost for total coliform/*E. coli* ranges from \$29.61 to \$40.08 per sample across water system size by population served and are shown in Table 14 (in 2017 dollars).

5. Estimated Average Unit Monitoring Cost per Sample (Bacteriological, Total Coliform/*E. coli*, Presence-Absence)

a. For contract laboratory sample analysis, components of unit monitoring cost are sample collection, sample delivery, and laboratory analytical fee.

b. For in-house sample analysis, components of unit monitoring cost are sample collection and sample analysis.

c. Estimated percentage of water systems using contract laboratory ranges from 10% to 100% across water system size by population served. Estimated percentage of water systems using in-house laboratory ranges from 0% to 90% across water system size by population served. The estimated average unit cost of monitoring is based on a weighted average incorporating both contract laboratory and in-house sample analysis cost.

d. For the proposed RTCR, the estimated average unit cost of monitoring per sample ranges from \$54.94 to \$96.37 across water system size and number of samples collected simultaneously and are shown in Table 15 (in 2017 dollars).

6. Estimated Average Unit Monitoring Cost per Sample (Bacteriological, Total Coliform/*E. coli*, Coliform Density)

a. The federal RTCR does not require determination of total coliform/*E. coli* coliform density.

b. For the proposed RTCR, the sample analysis costs for presence-absence and coliform density of total coliform/*E. coli* are described under Item 4cii. The estimated average unit cost of monitoring difference for total coliform/*E. coli* analysis by presence-absence and coliform density is \$8 per sample, with cost differences ranging from \$0 to \$45 dollars per sample as shown in Table 13 (in 2017 dollars). For contract laboratory and in-house analysis, it is assumed that coliform density cost is \$8 per sample more than presence-absence. To estimate the average unit cost of monitoring per sample (total coliform/*E. coli*, coliform density), the estimated average unit cost of monitoring per sample (total coliform/*E. coli*, presence-absence) in Table 15 is increased by \$8 per sample. The estimated average unit cost of monitoring per sample (total coliform/*E. coli*, coliform density) ranges from \$62.94 to \$103.59 across water system size and number of samples collected simultaneously and are shown in Table 16 (in 2017 dollars).

Estimated Cost of Bacteriological Reporting (Monthly Coliform Summary). The State Water Board considered direct and indirect costs in developing the cost of labor. The unit cost of labor is described in Item 1. For the proposed RTCR, estimated labor burden to print and complete a summary is five minutes (0.083 hours).

Estimated Cost of Revising Bacteriological Sample Siting Plans. The State Water Board considered direct and indirect costs in developing the cost of labor. The unit cost of labor is described in Item 1. Estimated labor burden to revise a plan is two to eight hours across public water system size by population served according to U.S. EPA for the federal RTCR (Economic Analysis for the Final Revised Total Coliform Rule, USEPA Office of Water (4706M), EPA 815-R-12-004, September 2012, Exhibit 7.6). For the proposed RTCR, water systems will revise their plans if: (1) performing raw water bacteriological monitoring (see section 64421(b)(2)(A)) or (2) a change in bacteriological monitoring frequency occurs (see sections 64423(a)(1) and (2)).

C. Assumptions. The assumptions used by U.S. EPA and the State Water Board to estimate the cost of bacteriological monitoring, bacteriological reporting, and revising bacteriological sample siting plans are documented in Part B. Tools. Additional assumptions used by the State Water Board are described below.

1. Public water system data from State Water Board's SDWIS database provides a sufficient basis for a cost analysis for the proposed regulations.
2. Number of public water systems stays relatively stable from year-to-year.
3. Unit cost of labor is the same for bacteriological monitoring, bacteriological reporting, and revising bacteriological sample siting plans.

D. Calculations. The calculations used to estimate the cost of bacteriological monitoring, bacteriological reporting, and revising bacteriological sample siting plans are described below. Depending on the proposed regulatory requirement, the estimated costs may consist of a one-time cost or annual costs. The estimated annual cost may be a cost increase, cost decrease, or loss of a previous cost saving (*i.e.*, water systems on reduced monitoring under the state TCR are now required to return to routine monitoring).

Estimated Cost of Bacteriological Monitoring. There are three types of bacteriological monitoring cost in the proposed RTCR as described below.

1. Raw Water Source Monitoring. A public water system using a groundwater (not GWUDI) source that is treated with a primary or residual disinfectant on a continuous basis and is not monitored pursuant to section 64654.8(b)(1)(B) would be required to collect a raw water sample each calendar quarter, with samples collected during the same month (first, second, or third) of each calendar quarter. The sample would be analyzed for total coliform/*E. coli*, presence-absence.

The estimated cost of raw water bacteriological monitoring, by water system size, is shown in Table 17. The costs start during year 1 and are expected to continue in years 2 and 3.

If the raw water sample is total coliform-positive, the public water system would be required to collect a raw water sample each month. If no coliforms are detected for a minimum of three consecutive months, the public water system may submit a request to the State Water Board to return to collecting a raw water sample each calendar quarter. The estimated cost of increased monitoring and submitting a monitoring reduction request to the State Water Board cannot be quantified because future occurrences are unknown and cannot be predicted.

2. Return to Routine Bacteriological Monitoring (Community Water Systems Using Groundwater (*i.e.*, Not GWUDI) and Serving 25-1,000 Persons). A community water system using groundwater (*i.e.*, not GWUDI) and serving 25-1,000 persons on reduced monitoring (one sample per quarter) would be required to return to routine monitoring (one sample per month; per Table 64423-A). The sample would be analyzed for total coliform/*E. coli*, presence-absence.

The estimated cost of returning to routine bacteriological monitoring is shown in Table 18. The costs start during year 1 and are expected to continue in years 2 and 3. However, it should be noted that the net cost is \$0 because the cost of routine and reduced monitoring under the state TCR was captured under the federal TCR. While the requirement to return to routine monitoring results in a loss of a previous cost savings, it does not result in an additional cost over existing state regulations.

3. Return to Routine Bacteriological Monitoring (Nontransient-Noncommunity Water Systems Using Groundwater (*i.e.*, Not GWUDI) and Serving 25-1,000 Persons). A nontransient-noncommunity water system using groundwater (*i.e.*, not GWUDI) and serving 25-1,000 persons on reduced monitoring (one sample per quarter) would be required to return to routine monitoring (one sample per month; per Table 64423-A). The sample would be analyzed for total coliform/*E. coli*, presence-absence.

The estimated cost of returning to routine bacteriological monitoring is shown in Table 19. The costs start during year 1 and are expected to continue in years 2 and 3. However, it should be noted that the net cost is \$0 because the cost of routine and reduced monitoring under the state TCR was captured under the federal TCR. While the requirement to return to routine monitoring results in a loss of a previous cost savings, it does not result in an additional cost over existing state regulations.

Estimated Cost of Bacteriological Reporting (Monthly Coliform Summary).

A public water system serving 400 or fewer service connections and 1,000 or fewer persons (excluding wholesale water systems) would no longer be required to submit a monthly summary of the bacteriological monitoring results to the State Water Board.

The estimated cost of no longer submitting a monthly coliform summary is shown in Table 20. The costs start during year 1 and are expected to continue in years 2 and 3.

Estimated Cost of Revising Bacteriological Sample Siting Plans.

A public water system performing bacteriological monitoring pursuant to section 64421(b) (see section 64422(a)(1)(A)) or experiencing a change in bacteriological monitoring frequency (see sections 64423(a)(1) and (2)) would be required to submit a revised bacteriological sample siting plan to the State Water Board.

The estimated cost of revising bacteriological sample siting plans is shown in Table 21. The costs are a one-time cost that occurs in year 1.

Estimated Total Cost for Proposed RTCR.

The estimated total cost for bacteriological monitoring, bacteriological reporting, and revising bacteriological sample siting plans is summarized in Table 22.

Estimated Total Cost by Water System Ownership.

Public water system ownership falls into four categories: federal, state, and local government agencies, and private owners. The estimated total cost for bacteriological monitoring, bacteriological reporting, and revising bacteriological sample siting plans by water system ownership is summarized in Table 23.

Estimated Total Cost for Years 1, 2, and 3.

The estimated total cost for bacteriological monitoring, bacteriological reporting, and revising bacteriological sample siting plans for Years 1, 2, and 3 are summarized in Table 24.

Subcategory (b) [negligible cost]

The proposed changes pertaining to maintaining documentation on trained personnel performing sample collection and/or field tests; clarifying the population basis for transient-noncommunity water systems when determining the minimum number of bacteriological samples required; providing a public water system contact person's name and contact information to a laboratory to enable system notification within the timeframe and situations required by existing state regulations; clarifying basis of bacteriological reporting requirements for public water systems (service connections vs. population); submitting a revised seasonal system start-up procedure, by a specified date and if directed by the State Water Board; and specifying the minimum components of a seasonal system start-up procedure have negligible cost impacts. Systems are likely to already be maintaining documentation to track training completed by system personnel and demonstrate compliance with section 64415(b). Transient-noncommunity water systems have historically used the population basis approach to determine monthly population served under the state TCR. Systems are likely to already have provided the contact person's name and contact information to the laboratory to enable system notification under the state TCR. Seasonal systems have been implementing approved seasonal start-up procedures since April 1, 2016; modification to section 64426.9(a)(6) in the 2017 draft regulation text is minor. Therefore, there are no working data, assumptions, or calculations to be presented.

Subcategory (c) [unquantifiable cost]

The proposed changes pertaining to requiring monthly bacteriological monitoring of the raw water from a groundwater (not GWUDI) source when a quarterly sample is total coliform-positive, and specifying criteria and a mechanism to enable a public water system to return to quarterly monitoring; no longer requiring Bacteriological Sample Siting Plans due to change in personnel performing sample collection and/or field tests; submitting various requests to State Water Board under Article 3 of the proposed regulations; specifying information to be submitted for consideration of reducing bacteriological monitoring from one or more sample per month to one sample per quarter for transient-noncommunity water systems, using groundwater (not GWUDI), and serving more than 1,000 persons; requiring extension requests for sample collection and/or analysis to be mandatory instead of optional for public water systems, using approved surface water, not practicing filtration in compliance with sections 64650 through 64666, and unable to collect and/or analyze a bacteriological sample within 24 hours of a source water 1 NTU (Nephelometric Turbidity Unit) exceedance; requiring coliform density determination if directed by the State Water Board for situations relating to an actual or potential contaminating event; including special purpose samples to determine a possible SRBC; and submitting a report and notifying the State Water Board within specified timeframes when a possible SRBC occurs have unquantifiable costs. The increased monitoring, elimination of plan updates, requests and contents of requests, coliform density determination, samples used in a possible SRBC determination, reports, and notifications are actions or former actions required based on future occurrences of events that are unknown and cannot be predicted. Therefore, there are no working data, assumptions, or calculations to be presented.

Subcategory (d) [no cost]

The proposed changes pertaining to adding definitions; specifying a timeframe and clarifying conditions for submittal of a revised Bacteriological Sample Siting Plan; providing an alternative basis to determine the number of samples required for public water systems with a monthly population served between 7,601 to 12,900; clarifying bacteriological reporting requirements for public water systems serving 10,000 service connections; revising regulations for consistency with existing state statute and regulation; clarifying a timeframe for a possible SRBC determination; deleting the word "physical" from "physical evidence" in an SRBC investigation; requiring seasonal systems to submit bacteriological and disinfectant residual monitoring results and to obtain State Water Board approval prior to serving water to the public; and allowing the use of an alternative approach for compliance with a seasonal system start-up procedure have no fiscal impact. The addition of definitions merely defines terms used in regulations. For submittal of the revised plan, the timeframe and clarifying language imposes no requirement more stringent than existing requirements; they merely make clear when a revised plan is due and the situations where an updated plan is warranted. The use of an alternative basis is optional and not mandatory. The clarification of bacteriological reporting requirements corrects an omission for systems serving 10,000 service connections; there are no systems serving exactly 10,000 service connections. The regulations being revised for consistency imposes no requirement more stringent than existing requirements. The timeframe for determining a possible SRBC imposes no requirement more stringent than proposed federal requirements; it merely makes clear when the determination is to be made. The elimination of the word "physical" merely allows public water systems to consider in their investigation all types of evidence indicating bacteriological contamination of facilities. For seasonal systems, the requirement to submit supporting documentation and obtain approval imposes no requirement more stringent than what has been occurring since April 1, 2016. The use of an alternative approach is optional and not mandatory. Therefore, there are no working data, assumptions, or calculations to be presented.

Category 3 (Requirements or Changes with No Cost Impacts)

With respect to Category 3, the proposed regulations amend existing state regulations for the purpose of making nonsubstantive changes, such as use of upper/lower case, plurals, and taxonomy (italics); correcting grammar and punctuation; adding clarifying language; deleting obsolete references and requirements; and deleting redundant requirements. The nonsubstantive changes are described in detail below. None of these result in additional costs to the regulated community. Therefore, there are no working data, assumptions, or calculations to be presented. A summary of the Category 3 requirements is provided in Table 1.

The proposed changes pertaining to use of upper/lower case, plurals, and taxonomy (italics); correcting grammar, punctuation, a typographical error, and subsection and paragraph designations; redesignating sections, subsections, paragraphs, and subparagraphs; redesignating referenced federal Code of Federal Regulations sections; updating article and section headings and section references; and reorganizing existing requirements between sections or within a section or for consistency with state and federal requirements are nonsubstantive and have no fiscal impact.

The proposed changes pertaining to adding clarifying language; deleting obsolete references, and requirements; and deleting redundant requirements are nonsubstantive and have no fiscal impact. The clarification of existing text and addition of clarifying language for consistency with existing text imposes no requirement more stringent than existing or federal requirements. The clarifying language merely restates the requirement in a less-confusing, more consistent manner, which is also consistent with federal language. The text being deleted pertains to text that will be superseded by the proposed regulations and text that appears elsewhere in regulations and is no longer needed.

IV. Conclusion

The State Water Board is promulgating a regulation substantially identical to a federally mandated regulation. For the federal RTCR portions of the proposed regulations, there are no significant differences related to fiscal impact. Regardless of whether California adopts a regulation that parallels the federal RTCR, public water systems are required to comply with the federal regulation and will incur, or have already incurred, the associated costs. The adoption of the federal RTCR portions of the proposed regulations merely provides California's regulatory agencies with the authority to enforce the regulations, which would otherwise be enforced by the U.S. EPA. The proposed regulations also establish and clarify requirements that are in addition to the federal RTCR and are known as state-only requirements. For some of the state-only requirements in the proposed regulations, there is a fiscal impact. The primary costs to the regulated community are for compliance with bacteriological monitoring, bacteriological reporting, and revising the Bacteriological Sample Siting Plan. Lastly, the portions of the proposed regulations unrelated to the federal RTCR have no fiscal impact on the regulated community.

The proposed regulations would not impose a mandate on local agencies or school districts that requires state reimbursement. The proposed regulations implement a federal mandate for which the regulated community must comply, regardless of the adoption of this regulation, and establish and clarify requirements that are in addition to the federal RTCR. Overall, the proposed regulations will not be a requirement unique to local government and will apply equally to public and private water systems.

There are no additional state costs beyond those resulting from complying with the proposed regulations; there is no need to provide additional funding of any state cost.

There will be no economic impact to business or individuals.

The State Water Board estimates that there will be no change to the Division of Drinking Water's Safe Drinking Water Account fees and caps. The fees, caps, and annual adjustments are specified in statute under sections 116565, 116577, 116585, and 116590, California Health and Safety Code. The proposed regulations apply only to public water systems, as defined pursuant to Health and Safety Code section 116275, which are not businesses or individuals. Public water systems are water companies providing drinking water to the public and, pursuant to Government Code section 11342.610, are exempt from the definition of a small business. Therefore, the regulation will not have a direct economic impact on business or individuals. Indirect economic impact will likely occur due to public water systems passing on any increased costs related to the regulation to its ratepayers, which may include business or individuals.

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Table 1 – Proposed State and Promulgated Federal RTCR

State Citation	Federal Citation [State Citation]	Remark	Category
64400.02	None	For clarity, adopting definition to define term used in regulation. State-only requirement with no cost impact.	2
64400.03	2013 FR; 141.2	None.	1
Former 64400.47; now 64400.49	None	Nonsubstantive (redesignation).	3
64400.47	None	For clarity, adopting definition to define term used in regulation. State-only requirement with no cost impact.	2
64400.63	2013 FR; 141.2	Did not include federal language on who conducts the assessment, minimum assessment elements, and requirement to comply with State Water Board directives. Assessment requirements reorganized and consolidated with other assessment provisions of the federal regulation (see 40 CFR 141.859), which are discussed later under section 64426.8.	1
64400.64	2013 FR; 141.2	Did not include federal language on who conducts the assessment, minimum assessment elements, and requirement to comply with State Water Board directives. Assessment requirements reorganized and consolidated with other assessment provisions of the federal regulation (see 40 CFR 141.859), which are discussed later under section 64426.8.	1
Former 64400.65; now 64400.62	None	Nonsubstantive (redesignation).	3
64400.95	None	For clarity and consistency, adopting definition from federal RTCR state implementation guidance document (USEPA, 2014) to define term used in regulation. State-only requirement with no cost impact.	2
64401.35	2013 FR; 141.2	None.	1
64401.45	2013 FR; 141.2	To clarify the type of noncommunity water system, replacing “noncommunity water system” with “nontransient-noncommunity water system or transient-noncommunity water system.”	1
64415(a)	None	Nonsubstantive (punctuation, paragraph designation, and reorganizing).	3
64415(a)(1)	None	Nonsubstantive (redesignate referenced federal Code of Federal Regulations sections to federal approved methods, clarity, grammar, and punctuation).	3
64415(a)(2)	2013 FR; 141.852 2014 FR;	None.	1

	141.852(a)(5)		
Former 64421(a) through (a)(5)	None	Nonsubstantive (redundant).	3
64421(a)	2013 FR; 141.851(b)	None.	1
64421(b)	None	Nonsubstantive (clarity).	3
Former 64421(b)(1) through (3)	None	Nonsubstantive (redundant).	3
Former 64421(b)(4); now 64421(b)(1)	None	Nonsubstantive (redesignation, punctuation, and grammar).	3
64421(b)(2) and (2)(A)	None	Requiring quarterly bacteriological monitoring of a GW (not GWUDI) source that is treated with a primary or residual disinfectant and is not monitored pursuant to section 64654.8(b)(1)(B). State-only requirement with cost impact.	2
64421(b)(2)(B)	None	Requiring monthly bacteriological monitoring and specifying criteria and mechanism to return to quarterly bacteriological monitoring. State-only requirement with unquantifiable cost impact ^(a) .	2
64421(c)	None	Nonsubstantive (reorganizing).	3
64421(c)	None	Requiring documentation of trained personnel performing sample collection and/or field tests, in lieu of updating Bacteriological Sample Siting due to change in personnel. State-only requirement with negligible cost impact given PWS likely already maintaining documentation to tracking training completed by system personnel and demonstrate compliance with section 64415(b); unquantifiable cost savings ^(a) given plan updates no longer required due to change in personnel.	2
64421(d)	2013 FR; 141.853(a)(1)	None.	1
64421(d)	None	For clarity and to avoid repetition, adding language to specify the format (in writing) of plan, procedure, and request submittals and the information to include in the requests. State-only requirement with unquantifiable cost impact ^(a) .	2
64422, Heading	None	Nonsubstantive (section heading update).	3
64422(a)	2013 FR; 141.853(a)(1)	Did not include federal language on 3/1/2016 deadline to develop a Bacteriological Sample Siting Plan because date has passed.	1
64422(a)	None	Requiring submittal of a revised Bacteriological Sample Siting Plan, by a specified date and if directed by the State Water Board, for raw water bacteriological monitoring or a change in bacteriological monitoring frequency. State-only requirement with cost	2

		impact.	
64422(a)	None	Nonsubstantive (clarity and grammar).	3
64422(a)(1)	None	Nonsubstantive (grammar, use of plurals, and punctuation).	3
64422(a)(2)	None	Nonsubstantive (clarity, paragraph designation, grammar, and punctuation).	3
64422(a)(3)	2013 FR; 141.853(a)(1)	None.	1
64422(a)(4)	2013 FR; 141.853(a)(1) & (5)	For clarity, referencing applicable state regulation.	1
64422(a)(5)	2013 FR; 141.853(a)(5)(i) & (ii)	None.	1
64422(a)(5)	None	Adding section 64421(b)(2) sampling points to identify those GW sources subject to raw water bacteriological monitoring. State-only requirement with cost impact captured under section 64422(a).	2
Former 64422(b)	None	Nonsubstantive (reorganizing).	3
64422(b)	2013 FR; 141.853(a)(1)	None.	1
64422(c)	None	Specifying timeframe and clarifying conditions for submittal of Bacteriological Sample Siting Plan. State-only requirement with no cost impact given submittal required, regardless of timeframe, when distribution system or operational changes not reflected in plan with respect to selection of routine, repeat, and dual purpose sample sites.	2
64422(c)	None	Nonsubstantive (clarity).	3
64423(a)	None	Nonsubstantive (clarity).	3
64423(a)(1)	None	Nonsubstantive (punctuation).	3
64423(a)(1)	None	Deleting reduced monitoring provision for CWS, using GW (not GWUDI), and serving 25-1,000 persons. State-only requirement with cost impact.	2
64423(a)(2)	None	Nonsubstantive (punctuation).	3
64423(a)(2)	None	Deleting reduced monitoring provision for NTNCWS, using GW (not GWUDI), and serving 25-1,000 persons. State-only requirement with cost impact.	2
64423(a)(3)	2013 FR; 141.854(a)(1)	None.	1
64423(a)(3)	None	Nonsubstantive (punctuation).	3
64423(a)(4)	2013 FR; 141.857(d)	Nonsubstantive (reorganization). For clarity, adding language for monitoring on a whole quarter basis.	1
64423(a)(4)(A) & (B)	None	Specifying information to be submitted for consideration of reducing bacteriological monitoring from one or more sample per month to one sample per quarter. State-only requirement with unquantifiable cost impact ^(a) .	2
64423(a)(5)	None	Nonsubstantive (punctuation).	3
64423(a)(6)	2013 FR; 141.854(i)(2),	For seasonal systems, did not include federal language on	1

	141.856(b), & 141.857(b) & (d)	reduced monitoring because: (1) for NTNCWS, using GW (not GWUDI), and serving ≤1,000 persons, reduced monitoring frequency is less than that required by existing state regulation (see section 64423(a)(2)) and (2) for TNCWS, using GW (not GWUDI), and serving ≤1,000 persons, it would result in inadequate monitoring and an unacceptable level of public health protection. For clarity, adding language on monitoring requirements for NTNCWS and TNCWS that are also seasonal systems.	
Former 64423(a)(6); now 64423(a)(7)	2013 FR; 141.853(a)(2)	None.	1
Former 64423(a)(6); now 64423(a)(7)	None	Nonsubstantive (redesignation, grammar, clarity, and punctuation).	3
64423(a)(8)	2013 FR; 141.853(a)(3)	For clarity, referencing applicable state regulation.	1
64423(a)(9)	2013 FR; 141.853(a)(4)	Did not include federal language on: (1) purpose of additional samples because language is narrative and (2) need for additional samples to be representative of water throughout the distribution system because language is redundant with respect to existing state regulation (see section 64422(a)(2)). For clarity, referencing applicable state regulation.	1
64423(b)	2013 FR; 141.856(c) & 141.857(c)	For consistency with existing state regulations, retaining “before or at the first service connection” and “24-hour time period.” For clarity, referencing applicable state regulation.	1
64423(b)	None	Requiring submittal of extension request to State Water Board for bacteriological sample collection and/or analysis to be mandatory instead of optional. State-only requirement with unquantifiable cost impact ^(a) .	2
64423(b)	None	Nonsubstantive (clarity and grammar).	3
Former 64423(c)	None	Nonsubstantive (redundant).	3
64423(c) & (c)(1)	2013 FR; 141.854(f)	Did not include federal language for systems on annual monitoring because existing and proposed state regulations (see sections 64423(a) and (b)) do not allow systems to be on annual monitoring.	1
64423(c)(1)(A) through (D)	2013 FR; 141.854(f)(1) through (4)	None.	1
64423(c)(1)(A) through (D)	None.	For subparagraph (D), nonsubstantive (clarity).	3
64423(c)(2)	2013 FR; 141.854(g)	Replacing self-regulating language allowing State Water Board to reduce monitoring with	1

		allowing a TNCWS, using only GW (not GWUDI), serving 1,000 or fewer persons, and collecting one sample per month to submit a request to return to routine monitoring (one sample per quarter).	
64423(c)(2)(A)	2013 FR; 141.854(g)(1)	Nonsubstantive (clarity and for consistency with proposed section 64426.8(b)).	1
64423(c)(2)(B)	2013 FR; 141.854(g)(2)	Nonsubstantive (clarity).	1
64423(c)(3)	2013 FR; 141.854(j)	Did not include federal language to allow State Water Board to waive collection of three additional routine samples in the month following a total coliform-positive sample. Sample collection helps determine if problem persists and provides for public health protection. For clarity, revising “treatment technique trigger” to read “treatment technique trigger exceedance.”	1
64423(c)(3)	None	Nonsubstantive (reorganizing and obsolete reference).	3
64423(d)	2013 FR; 141.860(c)(1) & 141.861(a)(4)	For clarity, referencing applicable state regulations.	1
64423(e)	2013 FR; 141.204(a)(6)	For clarity, referencing applicable state regulations.	1
Table 64423-A	2013 FR; 141.855(b), 141.856(b), & 141.857(b)	Did not include federal language on: (1) 4/1/2016 implementation dates because dates have passed, (2) CWS quarterly monitoring because existing state regulation (see section 64423(a)(1)) requires monthly monitoring, and (3) consecutive systems because all PWS, using approved surface water, and serving 1,000 or fewer persons required to collect 1 sample per month regardless if PWS is or is not a consecutive system.	1
Table 64423-A	None	Monthly Population Served column, Footnote 1 – adding language to clarify population basis for TNCWS when determining the minimum number of bacteriological samples required. State-only requirement with negligible cost impact given historical use of approach under state TCR. Service Connections column – providing alternative basis to determine the minimum number of samples required for water system with a monthly population served between 7,601 to 12,900. State-only requirement with no cost impact given use of alternative basis is optional and not mandatory.	2
64423.1(a)	2013 FR; 141.852(a)(2)	None.	1
64423.1(a)	None	Requiring coliform density determination if directed by State Water Board for situations	2

		relating to an actual or potential contaminating event. State-only requirement with unquantifiable cost impact.	
64423.1(a)	None	Nonsubstantive (clarity).	3
64423.1(b)	None	Requiring PWS to provide laboratory with PWS contact person's name and contact information to enable PWS notification within the timeframe and situations specified in subsection (b). State-only requirement with negligible cost impact given PWS likely to have already provided the information to the laboratory to enable system notification under the state TCR.	2
64423.1(b)	None	Nonsubstantive (clarity, obsolete reference, grammar, and punctuation).	3
64423.1(c)	None	Nonsubstantive (clarity).	3
64423.1(c)(1)	None	For PWS serving 400 or fewer service connections and 1,000 or fewer persons (excluding wholesalers), deleting requirement to submit a monthly coliform summary report, thereby eliminating a reporting burden to summarize the result of one sample. State-only requirement with cost decrease.	2
64423.1(c)(1)	None	Nonsubstantive (grammar and punctuation).	3
64423.1(c)(1)(A) through (D)	None	For clarity, specifying content of monthly coliform summary. State-only requirement with no cost impact.	2
64423.1(c)(2)	None	Nonsubstantive (upper/lower case usage, grammar, and punctuation).	3
64423.1(c)(3)	None	Clarifying reporting requirement for PWS serving 10,000 service connections. State-only requirement with no cost impact given there are no PWS serving exactly 10,000 service connections.	2
64423.1(c)(3)	None	Nonsubstantive (upper/lower case usage and grammar).	3
64423.1(c)(2) & (3)	None	Retaining reference to 10,000 service connections and deleting reference to 33,000 persons to clarify the reporting requirements. State-only requirement with negligible cost impact given PWS are likely reporting based on number of service connections served.	2
Former 64423.1(d)	None	Nonsubstantive (redundant).	3
64423.1(d)	2013 FR; 141.860(c)(2) & 141.861(a)(4)	For clarity, referencing applicable state regulations.	1
64423.1(e)	2013 FR; 141.204(a)(6) & 141.860(d)(1)	For clarity, referencing applicable state regulations.	1
64424(a)	2013 FR; 141.858(a)(1) & (2)	For consistency with existing state regulations, did not include federal language allowing an	1

		alternative repeat sample set collection procedure for a single service connection water system.	
64424(a)	None	Nonsubstantive (clarity, paragraph designation, punctuation, and grammar).	3
64424(a)(1)	2013 FR; 141.858(a)(1)	Did not include federal language: (1) allowing State Water Board to implement criteria for PWS to use in lieu of case-by-case extension provided in section 64424(a)(2) because extension depends on the circumstances and (2) self-regulating language prohibiting State Water Board waiver of repeat sampling requirement; repeat sampling required by existing state regulation (see section 64424).	1
64424(a)(2)	None	Nonsubstantive (grammar).	3
64424(b)	2013 FR; 141.853(a)(5) & (5)(ii)(A), (B), & (C)	Replacing self-regulating language allowing State Water Board to allow the use of an alternative sampling location with allowing a PWS to submit a request to use an alternative monitoring location. For clarity, referencing applicable state regulation. To improve readability, organizing in table format.	1
64424(b)	None	Nonsubstantive (upper/lower case usage and clarity).	3
Table 64424-A	2013 FR; 141.853(a)(5)(i)	None.	1
Table 64424-B	2013 FR; 141.853(a)(5)(ii)	Replacing self-regulating language regarding State Water Board written approval to use dual purpose sampling with allowing a PWS to submit a request to use dual purpose sampling. For clarity, referencing applicable state regulation.	1
Table 64424-C	2013 FR; 141.853(a)(5)(ii)(A), (B), & (C)	For clarity, referencing applicable state regulation.	1
64424(c)	2013 FR; 141.858(a)(3)	Adding language to clarify timeframe for State Water Board notification with no cost impact. For clarity, referencing applicable state regulation.	1
64424(c)	None	Nonsubstantive (clarity and grammar).	3
Former 64424(d) through (d)(2)	None	Nonsubstantive (obsolete requirements).	3
64424(d)	2013 FR; 141.861(a)(4)	For clarity, referencing applicable state regulations.	1
64424(e)	2013 FR; 141.204(a)(6)	For clarity, referencing applicable state regulations.	1
64425(a)	None	Nonsubstantive (clarity and grammar).	3
64425(a)(2)	None	Nonsubstantive (grammar).	3
64425(b)	2013 FR; 141.853(c)(2)	Did not include federal language allowing State Water Board to implement criteria for PWS to use in lieu of case-by-case	1

		extension provided in section 64425(b) because extension depends on the circumstances. Use existing notification procedure from section 64424(a)(2).	
64425(b)	None	Nonsubstantive (clarity and grammar).	<u>3</u>
64425(c)	2013 FR; 141.853(c)	For clarity, referencing applicable state regulations.	1
64425(d)	2013 FR; 141.861(a)(4)	For clarity, referencing applicable state regulations.	1
64425(e)	2013 FR; 141.204(a)(6)	For clarity, referencing applicable state regulations.	1
64426(a)	None	Specifying timeframe and samples used to determine possible significant rise in bacterial count determination. State-only requirements with no cost impact (timeframe) and unquantifiable cost impact (use of special purpose samples).	2
64426(a)	None	Nonsubstantive (clarity).	3
Former 64426(a); now 64426(b)	None	Nonsubstantive (redesignation).	3
64426(b)(1)	None	Nonsubstantive (clarity).	3
64426(b)(2)	None	Nonsubstantive (clarity, obsolete reference, and taxonomy [use of italics]).	3
64426(b)(3)	None	Nonsubstantive (obsolete reference).	3
Former 64426(b); now 64426(c)	None	Nonsubstantive (redesignation, grammar, subsection designation, and clarity).	3
64426(c)(1)	None	Nonsubstantive (clarity and obsolete requirements).	3
64426(c)(2)	[Section 116450(b), CHSC]	Revising timeframe for conformance with state statute. State-only requirement with no cost impact.	2
64426(c)(2)	None	Nonsubstantive (upper/lower case usage).	3
64426(c)(2)(E)	None	Deleting “physical” from “physical evidence” to allow PWS to consider all types of evidence indicating bacteriological contamination of facilities. State-only requirement with no cost impact.	2
64426(c)(2)(E)	None	Nonsubstantive (upper/lower case usage)	3
Former 64426(c); now 64426(d)	[Section 64463.1(b), CCR & Section 116460, CHSC]	Revising timeframe for consistency with existing state regulation. State-only requirement with no cost impact.	2
Former 64426(c); now 64426(d)	None	Nonsubstantive (redesignation and clarify).	3
64426(e)	None	Specifying timeframe and requiring submittal of a report and the information to include when the PWS has reached or exceeded a possible significant rise in bacterial count. Specifying timeframe for State Water Board notification. State-only requirements with unquantifiable cost impact ^(a) .	2

64426(f)	2013 FR; 141.860(d)(2) & 141.204(a)(6)	For clarity, referencing applicable state regulations.	1
64426.1, Heading	None	Nonsubstantive (update section heading).	3
64426.1(a)	2013 FR; 141.63(d), 141.853(b), & 141.858(a)(5)	For 141.63(d), did not include federal language on total coliform MCL compliance determination until 3/31/2016 because the federal TCR is obsolete. For 141.858(a)(5), replacing “coliform treatment technique trigger” with “ <i>E. coli</i> MCL” to clarify the specific type of coliform treatment technique trigger covered under section 64426.1(a).	1
64426.1(a)	None	Nonsubstantive (grammar and clarity).	3
64426.1(b)	2013 FR; 141.63(c) & 141.860(a)	For 141.63(c), did not include federal language on: (1) 4/1/2016 begin date because date has passed, (2) reference to “Subpart Y” to avoid confusion with citing the federal RTRC, and (3) violation of the <i>E. coli</i> for purposes of public notification because language is narrative.	1
Former 64426.1(b)(1) through (4)	None	Nonsubstantive (obsolete requirements).	3
64426.1(b)(1) through (4)	2013 FR; 141.63(c)(1) through (4) & 141.860(a)(1) through (4)	None.	1
64426.1(c)	2013 FR; 141.861(a)(1)(i)	No longer retaining federal language to notify State Water Board after offices are closed because PWS have the ability to notify State Water Board via the PWS’ Emergency Notification Plan required under section 116460 CHSC. For clarity, referencing applicable state regulations.	1
64426.1(c)	None	Nonsubstantive (subsection designations and grammar).	3
64426.1(d)	2013 FR; 141.204(a)(6)	For clarity, referencing applicable state regulations.	1
64426.1(e)	2013 FR; 141.4(a)	Did not include federal language on: (1) for total coliform MCL – prohibition on variances or exemptions because the total coliform MCL is from the obsolete federal TCR and (2) for treatment technique requirements of subpart H of part 141 (Filtration and Disinfection) – prohibition on variances because prohibition is in existing state regulation (Chapter 17, section 64652(h)).	1
64426.5	2013 FR; 141.4(b)	None.	1
64426.6(a) through (a)(2)	2013 FR; 141.860(b) through (b)(2)	Nonsubstantive (organizing to improve readability). For clarity in subsection (a)(1), referencing applicable state regulations.	1
64426.6(b)	2013 FR; 141.861(a)(2)	For clarity, referencing applicable state regulations.	1

64426.6(c)	2013 FR; 141.204(a)(6)	For clarity, referencing applicable state regulations.	1
64426.7(a)	2013 FR; 141.853(a)(4) & (b), 141.854(j), 141.856(c), & 141.858(a)(5)	Nonsubstantive (organized and worded for consistency with existing state regulatory language). For clarity, referencing applicable state regulations.	1
64426.7(b) through (b)(3)	2013 FR; 141.859(a)(1) through (a)(1)(iii)	None.	1
64426.7(c) through (c)(2)	2013 FR; 141.859(a)(2) through (a)(2)(ii)	None.	1
64426.8(a)	2013 FR; 141.859(b)(3)	None.	1
64426.8(a)(1)	2013 FR; 141.2 [Level 1 Assessment] & 141.859(b)(3)(i)	None.	1
64426.8(a)(2)	2013 FR; 141.2 [Level 1 Assessment & Level 2 Assessment] & 141.859(b)(1), (2), & (3)(i)	For clarity, revising federal language of “assessment form” to read “assessment” because proposed regulations specify contents of an assessment and not the format.	1
64426.8(a)(2)(A) through (C)	2013 FR; 141.2 [Level 1 Assessment & Level 2 Assessment] & 141.859(b)(2)	None.	1
64426.8(a)(2)(D)	2013 FR; 141.2 [Level 1 Assessment & Level 2 Assessment] & 141.859(b)(2)	None.	1
64426.8(a)(2)(E)	2013 FR; 141.2 [Level 1 Assessment & Level 2 Assessment] & 141.859(b)(2)	None.	1
64426.8(a)(3)	2013 FR; 141.2 [Level 1 Assessment] & 141.859(b)(2)	None.	1
64426.8(a)(4)	2013 FR; 141.859(b)(3)(i) & 141.861(a)(3)	For clarity, revising federal language of “assessment form” and “assessment report” to read “assessment” because proposed regulations specify contents of an assessment and not the format.	1
64426.8(a)(5)	2013 FR; 141.859(b)(3)(ii)	Did not include self-regulating federal language concerning State Water Board consultation with PWS given consultation already occurs as part of the routine communication between State Water Board and PWS. For clarity, revising federal language of “revised assessment form” to read “revised assessment” because proposed regulations specify contents of an assessment and not the format. Revising federal language of “agreed-upon-schedule not to exceed 30 days” to read “within 30 days” to correct grammar due to elimination of self-regulating language.	1
64426.8(b)	2013 FR; 141.859(b)(4)	For clarity, referencing applicable state regulation.	1
64426.8(b)(1)	2013 FR; 141.2 [Level	Did not include the following	1

	2 Assessment] & 141.859(b)(1), (2), & (4)(i)	because Level 2 assessment would be conducted by the State Water Board: (1) federal language that assessment be conducted by party/parties approved by the State and (2) self-regulating language to conduct assessment consistent with any State directives.	
64426.8(b)(2)	2013 FR; 141.2 [Level 2 Assessment] & 141.859(b)(4)	None.	1
64426.8(b)(3)	2013 FR; 141.2 [Level 2 Assessment] & 141.859(b)(4)(i) & 141.861(a)(3)	For clarity, revising federal language of “assessment form” and “assessment report” to read “assessment” because proposed regulations specify contents of an assessment and not the format.	1
64426.8(b)(4)	2013 FR; 141.859(b)(4)(iii)	Did not include self-regulating federal language concerning State Water Board consultation with PWS given consultation already occurs as part of the routine communication between State Water Board and PWS. For clarity, revising federal language of “revised assessment form” to read “revised assessment” because proposed regulations specify contents of an assessment and not the format. Revising federal language of “agreed-upon-schedule not to exceed 30 days” to read “within 30 days” to correct grammar due to elimination of self-regulating language.	1
64426.8(c)	2013 FR; 141.859(c) & 141.861(a)(3)	Did not include self-regulating federal language concerning State Water Board consultation with PWS given consultation already occurs as part of the routine communication between State Water Board and PWS. For clarity, revising “assessment form” and “assessment report” to read “assessment” because proposed regulations specify contents of an assessment and not the format and to correct grammar. Adding language to clarify timeframe for State Water Board notification with no cost impact.	1
64426.8(d)	2013 FR; 141.204(a)(6) & 141.860(d)(1)	For clarity, revising federal language of “assessment form” to read “assessment” because proposed regulations specify contents of an assessment and not the format. For clarity, referencing applicable state regulations.	1
64426.9(a)	2013 FR; 141.854(i)(1), 141.856(a)(4)(i), & 141.857(a)(4)(i)	Did not include federal language on 4/1/2016 date to demonstrate completion of seasonal start-up procedure because date has passed.	1
64426.9(a)	None	Requiring submittal of a revised seasonal system start-up procedure, by a specified date and if directed by State Water	2

		Board. State-only requirement with negligible cost impact.	
64426.9(a)(1) through (6)	None	Specifying minimum components of a seasonal system start-up procedure. State-only requirement with negligible cost impact given approved procedures implemented since 4/1/2016 and minor modification to section 64426.9(a)(6) in 2017 draft regulation text.	2
64426.9(b)	2013 FR; 141.861(a)(5)	None.	1
64426.9(b)(1)	2013 FR; 141.854(i)(1), 141.856(a)(4)(i), & 141.857(a)(4)(i)	None.	1
64426.9(b)(2)	2013 FR; 141.861(a)(5)	None.	1
64426.9(b)(3)	None	Requiring submittal of bacteriological and disinfectant residual monitoring results. State-only requirement with no cost impact given submittal of supporting documentation occurring since 4/1/2016.	2
64426.9(b)(4)	None	Requiring State Water Board approval prior to serving water to the public. State-only requirement with no cost impact given request for State Water Board approval occurring since April 1, 2016.	2
64426.9(c)	2013 FR; 141.854(i)(3), 141.856(a)(4)(ii), & 141.857(a)(4)(ii)	Did not include federal language for seasonal systems monitoring less frequently than monthly because proposed state regulation (see section 64423(a)(6)) does not allow seasonal systems to monitor less frequently than monthly. For clarity, identifying seasonal system requirements for which an exemption may be requested.	1
64426.9(d) through (d)(2)	None	Allowing use of alternative approach for compliance with seasonal system start-up procedure. State-only requirement with no cost impact given the use of alternative is optional and not mandatory.	2
64426.9(e)	2013 FR; 141.204(a)(6) & 141.860(d)(3)	For clarity, referencing applicable state regulations.	1
64430, 1 st Paragraph	2013 FR; 141.402 & 141.405	Nonsubstantive (punctuation, grammar, and incorporate by reference amendments to federal Ground Water Rule).	1
Former 64430(a) through (c)	2013 FR; 141.402 & 141.405	Nonsubstantive (obsolete reference).	1
64430(a) through (d)	2013 FR; 141.402	For clarity, referencing applicable state regulations.	1
64430(e)	2013 FR; 141.405	For clarity, referencing applicable state regulation.	1
64447, 1 st Paragraph	2013 FR; 141.63(e) & (f)	Did not include federal language on BAT for the total coliform MCL because the total coliform MCL is from the obsolete federal	1

		TCR.	
64447(a)	2013 FR; 141.63(e)(1)	None.	1
64447(c)	2013 FR; 141.63(e)(3)	None.	1
64447(c)	None	Nonsubstantive (grammar).	3
64447(d)	2013 FR; 141.63(e)(4)	For clarity, referencing applicable state regulation.	1
64447(e)	2013 FR; 141.63(e)(5)	For clarity, incorporating by reference applicable state document that contains California's U.S. EPA-approved State Wellhead Protection Program.	1
Article 18, Heading	None	Nonsubstantive (article heading update).	3
64463.1(a)(1) through (1)(B)	2013 FR; 141.202(a)(1)	For clarity, referencing applicable state regulation.	1
64463.4(a)(2) and former 64463.4(a)(3)	None	Nonsubstantive (reorganizing and punctuation).	3
Former 64463.4(a)(4); now 64463.4(a)(3)	None	Nonsubstantive (redesignation).	3
64463.4(b)(2)	2013 FR; 141.203(b)(2)	Did not include federal language of "Total Coliform Rule" because federal TCR is obsolete.	1
64463.7(a)(2)	None	Nonsubstantive (grammar).	3
64463.7(a)(3)	None	Nonsubstantive (punctuation).	3
64463.7(a)(4) & (5)	2013 FR; 141.204(a)(6)	For clarity, referencing applicable state regulation.	1
64465(a)(3)	None	Nonsubstantive (typographical error).	3
Appendix 64465-A	Appendix B to Subpart Q of Part 141	Did not include federal language on: (1) contaminants from obsolete federal TCR, (2) reference to "Subpart Y" to avoid confusion with citing the federal RTCR, (3) maximum contaminant level goals, which are goals, not enforceable, and informative, and (4) <i>E. coli</i> MCL and treatment techniques that are duplicated elsewhere in federal RTCR and proposed RTCR. Health Effects Language – For clarity: (1) <i>E. coli</i> Assessment and/or Corrective Action Violations – replacing second applicable sentence of "during the assessment that we conducted" with "during the assessment" because State Water Board, not the PWS, is the party conducting the Level 2 assessments and (2) Seasonal System Treatment Technique Violations – referencing applicable state regulations.	1
64470(b)(5)	None	Nonsubstantive (grammar).	3
64470(b)(6)	None	Nonsubstantive (punctuation and grammar).	3
64470(b)(7)	2013 FR; 141.861(b)(1) 2014 FR; 141.861(b)(1)	For clarity, revising federal language of "assessment form" to read "Level 1 and Level 2 assessments" to clarify type of assessment conducted and because proposed regulations specify contents of an	1

		assessment and not the format. For clarity, referencing applicable state regulation.	
64481(b)(10)	2013 FR; 141.153(c)(4)(i)	None.	1
64481(b)(11)	2013 FR; 141.153(c)(4)(ii)	None.	1
64481(c)(1)	None	Nonsubstantive (section reference and punctuation).	3
64481(d)(2)(D)	2013 FR; 141.153(d)(4)(iv)	Nonsubstantive (reorganization).	1
Former 64481(d)(2)(G) through (G)2.; now 64481(o)(2) through (2)(B)	None	Nonsubstantive (reorganization).	3
Former 64481(d)(2)(H); now 64481(d)(2)(G)	2013 FR; 141.153(d)(4)(x)	None.	1
Former 64481(d)(2)(H); now 64481(d)(2)(G)	None	Nonsubstantive (redesignation).	3
Former 64481(d)(2)(I); now 64481(d)(2)(H)	None	Nonsubstantive (redesignation).	3
64481(n)	2013 FR; 141.153(h)(7)	None.	1
64481(n)(1)	2013 FR; 141.153(h)(7)(i)	For clarity, referencing applicable state regulations.	1
Table 64481-A	2013 FR; 141.153(h)(7)(i)(A) through (D)(2)	To improve readability, organizing in table format.	1
64481(n)(2)	2013 FR; 141.153(h)(7)(ii)	For clarity, referencing applicable state regulation.	1
Table 64481-B	2013 FR; 141.153(h)(7)(ii)(A) through (C)(2)	To improve readability, organizing in table format. For clarity, replacing last applicable sentence of “during the assessment that we conducted” with “during the assessment” because State Water Board, not the PWS, is the party conducting the Level 2 assessments.	1
64481(n)(3) through (3)(D)	2013 FR; 141.153(h)(7)(iii) through (iii)(D)	None.	1
64481(n)(4)	2013 FR; 141.153(h)(7)(iv)	None.	1
64481(o)	None	Nonsubstantive (reorganization and clarity).	3
64481(o)(1) & Table 64481-C	2013 FR; Appendix A to Subpart O of Part 141	None.	1
64481(o)(2) through (2)(B)	None	Nonsubstantive (reorganization).	3
64481(o)(3)	2013 FR; Appendix A to Subpart O of Part 141	None.	1
64481(o)(3)	None	Nonsubstantive (reorganization).	3
64481(o)(4)	None	Nonsubstantive (consistency with existing state regulation).	3
Table 64481-D	None	Nonsubstantive (consistency with existing state regulation).	3

64481(o)(5)	None	Nonsubstantive (consistency with existing state regulation).	3
Table 64481-E	None	Nonsubstantive (reorganization and consistency with federal RTCR <i>E. coli</i> health effects language).	3
64481(o)(6)	None	Nonsubstantive (consistency with existing state regulations).	3
Appendix 64481-A	2013 FR; Appendix A to Subpart O of Part 141	Did not include federal language on: (1) contaminants from obsolete federal TCR, (2) traditional MCLs, MCL in Consumer Confidence Report units, and health effects language that are duplicated elsewhere in federal RTCR and proposed RTCR, and (3) Maximum Contaminant Level Goals, which are goals, not enforceable, and informative.	1
Appendix 64481-A	None	Nonsubstantive (punctuations).	3
64534.4(a)	None	Nonsubstantive (grammar and section references).	3
64650(f)(1)(l)	USEPA, 2010 Memorandum	Adding U.S. EPA alternative <i>E. coli</i> concentration to trigger <i>Cryptosporidium</i> monitoring under federal LT2ESWTR.	1
Former 64650(f)(1)(I, J, K, L, and M); now 64650(f)(1)(J, K, L, M, and N), respectively	None	Nonsubstantive (redesignation).	3
64652.5(h)	2013 FR; 141.71(b)(5)	Did not include federal language on the total coliform MCL because the total coliform MCL is from the obsolete federal TCR.	1
Table 64653, (4)(A)	None	Nonsubstantive (punctuation and obsolete requirement).	3
64656(c)	None	Nonsubstantive (grammar and section references).	3
64656(d)	None	Revising “disinfected approved surface water” to read “disinfected water” for consistency with federal regulations.	1

(a) Future occurrences are unknown and cannot be predicted.

Table 2

**SDWIS Inventory and Survey Results for Section 64421(b)(2)(A)
 Raw Water Bacteriological Monitoring**

No. of Public Water Systems

Source of Information	SWS	LWS	Total
SDWIS Inventory ^(a)	1,442	639	2,081
Survey ^(b) Cost Impact = Yes ^(c)	494	90	584
Survey ^(b) Cost Impact = No ^(d)	948	549	1,497

No. of GW (Not GWUDI) Sources with Disinfection

Source of Information	SWS	LWS	Total
SDWIS Inventory ^(a)	2,027	4,400	6,427
Survey ^(b) Cost Impact = Yes ^(c)	666	525	1,191
Survey ^(b) Cost Impact = No ^(d)	1,361	3,875	5,236

- (a) SDWIS, 8/14/2017. PWS with GW (not GWUDI) sources that are treated with a primary or residual disinfectant on a continuous basis.
- (b) Survey of State Water Board District Offices and Local Primacy Agencies for raw water bacteriological monitoring practices and frequency of monitoring of GW (not GWUDI) sources that are treated with a primary or residual disinfectant on a continuous basis.
- (c) PWS not monitoring sources and would need to comply with section 64421(b)(2)(A). SWS and LWS serve 17,807 and 1,139,691 service connections, respectively, for a total of 1,157,498 service connections.
- (d) PWS already monitoring sources on a quarterly or more frequent basis pursuant to section 64654.8(b)(1)(B) or as a condition of an amended water supply permit.

Table 3

**SDWIS Inventory and Survey Results for Section 64423(a)(1)
 Return to Routine Bacteriological Monitoring
 No. of Community Water Systems
 Using Groundwater (*i.e.*, Not GWUDI) and Serving 25-1,000 Persons**

Source of Information	SWS	LWS	Total
SDWIS Inventory ^(a)	1,655	Not applicable	1,655
Survey ^(b) Cost Impact = Yes ^(c)	6	Not applicable	6
Survey ^(b) Cost Impact = No ^(d)	1,649	Not applicable	1,649

- (a) SDWIS, 8/14/2017.
- (b) Survey of State Water Board District Offices and Local Primacy Agencies for bacteriological monitoring frequency for CWS using GW (*i.e.*, not GWUDI) and serving 25-1,000 persons.
- (c) Water systems on reduced monitoring (one sample per quarter) and would need to return to routine monitoring (one sample per month). SWS serve a total of 278 service connections.
- (d) Water systems on routine monitoring (one sample per month).

Table 4

**SDWIS Inventory and Survey Results for Section 64423(a)(2) Return to Routine Bacteriological Monitoring
No. of Nontransient-Noncommunity Water Systems
Using Groundwater (i.e., Not GWUDI) and Serving 25-1,000 Persons**

Source of Information	SWS	LWS	Total
SDWIS Inventory ^(a)	1,315	Not applicable	1,315
Survey ^(b) Cost Impact = Yes ^(c)	22	Not applicable	22
Survey ^(b) Cost Impact = No ^(d)	1,293	Not applicable	1,293

- (a) SDWIS, 8/14/2017.
 (b) Survey of State Water Board District Offices and Local Primacy Agencies for bacteriological monitoring frequency for NTNC using GW (i.e., not GWUDI) and serving 25-1,000 persons.
 (c) Water systems on reduced monitoring (one sample per quarter) and would need to return to routine monitoring (one sample per month). SWS serve a total of 122 service connections.
 (d) Water systems on routine monitoring (one sample per month).

Table 5

**SDWIS Inventory for Section 64423.1(c)(1) Monthly Coliform Summary
No. of Public Water Systems**

Source of Information	Serving 400 or Fewer Service Connections and 1,000 or Fewer Persons (excluding Wholesalers)	Serving More than 400 Service Connections or More than 1,000 Persons (including Wholesalers)	Total
SDWIS Inventory ^(a)	6,340 ^(b)	1,159 ^(c)	7,499

- (a) SDWIS, 8/14/2017.
 (b) Cost impact = yes for these water systems, which serve a total of 191,507 service connections.
 (c) Cost impact = no for these water systems.

Table 6

**SDWIS Inventory and Survey Results for Section 64422(a) Bacteriological Sample Siting Plan Revision
No. of Public Water Systems**

Source of Information ^(a)	SWS	LWS	Total
SDWIS Inventory	4,412	639	5,051
Survey Cost Impact = Yes ^(b)	522	90	612
Survey Cost Impact = No ^(c)	3,890	549	4,439

- (a) Tables 2, 3, and 4; no duplicate water systems between tables.
 (b) PWS will need to submit a revised bacteriological sample siting plan if performing bacteriological monitoring (section 64421(b)) or a change in bacteriological monitoring frequency occurs (sections 64423(a)(1) and (2)). SWS and LWS serve 18,207 and 1,139,691 service connections, respectively, for a total of 1,157,898 service connections.
 (c) PWS will not need to submit a revised bacteriological sample siting plan. Values determined by difference between SDWIS Inventory and Survey, Cost Impact = Yes.

Table 7

Labor Rates by Federal RTRC Water System Size Categories (2017\$)

Water System Size (Population Served)	Labor Rate (Per Hour) ^(a)
≤100	\$33.38
101-500	\$35.95
501-1,000	\$38.52
1,001-4,100	\$39.61
4,101-33,000	\$47.95
33,001-96,000	\$48.40
>96,000	\$54.32

- (a) See Part B. Tools, Item 1g for development of labor rate.

Table 8

Estimated Sample Collection Cost Per Sample (Bacteriological) (2017\$)

Water System Size (Population Served) A	Labor Rate (Per Hour) ^(a) B	Sampling Time (Hours) ^(b) C	Total Labor Cost D=BxC
≤100	\$33.38	0.5	\$16.69
101-500	\$35.95	0.5	\$17.98
501-1,000	\$38.52	0.75	\$28.89
1,001-4,100	\$39.61	0.75	\$29.71
4,101-33,000	\$47.95	0.75	\$35.96
33,001-96,000	\$48.40	0.75	\$36.30
>96,000	\$54.32	1.0	\$54.32

(a) From Table 7.

(b) Technology and Cost Document for the Final Revised Total Coliform Rule, USEPA, Office of Water (4707M), EPA-815-R-12-005, December 2012, Exhibit 3-1.

Table 9

Estimated Sample Delivery Cost Per Lab Courier Service/FedEx Delivery (Bacteriological) (2017\$)

Type of Delivery	1 Sample in a Delivery	2 Samples in a Delivery	3 Samples in a Delivery	4 Samples in a Delivery	5 Samples in a Delivery
Lab Courier Service ^(a)	\$7.36	\$7.36	\$7.36	\$7.36	\$7.36
FedEx Ground ^(b)	\$13.99	\$13.99	\$13.99	\$13.99	\$13.99
FedEx Standard Overnight ^(b)	\$61.28	\$61.28	\$61.28	\$61.28	\$61.28
FedEx Priority Overnight ^(b)	\$67.98	\$67.98	\$67.98	\$67.98	\$67.98

(a) Lab Courier Service (2017\$) = Lab Courier Service (2007\$) x 2.1; where 2.1 = (FedEx Ground, 2017\$) / (FedEx Ground, 2007\$) = \$13.99/\$6.65.

(b) Source of Cost Quotes: FedEx, 10/6/2017, www.fedex.com. Delivery costs identical for 1.0-, 5.0-, 10.0-, and 20.0-lb shipments.

Table 10

Estimated Sample Delivery Cost Per Self-Delivery (Bacteriological) (2017\$)

Water System Size (Population Served) A	Labor Rate (Per Hour) ^(a) B	Drive Time (Hours) ^(b) C	Total Labor Cost D=BxC	Personal Vehicle Use Reimbursement ^(c) E	Total Delivery Cost F=D+E
≤100	\$33.38	0.5	\$16.69	\$16.05	\$32.74
101-500	\$35.95	0.5	\$17.98	\$16.05	\$34.03
501-1,000	\$38.52	0.5	\$19.26	\$16.05	\$35.31
1,001-4,100	\$39.61	0.5	\$19.81	\$16.05	\$35.86
4,101-33,000	\$47.95	0.5	\$23.98	\$16.05	\$40.03
33,001-96,000	\$48.40	0.5	\$24.20	\$16.05	\$40.25
>96,000	\$54.32	0.5	\$27.16	\$16.05	\$43.21

(a) From Table 7.

(b) Based on average speed of 60 mph and travel distance of 30 miles roundtrip.

(c) Personal vehicle use reimbursement = (Travel Distance) x (Mileage Reimbursement Rate) = (30 miles) x (\$0.535 per mile) = \$16.05; where mileage reimbursement rate = \$0.535 per mile, U.S. General Services Administration, 10/2/2017.

Table 11

Estimated Sample Delivery Cost Per Sample (Bacteriological) (2017\$)

Type of Delivery A	1 Sample in a Delivery B ^(c)	2 Samples in a Delivery C=B/2	3 Samples in a Delivery D=B/3	4 Samples in a Delivery E=B/4	5 Samples in a Delivery F=B/5
Lab Courier Service ^(a)	\$7.36	\$3.68	\$2.45	\$1.84	\$1.47
FedEx Ground ^(a)	\$13.99	\$7.00	\$4.66	\$3.50	\$2.80
FedEx Standard Overnight ^(a)	\$61.28	\$30.64	\$20.43	\$15.32	\$12.26
FedEx Priority Overnight ^(a)	\$67.98	\$33.99	\$22.66	\$17.00	\$13.60
Self-Delivery (population served) ^(b) ≤100	\$32.74	\$16.37	\$10.91	\$8.19	\$6.55
Self-Delivery (population served) ^(b) 101-500	\$34.03	\$17.02	\$11.34	\$8.51	\$6.81
Self-Delivery (population served) ^(b) 501-1,000	\$35.31	\$17.66	\$11.77	\$8.83	\$7.06
Self-Delivery (population served) ^(b) 1,001-4,100	\$35.86	\$17.93	\$11.95	\$8.97	\$7.17
Self-Delivery (population served) ^(b) 4,101-33,000	\$40.03	\$20.02	\$13.34	\$10.01	\$8.01
Self-Delivery (population served) ^(b) 33,001-96,000	\$40.25	\$20.13	\$13.42	\$10.06	\$8.05
Self-Delivery (population served) ^(b) >96,000	\$43.21	\$21.61	\$14.40	\$10.80	\$8.64

(a) Estimated Sample Delivery Cost Per Sample = [(Delivery Cost Per Lab Courier Service/FedEx Delivery; from Table 9) / (No. of Samples in Delivery)].

(b) Estimated Sample Delivery Cost Per Sample = [(Total Delivery Cost; from Table 10) / (No. of Samples in Delivery)].

(c) In Tables 9 and 10, delivery cost is the same regardless of the number of samples in a delivery. This allows the use of column B to calculate columns C through F for determining delivery cost per sample.

Table 12

Estimated Average Sample Delivery Cost Per Sample (Bacteriological) (2017\$)^(a)

Water System Size (Population Served)	1 Sample in a Delivery	2 Samples in a Delivery	3 Samples in a Delivery	4 Samples in a Delivery	5 Samples in a Delivery
Water System Size ≤100	\$26.26	\$13.13	\$8.75	\$6.57	\$5.25
Water System Size 101-500	\$26.33	\$13.16	\$8.78	\$6.58	\$5.27
Water System Size 501-1,000	\$26.39	\$13.20	\$8.80	\$6.60	\$5.28
Water System Size 1,001-4,100	\$26.42	\$13.21	\$8.81	\$6.60	\$5.28
Water System Size 4,101-33,000	\$26.63	\$13.31	\$8.88	\$6.66	\$5.33
Water System Size 33,001-96,000	\$26.64	\$13.32	\$8.88	\$6.66	\$5.33
Water System Size >96,000	\$26.79	\$13.39	\$8.93	\$6.70	\$5.36

(a) Estimated Average Sample Delivery Cost Per Sample = Sum of [(Percentage of Water Systems Using a Type of Delivery) x (Delivery Cost for Number of Samples in a Delivery)]. See sample calculations below.

Sample Calculations for Table 12

For Water System Serving ≤100 Population and Collecting One Sample in a Delivery

Type of Delivery A	Percentage of Water Systems Using Delivery Type^(a) B	Delivery Cost^(b) C	Subtotal D=BxC	Total^(c) E = Sum of D
Lab Courier Service	20%	\$7.36	\$1.47	NA
FedEx Ground	50%	\$13.99	\$7.00	NA
FedEx Standard Overnight	12.5%	\$61.28	\$7.66	NA
FedEx Priority Overnight	12.5%	\$67.98	\$8.50	NA
Self-Delivery	5%	\$32.74	\$1.64	NA
NA	NA	NA	NA	\$26.27

For Water System Serving 1,000 Population and Collecting Three Samples in a Delivery

Type of Delivery A	Percentage of Water Systems Using Delivery Type^(a) B	Delivery Cost^(b) C	Subtotal D=BxC	Total^(c) E = Sum of D
Lab Courier Service	20%	\$2.45	\$0.49	NA
FedEx Ground	50%	\$4.66	\$2.33	NA
FedEx Standard Overnight	12.5%	\$20.43	\$2.55	NA
FedEx Priority Overnight	12.5%	\$22.66	\$2.83	NA
Self-Delivery	5%	\$11.77	\$0.59	NA
NA	NA	NA	NA	\$8.79

(a) Technology and Cost Document for the Final Revised Total Coliform Rule, USEPA, Office of Water (4707M), EPA-815-R-12-005, December 2012, Exhibit 3-7.

(b) From Table 11.

(c) Total may differ from Table 12 due to rounding.

Table 13

Estimated Sample Cost for Certified Contract Laboratory Analysis (Bacteriological) (2017\$)^(a)

Laboratory	Total Coliform/<i>E. coli</i> Presence-Absence (P-A)	Total Coliform/<i>E. coli</i> Coliform Density (CD)	Cost Difference Between P-A and CD
1	\$30	\$35	\$5
2	\$26	\$36	\$10
3	\$25	\$25	\$0
4	\$30	\$40	\$10
5	\$40	\$45	\$5
6	\$15	\$25	\$10
7	\$33	\$33	\$0
8	\$25	\$25	\$0
9	\$20	\$22	\$2
10	\$33	\$33	\$0
11	\$40	\$80	\$40
12	\$47	\$65	\$18
13	\$50	\$95	\$45
14	\$60	\$60	\$0
15	\$35	\$48	\$13
16	\$55	\$65	\$10
17	\$25	\$30	\$5
18	\$25	\$39	\$14
19	\$22	\$32	\$10
20	\$50	\$90	\$40
21	\$24	\$28	\$4
22	\$29	\$39	\$10
23	\$50	\$50	\$0
24	\$25	\$25	\$0
25	\$15	\$25	\$10
26	\$20	\$20	\$0
27	\$33	\$33	\$0
28	\$23	\$23	\$0
29	\$24	\$28	\$4
30	\$33	\$33	\$0
31	\$24	\$28	\$4
32	\$35	\$35	\$0
33	\$33	\$33	\$0
34	\$15	\$25	\$10
35	\$15	\$25	\$10
36	\$34	\$44	\$10
37	\$35	\$35	\$0
38	\$15	\$25	\$10
39	\$45	\$45	\$0
40	\$35	\$48	\$13
41	\$40	\$45	\$5
42	\$80	\$80	\$0
43	\$39	\$40	\$1
44	\$40	\$47.50	\$7.50
45	\$50	\$58.60	\$8.60
AVERAGE	\$33.27; rounded = \$33	\$40.91; rounded = \$41	\$7.65; rounded = \$8

(a) Based on 2017 data from 45 laboratories accredited by the State Water Board's, ELAP.

Table 14

Estimated Sample Cost for In-House Analysis (Bacteriological) (2017\$)

Water System Size (Population Served) A	Labor Rate (Per Hour) ^(a) B	Labor Burden (Hours) ^(b) C	O&M ^(c) D	Total Labor Cost E=(BxC)+D
≤100	\$33.38	0.5	\$12.92	\$29.61
101-500	\$35.95	0.5	\$12.92	\$30.90
501-1,000	\$38.52	0.5	\$12.92	\$32.18
1,001-4,100	\$39.61	0.5	\$12.92	\$32.73
4,101-33,000	\$47.95	0.5	\$12.92	\$36.90
33,001-96,000	\$48.40	0.5	\$12.92	\$37.12
>96,000	\$54.32	0.5	\$12.92	\$40.08

(a) From Table 7.

(b) Technology and Cost Document for the Final Revised Total Coliform Rule, USEPA, Office of Water (4707M), EPA-815-R-12-005, December 2012, Exhibit 3-10.

(c) O&M rate adjusted from 2007\$ to 2017\$ using the present-future worth method, assuming an annual rate of inflation of (i) of 2.5% in decimal format (0.025) and a period (n) of 10 years.

- Present-Future Worth Factor = $(1 + i)^n = (1.025)^{10} = 1.2801$.

- O&M Cost (2017\$) = O&M Cost (2007\$, from Exhibit 3-10) x Present-Future Worth Factor = \$10.09 x 1.2801 = \$12.92.

Table 15

**Estimated Average Unit Cost of Monitoring Per Sample
(Bacteriological, Total Coliform/E. coli, Presence-Absence) (2017\$)^(a)**

Water System Size (Population Served)	1 Sample Collected Simultaneously	2 Samples Collected Simultaneously	3 Samples Collected Simultaneously	4 Samples Collected Simultaneously	5 Samples Collected Simultaneously
≤100	\$75.95	\$62.82	\$58.44	\$56.26	\$54.94
101-500	\$77.31	\$64.14	\$59.76	\$57.56	\$56.25
501-1,000	\$88.28	\$75.09	\$70.69	\$68.49	\$67.17
1,001-4,100	\$89.13	\$75.92	\$71.52	\$69.31	\$67.99
4,101-33,000	\$95.59	\$82.27	\$77.84	\$75.62	\$74.29
33,001-96,000	\$84.68	\$78.02	\$75.80	\$74.69	\$74.03
>96,000	\$96.37	\$95.03	\$94.59	\$94.36	\$94.23

(a) Estimated Average Unit Cost of Monitoring Per Sample = [(Percentage of Water Systems Using In-House Laboratory) x (Unit Cost of Sample Collection + Unit Cost of In-House Sample Analysis)] + [(Percentage of Water Systems Using Contract Laboratory) x (Unit Cost of Sample Collection + Unit Cost of Sample Delivery + Unit Cost of Contract Laboratory Sample Analysis)]. See sample calculations next page.

**Sample Calculations for Table 15
For Water System Serving ≤100 Population and Collecting One Sample in a Delivery**

Water System Size (Population Served) A	Percentage of Water Systems Using Contract Laboratory ^(a) B	Estimated Unit Cost of Sample Collection (\$/Sample) ^(b) C	Estimated Unit Cost of Sample Delivery (\$/Sample) ^(c) D	Estimated Unit Cost of Contract Laboratory Sample Analysis (\$/Sample) ^(d) E	Percentage of Water Systems Using In-House Laboratory ^(a) F	Estimated Unit Cost of Sample Collection (\$/Sample) ^(b) G=C	Estimated Unit Cost of In-House Sample Analysis (\$/Sample) ^(e) H	Estimated Average Unit Cost of Monitoring (\$/Sample) I=[Bx(C+D+E)]+[Fx(C+H)]
≤100	100%	\$16.69	\$26.26	\$33	0%	\$16.69	\$29.61	\$75.95
101-500	100%	\$17.98	\$26.33	\$33	0%	\$17.98	\$30.90	\$77.31
501-1,000	100%	\$28.89	\$26.39	\$33	0%	\$28.89	\$32.18	\$88.28
1,001-4,100	100%	\$29.71	\$26.42	\$33	0%	\$29.71	\$32.73	\$89.13
4,101-33,000	100%	\$35.96	\$26.63	\$33	0%	\$35.96	\$36.90	\$95.59
33,001-96,000	50%	\$36.30	\$26.64	\$33	50%	\$36.30	\$37.12	\$84.68
>96,000	10%	\$54.32	\$26.79	\$33	90%	\$54.32	\$40.08	\$96.37

For Water System Serving 1,000 Population and Collecting Three Samples in a Delivery

Water System Size (Population Served) A	Percentage of Water Systems Using Contract Laboratory ^(a) B	Estimated Unit Cost of Sample Collection (\$/Sample) ^(b) C	Estimated Unit Cost of Sample Delivery (\$/Sample) ^(c) D	Estimated Unit Cost of Contract Laboratory Sample Analysis (\$/Sample) ^(d) E	Percentage of Water Systems Using In-House Laboratory ^(a) F	Estimated Unit Cost of Sample Collection (\$/Sample) ^(b) G=C	Estimated Unit Cost of In-House Sample Analysis (\$/Sample) ^(e) H	Estimated Average Unit Cost of Monitoring (\$/Sample) I=[Bx(C+D+E)]+[Fx(C+H)]
≤100	100%	\$16.69	\$8.75	\$33	0%	\$16.69	\$29.61	\$58.44
101-500	100%	\$17.98	\$8.78	\$33	0%	\$17.98	\$30.90	\$59.76
501-1,000	100%	\$28.89	\$8.80	\$33	0%	\$28.89	\$32.18	\$70.69
1,001-4,100	100%	\$29.71	\$8.81	\$33	0%	\$29.71	\$32.73	\$71.52
4,101-33,000	100%	\$35.96	\$8.88	\$33	0%	\$35.96	\$36.90	\$77.84

33,001-96,000	50%	\$36.30	\$8.88	\$33	50%	\$36.30	\$37.12	\$75.80
>96,000	10%	\$54.32	\$8.93	\$33	90%	\$54.32	\$40.08	\$94.59

(a) Technology and Cost Document for the Final Revised Total Coliform Rule, USEPA, Office of Water (4707M), EPA-815-R-12-005, December 2012, Exhibit 3-11.

- (b) From Table 8.
- (c) From Table 12.
- (d) From Table 13.
- (e) From Table 14.

Table 16

Estimated Average Unit Cost of Monitoring Per Sample (Bacteriological, Total Coliform/*E. coli*, Coliform Density) (2017\$)^(a)

Water System Size (Population Served)	1 Sample Collected Simultaneously	2 Samples Collected Simultaneously	3 Samples Collected Simultaneously	4 Samples Collected Simultaneously	5 Samples Collected Simultaneously
≤100	\$83.95	\$70.82	\$66.44	\$64.26	\$62.94
101-500	\$85.31	\$72.14	\$67.76	\$65.56	\$64.25
501-1,000	\$96.28	\$83.09	\$78.69	\$76.49	\$75.17
1,001-4,100	\$97.13	\$83.92	\$79.52	\$77.31	\$75.99
4,101-33,000	\$103.59	\$90.27	\$85.84	\$83.62	\$82.29
33,001-96,000	\$92.68	\$86.02	\$83.80	\$82.69	\$82.03
>96,000	\$104.37	\$103.03	\$102.59	\$102.36	\$102.23

(a) Estimated Average Unit Cost of Monitoring Per Sample (Bacteriological, Total Coliform/*E. coli*, Coliform Density) = [Estimated Average Unit Cost of Monitoring Per Sample (Bacteriological, Total Coliform/*E. coli*, Presence-Absence; from Table 15)] + [Estimated Average Cost Difference Per Sample (Bacteriological, Total Coliform/*E. coli*, Presence-Absence Minus Coliform Density; \$8 per Sample; from Table 13)].

Table 17

**Estimated Monitoring Cost for Section 64421(b)(2)(A)
Raw Water Bacteriological Monitoring**

Water System Size (Population Served)	No. of Public Water Systems^(a)	No. of GW (Not GWUDI) Sources with Disinfection^(a)	Monitoring Cost (for Year 1+)^(b) (Cost Increase)
SWS (≤1,000)	494	666	\$188,000
LWS (>1,000)	90	525	\$175,000
Total	584	1,191	\$363,000

(a) From Table 2; Survey, Cost Impact = Yes.

(b) Estimated Annual Cost of Raw Water Source Monitoring = Sum of [(Estimated Average Unit Cost of Bacteriological Monitoring per Sample (Bacteriological, Total Coliform/*E. coli*, Presence-Absence)) x (No. of Samples Required per Year; four)]. See sample calculations below.

Sample Calculations for Table 17

For Water System Serving ≤100 Persons and One Raw Water Source to be Monitored

Water System Name A	Source Name B	Estimated Average Unit Cost of Bacteriological Monitoring Per Sample (\$/Sample)^(a) C	No. of Samples Required Per Year^(b) D	Subtotal E=CxD	Total F=Sum of E
Water System 1	Source 1	\$75.95	4	\$303.80	NA

For Water System Serving 1,000 Persons and Three Raw Water Sources to be Monitored

Water System Name A	Source Name B	Estimated Average Unit Cost of Bacteriological Monitoring Per Sample (\$/Sample)^(a) C	No. of Samples Required Per Year^(b) D	Subtotal E=CxD	Total F=Sum of E
Water System 2	Source 1	\$70.69	4	\$282.76	NA
Water System 2	Source 2	\$70.69	4	\$282.76	NA
Water System 2	Source 3	\$70.69	4	\$282.76	NA
Water Systems 1 & 2	NA	NA	NA	NA	\$1,152.08

(a) From Table 15.

(b) No. of Samples Required per Year = [(1 sample per quarter) x (4 quarters)] = 4.

Table 18

**Estimated Monitoring Cost for Section 64423(a)(1)
 Return to Routine Bacteriological Monitoring**

Water System Size (Population Served)	No. of Community Water Systems Using Groundwater (i.e., Not GWUDI) and Serving 25-1,000 Persons^(a)	Monitoring Cost (for Year 1+)^(b) (Loss of Previous Cost Savings)
SWS (≤1,000)	6	\$3,600
LWS (>1,000)	Not applicable	Not applicable
Total	6	\$3,600 Net Cost = \$0 ^(c)

- (a) From Table 3; Survey, Cost Impact = Yes.
 (b) Estimated Annual Cost of Returning to Routine Bacteriological Monitoring = Sum of [(No. of Water Systems) x (Estimated Average Unit Cost of Bacteriological Monitoring Per Sample (Bacteriological, Total Coliform/*E. coli*, Presence-Absence)) x (No. Additional Samples Required per Year; eight)]. See sample calculation below.
 (c) Net cost is \$0 because the cost of routine and reduced monitoring under the state TCR was captured under the federal TCR. While the requirement to return to routine monitoring results in a loss of a previous cost saving, it does not result in an additional cost over existing state regulations.

Sample Calculation for Table 18

No. of Water Systems A	Estimated Average Unit Cost of Bacteriological Monitoring Per Sample (\$/Sample)^(a) B	No. of Additional Samples Required Per Year^(b) C	Total D=AxBxC
6	\$75.95	8	\$3,645.60

- (a) From Table 15. Six water systems serve ≤100 persons.
 (b) No. of Additional Samples Required per Year = [(No. of Routine Samples in a Year) – (No. of Reduced Samples in Year)] = [(1 sample per month) x (12 months)] – [(1 sample per quarter) x (4 quarters)] = 12 – 4 = 8.

Table 19

**Estimated Monitoring Cost for Section 64423(a)(2)
 Return to Routine Bacteriological Monitoring**

Water System Size (Population Served)	No. of Nontransient-Noncommunity Water Systems Using Groundwater (i.e., Not GWUDI) and Serving 25-1,000 Persons^(a)	Monitoring Cost (for Year 1+)^(b) (Loss of Previous Cost Savings)
SWS (≤1,000)	22	\$13,000
LWS (>1,000)	Not applicable	Not applicable
Total	22	\$13,000 Net Cost = \$0

- (a) From Table 4; Survey, Cost Impact = Yes.
 (b) Estimated Annual Cost of Returning to Routine Bacteriological Monitoring = Sum of [(No. of Water Systems) x (Estimated Average Unit Cost of Bacteriological Monitoring Per Sample (Bacteriological, Total Coliform/*E. coli*, Presence-Absence)) x (No. Additional Samples Required per Year; eight)]. See sample calculations below.
 (c) Net cost is \$0 because the cost of routine and reduced monitoring under the state TCR was captured under the federal TCR. While the requirement to return to routine monitoring results in a loss of a previous cost saving, it does not result in an additional cost over existing state regulations.

Sample Calculations for Table 19

No. of Water Systems A	Estimated Average Unit Cost of Bacteriological Monitoring Per Sample (\$/Sample)^(a) B	No. of Additional Samples Required Per Year^(b) C	Subtotal D=AxBxC	Total E=Sum of D
18	\$75.95	8	\$10,936.80	NA
4	\$77.31	8	\$2,473.92	NA
NA	NA	NA	NA	\$13,410.72

- (a) From Table 15. Eighteen water systems serve ≤100 persons; four water systems serve 101-500 persons.
 (b) No. of Additional Samples Required per Year = [(No. of Routine Samples in a Year) – (No. of Reduced Samples in Year)] = [(1 sample per month) x (12 months)] – [(1 sample per quarter) x (4 quarters)] = 12 – 4 = 8.

Table 20

**Estimated Reporting Cost for Section 64423.1(c)(1)
 Monthly Coliform Summary**

Water System Size	No. of Public Water Systems^(a)	Reporting Cost (for Year 1+)^(b) (Cost Decrease)
400 or Fewer Service Connections and 1,000 or Fewer Persons (excluding Wholesalers)	6,340	\$154,000
More than 400 Service Connections or More than 1,000 Persons (including Wholesalers)	Not applicable	Not applicable
Total	6,340	\$154,000

(a) From Table 5.

(b) Estimated Annual Cost of No Longer Submitting a Monthly Summary of Bacteriological Results = Sum of [(No. of Water Systems) x (Number of Summaries Per Year) x (Labor Burden Per Summary x (Labor Rate))]. See sample calculations below.

Sample Calculations for Table 20

No. of Water Systems A	Number of Summaries Per Year^(a) B	Labor Burden (Hours/Summary)^(b) C	Labor Rate (Per Hour)^(c) D	Subtotal E=AxBxCxD	Total^(d) F=Sum of E
1,746	12	0.083	\$33.38	\$58,048.35	NA
1,463	12	0.083	\$35.95	\$52,384.47	NA
287	12	0.083	\$38.52	\$11,011.02	NA
1,952	4	0.083	\$33.38	\$21,632.38	NA
775	4	0.083	\$35.95	\$9,249.94	NA
117	4	0.083	\$38.52	\$1,496.27	NA
NA	NA	NA	NA	NA	\$153,822.43

(a) Number of Summaries per Year = 12 (for systems collecting one sample per month) and 4 (for systems collecting one sample per quarter).

(b) Labor burden to print and complete summary is 5 minutes (0.083 hours).

(c) From Table 7. 1,748 and 1,954 water systems serve ≤100 persons; 1,463 and 775 water systems serve 101-500 persons; 287 and 117 water systems serve 501-1,000 persons.

(d) Total may differ from sum of subtotal due to rounding.

Table 21

**Estimated Plan Revision Cost for Section 64422(a)
Bacteriological Sample Siting Plan**

Water System Size (Population Served)	No. of Public Water Systems^(a)	Plan Revision Cost (for Year 1)^(b) (One-Time Cost)
SWS (≤1,000)	522	\$38,000
LWS (>1,000)	90	\$25,000
Total	612	\$63,000

(b) From Table 6.

(c) Estimated Cost of Bacteriological Sample Siting Plan Revision = Sum of [(No. of Water Systems) x (Labor Burden Per Plan) x (Labor Rate)]. See sample calculations below.

Sample Calculations for Table 21

No. of Water Systems A	Labor Burden (Hours/Plan)^(a) B	Labor Rate (Per Hour)^(b) C	Subtotal D=AxBxC	Total E=Sum of D
320	2	\$33.38	\$21,363.20	NA
177	2	\$35.95	\$12,726.30	NA
25	4	\$38.52	\$3,852.00	NA
34	4	\$39.61	\$5,386.96	NA
24	6	\$47.95	\$6,904.80	NA
18	8	\$48.40	\$6,969.60	NA
14	8	\$54.32	\$6,083.84	NA
NA	NA	NA	NA	\$63,286.70

(a) Economic Analysis for the Final Revised Total Coliform Rule, USEPA Office of Water (4706M), EPA 815-R-12-004, September 2012, Exhibit 7.6.

(b) From Table 7. 320 water systems serve ≤100 persons; 177 water systems serve 101-500 persons; 25 water systems serve 501-1,000 persons; 34 water systems serve 1,001-4,100 persons; 24 water systems serve 4,100-33,000 persons; 18 water systems serve 33,001-96,000 persons; 14 water systems serve >96,000 persons.

Table 22

Estimated Total Cost of the Proposed RTCR

Regulatory Requirement	No. of Affected Water Systems (Sources) [Service Connections]	Cost Type Annual Increase	Cost Type Annual Decrease	Cost Type Annual Loss of Previous Cost Savings	Cost Type One-Time
Table 17 – Raw Water Bacteriological Monitoring	584 (1,191) [1,157,498]	\$363,000	Not applicable	Not applicable	Not applicable
Table 18 – Return to Routine Bacteriological Monitoring (CWS, Using GW (not GWUDI), and Serving 25-1,000 Persons)	6 [278]	Not applicable	Not applicable	\$3,600 Net Cost = \$0 ^(a)	Not applicable
Table 19 – Return to Routine Bacteriological Monitoring (NTNCWS, Using GW (not GWUDI), and Serving 25-1,000 Persons)	22 [122]	Not applicable	Not applicable	\$13,000 Net Cost = \$0 ^(a)	Not applicable
Table 20 – Monthly Coliform Summary	6,340 [191,507]	Not applicable	\$154,000	Not applicable	Not applicable
Table 21 – Bacteriological Sample Siting Plan	612 [1,157,898]	Not applicable	Not applicable	Not applicable	\$63,000

(a) Net cost is \$0 because the cost of routine and reduced monitoring under the state TCR was captured under the federal TCR. While the requirement to return to routine monitoring results in a loss of a previous cost saving, it does not result in an additional cost over existing state regulations.

**Total Net Annual Ongoing Increased Cost is \$209,000
Total Net One Time Cost is \$63,000**

Table 23

Estimated Total Cost by Water System Ownership^(a)

Regulatory Requirement	No. of Affected Water Systems (Sources)	Cost Type	Ownership Type Federal	Ownership Type State	Ownership Type Local	Ownership Type Private
Table 17 – Raw Water Bacteriological Monitoring	584 (1,191)	Annual Increase	\$5,700	\$10,000	\$149,000	\$198,000
Table 18 – Return to Routine Bacteriological Monitoring (CWS, Using GW (not GWUDI), and Serving 25-1,000 Persons)	6	Annual Loss of Previous Cost Savings	\$0 Net Cost = \$0 ^(b)	\$0 Net Cost = \$0 ^(b)	\$600 Net Cost = \$0 ^(b)	\$3,000 Net Cost = \$0 ^(b)
Table 19 – Return to Routine Bacteriological Monitoring (NTNCWS, Using GW (not GWUDI), and Serving 25-1,000 Persons)	22	Annual Loss of Previous Cost Savings	\$0 Net Cost = \$0 ^(b)	\$0 Net Cost = \$0 ^(b)	\$4,900 Net Cost = \$0 ^(b)	\$8,500 Net Cost = \$0 ^(b)
Table 20 – Monthly Coliform Summary ^(c)	6,340	Annual Decrease	\$6,700	\$4,500	\$28,000	\$114,000
Tables 17, 18, 19, 20	NA	Net Annual Cost	-\$1,100	\$5,500	\$121,000	\$84,000
Table 21 – Bacteriological Sample Siting Plan	612	One-Time	\$1,700	\$2,300	\$26,000	\$34,000

(a) Costs may differ from Tables 17 through 22, from Table 24, and within Table 23 due to rounding.

(b) Net cost is \$0 because the cost of routine and reduced monitoring under the state TCR was captured under the federal TCR. While the requirement to return to routine monitoring results in a loss of a previous cost saving, it does not result in an additional cost over existing state regulations.

(c) SDWIS database indicated mixed ownership for systems 0105020 and 1000586, which were assumed to be local and private, respectively, based on available information.

Table 24

Estimated Total Cost for Years 1, 2, and 3

Net Cost Type^(a)	Year 1	Year 2	Year 3
Annual	\$209,000	\$209,000	\$209,000
One-Time	\$63,000	Not applicable	Not applicable
Total	\$272,000	\$209,000	\$209,000

(a) From Table 22.