NOTE: This publication is meant to be an aid to the staff of the State Board's Division of Drinking Water (DDW) and cannot be relied upon by the regulated community as the State of California's representation of the law. The published codes are the only official representation of the law. Refer to the published codes—in this case, Title 22 CCR—whenever specific citations are required.

State Water Resources Control Board

Regulations Related to Recycled Water

May 1, 2026

*Sections amended, adopted, repealed, or not included in the previous version are highlighted in yellow. **This revision includes adoption of the Onsite Treatment and Reuse of Nonpotable Water Regulations, effective on April 22, 2026.** If the text in a section, subsection, or paragraph is highlighted, it is new. If only the section/paragraph number is highlighted, it was amended or repealed. Some nonsubstantive revisions may not be shown.*

TITLE 22 CODE OF REGULATIONS

Division 4. Environmental Health

Chapter 1. Introduction

Article 1. Definitions

§60001. Department.
Whenever the term "department" is used in this division, it means the State Department of Health Services, unless otherwise specified.

§60003. Director.
Whenever the term "director" is used in this division, it means the Director, State Department of Health Services, unless otherwise specified.

Chapter 2. Regulations for the Implementation of the California Environmental Quality

Article 1. General Requirements and Categorical Exemptions

§60100. General requirements.
The Department of Health Services incorporates by reference the objectives, criteria, and procedures as delineated in Chapters 1, 2, 2.5, 2.6, 3, 4, 5, and 6, Division 13, Public Resources Code, Sections 21000 et seq., and the Guidelines for the Implementation of the California Environmental Quality Act, Title 14, Division 6, Chapter 3, California Administrative Code, Sections 15000 et seq.

§60101. Specific activities within categorical exempt classes.
The following specific activities are determined by the Department to fall within the classes of categorical exemptions set forth in Sections 15300 et seq. of Title 14 of the California Administrative Code:

(a) Class 1: Existing Facilities.

(1) Any interior or exterior alteration of water treatment units, water supply systems, and pump station buildings where the alteration involves the addition, deletion, or modification of mechanical, electrical, or hydraulic controls.

(2) Maintenance, repair, replacement, or reconstruction to any water treatment process units, including structures, filters, pumps, and chlorinators.

(b) Class 2: Replacement or Reconstruction.

(1) Repair or replacement of any water service connections, meters, and valves for backflow prevention, air release, pressure regulating, shut-off and blow-off or flushing.

(2) Replacement or reconstruction of any existing water supply distribution lines, storage tanks and reservoirs of substantially the same size.

(3) Replacement or reconstruction of any water wells, pump stations and related appurtenances.

(c) Class 3: New Construction of Small Structures.

(1) Construction of any water supply and distribution lines of less than sixteen inches in diameter, and related appurtenances.

(2) Construction of any water storage tanks and reservoirs of less than 100,000 gallon capacity.

(d) Class 4: Minor Alterations to Land.

(1) Minor alterations to land, water, or vegetation on any officially existing designated wildlife management areas or fish production facilities for the purpose of reducing the environmental potential for nuisances or vector production.

(2) Any minor alterations to highway crossings for water supply and distribution lines.

Chapter 3. Water Recycling Criteria

Article 1. Definitions.

§60301.050. 24-hour Composite Sample.

"24-hour Composite Sample" means an aggregate sample derived from no fewer than eight discrete samples collected at equal time intervals or collected proportional to the flow rate over the compositing period. The aggregate sample shall reflect the average source water quality covering the composite 24-hour sample period.

§60301.080. Added Tracer.

"Added Tracer" means a non-reactive substance, with measureable characteristics distinctly different from the receiving groundwater, intentionally added to the water applied at a Groundwater Replenishment Reuse Project (GRRP) for the purpose of being a tracer such that the tracer can be readily identified in the groundwater downgradient of the GRRP to determine the underground retention time of the applied water.

§60301.100. Approved laboratory.

"Approved laboratory" means a laboratory that has been certified by the Department to perform microbiological analyses pursuant to section 116390, Health and Safety Code.

§60301.120. Augmented Reservoir.
"Augmented Reservoir" means a surface water reservoir used as a source of domestic drinking water supply that receives recycled municipal wastewater from a Surface Water Source Augmentation Project (SWSAP).

§60301.160. Coagulated wastewater.
"Coagulated wastewater" means oxidized wastewater in which colloidal and finely divided suspended matter have been destabilized and agglomerated upstream from a filter by the addition of suitable floc-forming chemicals.

§60301.170. Conventional treatment.
"Conventional treatment" means a treatment chain that utilizes a sedimentation unit process between the coagulation and filtration processes and produces an effluent that meets the definition for disinfected tertiary recycled water.

§60301.175. Cross-Connection Control Policy Handbook
"Cross-Connection Control Policy Handbook" or "CCCPH" means standards for backflow protection and cross-connection control contained in a policy handbook adopted by the State Board pursuant to section 116407 of the Health and Safety Code on December 19, 2023, and effective July 1, 2024, which is hereby incorporated by reference.

§60301.180. Department.
"Department" means the California Department of Public Health or its successor with authority to regulate public water systems.

§60301.190. Diluent Water.
"Diluent Water" means water, meeting the diluent requirements of this Chapter, used for reducing the recycled municipal wastewater contribution over time.

§60301.200. Direct beneficial use.
"Direct beneficial use" means the use of recycled water that has been transported from the point of treatment or production to the point of use without an intervening discharge to waters of the State.

§60301.220. Disinfected secondary-2.2 recycled water.
"Disinfected secondary-2.2 recycled water" means recycled water that has been oxidized and disinfected so that the median concentration of total coliform bacteria in the disinfected effluent does not exceed a most probable number (MPN) of 2.2 per 100 milliliters utilizing the bacteriological results of the last seven days for which analyses have been completed, and the number of total coliform bacteria does not exceed an MPN of 23 per 100 milliliters in more than one sample in any 30 day period.

§60301.225. Disinfected secondary-23 recycled water.

"Disinfected secondary-23 recycled water" means recycled water that has been oxidized and disinfected so that the median concentration of total coliform bacteria in the disinfected effluent does not exceed a most probable number (MPN) of 23 per 100 milliliters utilizing the bacteriological results of the last seven days for which analyses have been completed, and the number of total coliform bacteria does not exceed an MPN of 240 per 100 milliliters in more than one sample in any 30 day period.

§60301.230. Disinfected tertiary recycled water.

"Disinfected tertiary recycled water" means a filtered and subsequently disinfected wastewater that meets the following criteria:

(a) The filtered wastewater has been disinfected by either:

(1) A chlorine disinfection process following filtration that provides a CT (the product of total chlorine residual and modal contact time measured at the same point) value of not less than 450 milligram-minutes per liter at all times with a modal contact time of at least 90 minutes, based on peak dry weather design flow; or

(2) A disinfection process that, when combined with the filtration process, has been demonstrated to inactivate and/or remove 99.999 percent of the plaque forming units of F-specific bacteriophage MS2, or polio virus in the wastewater. A virus that is at least as resistant to disinfection as polio virus may be used for purposes of the demonstration.

(b) The median concentration of total coliform bacteria measured in the disinfected effluent does not exceed an MPN of 2.2 per 100 milliliters utilizing the bacteriological results of the last seven days for which analyses have been completed and the number of total coliform bacteria does not exceed an MPN of 23 per 100 milliliters in more than one sample in any 30 day period. No sample shall exceed an MPN of 240 total coliform bacteria per 100 milliliters.

§60301.240. Drift.

"Drift" means the water that escapes to the atmosphere as water droplets from a cooling system.

§60301.245. Drift eliminator.

"Drift eliminator" means a feature of a cooling system that reduces to a minimum the generation of drift from the system.

§60301.250. Dual plumbed system.

"Dual plumbed system" or "dual plumbed" means a system that utilizes separate piping systems for recycled water and potable water within a facility and where the recycled water is used for either of the following purposes:

(a) To serve plumbing outlets (excluding fire suppression systems) within a building or

(b) Outdoor landscape irrigation at individual residences.

§60301.300. F-Specific bacteriophage MS-2.

"F-specific bacteriophage MS-2" means a strain of a specific type of virus that infects coliform bacteria that is traceable to the American Type Culture Collection (ATCC15597B1) and is grown on lawns of E. coli (ATCC 15597).

§60301.310. Facility.

"Facility" means any type of building or structure, or a defined area of specific use that receives water for domestic use from a public water system as defined in section 116275 of the Health and Safety Code.

§60301.320. Filtered wastewater.

"Filtered wastewater" means an oxidized wastewater that meets the criteria in subsection (a) or (b):

(a) Has been coagulated and passed through natural undisturbed soils or a bed of filter media pursuant to the following:

(1) At a rate that does not exceed 5 gallons per minute per square foot of surface area in mono, dual or mixed media gravity, upflow or pressure filtration systems, or does not exceed 2 gallons per minute per square foot of surface area in traveling bridge automatic backwash filters; and

(2) So that the turbidity of the filtered wastewater does not exceed any of the following:

(A) An average of 2 NTU within a 24-hour period;

(B) 5 NTU more than 5 percent of the time within a 24-hour period; and

(C) 10 NTU at any time.

(b) Has been passed through a microfiltration, ultrafiltration, nanofiltration, or reverse osmosis membrane so that the turbidity of the filtered wastewater does not exceed any of the following:

(1) 0.2 NTU more than 5 percent of the time within a 24-hour period; and

(2) 0.5 NTU at any time.

§60301.330. Food crops.

"Food crops" means any crops intended for human consumption.

§60301.370. Groundwater.

"Groundwater" means water below the land surface in a saturated zone.

§60301.390. Groundwater Replenishment Reuse Project or GRRP.

"Groundwater Replenishment Reuse Project" or "GRRP" means a project involving the planned use of recycled municipal wastewater that is operated for the purpose of replenishing a groundwater basin designated in the Water Quality Control Plan [as defined in Water Code section 13050(j)] for use as a source of municipal and domestic water supply.

§60301.400. Hose bib.

"Hose bib" means a faucet or similar device to which a common garden hose can be readily attached.

§60301.450. Indicator Compound.

"Indicator Compound" means an individual chemical in a municipal wastewater that represents the physical, chemical, and biodegradable characteristics of a specific family of trace organic chemicals; is present in concentrations that provide information relative to the environmental fate and transport of those chemicals; may be used to monitor the efficiency of trace organic compound removal by treatment processes; and provides an indication of treatment process failure.

§60301.455. Intrinsic Tracer.

"Intrinsic Tracer" means a substance or attribute present in the recharge water at levels different from the receiving groundwater such that the substance in the water applied at the GRRP can be distinctly and sufficiently detected in the groundwater downgradient of the GRRP to determine the underground retention time of the water.

§60301.550. Landscape impoundment.

"Landscape impoundment" means an impoundment in which recycled water is stored or used for aesthetic enjoyment or landscape irrigation, or which otherwise serves a similar function and is not intended to include public contact.

§60301.575. Maximum Contaminant Level or MCL.

"Maximum Contaminant Level" or "MCL" means the maximum permissible concentration of a contaminant established pursuant to sections 116275(c)(1) and (d) of the Health and Safety Code or established by the U.S. Environmental Protection Agency.

§60301.600. Modal contact time.

"Modal contact time" means the amount of time elapsed between the time that a tracer, such as salt or dye, is injected into the influent at the entrance to a chamber and the time that the highest concentration of the tracer is observed in the effluent from the chamber.

§60301.620. Nonrestricted recreational impoundment.

"Nonrestricted recreational impoundment" means an impoundment of recycled water, in which no limitations are imposed on body-contact water recreational activities.

§60301.625. Notification Level or NL.

"Notification Level" or "NL" means the concentration of a contaminant established by the Department pursuant to section 116455 of the Health and Safety Code.

§60301.630. NTU.

"NTU" (Nephelometric turbidity unit) means a measurement of turbidity as determined by the ratio of the intensity of light scattered by the sample to the intensity of incident light as measured by method 2130 B. in Standard Methods for the Examination of Water and Wastewater, 20th ed.; Eaton, A. D., Clesceri, L. S., and Greenberg, A. E., Eds; American Public Health Association: Washington, DC, 1995; p. 2-8.

§60301.650. Oxidized wastewater.

"Oxidized wastewater" means wastewater in which the organic matter has been stabilized, is nonputrescible, and contains dissolved oxygen.

§60301.660. Peak dry weather design flow.

"Peak Dry Weather Design Flow" means the arithmetic mean of the maximum peak flow rates sustained over some period of time (for example three hours) during the maximum 24-hour dry weather period. Dry weather period is defined as periods of little or no rainfall.

§60301.670. Project Sponsor.

"Project Sponsor" means an entity subject to a Regional Water Quality Control Board's (Regional Board's) water recycling requirements for a Groundwater Replenishment Reuse Project (GRRP) and is, in whole or part, responsible for applying to the Regional Board for a permit, obtaining a permit, operation of a GRRP, and complying with the terms and conditions of the permit and the requirements of this Chapter.

§60301.680. Public Water System.

"Public Water System" has the same meaning as defined in section 116275(h) of the Health and Safety Code.

§60301.685. Recharge Water.

"Recharge Water" means recycled municipal wastewater, or the combination of recycled municipal wastewater and credited diluent water, which is utilized by a GRRP for groundwater replenishment.

§60301.690. Recycled Municipal Wastewater.
"Recycled Municipal Wastewater" means recycled water that is the effluent from the treatment of wastewater of municipal origin.

§60301.700. Recycled water agency.
"Recycled water agency" means the public water system, or a publicly or privately owned or operated recycled water system, that delivers or proposes to deliver recycled water to a facility.

§60301.705. Recycled Municipal Wastewater Contribution or RWC.
"Recycled Municipal Wastewater Contribution" or "RWC" means the fraction equal to the quantity of recycled municipal wastewater applied at the GRRP divided by the sum of the quantity of recycled municipal wastewater and credited diluent water.

§60301.710. Recycling plant.
"Recycling plant" means an arrangement of devices, structures, equipment, processes and controls which produce recycled water.

§60301.740. Regulatory agency.
"Regulatory agency" means the California Regional Water Quality Control Board(s) that have jurisdiction over the recycling plant and use areas.

§60301.750. Restricted access golf course.
"Restricted access golf course" means a golf course where public access is controlled so that areas irrigated with recycled water cannot be used as if they were part of a park, playground, or school yard and where irrigation is conducted only in areas and during periods when the golf course is not being used by golfers.

§60301.760. Restricted recreational impoundment.
"Restricted recreational impoundment" means an impoundment of recycled water in which recreation is limited to fishing, boating, and other non-body-contact water recreational activities.

§60301.770. Regional Board.
"Regional Board" means the Regional Water Quality Control Board.

§60301.780. Saturated Zone.
"Saturated Zone" means an underground region or regions in which all interstices in, between, and below natural geologic materials are filled with water, with the uppermost surface of the saturated zone being the water table.

§60301.800. Spray irrigation.
"Spray irrigation" means the application of recycled water from sprinklers to crops or vegetation.

§60301.810. Spreading Area.
"Spreading Area" means a natural or constructed impoundment with a depth equal to or less than its widest surface dimension used by a GRRP to replenish a groundwater basin with recharge water infiltrating and percolating through a zone that, in the absence of a GRRP, would be an unsaturated zone.

§60301.830. Standby unit process.
"Standby unit process" means an alternate unit process or an equivalent alternative process which is maintained in operable condition and which is capable of providing comparable treatment of the actual flow through the unit for which it is a substitute.

§60301.840. Subsurface Application.
"Subsurface Application" means the application of recharge water to a groundwater basin(s) by a means other than surface application.

§60301.850. Surface Application.
"Surface Application" means the application of recharge water to a spreading area.

§60301.850.5. Surface Water.
As used in this Article and Article 5.3 of this Chapter, "Surface Water" has the same meaning as defined in section 64651.83 of Chapter 17[1].

§60301.851. Surface Water Source Augmentation Project or SWSAP.
"Surface Water Source Augmentation Project" or "SWSAP" means a project involving the planned placement of recycled municipal wastewater into a surface water reservoir that is used as a source of domestic drinking water supply, for the purpose of supplementing the source of domestic drinking water supply.

§60301.852. Surface Water Source Augmentation Project Public Water System or SWSAP PWS.
"Surface Water Source Augmentation Project Public Water System" or "SWSAP PWS" means a public water system that plans to utilize or is utilizing an augmented reservoir as a source of drinking water and is responsible for complying with the requirements of Chapter 17[1] and the applicable requirements of this Chapter.

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[1] Chapter 17, in its entirety, may be found in the DDW's "Drinking Water-Related Regulations" located here: https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/Lawbook.html

§60301.853. Surface Water Source Augmentation Project Water Recycling Agency or SWSAP WRA.
"Surface Water Source Augmentation Project Water Recycling Agency" or "SWSAP WRA" means an agency that is subject to a Regional Water Quality Control Board's (Regional Board's) water-recycling requirements applicable to a Surface Water Source Augmentation Project (SWSAP) and is, in whole or part, responsible for applying to the Regional Board for a permit, obtaining a permit, the operation of a SWSAP, and complying with the terms and conditions of the Regional Board permit and the requirements of this Chapter.

§60301.855. Surrogate Parameter.
"Surrogate Parameter" means a measurable physical or chemical property that has been demonstrated to provide a direct correlation with the concentration of an indicator compound, can be used to monitor the efficiency of trace organic compounds removal by a treatment process, and/or provides an indication of a treatment process failure.

§60301.860. Total Nitrogen.
"Total Nitrogen" means the sum of concentrations of ammonia, nitrite, nitrate, and organic nitrogen-containing compounds, expressed as nitrogen.

§60301.870. Total Organic Carbon or TOC.
"Total Organic Carbon" or "TOC" means the concentration of organic carbon present in water.

§60301.900. Undisinfected secondary recycled water.
"Undisinfected secondary recycled water" means oxidized wastewater.

§60301.910. Unsaturated Zone.
"Unsaturated Zone" means the volume between the land surface and the uppermost saturated zone.

§60301.920. Use area.
"Use area" means an area of recycled water use with defined boundaries. A use area may contain one or more facilities.

Article 2. Sources of Recycled Water.

§60302. Source specifications.
The requirements in this chapter shall only apply to recycled water from sources that contain domestic waste, in whole or in part.

Article 3. Uses of Recycled Water.

§60303. Exceptions.

The requirements set forth in this chapter shall not apply to the use of recycled water onsite at a water recycling plant, or wastewater treatment plant, provided access by the public to the area of onsite recycled water use is restricted.

§60304. Use of recycled water for irrigation.

(a) Recycled water used for the surface irrigation of the following shall be a disinfected tertiary recycled water, except that for filtration pursuant to Section 60301.320(a) coagulation need not be used as part of the treatment process provided that the filter effluent turbidity does not exceed 2 NTU, the turbidity of the influent to the filters is continuously measured, the influent turbidity does not exceed 5 NTU for more than 15 minutes and never exceeds 10 NTU, and that there is the capability to automatically activate chemical addition or divert the wastewater should the filter influent turbidity exceed 5 NTU for more than 15 minutes:

(1) Food crops, including all edible root crops, where the recycled water comes into contact with the edible portion of the crop,

(2) Parks and playgrounds,

(3) School yards,

(4) Residential landscaping,

(5) Unrestricted access golf courses, and

(6) Any other irrigation use not specified in this section and not prohibited by other sections of the California Code of Regulations.

(b) Recycled water used for the surface irrigation of food crops where the edible portion is produced above ground and not contacted by the recycled water shall be at least disinfected secondary-2.2 recycled water.

(c) Recycled water used for the surface irrigation of the following shall be at least disinfected secondary-23 recycled water:

(1) Cemeteries,

(2) Freeway landscaping,

(3) Restricted access golf courses,

(4) Ornamental nursery stock and sod farms where access by the general public is not restricted,

(5) Pasture for animals producing milk for human consumption, and

(6) Any nonedible vegetation where access is controlled so that the irrigated area cannot be used as if it were part of a park, playground or school yard

(d) Recycled wastewater used for the surface irrigation of the following shall be at least undisinfected secondary recycled water:

(1) Orchards where the recycled water does not come into contact with the edible portion of the crop,

(2) Vineyards where the recycled water does not come into contact with the edible portion of the crop,

(3) Non food-bearing trees (Christmas tree farms are included in this category provided no irrigation with recycled water occurs for a period of 14 days prior to harvesting or allowing access by the general public),

(4) Fodder and fiber crops and pasture for animals not producing milk for human consumption,

(5) Seed crops not eaten by humans,

(6) Food crops that must undergo commercial pathogen-destroying processing before being consumed by humans, and

(7) Ornamental nursery stock and sod farms provided no irrigation with recycled water occurs for a period of 14 days prior to harvesting, retail sale, or allowing access by the general public.

(e) No recycled water used for irrigation, or soil that has been irrigated with recycled water, shall come into contact with the edible portion of food crops eaten raw by humans unless the recycled water complies with subsection (a).

§60305. Use of recycled water for impoundments.

(a) Except as provided in subsection (b), recycled water used as a source of water supply for nonrestricted recreational impoundments shall be disinfected tertiary recycled water that has been subjected to conventional treatment.

(b) Disinfected tertiary recycled water that has not received conventional treatment may be used for nonrestricted recreational impoundments provided the recycled water is monitored for the presence of pathogenic organisms in accordance with the following:

(1) During the first 12 months of operation and use the recycled water shall be sampled and analyzed monthly for *Giardia*, enteric viruses, and *Cryptosporidium*. Following the first 12 months of use, the recycled water shall be sampled and analyzed quarterly for *Giardia*, enteric viruses, and *Cryptosporidium*. The ongoing monitoring may be discontinued after the first two years of operation with the approval of the department. This monitoring shall be in addition to the monitoring set forth in section 60321.

(2) The samples shall be taken at a point following disinfection and prior to the point where the recycled water enters the use impoundment. The samples shall be analyzed by an approved laboratory and the results submitted quarterly to the regulatory agency.

(c) The total coliform bacteria concentrations in recycled water used for nonrestricted recreational impoundments, measured at a point between the disinfection process and the

point of entry to the use impoundment, shall comply with the criteria specified in section 60301.230 (b) for disinfected tertiary recycled water.

(d) Recycled water used as a source of supply for restricted recreational impoundments and for any publicly accessible impoundments at fish hatcheries shall be at least disinfected secondary-2.2 recycled water.

(e) Recycled water used as a source of supply for landscape impoundments that do not utilize decorative fountains shall be at least disinfected secondary-23 recycled water.

§60306. Use of recycled water for cooling.

(a) Recycled water used for industrial or commercial cooling or air conditioning that involves the use of a cooling tower, evaporative condenser, spraying or any mechanism that creates a mist shall be a disinfected tertiary recycled water.

(b) Use of recycled water for industrial or commercial cooling or air conditioning that does not involve the use of a cooling tower, evaporative condenser, spraying, or any mechanism that creates a mist shall be at least disinfected secondary-23 recycled water.

(c) Whenever a cooling system, using recycled water in conjunction with an air conditioning facility, utilizes a cooling tower or otherwise creates a mist that could come into contact with employees or members of the public, the cooling system shall comply with the following:

(1) A drift eliminator shall be used whenever the cooling system is in operation.

(2) A chlorine, or other, biocide shall be used to treat the cooling system recirculating water to minimize the growth of *Legionella* and other microorganisms.

§60307. Use of recycled water for other purposes.

(a) Recycled water used for the following shall be disinfected tertiary recycled water, except that for filtration being provided pursuant to Section 60301.320(a) coagulation need not be used as part of the treatment process provided that the filter effluent turbidity does not exceed 2 NTU, the turbidity of the influent to the filters is continuously measured, the influent turbidity does not exceed 5 NTU for more than 15 minutes and never exceeds 10 NTU, and that there is the capability to automatically activate chemical addition or divert the wastewater should the filter influent turbidity exceed 5 NTU for more than 15 minutes:

(1) Flushing toilets and urinals,
(2) Priming drain traps,
(3) Industrial process water that may come into contact with workers,
(4) Structural fire fighting,
(5) Decorative fountains,
(6) Commercial laundries,

(7) Consolidation of backfill around potable water pipelines,
(8) Artificial snow making for commercial outdoor use, and
(9) Commercial car washes, including hand washes if the recycled water is not heated, where the general public is excluded from the washing process.

(b) Recycled water used for the following uses shall be at least disinfected secondary-23 recycled water:
(1) Industrial boiler feed,
(2) Nonstructural fire fighting,
(3) Backfill consolidation around nonpotable piping,
(4) Soil compaction,
(5) Mixing concrete,
(6) Dust control on roads and streets,
(7) Cleaning roads, sidewalks and outdoor work areas and
(8) Industrial process water that will not come into contact with workers.

(c) Recycled water used for flushing sanitary sewers shall be at least undisinfected secondary recycled water.

Article 4. Use Area Requirements.

§60310. Use area requirements.

(a) No irrigation with disinfected tertiary recycled water shall take place within 50 feet of any domestic water supply well unless all of the following conditions have been met:
(1) A geological investigation demonstrates that an aquitard exists at the well between the uppermost aquifer being drawn from and the ground surface.
(2) The well contains an annular seal that extends from the surface into the aquitard.
(3) The well is housed to prevent any recycled water spray from coming into contact with the wellhead facilities.
(4) The ground surface immediately around the wellhead is contoured to allow surface water to drain away from the well.
(5) The owner of the well approves of the elimination of the buffer zone requirement.

(b) No impoundment of disinfected tertiary recycled water shall occur within 100 feet of any domestic water supply well.

(c) No irrigation with, or impoundment of, disinfected secondary-2.2 or disinfected

secondary-23 recycled water shall take place within 100 feet of any domestic water supply well.

(d) No irrigation with, or impoundment of, undisinfected secondary recycled water shall take place within 150 feet of any domestic water supply well.

(e) Any use of recycled water shall comply with the following:

(1) Any irrigation runoff shall be confined to the recycled water use area, unless the runoff does not pose a public health threat and is authorized by the regulatory agency.

(2) Spray, mist, or runoff shall not enter dwellings, designated outdoor eating areas, or food handling facilities.

(3) Drinking water fountains shall be protected against contact with recycled water spray, mist, or runoff.

(f) No spray irrigation of any recycled water, other than disinfected tertiary recycled water, shall take place within 100 feet of a residence or a place where public exposure could be similar to that of a park, playground, or school yard.

(g) All use areas where recycled water is used that are accessible to the public shall be posted with signs that are visible to the public, in a size no less than 4 inches high by 8 inches wide, that include the following wording : "RECYCLED WATER - DO NOT DRINK". Each sign shall display an international symbol similar to that shown in figure 60310-A. The Department may accept alternative signage and wording, or an educational program, provided the applicant demonstrates to the Department that the alternative approach will assure an equivalent degree of public notification.

(h) Except as allowed under the Cross-Connection Control Policy Handbook, no physical connection shall be made or allowed to exist between any recycled water system and any separate system conveying potable water.

(i) Except for use in a cemetery that complies with the requirements of section 8118 of the Health and Safety Code, the portions of the recycled water piping system that are in areas subject to access by the general public shall not include any hose bibs. Only quick couplers that differ from those used on the potable water system shall be used on the portions of the recycled water piping system in areas subject to public access.

Water Recycling Criteria

FIGURE 60310-A

Article 5. Dual Plumbed Recycled Water Systems.

§60313. General requirements.

(a) No person other than a recycled water agency shall deliver recycled water to a dual plumbed facility.

(b) Except as allowed pursuant to section 13553(d) of the Water Code, a recycled water agency shall not deliver recycled water for any internal use to any individually-owned residential units including free-standing structures, multiplexes, or condominiums.[2]

(c) No recycled water agency shall deliver recycled water for internal use except for fire suppression systems, to any facility that produces or processes food products or beverages. For purposes of this Subsection, cafeterias or snack bars in a facility whose primary function does not involve the production or processing of foods or beverages are not considered facilities that produce or process foods or beverages.

(d) No recycled water agency shall deliver recycled water to a facility using a dual plumbed system unless the report required pursuant to section 13522.5 of the Water Code, and which meets the requirements set forth in section 60314, has been submitted to, and approved by, the regulatory agency.

§60314. Report submittal.

(a) For dual-plumbed recycled water systems, **t**he report submitted pursuant to section13522.5 of the Water Code shall contain the following information in addition to the information required by section 60323:

(1) A detailed description of the intended use area identifying the following:

(A) The number, location, and type of facilities within the use area proposing to use dual plumbed systems,

(B) The average number of persons estimated to be served by each facility on a daily basis,

(C) The specific boundaries of the proposed use area including a map showing the location of each facility to be served,

(D) The person or persons responsible for operation of the dual plumbed system at each facility, and

(E) The specific use to be made of the recycled water at each facility.

(2) Plans and specifications describing the following:

(A) Proposed piping system to be used,

(B) Pipe locations of both the recycled and potable systems,

[2] AB 1406, Chapter 537, Statutes of 2007, Water Code 13553, et seq., allows condominiums to be plumbed with recycled water, subject to a number of provisions.

(C) Type and location of the outlets and plumbing fixtures that will be accessible to the public, and

(D) The methods and devices to be used to prevent backflow of recycled water into the public water system.

(3) The methods to be used by the recycled water agency to assure that the installation and operation of the dual plumbed system will not result in cross connections between the recycled water piping system and the potable water piping system. This shall include a description of pressure, dye or other test methods to be used to test the system every four years.

(b) A master plan report that covers more than one facility or use site may be submitted provided the report includes the information required by this section. Plans and specifications for individual facilities covered by the report may be submitted at any time prior to the delivery of recycled water to the facility.

§60315. Design requirements.

The public water supply shall not be used as a backup or supplemental source of water for a dual-plumbed recycled water system unless the connection between the two systems is protected in a manner that complies with the requirements of the Cross-Connection Control Policy Handbook, and approval from the public water system has been obtained.

§60316. Operation requirements.

(a) Prior to the initial operation of the dual-plumbed recycled water system and annually thereafter, the Recycled Water Agency shall ensure that the dual plumbed system within each facility and use area is inspected for possible cross connections with the potable water system. The recycled water system shall also be tested for possible cross connections at least once every four years. The testing shall be conducted in accordance with the method described in the report submitted pursuant to section 60314. The inspections and the testing shall be performed by a cross connection control specialist certified by the California-Nevada section of the American Water Works Association or an organization with equivalent certification requirements. A written report documenting the result of the inspection or testing for the prior year shall be submitted to the department within 30 days following completion of the inspection or testing.

(b) The recycled water agency shall notify the department of any incidence of backflow from the dual-plumbed recycled water system into the potable water system within 24 hours of the discovery of the incident.

(c) Any backflow prevention assembly installed to protect the public water system serving the dual-plumbed recycled water system shall be inspected and maintained in accordance with the Cross-Connection Control Policy Handbook.

Article 5.1. Indirect Potable Reuse: Groundwater Replenishment – Surface Application.

§60320.100. General Requirements.

(a) The requirements of this Article apply to Groundwater Replenishment Reuse Projects (GRRPs) utilizing surface application, which receive initial permits from the Regional Board after June 18, 2014. Within 12 months after June 18, 2014, a project sponsor for a GRRP permitted on or before June 18, 2014, shall submit a report to the Department and appropriate Regional Board assessing its compliance with the requirements of this Article. For each requirement considered noncompliant and applicable by the Department or Regional Board, a project sponsor shall submit a schedule to the Department and Regional Board, for demonstrating and/or achieving compliance with the applicable requirements of this Article. Unless directed otherwise by the Department, a project sponsor's report for a GRRP permitted on or before June 18, 2014, need not assess compliance with requirements of this Article that are required to be met prior to operation of a GRRP, except subsection (b) of this section. The report is subject to review and approval by the Department and Regional Board.

(b) Prior to operation of a GRRP, the GRRP's project sponsor shall obtain Department approval of a plan describing the steps a project sponsor will take to provide an alternative source of drinking water supply to all users of a producing drinking water well, or a Department-approved treatment mechanism a project sponsor will provide to all owners of a producing drinking water well, that as a result of the GRRP's operation, as determined by the Department:

(1) violates a California or federal drinking water standard;

(2) has been degraded to the degree that it is no longer a safe source of drinking water; or

(3) receives water that fails to meet section 60320.108.

(c) Prior to operating a GRRP, a project sponsor shall collect at least four samples, at least one sample each quarter, from each potentially affected aquifer. The samples shall be representative of water in each aquifer, taking into consideration seasonal variations, and be analyzed for the chemicals, contaminants, and characteristics pursuant to sections 60320.110, 60320.112, 60320.118, and 60320.120.

(d) A GRRP's recycled municipal wastewater shall be retained underground for a period of time no less than the retention time required pursuant to sections 60320.108 and 60320.124. The GRRP shall be designed and operated in a manner that ensures water treated pursuant to this Article, beyond the boundary described in subsection (e)(2),

meets the recycled municipal wastewater contributions (RWC) requirements in section 60320.116.

(e) Based on hydrogeologic flowpaths, a GRRP's project sponsor shall provide the Department, Regional Board, and local well-permitting authorities a map of the GRRP site at a scale of 1:24,000 or larger (1 inch equals 2,000 feet or 1 inch equals less than 2,000 feet) or, if necessary, a site sketch at a scale providing more detail, that clearly indicates the criteria in paragraphs (1) – (4) below. A revised map shall be prepared and provided when conditions change such that the previous map no longer accurately reflects current conditions.

(1) the location and boundaries of the GRRP;

(2) a boundary representing a zone of controlled drinking water well construction, the greatest of the horizontal and vertical distances reflecting the retention times required pursuant to sections 60320.108 and 60320.124;

(3) a secondary boundary representing a zone of potential controlled drinking water well construction, depicting the zone within which a well would extend the boundary in paragraph (2) to include existing or potential future drinking water wells, thereby requiring further study and potential mitigating activities prior to drinking water well construction; and

(4) the location of all monitoring wells established pursuant to section 60320.126, and drinking water wells within two years travel time of the GRRP based on groundwater flow directions and velocities expected under GRRP operating conditions.

(f) Prior to operating a GRRP, a project sponsor shall demonstrate to the Department and Regional Board that a project sponsor possesses adequate managerial and technical capability to assure compliance with this Article.

(g) Prior to replenishing a groundwater basin or an aquifer with recycled municipal wastewater, a GRRP's project sponsor shall demonstrate that all treatment processes have been installed and can be operated by a project sponsor to achieve their intended function. A protocol describing the actions to be taken to meet this subsection shall be included in the engineering report submitted pursuant section 60323.

(h) In the engineering report required pursuant to section 60323, a project sponsor for a GRRP shall include a hydrogeological assessment of the proposed GRRP's setting. The assessment shall include the following:

(1) the qualifications of the individual(s) preparing the assessment;

(2) a general description of geologic and hydrogeological setting of the groundwater basin(s) potentially directly impacted by the GRRP;

(3) a detailed description of the stratigraphy beneath the GRRP, including the composition, extent, and physical properties of the affected aquifers; and

(4) based on at least four rounds of consecutive quarterly monitoring to capture seasonal impacts;

(A) the existing hydrogeology and the hydrogeology anticipated as a result of the operation of the GRRP, and

(B) maps showing quarterly groundwater elevation contours, along with vector flow directions and calculated hydraulic gradients.

(i) If a project sponsor fails to complete compliance monitoring required pursuant to this Article, the Regional Board may determine water quality-related compliance based on available data.

(j) A project sponsor shall ensure that the recycled municipal wastewater used for a GRRP shall be from a wastewater management agency that is not in violation of the effluent limits pertaining to groundwater replenishment pursuant to this Article, as established in the wastewater management agency's Regional Board permit.

(k) If a project sponsor has been directed by the Department or Regional Board to suspend surface application pursuant to this Article, surface application shall not resume until the project sponsor has obtained Department and Regional Board approval.

§60320.102. Public Hearing.

(a) A public hearing for a GRRP shall be held by a project sponsor prior to the Department's submittal of its recommendations to the Regional Board for the GRRP's initial permit and any time an increase in maximum RWC has been proposed but not addressed in a prior public hearing. Prior to a public hearing conducted pursuant to this section, a project sponsor shall provide the Department, for its review and approval, the information a project sponsor intends to present at the hearing. Following the Department's approval of the information, a project sponsor shall place the information on a project sponsor's Web site and in a repository that provides at least 30 days of public access to the information prior to the public hearing.

(b) Prior to placing the information required pursuant to subsection (a) in a repository, a project sponsor shall:

(1) Notify the public of the following;

(A) the location and hours of operation of the repository,

(B) the Internet address where the information may be viewed,

(C) the purpose of the repository and public hearing,

(D) the manner in which the public can provide comments, and

(E) the date, time, and location of the public hearing; and

(2) At a minimum, notify the first downgradient drinking water well owner and well owners whose drinking water well is within 10 years from the GRRP based on groundwater flow directions and velocities.

(c) Unless directed otherwise by the Department, the public notification made pursuant to subsection (b)(2) shall be by direct mail and the notification made pursuant to subsection (b)(1) shall be delivered in a manner to reach persons whose source of drinking water may be impacted by the GRRP, using one or more of the following methods:

(1) local newspaper(s) publication of general circulation;
(2) mailed or direct delivery of a newsletter;
(3) conspicuously placed statement in water bills; and/or
(4) television and/or radio.

§60320.104. Lab Analyses.

(a) Analyses for contaminants having primary or secondary MCLs shall be performed by laboratories approved to perform such analyses by the Department utilizing Department-approved drinking water methods.

(b) Analyses for chemicals other than those having primary or secondary MCLs shall be described in the GRRP's Operation Optimization Plan prepared pursuant to section 60320.122.

§60320.106. Wastewater Source Control.

A project sponsor shall ensure that the recycled municipal wastewater used for a GRRP shall be from a wastewater management agency that:

(a) administers an industrial pretreatment and pollutant source control program; and

(b) implements and maintains a source control program that includes, at a minimum;

(1) an assessment of the fate of Department-specified and Regional Board-specified chemicals and contaminants through the wastewater and recycled municipal wastewater treatment systems,

(2) chemical and contaminant source investigations and monitoring that focuses on Department-specified and Regional Board-specified chemicals and contaminants,

(3) an outreach program to industrial, commercial, and residential communities within the portions of the sewage collection agency's service area that flows into the water reclamation plant subsequently supplying the GRRP, for the purpose of managing and minimizing the discharge of chemicals and contaminants at the source, and

(4) a current inventory of chemicals and contaminants identified pursuant to this section, including new chemicals and contaminants resulting from new sources or changes to existing sources, that may be discharged into the wastewater collection system.

§60320.108. Pathogenic Microorganism Control.

(a) A project sponsor shall design and operate a GRRP such that the recycled municipal wastewater used as recharge water for a GRRP receives treatment that achieves at least 12-log enteric virus reduction, 10-log Giardia cyst reduction, and 10-log

Cryptosporidium oocyst reduction. The treatment train shall consist of at least three separate treatment processes. Except as provided in subsection (c), for each pathogen (i.e., virus, Giardia cyst, or Cryptosporidium oocyst), a separate treatment process may be credited with no more than 6-log reduction, with at least three processes each being credited with no less than 1.0-log reduction.

(b) At a minimum, the recycled municipal wastewater applied at a GRRP shall receive treatment that meets:

(1) the definition of filtered wastewater, pursuant to section 60301.320; and

(2) the definition of disinfected tertiary recycled water, pursuant to section 60301.230.

(c) For each month retained underground as demonstrated in subsection (e), the recycled municipal wastewater or recharge water will be credited with 1-log virus reduction. A GRRP meeting subsections (b)(1) and (2) or providing advanced treatment in accordance with section 60320.201 for the entire flow of the recycled municipal wastewater used for groundwater replenishment, that also demonstrates at least six months retention underground pursuant to subsection (e), will be credited with 10-log Giardia cyst reduction and 10-log Cryptosporidium oocyst reduction.

(d) With the exception of log reduction credited pursuant to subsection (c), a project sponsor shall validate each of the treatment processes used to meet the requirements in subsection (a) for their log reduction by submitting a report for the Department's review and approval, or by using a challenge test approved by the Department, that provides evidence of the treatment process's ability to reliably and consistently achieve the log reduction. The report and/or challenge test shall be prepared by an engineer licensed in California with at least five years of experience, as a licensed engineer, in wastewater treatment and public water supply, including the evaluation of treatment processes for pathogen control. With the exception of retention time underground and a soil-aquifer treatment process, a project sponsor shall propose and include in its Operation Optimization Plan prepared pursuant to section 60320.122, on-going monitoring using the pathogenic microorganism of concern or a microbial, chemical, or physical surrogate parameter(s) that verifies the performance of each treatment process's ability to achieve its credited log reduction.

(e) To demonstrate the retention time underground in subsection (c), a tracer study utilizing an added tracer shall be implemented under hydraulic conditions representative of normal GRRP operations. The retention time shall be the time representing the difference from when the water with the tracer is applied at the GRRP to when either; two percent (2%) of the initially introduced tracer concentration has reached the downgradient monitoring point, or ten percent (10%) of the peak tracer unit value observed at the downgradient monitoring point reached the monitoring point. A project sponsor for a GRRP shall initiate the tracer study prior to the end of the third month of

operation. A project sponsor for a GRRP permitted on or before June 18, 2014, that has not already performed such a tracer study shall complete a tracer study demonstrating the retention time underground. With Department approval, an intrinsic tracer may be used in lieu of an added tracer, with no more credit provided than the corresponding virus log reduction in column 2 of Table 60320.108.

(f) For the purpose of siting a GRRP location during project planning and until a GRRP's project sponsor has met the requirements of subsection (e), for each month of retention time estimated using the method in column 1, the recycled municipal wastewater or recharge water shall be credited with no more than the corresponding virus log reduction in column 2 of Table 60320.108.

Table 60320.108

Column 1	Column 2
Method used to estimate the retention time to the nearest downgradient drinking water well	**Virus Log Reduction Credit per Month**
Tracer study utilizing an added tracer.[1]	1.0 log
Tracer study utilizing an intrinsic tracer.[1]	0.67 log
Numerical modeling consisting of calibrated finite element or finite difference models using validated and verified computer codes used for simulating groundwater flow.	0.50 log
Analytical modeling using existing academically-accepted equations such as Darcy's Law to estimate groundwater flow conditions based on simplifying aquifer assumptions.	0.25 log

[1] The retention time shall be the time representing the difference from when the water with the tracer is applied at the GRRP to when either; two percent (2%) of the initially introduced tracer concentration has reached the downgradient monitoring point, or ten percent (10%) of the peak tracer unit value observed at the downgradient monitoring point reached the monitoring point.

(g) A project sponsor shall obtain Department approval for the protocol(s) to be used to establish the retention times in subsections (e) and (f).

(h) Based on changes in hydrogeological or climatic conditions since the most recent demonstration, the Department may require a GRRP's project sponsor to demonstrate that the underground retention times required in this section are being met.

(i) If a pathogen reduction in subsection (a) is not met based on the on-going monitoring required pursuant to subsection (d), within 24 hours of being aware a project sponsor shall immediately investigate the cause and initiate corrective actions. The project sponsor shall immediately notify the Department and Regional Board if the GRRP fails to meet the pathogen reduction criteria longer than 4 consecutive hours, or more than a total of 8 hours during any 7-day period. Failures of shorter duration shall be reported to the Regional Board by a project sponsor no later than 10 days after the month in which the failure occurred.

(j) If the effectiveness of a treatment train's ability to reduce enteric virus is less than 10-logs, or Giardia cyst or Cryptosporidium oocyst reduction is less than 8-logs, a project sponsor shall immediately notify the Department and Regional Board, and discontinue application of recycled municipal wastewater at the GRRP, unless directed otherwise by the Department or Regional Board.

§60320.110. Nitrogen Compounds Control.

(a) To demonstrate control of the nitrogen compounds, a project sponsor shall:

(1) Each week, at least three days apart as specified in the GRRP's Operation Optimization Plan, collect at least two total nitrogen samples (grab or 24-hour composite) representative of the recycled municipal wastewater or recharge water applied throughout the spreading area. Samples may be collected before or after surface application;

(2) Have the samples collected pursuant to paragraph (1) analyzed for total nitrogen, with the laboratory being required by a project sponsor to complete each analysis within 72 hours and have the result reported to a project sponsor within the same 72 hours if the result of any single sample exceeds 10 mg/L;

(3) If the average of the results of two consecutive samples collected pursuant to paragraph (1) exceeds 10 mg/L total nitrogen;

(A) take a confirmation sample and notify the Department and the Regional Board within 48 hours of being notified of the results by the laboratory,

(B) investigate the cause for the exceedances and take actions to reduce the total nitrogen concentrations to ensure continued or future exceedances do not occur, and

(C) initiate additional monitoring for nitrogen compounds as described in the GRRP's Operation Optimization Plan, including locations in the groundwater basin and spreading area, to identify elevated concentrations and determine whether such elevated concentrations exceed or may lead to an exceedance of a nitrogen-based MCL; and

(4) If the average of the results of four consecutive samples collected pursuant to paragraph (1) exceeds 10 mg/L total nitrogen, suspend the surface application of recycled municipal wastewater. Surface application shall not resume until corrective actions have been taken and at least two consecutive total nitrogen sampling results are less than 10 mg/L.

(b) As determined by the Department and based on a GRRP's operation, including but not limited to the time the spreading area is out of service and utilization of a denitrification process, a project sponsor shall initiate additional monitoring for nitrogen compounds to identify elevated concentrations in the groundwater and determine whether such elevated concentrations exceed or may lead to an exceedance of a nitrogen-based MCL.

(c) Following Department and Regional Board approval, a project sponsor may initiate reduced monitoring frequencies for total nitrogen. A project sponsor may apply to the Department and Regional Board for reduced monitoring frequencies for total nitrogen if, for the most recent 24 months:

(1) the average of all results did not exceed 5 mg/L total nitrogen; and

(2) the average of a result and its confirmation sample (taken within 24 hours of receipt of the initial result) did not exceed 10 mg/L total nitrogen.

(d) If the results of reduced monitoring conducted as approved pursuant to subsection (c) exceed the total nitrogen concentration criteria in subsection (c), a project sponsor shall revert to the monitoring frequencies for total nitrogen prior to implementation of the reduced frequencies. Reduced frequency monitoring shall not resume unless the requirements of subsection (c) are met.

§60320.112. Regulated Contaminants and Physical Characteristics Control.

(a) Each quarter, as specified in the GRRP's Operation Optimization Plan, a project sponsor shall collect samples (grab or 24-hour composite) representative of the applied recycled municipal wastewater and have the samples analyzed for:

(1) the inorganic chemicals in Table 64431-A, except for nitrogen compounds;

(2) the radionuclide chemicals in Tables 64442 and 64443;

(3) the organic chemicals in Table 64444-A;

(4) the disinfection byproducts in Table 64533-A; and

(5) lead and copper.

(b) Recharge water (including recharge water after surface application) may be monitored in lieu of recycled municipal wastewater to satisfy the monitoring requirements in subsection (a)(4) if the fraction of recycled municipal wastewater in the recharge water is equal to or greater than the average fraction of recycled municipal wastewater in the recharge water applied over the quarter. If the fraction of recycled municipal wastewater in the recharge water being monitored is less than the average fraction of recycled municipal wastewater in the recharge water applied over the quarter, the reported value shall be adjusted to exclude the effects of dilution.

(c) Each year, the GRRP's project sponsor shall collect at least one representative sample (grab or 24-hour composite) of the recycled municipal wastewater or recharge

water and have the sample(s) analyzed for the secondary drinking water contaminants in Tables 64449-A and 64449-B.

(d) If a result of the monitoring performed pursuant to subsection (a) exceeds a contaminant's MCL or action level (for lead and copper), a project sponsor shall collect another sample within 72 hours of notification of the result and then have it analyzed for the contaminant as confirmation.

(1) For a contaminant whose compliance with its MCL or action level is not based on a running annual average, if the average of the initial and confirmation sample exceeds the contaminant's MCL or action level, or the confirmation sample is not collected and analyzed pursuant to this subsection, the GRRP's project sponsor shall notify the Department and Regional Board within 24 hours and initiate weekly monitoring until four consecutive weekly results are below the contaminant's MCL or action level. If the running four-week average exceeds the contaminant's MCL or action level, the GRRP's project sponsor shall notify the Department and Regional Board within 24 hours and, if directed by the Department or Regional Board, suspend application of the recycled municipal wastewater.

(2) For a contaminant whose compliance with its MCL is based on a running annual average, if the average of the initial and confirmation sample exceeds the contaminant's MCL, or a confirmation sample is not collected and analyzed pursuant to this subsection, the GRRP shall initiate weekly monitoring for the contaminant until the running four-week average no longer exceeds the contaminant's MCL.

(A) If the running four-week average exceeds the contaminant's MCL, a project sponsor shall describe the reason(s) for the exceedance and provide a schedule for completion of corrective actions in a report submitted to the Department and Regional Board no later than 45 days following the quarter in which the exceedance occurred.

(B) If the running four-week average exceeds the contaminant's MCL for sixteen consecutive weeks, a project sponsor shall notify the Department and Regional Board within 48 hours of knowledge of the exceedance and, if directed by the Department or Regional Board, suspend application of the recycled municipal wastewater.

(e) If the annual average of the results of the monitoring performed pursuant to subsection (c) exceeds a contaminant's secondary MCL in Table 64449-A or the upper limit in Table 64449-B, a project sponsor shall initiate quarterly monitoring of the recycled municipal wastewater for the contaminant and, if the running annual average of quarterly-averaged results exceeds a contaminant's secondary MCL or upper limit, describe the reason(s) for the exceedance and any corrective actions taken in a report submitted to Regional Board no later than 45 days following the quarter in which the exceedance occurred, with a copy concurrently provided to the Department. The annual monitoring in subsection (c) may resume if the running annual average of quarterly results does not exceed a contaminant's secondary MCL or upper limit.

(f) If four consecutive quarterly results for asbestos are below the detection limit in Table 64432-A for asbestos, monitoring for asbestos may be reduced to one sample every three years. Quarterly monitoring shall resume if asbestos is detected.

§60320.114. Diluent Water Requirements.

To be credited with diluent water used in calculating an RWC pursuant to section 60320.116, the GRRP shall comply with the requirements of this section and receive Department approval. For diluent water that is a Department-approved drinking water source, the GRRP's project sponsor is exempt from subsections (a) and (b). The GRRP's project sponsor shall:

(a) Monitor the diluent water quarterly for nitrate and nitrite and, within 72 hours of being informed by the laboratory of a nitrate, nitrite, or nitrate plus nitrite result exceeding a maximum contaminant level (MCL), collect a confirmation sample. If the average of the two samples is greater than an MCL;

(1) notify the Department and the Regional Board within 48 hours of receiving the confirmation sample result,

(2) investigate the cause(s) and implement corrective actions, and

(3) each week, collect and analyze two grab samples at least three days apart as specified in the GRRP's Operation Optimization Plan. If the average of the results for a two-week period exceeds the MCL, surface application of the diluent water shall not be used in the calculation of RWC until corrective actions are made. Quarterly monitoring may resume if four consecutive results are below the MCL.

(b) Conduct a source water evaluation per the California-Nevada Section of American Water Works Association's Watershed Sanitary Survey Guidance Manual (1993), as it may be amended, or other Department-approved evaluation, of the diluent water for Department review and approval that includes, but is not limited to:

(1) a description of the source of the diluent water;

(2) delineation of the origin and extent of the diluent water;

(3) the susceptibility of the diluent water to contamination;

(4) the identification of known or potential contaminants; and

(5) an inventory of the potential sources of diluent water contamination.

(c) Ensure diluent water does not exceed a primary MCL, a secondary MCL upper limit (if not historically used to recharge the basin), or a notification level (NL), and implement a Department-approved water quality monitoring plan for Department-specified contaminants to demonstrate compliance with the primary MCLs, secondary MCLs (except turbidity, color, and odor), and NLs. The plan shall also include:

(1) except for Department-approved drinking water sources used as a diluent water, monitoring of any chemicals or contaminants required pursuant to section 60320.120, based on the source water evaluation performed in subsection (b); and

(2) actions to be taken in the event of non-compliance with a primary MCL, secondary MCL, or exceedance of a NL.

(d) Develop a method for determining the volume of diluent water to be credited and demonstrate that the diluent water will be introduced in a manner such that the diluent water volume will not result in the GRRP's 120-month running monthly average RWC exceeding its maximum RWC at or beyond the boundary established pursuant to section 60320.100(e)(2). The method shall be submitted to the Department for review and approval, and be conducted at a frequency specified in the engineering report prepared pursuant to section 60323. The method shall address all conditions that influence how and when the recycled municipal wastewater and diluent water arrive at all points along the boundary. The conditions must include, but are not limited to, temporal variability in the diluent water supply and regional groundwater gradients, the difference in the distribution of the recycled municipal wastewater and diluent water between individual aquifers where more than one aquifer is replenished, and the difference in travel-time when recycled municipal wastewater and diluent water are introduced at different locations and/or times.

(e) For credit prior to the operation of the GRRP, but not to exceed 120 months:

(1) demonstrate that the diluent water met the nitrate, nitrite, and nitrate plus nitrite MCLs, NLs, and the water quality requirements in section 60320.112;

(2) provide evidence that the quantity of diluent water has been accurately determined and was distributed such that the proposed or permitted maximum RWC would not have been exceeded; and

(3) conduct a source water evaluation of the diluent water pursuant to subsection (b).

(f) In the Operation Optimization Plan prepared pursuant to section 60320.122, include a description of:

(1) how the diluent water will be distributed in a manner that ensures that the maximum RWC will not be exceeded during normal operations; and

(2) the actions to be taken in the event the diluent water is curtailed or is no longer available.

(g) If approved by the Department, recharge water may be monitored in lieu of a diluent water source if the diluent water source cannot be monitored directly in a manner that provides samples representative of the diluent water being applied.

§60320.116. Recycled Municipal Wastewater Contribution (RWC) Requirements.

(a) Each month, for each surface application GRRP used for replenishing a groundwater basin, the GRRP's project sponsor shall calculate the running monthly average (RMA) RWC based on the total volume of the recycled municipal wastewater and credited diluent water for the preceding 120 months. For GRRPs in operation less than 120 months, calculation of the RMA RWC shall commence after 30 months of recycled municipal wastewater application, based on the total volume of the recycled municipal wastewater and credited diluent water introduced during the preceding months.

(b) The GRRP's RMA RWC, as determined in subsection (a), shall not exceed the maximum RWC specified for the GRRP by the Department.

(c) The initial maximum RWC shall not exceed 0.20 or an alternative initial RWC approved by the Department. An alternative initial RWC up to 1.0 may be approved by the Department based on, but not limited to, the Department's review of the engineering report, the information obtained as a result of the public hearing(s), and a project sponsor's demonstration that the treatment processes preceding the soil-aquifer treatment process will reliably achieve total organic carbon (TOC) concentrations no greater than 0.5 mg/L divided by the proposed initial RWC.

(d) A GRRP may increase its maximum RWC, provided:

(1) the increase has been approved by the Department and Regional Board;

(2) for the previous 52 weeks, the TOC 20-week running average, as monitored pursuant to section 60320.118, has not exceeded 0.5 mg/L divided by the proposed maximum RWC; and

(3) the GRRP has received a permit from the Regional Board that allows operation of the GRRP at the increased maximum RWC.

(e) In addition to the requirements in subsection (d), prior to operating a GRRP at an RWC greater than 0.50 or 0.75, which must be achieved sequentially, a project sponsor shall:

(1) provide a proposal to the Department prepared and signed by an engineer licensed in California with at least three years of experience in wastewater treatment and public water supply;

(2) submit an updated engineering report and Operation Optimization Plan; and

(3) provide evidence of compliance with section 60320.126(a).

(f) If the RMA RWC exceeds its maximum RWC, the GRRP's project sponsor shall:

(1) notify the Department and Regional Board in writing within seven days of knowledge of the exceedance; and

(2) within 60 days of knowledge of the exceedance, implement corrective action(s) and additional actions that may be required by the Department or Regional Board, and submit a report to the Department and Regional Board describing the reason(s) for the exceedance and the corrective action(s) taken to avoid future exceedances.

§60320.118. Total Organic Carbon (TOC) and Soil-Aquifer Treatment (SAT) Process Requirements.

For each surface application GRRP used for replenishing a groundwater basin, the GRRP's project sponsor shall assess the SAT process through the monitoring of TOC, indicator compounds, and surrogate parameters, as approved by the Department.

(a) At least once each week, a project sponsor shall analyze TOC from representative 24-hour composite samples of the following:

(1) the undiluted recycled municipal wastewater, prior to application or within the zone of percolation;

(2) the diluted percolated recycled municipal wastewater, with the value amended to negate the effect of the diluent water; or

(3) the undiluted recycled municipal wastewater prior to application, with the value amended using a soil-aquifer treatment factor approved by the Department and based on demonstration studies, which reliably predicts the removal efficiency of the process.

(b) Grab samples may be used in lieu of the 24-hour composite samples required in subsection (a) if:

(1) the GRRP demonstrates that a grab sample is representative of the water quality throughout a 24-hour period; or

(2) the entire recycled municipal wastewater stream has been treated by reverse osmosis meeting the criteria in sections 60320.201(a) and (b).

(c) Analytical results of the TOC monitoring performed pursuant to subsection (a) shall not exceed 0.5 mg/L divided by the RMA RWC based on:

(1) the 20-week running average of all TOC results; and

(2) the average of the last four TOC results.

(d) If the GRRP exceeds the limit in subsection (c)(1) or its approved increased TOC limit obtained pursuant to section 60320.130(c), based on a 20-week running average, a project sponsor shall take the following actions upon being notified of the results:

(1) immediately suspend the addition of recycled municipal wastewater until at least two consecutive results, three days apart, are less than the limit;

(2) notify the Department and Regional Board within seven days of suspension; and

(3) within 60 days, submit a report to the Department and Regional Board describing the reasons for the exceedance and the corrective actions to avoid future exceedances. At a minimum, the corrective actions shall include;

(A) a reduction of RWC sufficient to comply with the limit, and/or

(B) additional treatment demonstrated to the Department to remove TOC and chemicals or contaminants of concern to public health.

(e) If the GRRP exceeds the limit in subsection (c)(2) or its approved increased TOC limit obtained pursuant to section 60320.130(c), based on the average of the last four results, a project sponsor shall, within 60 days of being notified of the results, submit a report to the Department and Regional Board describing the reasons for the exceedance and the corrective actions taken to avoid future exceedances.

(f) Prior to a GRRP beginning initial operation and at five-year intervals thereafter, a project sponsor shall conduct a study to determine the occurrence of indicator compounds in the recycled municipal wastewater to be applied at the GRRP. Following completion of the study, a project sponsor shall propose at least three indicator compounds for use in meeting subsection (g). The protocol for the occurrence study, the study's results, and the indicator compounds to be used shall be reviewed and approved by the Department.

(g) Quarterly, a project sponsor shall monitor the GRRP's recycled municipal wastewater or recharge water prior to the SAT process and the water after the SAT process, but at a point no farther than 30 days downgradient of the spreading area. The monitoring shall include at least three indicator compounds based on the results of an occurrence study approved by the Department. If the monitoring results do not indicate a reduction of at least 90 percent in the concentration of indicator compounds by the SAT, excluding the effects of dilution from diluent water that may be present, a project sponsor shall investigate the reason for the low reduction and report the indicator compound and investigative results within 90 days of receipt of the analytical results.

(h) If the result of the investigation in subsection (g) concludes that the 90 percent reduction could not be demonstrated because the concentration of indicator compounds prior to the SAT process was not sufficient, a project sponsor shall consult with the Department and comply with an alternative monitoring plan approved by the Department. If a project sponsor demonstrates that there are not three compounds available and suitable for indicating a 90 percent reduction pursuant to subsection (g), a project sponsor may utilize an indicator compound that achieves a reduction less than 90 percent, with Department approval of the alternative indicator compound and reduction criteria.

(i) To use one or more wastewater chemicals in lieu of TOC, a project sponsor shall obtain approval from the Department. At a minimum, the chemical(s) used in lieu of TOC shall:

(1) be quantifiable in the wastewater, recycled municipal wastewater, groundwater, and throughout the treatment processes; and

(2) have identifiable treatment performance standards as protective of public health as the TOC standards in this Article.

§60320.120. Additional Chemical and Contaminant Monitoring.

(a) Each quarter, the GRRP's project sponsor shall sample and analyze the recycled municipal wastewater and the groundwater (from the downgradient monitoring wells established pursuant to section 60320.126) for the following:

(1) Priority Toxic Pollutants (chemicals listed in 40 CFR section 131.38, "Establishment of numeric criteria for priority toxic pollutants for the State of California," as the foregoing may be amended) specified by the Department, based on the Department's review of the GRRP's engineering report; and

(2) Chemicals that the Department has specified, based on a review of the GRRP's engineering report, the affected groundwater basin(s), and the results of the assessment performed pursuant to section 60320.106(b)(1).

(b) Each quarter, the GRRP's project sponsor shall sample and analyze the recycled municipal wastewater for Department-specified chemicals having notification levels (NLs). Recharge water (including recharge water after surface application) may be monitored in lieu of recycled municipal wastewater if the fraction of recycled municipal wastewater in the recharge water is equal to or greater than the average fraction of recycled municipal wastewater in the recharge water applied over the quarter. If the fraction of recycled municipal wastewater in the recharge water being monitored is less than the average fraction of recycled municipal wastewater in the recharge water applied over the quarter, the reported value shall be adjusted to exclude the effects of dilution. If a result exceeds a NL, within 72 hours of notification of the result a project sponsor shall collect another sample and have it analyzed for the contaminant as confirmation. If the average of the initial and confirmation sample exceeds the contaminant's NL, or a confirmation sample is not collected and analyzed pursuant to this subsection, the GRRP shall initiate weekly monitoring for the contaminant until the running four-week average no longer exceeds the NL.

(1) If the running four-week average exceeds the contaminant's NL, a project sponsor shall describe the reason(s) for the exceedance and provide a schedule for completion of corrective actions in a report submitted to the Regional Board no later than 45 days following the quarter in which the exceedance occurred, with a copy concurrently provided to the Department.

(2) If the running four-week average exceeds the contaminant's NL for sixteen consecutive weeks, a project sponsor shall notify the Department and Regional Board within 48 hours of knowledge of the exceedance.

(c) A project sponsor may reduce monitoring for the chemicals in this section to once each year following Department approval based on the Department's review of the most recent two years of results of the monitoring performed pursuant to this section.

(d) Annually, a project sponsor shall monitor the recycled municipal wastewater for indicator compounds specified by the Department and Regional Board based on the following:

(1) a review of the GRRP's engineering report;

(2) the inventory developed pursuant to section 60320.106(b)(4);

(3) the affected groundwater basin(s);

(4) an indicator compound's ability to characterize the presence of pharmaceuticals, endocrine disrupting chemicals, personal care products, and other indicators of the presence of municipal wastewater; and

(5) the availability of a test method for a chemical.

(e) A chemical or contaminant detected as a result of monitoring conducted pursuant to this section shall be reported to the Department and Regional Board no later than the quarter following the quarter in which the results are received by the GRRP's project sponsor.

§60320.122. Operation Optimization and Plan.

(a) Prior to operation of a GRRP, a project sponsor shall submit an Operation Optimization Plan to the Department and Regional Board for review and approval. At a minimum, the Operation Optimization Plan shall identify and describe the operations, maintenance, analytical methods, monitoring necessary for the GRRP to meet the requirements of this Article, and the reporting of monitoring results to the Department and Regional Board. A project sponsor shall be responsible for ensuring that the Operation Optimization Plan is, at all times, representative of the current operations, maintenance, and monitoring of the GRRP. A GRRP's project sponsor shall make the Operation Optimization Plan available to the Department or Regional Board for review upon request.

(b) During the first year of operation of a GRRP and at all times thereafter, all treatment processes shall be operated in a manner providing optimal reduction of all chemicals and contaminants including:

(1) microbial contaminants;

(2) regulated contaminants identified in section 60320.112 and the nitrogen compounds required pursuant to section 60320.110; and

(3) chemicals and contaminants required pursuant to section 60320.120.

(c) Within six months of optimizing treatment processes pursuant to subsection (b) and anytime thereafter operations are optimized that result in a change in operation, a project sponsor shall update the GRRP's Operation Optimization Plan to include such changes in operational procedures and submit the operations plan to the Department for review.

§60320.124. Response Retention Time.

(a) The recycled municipal wastewater applied by a GRRP shall be retained underground for a period of time necessary to allow a project sponsor sufficient response time to identify treatment failures and implement actions, including those required pursuant to section 60320.100(b), necessary for the protection of public health.

(b) The response retention time required in subsection (a) must be approved by the Department, based on information provided in the engineering report required pursuant to section 60323. The response retention time shall be no less than two months.

(c) To demonstrate the retention time underground is no less than the response retention time approved pursuant to subsection (b), a tracer study utilizing an added tracer shall be implemented under hydraulic conditions representative of normal GRRP operations. With Department approval, an intrinsic tracer may be used in lieu of an added tracer. For each month of retention time estimated utilizing the approved intrinsic tracer, a project sponsor shall receive no more than 0.67 months credit. The retention time shall be the time representing the difference from when the water with the tracer is applied at the GRRP to when either; two percent (2%) of the initially introduced tracer concentration has reached the downgradient monitoring point, or ten percent (10%) of the peak tracer unit value observed at the downgradient monitoring point reaches the monitoring point. A project sponsor for a GRRP shall initiate the tracer study prior to the end of the third month of operation. A project sponsor for a GRRP permitted on or before June 18, 2014, that has not performed a tracer study shall complete a tracer study demonstrating the retention time underground.

(d) For the purpose of siting a GRRP location during project planning and until a GRRP's project sponsor has met the requirements of subsection (c), for each month of retention time estimated using the method in column 1, the recycled municipal wastewater or recharge water may be credited with no more than the corresponding response time in column 2 of Table 60320.124.

Table 60320.124

Column 1	Column 2
Method used to estimate the retention time	**Response Time Credit per Month**
Tracer study utilizing an added tracer.[1]	1.0 month
Tracer study utilizing an intrinsic tracer.[1]	0.67 month
Numerical modeling consisting of calibrated finite element or finite difference models using validated and verified computer codes used for simulating groundwater flow.	0.50 month
Analytical modeling using existing academically-accepted equations such as Darcy's Law to estimate groundwater flow conditions based on simplifying aquifer assumptions.	0.25 month

[1] The retention time shall be the time representing the difference from when the water with the tracer is applied at the GRRP to when either; two percent (2%) of the initially introduced tracer concentration has reached the downgradient monitoring point, or ten percent (10%) of the peak tracer unit value observed at the downgradient monitoring point reaches the monitoring point.

(e) A project sponsor shall obtain Department approval for the protocol(s) to be used to establish the retention times in subsections (c) and (d).

(f) Upon request from the Department, a project sponsor shall demonstrate that the underground retention times required in this section are being met based on changes in hydrogeological or climatic conditions since the most recent demonstration.

§60320.126. Monitoring Well Requirements.

(a) Prior to operating a GRRP, a project sponsor shall site and construct at least two monitoring wells downgradient of the GRRP such that:

(1) at least one monitoring well is located;

(A) no less than two weeks but no more than six months of travel through the saturated zone affected by the GRRP, and

(B) at least 30 days upgradient of the nearest drinking water well;

(2) in addition to the well(s) in paragraph (1) and after consultation with the Department, at least one monitoring well is located between the GRRP and the nearest downgradient drinking water well; and

(3) samples from the monitoring wells in paragraphs (1) and (2) can be;

(A) obtained independently from each aquifer, initially receiving the water used as a source of drinking water supply, that will receive the GRRP's recharge water, and

(B) validated as receiving recharge water from the GRRP.

(b) In addition to the monitoring required pursuant to section 60320.120, from each monitoring well in subsection (a)(1), and each monitoring well in subsection (a)(2) that has recharge water located within one year travel time of the well(s), a project sponsor shall collect two samples prior to GRRP operation and at least one sample each quarter after operation begins. Each sample shall be analyzed for total nitrogen, nitrate, nitrite, the contaminants in Tables 64449-A and B of section 64449, and any contaminants and chemicals specified by the Department or Regional Board based on the results of the recycled municipal wastewater monitoring conducted pursuant to this Article.

(c) If a result from the monitoring conducted pursuant to subsection (b) exceeds 80 percent of a nitrate, nitrite, or nitrate plus nitrite MCL a project sponsor shall, within 48 hours of being notified of the result by the laboratory, collect another sample and have it analyzed for the contaminant. If the average of the result of the initial sample and the confirmation sample exceed the contaminant's MCL, a project sponsor shall:

(1) within 24 hours of being notified by the laboratory of the confirmation sample result, notify the Department and Regional Board; and

(2) discontinue surface application of recycled municipal wastewater until corrective actions have been taken or evidence is provided to the Department and Regional Board that the contamination was not a result of the GRRP.

(d) For Department-specified chemical analyses completed in a month, a project sponsor shall ensure the laboratory electronically submits results to the Department no later than 45 days after the end of the month in which monitoring occurred, in a manner such that data is readily uploaded into the Department's database. Utilization of the process described on the Department's Web site will satisfy this requirement.

(e) The GRRP's project sponsor may reduce monitoring for the chemicals and contaminants in subsection (b) to once each year following Department approval based on the Department's review of the most recent two years of monitoring results.

§60320.128. Reporting.

(a) No later than six months after the end of each calendar year, a project sponsor shall provide a report to the Department and Regional Board. Public water systems and drinking water well owners having downgradient sources potentially affected by the GRRP and within 10 years groundwater travel time from the GRRP shall be notified by direct mail and/or electronic mail of the availability of the report. The report shall be prepared by an engineer licensed in California and experienced in the fields of wastewater treatment and public water supply. The report shall include the following:

(1) A summary of the GRRP's compliance status with the monitoring requirements and criteria of this Article during the previous calendar year;

(2) For any violations of this Article during the previous calendar year;

(A) the date, duration, and nature of the violation,

(B) a summary of any corrective actions and/or suspensions of surface application of recycled municipal wastewater resulting from a violation, and

(C) if uncorrected, a schedule for and summary of all remedial actions;

(3) Any detections of monitored chemicals or contaminants, and any observed trends in the monitoring wells and diluent water supplies;

(4) Information pertaining to the vertical and horizontal migration of the recharge water plume;

(5) A description of any changes in the operation of any unit processes or facilities;

(6) A description of any anticipated changes, along with an evaluation of the expected impact of the changes on subsequent unit processes;

(7) The estimated quantity and quality of the recycled municipal wastewater and diluent water to be applied for the next calendar year;

(8) A summary of the measures taken to comply with section 60320.106 and 60320.100(j), and the effectiveness of the implementation of the measures; and

(9) Increases in RWC during the previous calendar year and RWC increases anticipated for the next calendar year.

(b) Every five years from the date of the initial approval of the engineering report required pursuant to section 60323, a project sponsor shall update the report to address any project changes and submit the report to the Department and Regional Board. The update shall include, but not be limited to:

(1) anticipated RWC increases, a description of how the RWC requirements in section 60320.116 will be met, and the expected impact the increase will have on the GRRP's ability to meet the requirements of this Article;

(2) evidence that the requirements associated with retention time in section 60320.108, if applicable, and section 60320.124 have been met; and

(3) a description of any inconsistencies between previous groundwater model predictions and the observed and/or measured values, as well as a description of how subsequent predictions will be accurately determined.

§60320.130. Alternatives.

(a) A project sponsor may use an alternative to a requirement in this Article if the GRRP's project sponsor:

(1) demonstrates to the Department that the proposed alternative assures at least the same level of protection to public health;

(2) receives written approval from the Department prior to implementation of the alternative; and

(3) if required by the Department or Regional Board, conducts a public hearing on the proposed alternative, disseminates information to the public, and receives public comments, pursuant to sections 60320.102(b) and (c).

(b) Unless specified otherwise by the Department, the demonstration in subsection (a)(1) shall include the results of a review of the proposed alternative by an independent scientific advisory panel that includes a toxicologist, a registered engineering geologist or hydrogeologist, an engineer licensed in California with at least three years of experience in wastewater treatment and public drinking water supply, a microbiologist, and a chemist.

(c) The TOC limit specified in section 60320.118(c) may be increased if:

(1) The increased TOC limit is approved by the Department and Regional Board;

(2) The GRRP has been in operation for the most recent ten consecutive years;

(3) A project sponsor submits a proposal to the Department prepared and signed by an engineer licensed in California with at least three years of experience in the fields of wastewater treatment and public water supply. The proposal shall include the following, based on the most recent ten consecutive years of operation;

(A) GRRP operations, monitoring, and compliance data,

(B) Evidence that the GRRP has a history of compliance with the requirements of their Regional Board permit,

(C) Evidence that the water collected at all downgradient drinking water wells and monitoring wells impacted by the GRRP has met the primary drinking water standards,

(D) Analytical or treatment studies requested by the Department to make the determination in subparagraph (C),

(E) Validation of appropriate construction and siting of monitoring wells pursuant to section 60320.126(a), and

(F) A study defining the water quality changes, including organic carbon characterization, as a result of the impact of the GRRP; and

(4) A project sponsor performs a health effects evaluation that assesses the health risks to consumers of water impacted by the GRRP, including any anticipated water quality changes resulting from the proposed increased TOC limit. The evaluation shall include the following;

(A) An exposure assessment that characterizes the quality of the water consumed and the quantity of contaminants and chemicals consumed,

(B) All available human epidemiologic studies of the population that has consumed water impacted by the GRRP,

(C) The results of laboratory animal studies and health risk assessments available in peer-reviewed literature pertaining to water impacted by the GRRP and anticipated water quality changes resulting from the proposed increased TOC, including studies or assessments where extrapolation of data may be relevant,

(D) A health risk assessment of the potential individual and cumulative effects of each of the regulated contaminants identified in section 60320.112, and the chemicals or contaminants monitored pursuant to sections 60320.120(a) and (c), that includes;

1. lifetime risks of cancer, and
2. risks of non-cancer effects, and

(E) A report detailing comments, questions, concerns, and conclusions of a review by an independent scientific peer review advisory panel that includes, as a minimum, a toxicologist, an epidemiologist, an engineering geologist or hydrogeologist registered in California, an engineer licensed in California with at least three years of experience in wastewater treatment and public water supply, a microbiologist, and a chemist.

Article 5.2. Indirect Potable Reuse: Groundwater Replenishment – Subsurface Application.

§60320.200. General Requirements.

(a) The requirements of this Article apply to Groundwater Replenishment Reuse Projects (GRRPs) utilizing subsurface application, which receive initial permits from the Regional Board after June 18, 2014. Within 12 months after June 18, 2014, a project sponsor for a GRRP permitted on or before June 18, 2014, shall submit a report to the Department and appropriate Regional Board assessing its compliance with the requirements of this Article. For each requirement considered noncompliant and applicable by the Department or Regional Board, a project sponsor shall submit a schedule to the Department and Regional Board, for demonstrating and/or achieving compliance with the applicable requirements of this Article. Unless directed otherwise by the Department, a project sponsor's report for a GRRP permitted on or before June 18, 2014, need not assess compliance with requirements of this Article that are required to be

met prior to operation of a GRRP, except subsection (b) of this section. The report is subject to review and approval by the Department and Regional Board. A project sponsor shall ensure the GRRP continuously treats, with full advanced treatment meeting the criteria in section 60320.201, the entire recycled municipal wastewater stream prior to application.

(b) Prior to operation of a GRRP, the GRRP's project sponsor shall obtain Department approval of a plan describing the steps a project sponsor will take to provide an alternative source of drinking water supply to all users of a producing drinking water well, or a Department-approved treatment mechanism a project sponsor will provide to all owners of a producing drinking water well, that as a result of the GRRP's operation, as determined by the Department:

(1) violates a California or federal drinking water standard;

(2) has been degraded to the degree that it is no longer a safe source of drinking water; or

(3) receives water that fails to meet section 60320.208.

(c) Prior to operating a GRRP, a project sponsor shall collect at least four samples, at least one sample each quarter, from each potentially affected aquifer. The samples shall be representative of water in each aquifer, taking into consideration seasonal variations, and be analyzed for the chemicals, contaminants, and characteristics pursuant to sections 60320.210, 60320.212, 60320.218, and 60320.220.

(d) A GRRP's recycled municipal wastewater shall be retained underground for a period of time no less than the retention time required pursuant to sections 60320.208 and 60320.224. The GRRP shall be designed and operated in a manner that ensures water treated pursuant to this Article, beyond the boundary described in subsection (e)(2), meets the recycled municipal wastewater contributions (RWC) requirements in section 60320.216.

(e) Based on hydrogeologic flowpaths, a GRRP's project sponsor shall provide the Department, Regional Board, and local well-permitting authorities a map of the GRRP site at a scale of 1:24,000 or larger (1 inch equals 2,000 feet or 1 inch equals less than 2,000 feet) or, if necessary, a site sketch at a scale providing more detail, that clearly indicates the criteria in paragraphs (1) – (4) below. A revised map shall be prepared and provided when conditions change such that the previous map no longer accurately reflects current conditions.

(1) the location and boundaries of the GRRP;

(2) a boundary representing a zone of controlled drinking water well construction, the greatest of the horizontal and vertical distances reflecting the retention times required pursuant to sections 60320.208 and 60320.224;

(3) a secondary boundary representing a zone of potential controlled drinking water well construction, depicting the zone within which a well would extend the

boundary in paragraph (2) to include existing or potential future drinking water wells, thereby requiring further study and potential mitigating activities prior to drinking water well construction; and

(4) the location of all monitoring wells established pursuant to section 60320.226, and drinking water wells within two years travel time of the GRRP based on groundwater flow directions and velocities expected under GRRP operating conditions.

(f) Prior to operating a GRRP, a project sponsor shall demonstrate to the Department and Regional Board that a project sponsor possesses adequate managerial and technical capability to assure compliance with this Article.

(g) Prior to replenishing a groundwater basin or an aquifer with recycled municipal wastewater, a GRRP's project sponsor shall demonstrate that all treatment processes have been installed and can be operated by a project sponsor to achieve their intended function. A protocol describing the actions to be taken to meet this subsection shall be included in the engineering report submitted pursuant section 60323.

(h) In the engineering report required pursuant to section 60323, a project sponsor for a GRRP shall include a hydrogeological assessment of the proposed GRRP's setting. The assessment shall include the following:

(1) the qualifications of the individual(s) preparing the assessment;

(2) a general description of geologic and hydrogeological setting of the groundwater basin(s) potentially directly impacted by the GRRP;

(3) a detailed description of the stratigraphy beneath the GRRP, including the composition, extent, and physical properties of the affected aquifers; and

(4) based on at least four rounds of consecutive quarterly monitoring to capture seasonal impacts;

(A) the existing hydrogeology and the hydrogeology anticipated as a result of the operation of the GRRP, and

(B) maps showing quarterly groundwater elevation contours, along with vector flow directions and calculated hydraulic gradients.

(i) If a project sponsor fails to complete compliance monitoring required pursuant to this Article, the Regional Board may determine water quality-related compliance based on available data.

(j) A project sponsor shall ensure that the recycled municipal wastewater used for a GRRP shall be from a wastewater management agency that is not in violation of the effluent limits pertaining to groundwater replenishment pursuant to this Article, as established in the wastewater management agency's Regional Board permit.

(k) If a project sponsor has been directed by the Department or Regional Board to suspend subsurface application pursuant to this Article, subsurface application shall not resume until the project sponsor has obtained Department and Regional Board approval.

§60320.201. Advanced Treatment Criteria.

Full advanced treatment is the treatment of an oxidized wastewater, as defined in section 60301.650, using a reverse osmosis and an oxidation treatment process that, at a minimum, meets the criteria of this section.

(a) A project sponsor shall select for use a reverse osmosis membrane such that:

(1) each membrane element used in the project has achieved a minimum rejection of sodium chloride of no less than 99.0 percent (99.0%) and an average (nominal) rejection of sodium chloride of no less than 99.2 percent (99.2%), as demonstrated through Method A of ASTM International's method D4194-03 (2008) using the following substitute test conditions:

(A) tests are operated at a recovery of no less than 15 percent (15%);

(B) sodium chloride rejection is based on three or more successive measurements, after flushing and following at least 30 minutes of operation having demonstrated that rejection has stabilized;

(C) an influent pH no less than 6.5 and no greater than 8.0; and

(D) an influent sodium chloride concentration of no greater than 2,000 mg/L, to be verified prior to the start of testing; and

(2) during the first twenty weeks of full-scale operation the membrane produces a permeate with no more than five percent (5%) of the sample results having TOC concentrations greater than 0.25 mg/L, as verified through monitoring no less frequent than weekly.

(b) For the reverse osmosis treatment process, a project sponsor shall propose, for Department review and approval, on-going performance monitoring (e.g., conductivity or TOC) that indicates when the integrity of the process has been compromised. The proposal shall include at least one form of continuous monitoring, as well as the associated surrogate and/or operational parameter limits and alarm settings that indicate when the integrity has been compromised.

(c) To demonstrate a sufficient oxidation process has been designed for implementation, a project sponsor shall:

(1) Perform an occurrence study on the project's municipal wastewater to identify indicator compounds and select a total of at least nine indicator compounds, with at least one from each of the functional groups in subparagraphs (A) through (I) below. A project sponsor shall submit an occurrence study protocol, as well as the subsequent results and chosen indicator compounds, to the Department for review and approval.

(A) Hydroxy Aromatic

(B) Amino/Acylamino Aromatic

(C) Nonaromatic with carbon double bonds
(D) Deprotonated Amine
(E) Alkoxy Polyaromatic
(F) Alkoxy Aromatic
(G) Alkyl Aromatic
(H) Saturated Aliphatic
(I) Nitro Aromatic

(2) Utilize an oxidation process that achieves optimal removal of the indicator compounds selected in paragraph (1) such that removal is no less than;

(A) 0.5-log (69 percent) for each indicator compound representing the functional groups in paragraphs (1)(A) through (1)(G), and

(B) 0.3-log (50 percent) for each indicator compound representing the functional groups in paragraphs (1)(H) and (1)(I).

(3) Establish at least one surrogate or operational parameter that reflects the removal of at least five of the nine indicator compounds selected pursuant to paragraph (1) such that;

(A) at least one of the five indicator compounds represents at least one functional group in paragraphs (1)(A) through (1)(G),

(B) at least one of the five indicator compounds represents at least one functional group in paragraphs (1)(H) or (1)(I),

(C) at least one surrogate or operational parameter is capable of being monitored continuously, recorded, and have associated alarms, and

(D) a surrogate or operational parameter, including the parameter in subparagraph (C), is identified that indicates when the process may no longer meet the criteria established in paragraph (2).

(4) Conduct testing that includes confirmation of the findings of the occurrence study in paragraph (1) and provides evidence that the requirements of paragraphs (2) and (3) can be met with a full-scale oxidation process. The testing shall include challenge or spiking tests conducted to determine the removal differential under normal operating conditions utilizing, at minimum, the nine indicator compounds identified in paragraph (1). A project sponsor shall submit a testing protocol, as well as the subsequent results, to the Department for review and approval.

(d) In lieu of demonstrating that a sufficient oxidation process has been designed for implementation pursuant to subsection (c), a project sponsor may conduct testing demonstrating that the oxidation process will provide no less than 0.5-log (69 percent) reduction of 1,4-dioxane.

(1) A project sponsor shall submit a testing protocol, as well as the subsequent results, to the Department for review and approval. The testing shall include challenge or spiking tests, using 1,4-dioxane, to demonstrate the proposed oxidation process will achieve the minimum 0.5-log reduction under the proposed oxidation process's normal full-scale operating conditions.

(2) A project sponsor shall establish surrogate and/or operational parameters that reflect whether the minimum 0.5-log 1,4-dioxane reduction design criteria is being met. At least one surrogate or operational parameter shall be capable of being monitored continuously, recorded, and have associated alarms that indicate when the process is not operating as designed.

(e) During the full-scale operation of the oxidation process designed pursuant to subsection (c) or (d), a project sponsor shall continuously monitor the surrogate and/or operational parameters established pursuant to subsection (c)(3)(C) or (d)(2), as applicable. A project sponsor shall implement, in full-scale operation, the oxidation process as designed pursuant to subsection (c) or (d).

(f) Within 60 days after completing the initial 12-months of monitoring pursuant to subsection (e), a project sponsor shall submit a report to the Department and Regional Board that includes:

(1) the results of the monitoring performed in subsection (e);

(2) the removal differential of the indicator compounds;

(3) a description of the efficacy of the surrogate and/or operational parameters to reflect the removal differential of the indicator compounds; and

(4) a description of actions taken, or to be taken, if the indicator compound removal did not meet the associated design criteria in subsection (c) or (d), the continuous surrogate and/or operational parameter monitoring in subsection (c)(3)(C) or (d)(2) fails to correspond to the differential indicator compound removal, or the surrogate and/or operational parameter established in subsection (c)(3)(D) or (d)(2) is not met.

(g) Within 60 days after completing the initial 12 months of operation of the reverse osmosis process, a project sponsor shall submit a report to the Department and Regional Board describing the effectiveness of the treatment, process failures, and actions taken in the event the on-going monitoring in subsection (b) indicated that process integrity was compromised.

(h) Each quarter, a project sponsor shall calculate what percent of results of the quarter's monitoring, conducted pursuant to subsections (b) and (e), did not meet the surrogate and/or operational parameter limits established to assure proper on-going performance of the reverse osmosis and oxidation processes. If the percent is greater than ten, within 45 days after the end of the quarter a project sponsor shall:

(1) submit a report to the Department and Regional Board describing the corrective actions planned or taken to reduce the percent to ten percent (10%) or less; and

(2) consult with the Department and, if required, comply with an alternative monitoring plan approved by the Department.

(i) Each month a project sponsor shall collect samples (grab or composite) representative of the effluent of the advanced treatment process and have the samples

analyzed for contaminants having MCLs and notification levels (NLs). After 12 consecutive months with no results exceeding an MCL or NL, a project sponsor may apply for a reduced monitoring frequency. The reduced monitoring frequency shall be no less than quarterly. Monitoring conducted pursuant to this subsection may be used in lieu of the monitoring (for the same contaminants) required pursuant to sections 60320.212 and 60320.220. The effluent of the advanced treatment process shall not exceed an MCL.

§60320.202. Public Hearing.

(a) A public hearing for a GRRP shall be held by a project sponsor prior to the Department's submittal of its recommendations to the Regional Board for the GRRP's initial permit and any time an increase in maximum RWC has been proposed but not addressed in a prior public hearing. Prior to a public hearing conducted pursuant to this section, a project sponsor shall provide the Department, for its review and approval, the information a project sponsor intends to present at the hearing. Following the Department's approval of the information, a project sponsor shall place the information on a project sponsor's Web site and in a repository that provides at least 30 days of public access to the information prior to the public hearing.

(b) Prior to placing the information required pursuant to subsection (a) in a repository, a project sponsor shall:

(1) Notify the public of the following;

(A) the location and hours of operation of the repository,

(B) the Internet address where the information may be viewed,

(C) the purpose of the repository and public hearing,

(D) the manner in which the public can provide comments, and

(E) the date, time, and location of the public hearing; and

(2) At a minimum, notify the first downgradient drinking water well owner and well owners whose drinking water well is within 10 years from the GRRP based on groundwater flow directions and velocities.

(c) Unless directed otherwise by the Department, the public notification made pursuant to subsection (b)(2) shall be by direct mail and the notification made pursuant to subsection (b)(1) shall be delivered in a manner to reach persons whose source of drinking water may be impacted by the GRRP, using one or more of the following methods:

(1) local newspaper(s) publication of general circulation;

(2) mailed or direct delivery of a newsletter;

(3) conspicuously placed statement in water bills; and/or

(4) television and/or radio.

§60320.204. Lab Analyses.

(a) Analyses for contaminants having primary or secondary MCLs shall be performed by laboratories approved to perform such analyses by the Department utilizing Department-approved drinking water methods.

(b) Analyses for chemicals other than those having primary or secondary MCLs shall be described in the GRRP's Operation Optimization Plan prepared pursuant to section 60320.222.

§60320.206. Wastewater Source Control.

A project sponsor shall ensure that the recycled municipal wastewater used for a GRRP shall be from a wastewater management agency that:

(a) administers an industrial pretreatment and pollutant source control program; and

(b) implements and maintains a source control program that includes, at a minimum;

(1) an assessment of the fate of Department-specified and Regional Board-specified chemicals and contaminants through the wastewater and recycled municipal wastewater treatment systems,

(2) chemical and contaminant source investigations and monitoring that focuses on Department-specified and Regional Board-specified chemicals and contaminants,

(3) an outreach program to industrial, commercial, and residential communities within the portions of the sewage collection agency's service area that flows into the water reclamation plant subsequently supplying the GRRP, for the purpose of managing and minimizing the discharge of chemicals and contaminants at the source, and

(4) a current inventory of chemicals and contaminants identified pursuant to this section, including new chemicals and contaminants resulting from new sources or changes to existing sources, that may be discharged into the wastewater collection system.

§60320.208. Pathogenic Microorganism Control.

(a) A project sponsor shall design and operate a GRRP such that the recycled municipal wastewater used as recharge water for a GRRP receives treatment that achieves at least 12-log enteric virus reduction, 10-log Giardia cyst reduction, and 10-log Cryptosporidium oocyst reduction. The treatment train shall consist of at least three separate treatment processes. For each pathogen (i.e., virus, Giardia cyst, or Cryptosporidium oocyst), a separate treatment process may be credited with no more than 6-log reduction, with at least three processes each being credited with no less than 1.0-log reduction.

(b) For each month retained underground as demonstrated in subsection (d), the recycled municipal wastewater or recharge water will be credited with 1-log virus reduction.

(c) With the exception of log reduction credited pursuant to subsection (b), a project sponsor shall validate each of the treatment processes used to meet the requirements in subsection (a) for their log reduction by submitting a report for the Department's review and approval, or by using a challenge test approved by the Department, that provides evidence of the treatment process's ability to reliably and consistently achieve the log reduction. The report and/or challenge test shall be prepared by an engineer licensed in California with at least five years of experience, as a licensed engineer, in wastewater treatment and public water supply, including the evaluation of treatment processes for pathogen control. With the exception of retention time underground, a project sponsor shall propose and include in its Operation Optimization Plan prepared pursuant to section 60320.222, on-going monitoring using the pathogenic microorganism of concern or a microbial, chemical, or physical surrogate parameter(s) that verifies the performance of each treatment process's ability to achieve its credited log reduction.

(d) To demonstrate the retention time underground in subsection (b) a tracer study utilizing an added tracer shall be implemented under hydraulic conditions representative of normal GRRP operations. The retention time shall be the time representing the difference from when the water with the tracer is applied at the GRRP to when either; two percent (2%) of the initially introduced tracer concentration has reached the downgradient monitoring point, or ten percent (10%) of the peak tracer unit value observed at the downgradient monitoring point reached the monitoring point. A project sponsor for a GRRP shall initiate the tracer study prior to the end of the third month of operation. A project sponsor for a GRRP permitted on or before June 18, 2014, that has not already performed such a tracer study shall complete a tracer study demonstrating the retention time underground. With Department approval, an intrinsic tracer may be used in lieu of an added tracer, with no more credit provided than the corresponding virus log reduction in column 2 of Table 60320.208.

(e) For the purpose of siting a GRRP location during project planning and until a GRRP's project sponsor has met the requirements of subsection (d), for each month of retention time estimated using the method in column 1, the recycled municipal wastewater or recharge water shall be credited with no more than the corresponding virus log reduction in column 2 of Table 60320.208.

Table 60320.208

Column 1	Column 2
Method used to estimate the retention time to the nearest downgradient drinking water well	**Virus Log Reduction Credit per Month**
Tracer study utilizing an added tracer.[1]	1.0 log
Tracer study utilizing an intrinsic tracer.[1]	0.67 log
Numerical modeling consisting of calibrated finite element or finite difference models using validated and verified computer codes used for simulating groundwater flow.	0.50 log
Analytical modeling using existing academically-accepted equations such as Darcy's Law to estimate groundwater flow conditions based on simplifying aquifer assumptions.	0.25 log

[1] The retention time shall be the time representing the difference from when the water with the tracer is applied at the GRRP to when either; two percent (2%) of the initially introduced tracer concentration has reached the downgradient monitoring point, or ten percent (10%) of the peak tracer unit value observed at the downgradient monitoring point reached the monitoring point.

(f) A project sponsor shall obtain Department approval for the protocol(s) to be used to establish the retention times in subsections (d) and (e).

(g) Based on changes in hydrogeological or climatic conditions since the most recent demonstration, the Department may require a GRRP's project sponsor to demonstrate that the underground retention times required in this section are being met.

(h) If a pathogen reduction in subsection (a) is not met based on the on-going monitoring required pursuant to subsection (c), within 24 hours of being aware a project sponsor shall immediately investigate the cause and initiate corrective actions. The project sponsor shall immediately notify the Department and Regional Board if the GRRP fails to meet the pathogen reduction criteria longer than 4 consecutive hours, or more than a total of 8 hours during any 7-day period. Failures of shorter duration shall be reported to the Regional Board by a project sponsor no later than 10 days after the month in which the failure occurred.

(i) If the effectiveness of a treatment train's ability to reduce enteric virus is less than 10-logs, or Giardia cyst or Cryptosporidium oocyst reduction is less than 8-logs, a project sponsor shall immediately notify the Department and Regional Board, and discontinue application of recycled municipal wastewater at the GRRP, unless directed otherwise by the Department or Regional Board.

§60320.210. Nitrogen Compounds Control.

(a) To demonstrate control of the nitrogen compounds, a project sponsor shall:

(1) Each week, at least three days apart as specified in the GRRP's Operation Optimization Plan, collect at least two total nitrogen samples (grab or 24-hour composite) representative of the recycled municipal wastewater or recharge water applied. Samples may be collected before or after subsurface application;

(2) Have the samples collected pursuant to paragraph (1) analyzed for total nitrogen, with the laboratory being required by a project sponsor to complete each analysis within 72 hours and have the result reported to a project sponsor within the same 72 hours if the result of any single sample exceeds 10 mg/L;

(3) If the average of the results of two consecutive samples collected pursuant to paragraph (1) exceeds 10 mg/L total nitrogen;

(A) take a confirmation sample and notify the Department and the Regional Board within 48 hours of being notified of the results by the laboratory,

(B) investigate the cause for the exceedances and take actions to reduce the total nitrogen concentrations to ensure continued or future exceedances do not occur, and

(C) initiate additional monitoring for nitrogen compounds as described in the GRRP's Operation Optimization Plan, including locations in the groundwater basin, to identify elevated concentrations and determine whether such elevated concentrations exceed or may lead to an exceedance of a nitrogen-based MCL; and

(4) If the average of the results of four consecutive samples collected pursuant to paragraph (1) exceeds 10 mg/L total nitrogen, suspend the subsurface application of recycled municipal wastewater. Subsurface application shall not resume until corrective actions have been taken and at least two consecutive total nitrogen sampling results are less than 10 mg/L.

(b) Following Department and Regional Board approval, a project sponsor may initiate reduced monitoring frequencies for total nitrogen. A project sponsor may apply to the Department and Regional Board for reduced monitoring frequencies for total nitrogen if, for the most recent 12 months:

(1) the average of all results did not exceed 5 mg/L total nitrogen; and

(2) the average of a result and its confirmation sample (taken within 24 hours of receipt of the initial result) did not exceed 10 mg/L total nitrogen.

(c) If the results of reduced monitoring conducted as approved pursuant to subsection (b) exceed the total nitrogen concentration criteria in subsection (b), a project sponsor shall revert to the monitoring frequencies for total nitrogen prior to implementation of the reduced frequencies. Reduced frequency monitoring shall not resume unless the requirements of subsection (b) are met.

§60320.212. Regulated Contaminants and Physical Characteristics Control.

(a) Each quarter, as specified in the GRRP's Operation Optimization Plan, a project sponsor shall collect samples (grab or 24-hour composite) representative of the applied recycled municipal wastewater and have the samples analyzed for:

(1) the inorganic chemicals in Table 64431-A, except for nitrogen compounds;

(2) the radionuclide chemicals in Tables 64442 and 64443;

(3) the organic chemicals in Table 64444-A;

(4) the disinfection byproducts in Table 64533-A; and

(5) lead and copper.

(b) Recharge water may be monitored in lieu of recycled municipal wastewater to satisfy the monitoring requirements in subsection (a)(4) if the fraction of recycled municipal wastewater in the recharge water is equal to or greater than the average fraction of recycled municipal wastewater in the recharge water applied over the quarter. If the fraction of recycled municipal wastewater in the recharge water being monitored is less than the average fraction of recycled municipal wastewater in the recharge water applied over the quarter, the reported value shall be adjusted to exclude the effects of dilution.

(c) Each year, the GRRP's project sponsor shall collect at least one representative sample (grab or 24-hour composite) of the recycled municipal wastewater and have the sample(s) analyzed for the secondary drinking water contaminants in Tables 64449-A and 64449-B.

(d) If a result of the monitoring performed pursuant to subsection (a) exceeds a contaminant's MCL or action level (for lead and copper), a project sponsor shall collect another sample within 72 hours of notification of the result and then have it analyzed for the contaminant as confirmation.

(1) For a contaminant whose compliance with its MCL or action level is not based on a running annual average, if the average of the initial and confirmation sample exceeds the contaminant's MCL or action level, or the confirmation sample is not collected and analyzed pursuant to this subsection, the GRRP's project sponsor shall notify the Department and Regional Board within 24 hours and initiate weekly monitoring until four consecutive weekly results are below the contaminant's MCL or action level. If the running four-week average exceeds the contaminant's MCL or action level, the GRRP's project sponsor shall notify the Department and Regional Board within 24 hours and, if directed by the Department or Regional Board, suspend application of the recycled municipal wastewater.

(2) For a contaminant whose compliance with its MCL is based on a running annual average, if the average of the initial and confirmation sample exceeds the contaminant's MCL, or a confirmation sample is not collected and analyzed pursuant to this subsection, the GRRP shall initiate weekly monitoring for the contaminant until the running four-week average no longer exceeds the contaminant's MCL.

(A) If the running four-week average exceeds the contaminant's MCL, a project sponsor shall describe the reason(s) for the exceedance and provide a schedule for completion of corrective actions in a report submitted to the Department and Regional Board no later than 45 days following the quarter in which the exceedance occurred.

(B) If the running four-week average exceeds the contaminant's MCL for sixteen consecutive weeks, a project sponsor shall notify the Department and Regional Board within 48 hours of knowledge of the exceedance and, if directed by the Department or Regional Board, suspend application of the recycled municipal wastewater.

(e) If the annual average of the results of the monitoring performed pursuant to subsection (c) exceeds a contaminant's secondary MCL in Table 64449-A or the upper limit in Table 64449-B, a project sponsor shall initiate quarterly monitoring of the recycled municipal wastewater for the contaminant and, if the running annual average of quarterly-averaged results exceeds a contaminant's secondary MCL or upper limit, describe the reason(s) for the exceedance and any corrective actions taken a report submitted to the Regional Board no later than 45 days following the quarter in which the exceedance occurred, with a copy concurrently provided to the Department. The annual monitoring in subsection (c) may resume if the running annual average of quarterly results does not exceed a contaminant's secondary MCL or upper limit.

(f) If four consecutive quarterly results for asbestos are below the detection limit in Table 64432-A for asbestos, monitoring for asbestos may be reduced to one sample every three years. Quarterly monitoring shall resume if asbestos is detected.

§60320.214. Diluent Water Requirements.

To be credited with diluent water used in calculating an RWC pursuant to section 60320.216, the GRRP shall comply with the requirements of this section and receive Department approval. For diluent water that is a Department-approved drinking water source, the GRRP's project sponsor is exempt from subsections (a) and (b). The GRRP's project sponsor shall:

(a) Monitor the diluent water quarterly for nitrate and nitrite and, within 72 hours of being informed by the laboratory of a nitrate, nitrite, or nitrate plus nitrite result exceeding a maximum contaminant level (MCL), collect a confirmation sample. If the average of the two samples is greater than an MCL;

(1) notify the Department and the Regional Board within 48 hours of receiving the confirmation sample result,

(2) investigate the cause(s) and implement corrective actions, and

(3) each week, collect and analyze two grab samples at least three days apart as specified in the GRRP's Operation Optimization Plan. If the average of the results for a two-week period exceeds the MCL, subsurface application of the diluent water shall not be used in the calculation of RWC until corrective actions are made. Quarterly monitoring may resume if four consecutive results are below the MCL.

(b) Conduct a source water evaluation per the California-Nevada Section of American Water Works Association's Watershed Sanitary Survey Guidance Manual (1993), as it may be amended, or other Department-approved evaluation, of the diluent water for Department review and approval that includes, but is not limited to:

(1) a description of the source of the diluent water;

(2) delineation of the origin and extent of the diluent water;

(3) the susceptibility of the diluent water to contamination;

(4) the identification of known or potential contaminants; and

(5) an inventory of the potential sources of diluent water contamination.

(c) Ensure diluent water does not exceed a primary MCL, a secondary MCL upper limit, or a notification level (NL), and implement a Department-approved water quality monitoring plan for Department-specified contaminants to demonstrate compliance with the primary MCLs, secondary MCLs, and NLs. The plan shall also include:

(1) except for Department-approved drinking water sources used as a diluent water, monitoring of any chemicals or contaminants required pursuant to section 60320.220, based on the source water evaluation performed in subsection (b); and

(2) actions to be taken in the event of non-compliance with a primary MCL, secondary MCL, or exceedance of a NL.

(d) Develop a method for determining the volume of diluent water to be credited and demonstrate that the diluent water will be introduced in a manner such that the diluent water volume will not result in the GRRP's 120-month running monthly average RWC

exceeding its maximum RWC at or beyond the boundary established pursuant to section 60320.200(e)(2). The method shall be submitted to the Department for review and approval, and be conducted at a frequency specified in the engineering report prepared pursuant to section 60323. The method shall address all conditions that influence how and when the recycled municipal wastewater and diluent water arrive at all points along the boundary. The conditions must include, but are not limited to, temporal variability in the diluent water supply and regional groundwater gradients, the difference in the distribution of the recycled municipal wastewater and diluent water between individual aquifers where more than one aquifer is replenished, and the difference in travel-time when recycled municipal wastewater and diluent water are introduced at different locations and/or times.

(e) For credit prior to the operation of the GRRP, but not to exceed 120 months:

(1) demonstrate that the diluent water met the nitrate, nitrite, and nitrate plus nitrite MCLs, NLs, and the water quality requirements in section 60320.212;

(2) provide evidence that the quantity of diluent water has been accurately determined and was distributed such that the proposed or permitted maximum RWC would not have been exceeded; and

(3) conduct a source water evaluation of the diluent water pursuant to subsection (b).

(f) In the Operation Optimization Plan prepared pursuant to section 60320.222, include a description of:

(1) how the diluent water will be distributed in a manner that ensures that the maximum RWC will not be exceeded during normal operations; and

(2) the actions to be taken in the event the diluent water is curtailed or is no longer available.

(g) If approved by the Department, recharge water may be monitored in lieu of a diluent water source if the diluent water source cannot be monitored directly in a manner that provides samples representative of the diluent water being applied.

§60320.216. Recycled Municipal Wastewater Contribution (RWC) Requirements.

(a) Each month, for each subsurface application GRRP used for replenishing a groundwater basin, the GRRP's project sponsor shall calculate the running monthly average (RMA) RWC based on the total volume of the recycled municipal wastewater and credited diluent water for the preceding 120 months. For GRRPs in operation less than 120 months, calculation of the RMA RWC shall commence after 30 months of recycled municipal wastewater application, based on the total volume of the recycled municipal wastewater and credited diluent water introduced during the preceding months.

(b) The GRRP's RMA RWC, as determined in subsection (a), shall not exceed the maximum RWC specified for the GRRP by the Department.

(c) The initial maximum RWC, which may be up to 1.0, will be based on, but not limited to, the Department's review of the engineering report, information obtained as a result of the public hearing(s), and a project sponsor's demonstration that the treatment processes will reliably achieve TOC concentrations no greater than 0.5 mg/L.

(d) A GRRP may increase its maximum RWC, provided:

(1) the increase has been approved by the Department and Regional Board;

(2) for the previous 52 weeks the TOC 20-week running average, as monitored pursuant to section 60320.218, has not exceeded 0.5 mg/L; and

(3) the GRRP has received a permit from the Regional Board that allows operation of the GRRP at the increased maximum RWC.

(e) If the RMA RWC exceeds its maximum RWC, the GRRP's project sponsor shall:

(1) notify the Department and Regional Board in writing within seven days of knowledge of the exceedance; and

(2) within 60 days of knowledge of the exceedance, implement corrective action(s) and additional actions that may be required by the Department or Regional Board, and submit a report to the Department and Regional Board describing the reason(s) for the exceedance and the corrective action(s) taken to avoid future exceedances.

§60320.218. Total Organic Carbon Requirements.

(a) For each subsurface application GRRP used for replenishing a groundwater basin, the GRRP's project sponsor shall monitor the applied recycled municipal wastewater for TOC as follows:

(1) Prior to replenishment, at least one 24-hour composite sample each week.

(2) Grab samples may be used in lieu of the 24-hour composite samples required in paragraph (1) if the GRRP demonstrates that a grab sample is representative of the water quality throughout a 24-hour period.

(b) Analytical results of the TOC monitoring performed pursuant to subsection (a) shall not exceed 0.5 mg/L based on:

(1) the 20-week running average of all TOC results; and

(2) the average of the last four TOC results.

(c) If the GRRP exceeds the limit in subsection (b)(1) based on a 20-week running average, a project sponsor shall take the following actions upon being notified of the results:

(1) immediately suspend the addition of recycled municipal wastewater until at least two consecutive results, three days apart, are less than the limit;

(2) notify the Department and Regional Board within seven days of suspension; and

(3) within 60 days, submit a report to the Department and Regional Board describing the reasons for the exceedance and the corrective actions to avoid future exceedances. At a minimum, the corrective actions shall include a reduction of RWC sufficient to comply with the limit.

(d) If the GRRP exceeds the limit in subsection (b)(2) based on the average of the last four results, a project sponsor shall, within 60 days of being notified of the results, submit a report to the Department and Regional Board describing the reasons for the exceedance and the corrective actions taken to avoid future exceedances.

(e) To use one or more wastewater chemicals in lieu of TOC, a project sponsor shall obtain approval from the Department. At a minimum, the chemical(s) used in lieu of TOC shall:

(1) be quantifiable in the wastewater, recycled municipal wastewater, groundwater, and throughout the treatment processes; and

(2) have identifiable treatment performance standards as protective of public health as the TOC standards in this Article.

§60320.220. Additional Chemical and Contaminant Monitoring.

(a) Each quarter, the GRRP's project sponsor shall sample and analyze the recycled municipal wastewater and the groundwater (from the downgradient monitoring wells established pursuant to section 60320.226) for the following:

(1) Priority Toxic Pollutants (chemicals listed in 40 CFR section 131.38, "Establishment of numeric criteria for priority toxic pollutants for the State of California", as the foregoing may be amended) specified by the Department, based on the Department's review of the GRRP's engineering report; and

(2) Chemicals that the Department has specified, based on a review of the GRRP's engineering report, the affected groundwater basin(s), and the results of the assessment performed pursuant to section 60320.206(b)(1).

(b) Each quarter, the GRRP's project sponsor shall sample and analyze the recycled municipal wastewater for Department-specified chemicals having notification levels (NLs). Recharge water may be monitored in lieu of recycled municipal wastewater if the fraction of recycled municipal wastewater in the recharge water is equal to or greater than the average fraction of recycled municipal wastewater in the recharge water applied over the quarter. If the fraction of recycled municipal wastewater in the recharge water being monitored is less than the average fraction of recycled municipal wastewater in the recharge water applied over the quarter, the reported value shall be adjusted to exclude

the effects of dilution. If a result exceeds a NL, within 72 hours of notification of the result a project sponsor shall collect another sample and have it analyzed for the contaminant as confirmation. If the average of the initial and confirmation sample exceeds the contaminant's NL, or a confirmation sample is not collected and analyzed pursuant to this subsection, the GRRP shall initiate weekly monitoring for the contaminant until the running four-week average no longer exceeds the NL.

(1) If the running four-week average exceeds the contaminant's NL, a project sponsor shall describe the reason(s) for the exceedance and provide a schedule for completion of corrective actions in a report submitted to the Regional Board no later than 45 days following the quarter in which the exceedance occurred, with a copy concurrently provided to the Department.

(2) If the running four-week average exceeds the contaminant's NL for sixteen consecutive weeks, a project sponsor shall notify the Department and Regional Board within 48 hours of knowledge of the exceedance.

(c) A project sponsor may reduce monitoring for the chemicals in this section to once each year following Department approval based on the Department's review of the most recent two years of results of the monitoring performed pursuant to this section.

(d) Annually, a project sponsor shall monitor the recycled municipal wastewater for indicator compounds specified by the Department and Regional Board based on the following:

(1) a review of the GRRP's engineering report;

(2) the inventory developed pursuant to section 60320.206(b)(4);

(3) the affected groundwater basin(s);

(4) an indicator compound's ability to characterize the presence of pharmaceuticals, endocrine disrupting chemicals, personal care products, and other indicators of the presence of municipal wastewater; and

(5) the availability of a test method for a chemical.

(e) A chemical or contaminant detected as a result of monitoring conducted pursuant to this section shall be reported to the Department and Regional Board no later than the quarter following the quarter in which the results are received by the GRRP's project sponsor.

§60320.222. Operation Optimization and Plan.

(a) Prior to operation of a GRRP, a project sponsor shall submit an Operation Optimization Plan to the Department and Regional Board for review and approval. At a minimum, the Operation Optimization Plan shall identify and describe the operations, maintenance, analytical methods, monitoring necessary for the GRRP to meet the requirements of this Article, and the reporting of monitoring results to the Department and Regional Board. A project sponsor shall be responsible for ensuring that the

Operation Optimization Plan is, at all times, representative of the current operations, maintenance, and monitoring of the GRRP. A GRRP's project sponsor shall make the Operation Optimization Plan available to the Department or Regional Board for review upon request.

(b) During the first year of operation of a GRRP and at all times thereafter, all treatment processes shall be operated in a manner providing optimal reduction of all chemicals and contaminants including:

(1) microbial contaminants;

(2) regulated contaminants identified in section 60320.212 and the nitrogen compounds required pursuant to section 60320.210; and

(3) chemicals and contaminants required pursuant to section 60320.220.

(c) Within six months of optimizing treatment processes pursuant to subsection (b) and anytime thereafter operations are optimized that result in a change in operation, a project sponsor shall update the GRRP's Operation Optimization Plan to include such changes in operational procedures and submit the operations plan to the Department for review.

§60320.224. Response Retention Time.

(a) The recycled municipal wastewater applied by a GRRP shall be retained underground for a period of time necessary to allow a project sponsor sufficient response time to identify treatment failures and implement actions, including those required pursuant to section 60320.200(b), necessary for the protection of public health.

(b) The response retention time required in subsection (a) must be approved by the Department, based on information provided in the engineering report required pursuant to section 60323. The response retention time shall be no less than two months.

(c) To demonstrate the retention time underground is no less than the response retention time approved pursuant to subsection (b), a tracer study utilizing an added tracer shall be implemented under hydraulic conditions representative of normal GRRP operations. With Department approval, an intrinsic tracer may be used in lieu of an added tracer. For each month of retention time estimated utilizing the approved intrinsic tracer, a project sponsor shall receive no more than 0.67 months credit. The retention time shall be the time representing the difference from when the water with the tracer is applied at the GRRP to when either; two percent (2%) of the initially introduced tracer concentration has reached the downgradient monitoring point, or ten percent (10%) of the peak tracer unit value observed at the downgradient monitoring point reaches the monitoring point. A project sponsor for a GRRP shall initiate the tracer study prior to the end of the third month of operation. A project sponsor for a GRRP permitted on or

before June 18, 2014, that has not performed a tracer study shall complete a tracer study demonstrating the retention time underground.

(d) For the purpose of siting a GRRP location during project planning and until a GRRP's project sponsor has met the requirements of subsection (c), for each month of retention time estimated using the method in column 1, the recycled municipal wastewater or recharge water may be credited with no more than the corresponding response time in column 2 of Table 60320.224.

Table 60320.224

Column 1	Column 2
Method used to estimate the retention time	**Response Time Credit per Month**
Tracer study utilizing an added tracer.[1]	1.0 month
Tracer study utilizing an intrinsic tracer.[1]	0.67 month
Numerical modeling consisting of calibrated finite element or finite difference models using validated and verified computer codes used for simulating groundwater flow.	0.50 month
Analytical modeling using existing academically-accepted equations such as Darcy's Law to estimate groundwater flow conditions based on simplifying aquifer assumptions.	0.25 month

[1] The retention time shall be the time representing the difference from when the water with the tracer is applied at the GRRP to when either; two percent (2%) of the initially introduced tracer concentration has reached the downgradient monitoring point, or ten percent (10%) of the peak tracer unit value observed at the downgradient monitoring point reaches the monitoring point.

(e) A project sponsor shall obtain Department approval for the protocol(s) to be used to establish the retention times in subsections (c) and (d).

(f) Upon request from the Department, a project sponsor shall demonstrate that the underground retention times required in this section are being met based on changes in hydrogeological or climatic conditions since the most recent demonstration.

§60320.226. Monitoring Well Requirements.

(a) Prior to operating a GRRP, a project sponsor shall site and construct at least two monitoring wells downgradient of the GRRP such that:

(1) at least one monitoring well is located;

(A) no less than two weeks but no more than six months of travel time from the GRRP, and

(B) at least 30 days upgradient of the nearest drinking water well;

(2) in addition to the well(s) in paragraph (1) and after consultation with the Department, at least one monitoring well is located between the GRRP and the nearest downgradient drinking water well; and

(3) samples from the monitoring wells in paragraphs (1) and (2) can be;

(A) obtained independently from each aquifer initially receiving the water used as a source of drinking water supply that will receive the GRRP's recharge water, and

(B) validated as receiving recharge water from the GRRP.

(b) In addition to the monitoring required pursuant to section 60320.220, from each monitoring well in subsection (a)(1), and each monitoring well in subsection (a)(2) that has recharge water located within one year travel time of the well(s), a project sponsor shall collect two samples prior to GRRP operation and at least one sample each quarter after operation begins. Each sample shall be analyzed for total nitrogen, nitrate, nitrite, the contaminants in Tables 64449-A and B of section 64449, and any contaminants and chemicals specified by the Department or Regional Board based on the results of the recycled municipal wastewater monitoring conducted pursuant to this Article.

(c) If a result from the monitoring conducted pursuant to subsection (b) exceeds 80 percent of a nitrate, nitrite, or nitrate plus nitrite MCL a project sponsor shall, within 48 hours of being notified of the result by the laboratory, collect another sample and have it analyzed for the contaminant. If the average of the result of the initial sample and the confirmation sample exceed the contaminant's MCL, a project sponsor shall:

(1) within 24 hours of being notified by the laboratory of the confirmation sample result, notify the Department and Regional Board; and

(2) discontinue subsurface application of recycled municipal wastewater until corrective actions have been taken or evidence is provided to the Department and Regional Board that the contamination was not a result of the GRRP.

(d) For Department-specified chemical analyses completed in a month, a project sponsor shall ensure the laboratory electronically submits results to the Department no later than 45 days after the end of the month in which monitoring occurred, in a manner such that data is readily uploaded into the Department's database. Utilization of the process described on the Department's Web site will satisfy this requirement.

(e) The GRRP's project sponsor may discontinue monitoring for the chemicals and contaminants in subsection (b) following Department approval based on the Department's review of the most recent two years of monitoring results.

§60320.228. Reporting.

(a) No later than six months after the end of each calendar year, a project sponsor shall provide a report to the Department and Regional Board. Public water systems and drinking water well owners having downgradient sources potentially affected by the GRRP and within 10 years groundwater travel time from the GRRP shall be notified by direct mail and/or electronic mail of the availability of the report. The report shall be prepared by an engineer licensed in California and experienced in the fields of wastewater treatment and public water supply. The report shall include the following:

(1) A summary of the GRRP's compliance status with the monitoring requirements and criteria of this Article during the previous calendar year;

(2) For any violations of this Article during the previous calendar year;

(A) the date, duration, and nature of the violation,

(B) a summary of any corrective actions and/or suspensions of subsurface application of recycled municipal wastewater resulting from a violation, and

(C) if uncorrected, a schedule for and summary of all remedial actions;

(3) Any detections of monitored chemicals or contaminants, and any observed trends in the monitoring wells and diluent water supplies;

(4) Information pertaining to the vertical and horizontal migration of the recharge water plume;

(5) A description of any changes in the operation of any unit processes or facilities;

(6) A description of any anticipated changes, along with an evaluation of the expected impact of the changes on subsequent unit processes;

(7) The estimated quantity and quality of the recycled municipal wastewater and diluent water to be applied for the next calendar year;

(8) A summary of the measures taken to comply with section 60320.206 and 60320.200(j), and the effectiveness of the implementation of the measures; and

(9) Increases in RWC during the previous calendar year and RWC increases anticipated for the next calendar year.

(b) Every five years from the date of the initial approval of the engineering report required pursuant to section 60323, a project sponsor shall update the report to address any project changes and submit the report to the Department and Regional Board. The update shall include, but not be limited to:

(1) anticipated RWC increases, a description of how the RWC requirements in section 60320.216 will be met, and the expected impact the increase will have on the GRRP's ability to meet the requirements of this Article;

(2) evidence that the requirements associated with retention time in section 60320.208, if applicable, and section 60320.224 have been met; and

(3) a description of any inconsistencies between previous groundwater model predictions and the observed and/or measured values, as well as a description of how subsequent predictions will be accurately determined.

§60320.230. Alternatives.

(a) A project sponsor may use an alternative to a requirement in this Article if the GRRP's project sponsor:

(1) demonstrates to the Department that the proposed alternative assures at least the same level of protection to public health;

(2) receives written approval from the Department prior to implementation of the alternative; and

(3) if required by the Department or Regional Board, conducts a public hearing on the proposed alternative, disseminates information to the public, and receives public comments, pursuant to sections 60320.202(b) and (c).

(b) Unless specified otherwise by the Department, the demonstration in subsection (a)(1) shall include the results of a review of the proposed alternative by an independent scientific advisory panel that includes a toxicologist, a registered engineering geologist or hydrogeologist, an engineer licensed in California with at least three years of experience in wastewater treatment and public drinking water supply, a microbiologist, and a chemist.

Article 5.3. Indirect Potable Reuse: Surface Water Augmentation.

§60320.300. Application.

The requirements of this Article apply to a Surface Water Source Augmentation Project Water Recycling Agency (SWSAP WRA) involved in the planned placement of recycled municipal wastewater into a surface water reservoir that is used, in whole or in part, as a

source of domestic drinking water supply by a public water system pursuant to Article 9, Chapter 17[3], of this Division.

§60320.301. General Requirements.

(a) Prior to augmentation of a surface water reservoir using a SWSAP, each SWSAP WRA and each SWSAP PWS participating in the SWSAP shall submit a joint plan to the State Board and Regional Board for review and written approval. At a minimum, the joint plan shall address the elements in paragraphs (1) and (2) below. The joint plan shall be signed by each person with authority or responsibility to operate the SWSAP, comply with the requirements of this Article, and ensure that each SWSAP WRA and SWSAP PWS implements the actions designated in the joint plan. In the event of any subsequent change in applicable authority, responsibility, operation, or ownership of a SWSAP WRA or SWSAP PWS, including the addition of any SWSAP WRA or SWSAP PWS participant in the SWSAP, a revised joint plan shall be submitted to the State Board and Regional Board for review and written approval, and the revised joint plan shall be signed by all participants. A revised joint plan shall also be submitted to reflect any change in the information provided pursuant to paragraphs (1) and (2) below, and to address any State Board or Regional Board concerns. A revised joint plan required by this section shall be submitted not less than sixty (60) days prior to the effective date of any change required by this section to be addressed in a revised joint plan.

(1) Corrective actions to be taken in the event that a delivery of recycled municipal wastewater from the SWSAP to an augmented reservoir fails to meet the water quality requirements of this Article.

(2) The procedures a SWSAP WRA will implement for notifying a SWSAP PWS, State Board, and Regional Board of:

(A) operational changes that may adversely affect the quality of the recycled municipal wastewater to be delivered to an augmented reservoir, and

(B) the events and corresponding corrective actions required to be identified in paragraph (1).

(b) Prior to design and operation of a SWSAP, a SWSAP WRA shall demonstrate to the State Board and Regional Board that the SWSAP WRA possesses adequate financial, managerial, and technical capability to assure compliance with this Article.

(c) Prior to augmentation of a surface water reservoir using a SWSAP, a SWSAP WRA shall demonstrate to the State Board and Regional Board that all treatment processes are installed and can be operated by the SWSAP WRA, as designed, to achieve their intended function. A protocol describing the actions to be taken to meet this

[3] Article 9 of Chapter 17 has been included in this "Recycled Water-Related Regulations" compilation. Chapter 17, in its entirety, may be found in the DDW's "Drinking Water-Related Regulations" located here: https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/Lawbook.html

subsection shall be included in the engineering report submitted pursuant to section 60323 of Article 7, Chapter 3.

(d) If a SWSAP WRA fails to complete compliance monitoring required by this Article, compliance may be determined by the State Board or Regional Board based on available monitoring data.

(e) A SWSAP WRA shall ensure that the recycled municipal wastewater used for a SWSAP is from a wastewater management agency that is not in violation of the effluent limits or water quality requirements that pertain to surface water augmentation pursuant to this Article, as incorporated in the wastewater management agency's Regional Board permit.

(f) When a SWSAP WRA has been required by this Article or directed by the State Board or Regional Board to suspend augmentation of a surface water reservoir for any reason, augmentation of the surface water reservoir shall not resume until the SWSAP WRA has obtained written authorization to resume augmentation of the reservoir from the State Board and Regional Board.

(g) Reports required by this Article to be submitted by a SWSAP WRA or SWSAP PWS to the Regional Board or State Board shall be in writing.

(h) Unless specified otherwise, the term "quarter", as used in this Article, refers to a calendar quarter.

§60320.302. Advanced Treatment Criteria.

A SWSAP WRA shall ensure the continuous treatment, with full advanced treatment meeting the criteria in this section, of the entire recycled municipal wastewater stream prior to its delivery to an augmented reservoir. Full advanced treatment is the treatment of an oxidized wastewater, as defined in section 60301.650, using a reverse osmosis and an oxidation treatment process that, at a minimum, meets the criteria of this section.

(a) A SWSAP WRA shall select for use a reverse osmosis membrane such that:

(1) each membrane element used in the SWSAP has achieved a minimum rejection of sodium chloride of no less than 99.0 percent (99.0%) and an average (nominal) rejection of sodium chloride of no less than 99.2 percent (99.2%), as demonstrated through Method A of ASTM International's method D4194-03 (2014), hereby incorporated by reference, using the following substitute test conditions:

(A) a recovery of permeate of no less than 15 percent (15%);

(B) sodium chloride rejection is based on three or more successive measurements, after flushing and following at least 30 minutes of operation having demonstrated that rejection has stabilized;

(C) an influent pH no less than 6.5 and no greater than 8.0;

(D) an influent sodium chloride concentration of no greater than 2,000 mg/L, to be verified prior to the start of testing; and

(E) an applied pressure no greater than 225 pounds per square inch (psi); and

(2) during the first twenty weeks of full-scale operation the membrane produces a permeate with no more than five percent (5%) of the sample results having TOC concentrations greater than 0.25 mg/L (or an alternative surrogate parameter and corresponding limit approved by the State Board), as verified through monitoring no less frequent than weekly.

(b) For the reverse osmosis treatment process, a SWSAP WRA shall propose, for State Board review and written approval, on-going performance monitoring (e.g., conductivity, TOC, etc.) that indicates when the integrity of the process has been compromised. The proposal shall include at least one form of continuous monitoring, as well as the associated surrogate and/or operational parameter limits and alarm settings that indicate when the integrity has been compromised.

(c) To demonstrate a sufficient oxidation treatment process has been designed for implementation, the SWSAP WRA shall conduct testing demonstrating that an oxidation treatment process will provide no less than 0.5-log10 (69 percent) reduction of 1,4-dioxane.

(1) A SWSAP WRA shall submit a testing protocol, as well as the subsequent results, to the State Board for review and written approval. The testing shall include challenge or spiking tests, using 1,4-dioxane, to demonstrate the proposed oxidation treatment process will achieve the minimum 0.5-log10 reduction under the proposed oxidation treatment process's normal full-scale operating conditions.

(2) A SWSAP WRA shall establish, and submit to the State Board for review and written approval, surrogate and/or operational parameters that indicate whether the minimum 0.5-log10 1,4-dioxane reduction design criterion is being met. At least one surrogate or operational parameter shall be capable of being monitored continuously, recorded, and have associated alarms that indicate when the process is not operating as designed.

(d) During full-scale operation of the oxidation treatment process designed pursuant to subsection (c), a SWSAP WRA shall continuously monitor the surrogate and/or operational parameters established pursuant to subsection (c)(2). A SWSAP WRA shall implement, in full-scale operation, the oxidation treatment process as designed pursuant to subsection (c).

(e) Within sixty (60) days after completing the first 12-months of full-scale operational monitoring pursuant to subsection (d), a SWSAP WRA shall submit a report to the State Board and Regional Board that includes:

(1) results of surrogate and/or operational parameter monitoring conducted pursuant to subsection (d);

(2) a description of the efficacy of the surrogate and/or operational parameters to reflect the reduction criterion for 1,4-dioxane; and

(3) a description of actions taken, or yet to be taken, if any of the following occurred during the first 12 months of operation:

(A) the 1,4-dioxane reduction did not meet the associated design criteria in subsection (c), as indicated by the on-going continuous operational surrogate and/or operational parameter monitoring;

(B) if 1,4-dioxane was present, the continuous surrogate and/or operational parameter monitoring failed to correspond to the reduction criterion for 1,4-dioxane; and

(C) any failure, interruption, or other incident that may have resulted in insufficient oxidation treatment having occurred.

(f) Within sixty (60) days after completing the initial 12 months of operation of the reverse osmosis process (or alternative process approved pursuant to 60320.330), a SWSAP WRA shall submit a report to the State Board and Regional Board describing the effectiveness of the treatment, process failures that occurred, and actions taken in the event the on-going monitoring, conducted pursuant to subsection (b), indicated that process integrity was compromised.

(g) Each quarter, a SWSAP WRA shall calculate what percent of results of the quarter's monitoring, conducted pursuant to subsections (b) and (d), did not meet the surrogate and/or operational parameter limits established to assure proper on-going performance of the reverse osmosis and oxidation processes. If the percent is greater than ten, within forty-five (45) days after the end of the quarter a SWSAP WRA shall:

(1) submit a report to the State Board and Regional Board that identifies the reason(s) for the failure, if known, and describes the corrective actions planned or taken to reduce the percent to ten percent (10%) or less; and

(2) consult with the State Board and Regional Board and, if directed by the State Board or Regional Board, comply with an alternative monitoring plan approved by the State Board and Regional Board.

(h) Each month a SWSAP WRA shall collect samples representative of the effluent of the advanced treatment process under normal operating conditions and have the samples analyzed for contaminants having MCLs and notification levels (NLs). After 12 consecutive months with no results exceeding an MCL or NL, a SWSAP WRA may apply to the State Board and Regional Board for a reduced monitoring frequency. The reduced monitoring frequency for a contaminant with an MCL shall be no less than quarterly. With State Board and Regional Board approval, monitoring conducted pursuant to this subsection may be used in lieu of the monitoring (for the same contaminants) required pursuant to sections 60320.312 and 60320.320. If an MCL or NL is exceeded, the SWSAP WRA shall take the follow-up actions for MCL and NL exceedances required pursuant to section 60320.312 and section 60320.320(b), respectively.

§60320.304. Lab Analyses.

(a) An analysis for a contaminant having a primary or secondary MCL shall be performed using a drinking water method approved by the State Board for the contaminant, by a laboratory that at the time of the analysis has a valid certificate from the State Board for the analytical method used.

(b) Analyses for chemicals other than those having primary or secondary MCLs shall be described in the SWSAP WRA's Operation Plan prepared pursuant to section 60320.322.

§60320.306. Wastewater Source Control.

A SWSAP WRA shall ensure that the recycled municipal wastewater used for a SWSAP shall be from a wastewater management agency that:

(a) administers an industrial pretreatment and pollutant source control program; and

(b) implements and maintains a source control program that includes, at a minimum:

(1) an assessment of the fate of State Board-specified and Regional Board-specified chemicals and contaminants through the wastewater and recycled municipal wastewater treatment systems,

(2) chemical and contaminant source investigations and monitoring that focuses on State Board-specified and Regional Board-specified chemicals and contaminants,

(3) an outreach program to industrial, commercial, and residential communities within the portions of the sewage collection agency's service area that flows into the water reclamation plant subsequently supplying the SWSAP, for the purpose of managing and minimizing the discharge of chemicals and contaminants at the source, and

(4) a current inventory of chemicals and contaminants identified and evaluated pursuant to this section, including new chemicals and contaminants resulting from new sources or changes to existing sources, that may be discharged into the wastewater collection system.

§60320.308. Pathogenic Microorganism Control.

(a) A SWSAP WRA shall design and operate SWSAP treatment processes such that the recycled municipal wastewater delivered to an augmented reservoir for use by a SWSAP PWS receives treatment as follows:

(1) For a SWSAP PWS implementing the requirements of section 64668.30(c)(1), the treatment train shall reliably achieve at least 8-log10 enteric virus reduction, 7-log10 Giardia cyst reduction, and 8-log10 Cryptosporidium oocyst reduction, consisting of at least two separate treatment processes for each pathogen (i.e., enteric virus, Giardia cyst, or Cryptosporidium oocyst). A separate treatment process may be credited with no more than 6-log10 reduction, with at least two processes each being credited with no less than

1.0-log10 reduction. A single treatment process may receive log10 reduction credits for one or more pathogens.

(2) For a SWSAP PWS implementing the requirements of section 64668.30(c)(2), the treatment train shall reliably achieve at least 9-log10 enteric virus reduction, 8-log10 Giardia cyst reduction, and 9-log10 Cryptosporidium oocyst reduction, consisting of at least three separate treatment processes for each pathogen (i.e., enteric virus, Giardia cyst, or Cryptosporidium oocyst). A separate treatment process may be credited with no more than 6-log10 reduction, with at least three processes each being credited with no less than 1.0-log10 reduction. A single treatment process may receive log10 reduction credits for one or more pathogens.

(3) The State Board may increase the minimum enteric virus, Giardia cyst, and Cryptosporidium oocyst log10 reductions required in paragraphs (1) and (2) as a result of a SWSAP PWS relying on additional treatment to obtain State Board approval of an alternative minimum theoretical retention time pursuant section 64668.30(b) of Chapter 17[4].

(b) The SWSAP WRA shall validate each of the treatment processes used to meet the requirements in subsection (a) for their log reduction by submitting a report for the State Board's review and written approval, or by using a challenge test approved by the State Board, that provides evidence of the treatment process's ability to reliably and consistently achieve the log reduction. The report and/or challenge test shall be prepared by an engineer licensed in California with at least five years of experience, as a licensed engineer, in wastewater treatment and public water supply, including the evaluation of treatment processes for pathogen control. The SWSAP WRA shall propose and include in its Operations Plan, prepared pursuant to section 60320.322, on-going monitoring using the pathogenic microorganism of concern or a microbial, chemical, or physical surrogate parameter(s) that verifies the performance of each treatment process's ability to achieve its credited log reduction.

(c) If the applicable pathogen reduction in subsection (a) is not met based on the on-going monitoring required pursuant to subsection (b), within 24 hours of its knowledge of an occurrence, the SWSAP WRA shall investigate the cause and initiate corrective actions. If there is a failure to meet the pathogen reduction criteria longer than 4 consecutive hours or more than a total of 8 hours during any 7-day period, the SWSAP WRA shall, within 24 hours of its knowledge of such a failure, notify the State Board, Regional Board, and each SWSAP PWS utilizing the augmented reservoir. Failures of shorter duration shall be reported to the Regional Board no later than 10 days after the month in which the failure occurred.

[4] Article 9 of Chapter 17 has been included in this "Recycled Water-Related Regulations" compilation. Chapter 17, in its entirety, may be found in the DDW's "Drinking Water-Related Regulations" located here: https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/Lawbook.html

(d) The SWSAP WRA shall, within 24 hours of its knowledge, notify the State Board, Regional Board, and each SWSAP PWS utilizing the augmented reservoir and, unless directed otherwise by the State Board and the Regional Board, discontinue delivery of recycled municipal wastewater to the SWSAP augmented reservoir if:

(1) pursuant to the pathogen reduction requirements in subsection (a)(1), the effectiveness of the treatment train to reduce enteric virus is less than 6-logs10, Giardia cysts reduction is less than 5-logs10, or Cryptosporidium oocysts reduction is less than 6-logs10,

(2) pursuant to the pathogen reduction requirements in subsection (a)(2), the effectiveness of the treatment train to reduce enteric virus is less than 7-logs10, Giardia cysts reduction is less than 6-logs10, or Cryptosporidium oocysts reduction is less than 7-logs10, or

(3) effectiveness of the treatment train to reduce enteric virus, Giardia cysts, or Cryptosporidium oocysts is less than a log10 reduction value derived from deducting 2-logs10 from each of the minimum enteric virus, Giardia cyst, and Cryptosporidium oocyst log10 reductions required pursuant to subsection (a)(3).

§60320.312. Regulated Contaminants and Physical Characteristics Control.

(a) Each quarter, a SWSAP WRA shall collect samples (grab or 24-hour composite) representative of the recycled municipal wastewater delivered to the augmented reservoir and have the samples analyzed for:

(1) the inorganic chemicals in Table 64431-A, Chapter 15;
(2) the radionuclide chemicals in Tables 64442 and 64443, Chapter 15;
(3) the organic chemicals in Table 64444-A, Chapter 15;
(4) the disinfection byproducts in Table 64533-A, Chapter 15.5; and
(5) lead and copper.

(b) Each year, in the same quarter, the SWSAP WRA shall collect at least one representative sample (grab or 24-hour composite) of the recycled municipal wastewater delivered to the augmented reservoir and have the sample(s) analyzed for the secondary drinking water contaminants in Tables 64449-A and 64449-B of Chapter 15.

(c) If a result of the monitoring performed pursuant to subsection (a) exceeds a contaminant's MCL or action level (for lead and copper), the SWSAP WRA shall collect another sample within 72 hours of notification of the result and have it analyzed for the contaminant as confirmation.

(1) For a contaminant whose compliance with its MCL or action level is not based on a running annual average, if the average of the initial and confirmation sample exceeds the contaminant's MCL or action level, or the confirmation sample is not collected and analyzed pursuant to this subsection, the SWSAP WRA shall notify the State Board and Regional Board within 24 hours and initiate weekly monitoring until four consecutive weekly results are below the contaminant's MCL or action level. If at

any time a result causes, or would cause, a running four-week average of weekly results to exceed the contaminant's MCL or action level, the SWSAP WRA shall notify the State Board, each SWSAP PWS utilizing the augmented reservoir, and Regional Board within 24 hours and immediately suspend delivery of the recycled municipal wastewater to the augmented reservoir.

(2) For a contaminant whose compliance with its MCL is based on a running annual average, if the average of the initial and confirmation sample exceeds the contaminant's MCL, or a confirmation sample is not collected and analyzed pursuant to this subsection, the SWSAP WRA shall initiate weekly monitoring for the contaminant until the running four-week average of results no longer exceeds the contaminant's MCL.

(A) If the running four-week average exceeds the contaminant's MCL, a SWSAP WRA shall describe the reason(s) for the exceedance and provide a schedule for completion of corrective actions in a report submitted to the State Board and Regional Board no later than 45 days following the quarter in which the exceedance occurred.

(B) If the running four-week average exceeds the contaminant's MCL for sixteen consecutive weeks, a SWSAP WRA shall notify the State Board, Regional Board, and each SWSAP PWS utilizing the augmented reservoir within 48 hours of knowledge of the exceedance and, if directed by the State Board or Regional Board, suspend delivery of the recycled municipal wastewater to the augmented reservoir.

(d) If the annual average of the results of the monitoring performed pursuant to subsection (b) exceeds a contaminant's secondary MCL in Table 64449-A or the upper limit in Table 64449-B, the SWSAP WRA shall initiate quarterly monitoring of the recycled municipal wastewater for the contaminant and, if the running annual average of quarterly-averaged results exceeds a contaminant's secondary MCL or upper limit, describe the reason(s) for the exceedance and any corrective actions taken a report submitted to the Regional Board no later than 45 days following the quarter in which the exceedance occurred, with a copy concurrently provided to the State Board. The annual monitoring in subsection (b) may resume if the running annual average of quarterly results does not exceed a contaminant's secondary MCL or upper limit.

(e) If four consecutive quarterly results for asbestos are below the detection limit in Table 64432-A for asbestos, monitoring for asbestos may be reduced to one sample every three years. Quarterly monitoring shall resume if asbestos is detected.

§60320.320. Additional Chemical and Contaminant Monitoring.

(a) Each quarter, a SWSAP WRA shall sample and analyze the recycled municipal wastewater delivered to the augmented reservoir, for the following:

(1) Priority Toxic Pollutants (chemicals listed in 40 CFR section 131.38, "Establishment of numeric criteria for priority toxic pollutants for the State of California", as the foregoing may be amended) specified by the State Board, based on the State Board's review of the SWSAP engineering report; and

(2) Chemicals specified by the State Board, based on its review of the SWSAP engineering report, the results of the augmented reservoir monitoring conducted pursuant to section 60320.326, and the results of the assessment performed pursuant to section 60320.306(b)(1).

(b) Each quarter, a SWSAP WRA shall sample and analyze the recycled municipal wastewater delivered to the augmented reservoir for State Board-specified chemicals having notification levels (NLs). If a result exceeds an NL, within 72 hours of notification of the result the SWSAP WRA shall collect another sample and have it analyzed for the contaminant as confirmation. If the average of the initial and confirmation sample exceeds the contaminant's NL, or a confirmation sample is not collected and analyzed pursuant to this subsection, the SWSAP WRA shall initiate weekly monitoring for the contaminant until the running four-week average of results does not exceed the NL and the State Board and Regional Board determine weekly monitoring may cease.

(1) If a running four-week average exceeds the contaminant's NL, the SWSAP WRA shall describe the reason(s) for the exceedance and provide a schedule for completion of corrective actions in a report submitted to the Regional Board no later than 45 days following the quarter in which the exceedance occurred, with a copy concurrently provided to the State Board.

(2) If a running four-week average exceeds the contaminant's NL for sixteen consecutive weeks, the SWSAP WRA shall notify the State Board, Regional Board, and each SWSAP PWS utilizing the augmented reservoir within 48 hours of knowledge of the exceedance.

(c) A SWSAP WRA may reduce monitoring for the chemicals in this section to once each year following State Board written approval based on the State Board's review of no less than the most recent two years of results of the monitoring performed pursuant to this section.

(d) Each year, the SWSAP WRA shall monitor the recycled municipal wastewater delivered to the augmented reservoir for indicator compounds specified by the State Board or Regional Board based on the following:

(1) a review of the SWSAP WRA's engineering report;

(2) the inventory developed pursuant to section 60320.306(b)(4);

(3) an indicator compound's ability to characterize the performance of the treatment processes for removal of chemicals; and

(4) the availability of a test method for a chemical.

(e) A chemical or contaminant detected as a result of monitoring conducted pursuant to this section shall be reported to the State Board and Regional Board no later than the end of the quarter following the quarter in which the SWSAP WRA is notified of the results. If directed by the State Board or Regional Board, the SWSAP WRA shall

monitor the recycled municipal wastewater delivered to the augmented reservoir for chemicals or contaminants detected pursuant to section 60320.326.

§60320.322. SWSAP Operation Plan.

(a) Prior to operation of a SWSAP, a SWSAP WRA shall submit an Operation Plan to the State Board and Regional Board and receive written approval of the plan from the State Board and Regional Board. At a minimum, the Operation Plan shall identify and describe the operations, maintenance, analytical methods, monitoring necessary for the SWSAP to meet the requirements of this Article, and the reporting of monitoring results to the State Board and Regional Board. The plan shall also identify an on-going training program that includes the elements of the training required pursuant to subsection (b) of this section. A SWSAP WRA shall implement the Operation Plan and update the Operation Plan to ensure that the Operation Plan is, at all times, representative of the current operations, maintenance, and monitoring of the SWSAP. The SWSAP WRA shall make the Operation Plan immediately available to the State Board or Regional Board for review upon request.

(b) Prior to operation of a SWSAP, a SWSAP WRA shall, at a minimum, demonstrate to the State Board and Regional Board that the personnel operating and overseeing the SWSAP operations have received training in the following:

(1) The proper operation of the treatment processes utilized pursuant to sections 60320.302 and 60320.308;

(2) The California Safe Drinking Water Act and its implementing regulations; and

(3) The potential adverse health effects associated with the consumption of drinking water that does not meet California drinking water standards.

(c) At all times recycled municipal wastewater is delivered to the augmented reservoir, the SWSAP WRA shall ensure that all treatment processes are operated in a manner that provides optimal reduction of all chemicals and contaminants including:

(1) microbial contaminants identified in section 60320.308;

(2) regulated contaminants identified in section 60320.312; and

(3) chemicals and contaminants required pursuant to section 60320.320.

(d) Within six months following the first year of optimizing treatment processes pursuant to subsection (c) and anytime thereafter operations are optimized that result in a change in operation, the SWSAP WRA shall update the SWSAP Operation Plan to include the changes in operational procedures and submit the Operation Plan to the State Board and Regional Board for review.

§60320.326. Augmented Reservoir Monitoring.

(a) Prior to augmentation of a surface water reservoir using a SWSAP, the SWSAP WRA, in coordination with the SWSAP PWS, shall identify monitoring locations in the augmented reservoir, for State Board review and written approval. The identified monitoring locations must be representative, throughout the volume of the surface water reservoir impacted by the SWSAP, at a minimum, of the following:

(1) Differing water quality conditions across the horizontal extent of the surface water reservoir;

(2) Each level in the surface water reservoir corresponding to the depths in which water may be withdrawn; and

(3) The surface water reservoir's epilimnion and hypolimnion.

(b) Prior to augmentation of a surface water reservoir using a SWSAP, each month, the SWSAP WRA shall collect samples for no less than 24 consecutive months, from the monitoring locations established pursuant to subsection (a). The samples shall be analyzed for the contaminants in tables 64449-A and B of Chapter 15, total organic carbon (TOC), total nitrogen, E. coli, total coliform bacteria, temperature, dissolved oxygen, chlorophyll a, total and dissolved phosphorus, and other State Board-specified chemicals and contaminants based on a review of the SWSAP WRA's engineering report and the results of the assessment performed pursuant to section 60320.306(b)(1).

(c) The SWSAP WRA shall continue to conduct monthly monitoring pursuant to subsection (b) for no less than the initial 24 months that a SWSAP WRA is delivering recycled municipal wastewater to an augmented reservoir. In addition, the on-going monitoring required by this section shall include State Board-specified chemicals and contaminants based on SWSAP operations and the results of recycled municipal wastewater monitoring conducted pursuant to this Article.

(d) After completion of the 24 months of monthly monitoring conducted pursuant to subsection (c) and consultation with each SWSAP PWS utilizing the reservoir as a source of drinking water, a SWSAP WRA may apply to the State Board for reduced on-going monitoring. The SWSAP WRA shall obtain State-Board written approval prior to implementation of the reduced monitoring. The reduced on-going monitoring frequency may be no less than once every 12 months.

(e) Notwithstanding subsections (b), (c), and (d), based on the results of reservoir monitoring, the State Board may require a SWSAP WRA to monitor for any State Board-specified chemicals or contaminants, at the locations and frequencies specified by the State Board.

§60320.328. Reporting.

(a) By July 1st of each year, a SWSAP WRA shall provide a report to the State Board and Regional Board, and make a copy of the report available to each SWSAP PWS affected by the SWSAP. Each SWSAP PWS shall be notified by direct mail and/or electronic mail of the availability of the report. The report shall be prepared by an engineer licensed in California and experienced in the fields of wastewater treatment and public water supply, or California-licensed engineers collectively having the experience. The report shall include the following:

(1) A summary of the SWSAP compliance status with the monitoring requirements and criteria of this Article during the previous calendar year;

(2) For any violations of this Article during the previous calendar year;

(A) the date, duration, and nature of the violation,

(B) a summary of any corrective actions and/or suspensions of delivery of recycled municipal wastewater to an augmented reservoir resulting from a violation, and

(C) if uncorrected, a schedule for and summary of all remedial actions;

(3) Any detections of monitored chemicals or contaminants, and any observed trends in the monitoring results of the augmented reservoir required pursuant to section 60320.326;

(4) A description of any changes in the operation of any unit processes or facilities;

(5) A description of any anticipated changes, along with an evaluation of the expected impact of the changes on subsequent unit processes;

(6) The estimated quantity and quality of the recycled municipal wastewater to be delivered for the next calendar year, as well as the quantity delivered during the previous three years; and

(7) A summary of the measures taken to comply with sections 60320.306 and 60320.301(e), and the effectiveness of the implementation of the measures.

(b) No less frequently than every five years from the date of the initial approval of the engineering report required pursuant to section 60323 of Article 7, Chapter 3, the SWSAP WRA shall update the engineering report to address any SWSAP changes from the previous engineering report, and submit the report to the State Board and Regional Board. The update shall include, but not be limited to, the anticipated increases in delivery of recycled municipal wastewater and a description of the expected impact the increase will have on the SWSAP WRA's ability to meet the requirements of this Article.

§60320.330. Alternatives.

(a) A SWSAP WRA may use an alternative to a requirement in this Article if the SWSAP WRA:

(1) demonstrates to the State Board that the proposed alternative provides an equivalent or better level of performance with respect to the efficacy and reliability of the removal of contaminants of concern to public health, and ensures at least the same level of protection to public health;

(2) receives written approval from the State Board prior to implementation of the alternative; and

(3) if required by the State Board or Regional Board, conducts a public hearing on the proposed alternative, disseminates information to the public, and receives public comments.

(b) The demonstration in subsection (a)(1) shall include the results of a review of the proposed alternative by an independent scientific advisory panel, approved by the State Board, that includes, but is not limited to, a toxicologist, a limnologist, an engineer licensed in California with at least three years of experience in wastewater treatment and public drinking water supply, a microbiologist, and a chemist.

Article 5.5. Other Methods of Treatment.

§60320.5. Other methods of treatment.

Methods of treatment other than those included in this chapter and their reliability features may be accepted if the applicant demonstrates to the satisfaction of the State Department of Health that the methods of treatment and reliability features will assure an equal degree of treatment and reliability.

Article 6. Sampling and Analysis.

§60321. Sampling and analysis.

(a) Disinfected secondary-23, disinfected secondary-2.2, and disinfected tertiary recycled water shall be sampled at least once daily for total coliform bacteria. The samples shall be taken from the disinfected effluent and shall be analyzed by an approved laboratory.

(b) Disinfected tertiary recycled water shall be continuously sampled for turbidity using a continuous turbidity meter and recorder following filtration. Compliance with the daily average operating filter effluent turbidity shall be determined by averaging the levels of recorded turbidity taken at four-hour intervals over a 24-hour period. Compliance with turbidity pursuant to section 60301.320 (a)(2)(B) and (b)(1) shall be

determined using the levels of recorded turbidity taken at intervals of no more than 1.2-hours over a 24- hour period. Should the continuous turbidity meter and recorder fail, grab sampling at a minimum frequency of 1.2-hours may be substituted for a period of up to 24-hours. The results of the daily average turbidity determinations shall be reported quarterly to the regulatory agency.

(c) The producer or supplier of the recycled water shall conduct the sampling required in subsections (a) and (b).

Article 7. Engineering Report and Operational Requirements.

§60323. Engineering report.

(a) No person shall produce or supply recycled water for reuse from a water reclamation plant without a Department-approved engineering report.

(b) The report shall be prepared by a qualified engineer licensed in California and experienced in the field of wastewater treatment, and shall contain a description of the design of the proposed reclamation system. The report shall clearly indicate the means for compliance with these regulations and any other features specified by the regulatory agency.

(c) The report shall contain a contingency plan which will assure that no untreated or inadequately treated wastewater will be delivered to the use area.

§60325. Personnel.

(a) Each reclamation plant shall be provided with a sufficient number of qualified personnel to operate the facility effectively so as to achieve the required level of treatment at all times.

(b) Qualified personnel shall be those meeting requirements established pursuant to Chapter 9 (commencing with Section 13625) of the Water Code.

§60327. Maintenance.

A preventive maintenance program shall be provided at each reclamation plant to ensure that all equipment is kept in a reliable operating condition.

§60329. Operating records and reports.

(a) Operating records shall be maintained at the reclamation plant or a central depository within the operating agency. These shall include: all analyses specified in the reclamation criteria; records of operational problems, plant and equipment

breakdowns, and diversions to emergency storage or disposal; all corrective or preventive action taken.

(b) Process or equipment failures triggering an alarm shall be recorded and maintained as a separate record file. The recorded information shall include the time and cause of failure and corrective action taken.

(c) A monthly summary of operating records as specified under (a) of this section shall be filed monthly with the regulatory agency.

(d) Any discharge of untreated or partially treated wastewater to the use area, and the cessation of same, shall be reported immediately by telephone to the regulatory agency, the State Department of Health, and the local health officer.

§60331. Bypass.

There shall be no bypassing of untreated or partially treated wastewater from the reclamation plant or any intermediate unit processes to the point of use.

Article 8. General Requirements of Design.

§60333. Flexibility of design.

The design of process piping, equipment arrangement, and unit structures in the reclamation plant must allow for efficiency and convenience in operation and maintenance and provide flexibility of operation to permit the highest possible degree of treatment to be obtained under varying circumstances.

§60335. Alarms.

(a) Alarm devices required for various unit processes as specified in other sections of these regulations shall be installed to provide warning of:

(1) Loss of power from the normal power supply.
(2) Failure of a biological treatment process.
(3) Failure of a disinfection process.
(4) Failure of a coagulation process.
(5) Failure of a filtration process.
(6) Any other specific process failure for which warning is required by the regulatory agency.

(b) All required alarm devices shall be independent of the normal power supply of the reclamation plant.

(c) The person to be warned shall be the plant operator, superintendent, or any other responsible person designated by the management of the reclamation plant and capable of taking prompt corrective action.

(d) Individual alarm devices may be connected to a master alarm to sound at a location where it can be conveniently observed by the attendant. In case the reclamation plant is not attended full time, the alarm(s) shall be connected to sound at a police station, fire station or other full time service unit with which arrangements have been made to alert the person in charge at times that the reclamation plant is unattended.

§60337. Power supply.

The power supply shall be provided with one of the following reliability features:

(a) Alarm and standby power source.

(b) Alarm and automatically actuated short-term retention or disposal provisions as specified in Section 60341.

(c) Automatically actuated long-term storage or disposal provisions as specified in Section 60341.

Article 9. Reliability Requirements for Primary Effluent.

§60339. Primary treatment.

Reclamation plants producing reclaimed water exclusively for uses for which primary effluent is permitted shall be provided with one of the following reliability features:

(a) Multiple primary treatment units capable of producing primary effluent with one unit not in operation.

(b) Long-term storage or disposal provisions as specified in Section 60341.

Article 10. Reliability Requirements for Full Treatment.

§60341. Emergency storage or disposal.

(a) Where short-term retention or disposal provisions are used as a reliability feature, these shall consist of facilities reserved for the purpose of storing or disposing of untreated or partially treated wastewater for at least a 24-hour period. The facilities shall include all the necessary diversion devices, provisions for odor control, conduits, and pumping and pump back equipment. All of the equipment other than the pump back equipment shall be either independent of the normal power supply or provided with a standby power source.

(b) Where long-term storage or disposal provisions are used as a reliability feature, these shall consist of ponds, reservoirs, percolation areas, downstream sewers leading to other treatment or disposal facilities or any other facilities reserved for the purpose of emergency storage or disposal of untreated or partially treated wastewater. These facilities shall be of sufficient capacity to provide disposal or storage of wastewater for at least 20 days, and shall include all the necessary diversion works, provisions for odor and nuisance control, conduits, and pumping and pump back equipment. All of the equipment other than the pump back equipment shall be either independent of the normal power supply or provided with a standby power source.

(c) Diversion to a less demanding reuse is an acceptable alternative to emergency disposal of partially treated wastewater provided that the quality of the partially treated wastewater is suitable for the less demanding reuse.

(d) Subject to prior approval by the regulatory agency, diversion to a discharge point which requires lesser quality of wastewater is an acceptable alternative to emergency disposal of partially treated wastewater.

(e) Automatically actuated short-term retention or disposal provisions and automatically actuated long-term storage or disposal provisions shall include, in addition to provisions of (a), (b), (c), or (d) of this section, all the necessary sensors, instruments, valves and other devices to enable fully automatic diversion of untreated or partially treated wastewater to approved emergency storage or disposal in the event of failure of a treatment process and a manual reset to prevent automatic restart until the failure is corrected.

§60343. Primary treatment.

All primary treatment unit processes shall be provided with one of the following reliability features:

(a) Multiple primary treatment units capable of producing primary effluent with one unit not in operation.

(b) Standby primary treatment unit process.

(c) Long-term storage or disposal provisions.

§60345. Biological treatment.

All biological treatment unit processes shall be provided with one of the following reliability features:

(a) Alarm and multiple biological treatment units capable of producing oxidized wastewater with one unit not in operation.

(b) Alarm, short-term retention or disposal provisions, and standby replacement equipment.

(c) Alarm and long-term storage or disposal provisions.

(d) Automatically actuated long-term storage or disposal provisions.

§60347. Secondary sedimentation.

All secondary sedimentation unit processes shall be provided with one of the following reliability features:

(a) Multiple sedimentation units capable of treating the entire flow with one unit not in operation.

(b) Standby sedimentation unit process.

(c) Long-term storage or disposal provisions.

§60349. Coagulation.

(a) All coagulation unit processes shall be provided with the following mandatory features for uninterrupted coagulant feed:

(1) Standby feeders,
(2) Adequate chemical stowage and conveyance facilities,
(3) Adequate reserve chemical supply, and
(4) Automatic dosage control.

(b) All coagulation unit processes shall be provided with one of the following reliability features:

(1) Alarm and multiple coagulation units capable of treating the entire flow with one unit not in operation;
(2) Alarm, short-term retention or disposal provisions, and standby replacement equipment;
(3) Alarm and long-term storage or disposal provisions;
(4) Automatically actuated long-term storage or disposal provisions, or
(5) Alarm and standby coagulation process.

§60351. Filtration.

All filtration unit processes shall be provided with one of the following reliability features:

(a) Alarm and multiple filter units capable of treating the entire flow with one unit not in operation.

(b) Alarm, short-term retention or disposal provisions and standby replacement equipment.

(c) Alarm and long-term storage or disposal provisions.

(d) Automatically actuated long-term storage or disposal provisions.

(e) Alarm and standby filtration unit process.

§60353. Disinfection.

(a) All disinfection unit processes where chlorine is used as the disinfectant shall be provided with the following features for uninterrupted chlorine feed:

(1) Standby chlorine supply,

(2) Manifold systems to connect chlorine cylinders,

(3) Chlorine scales, and

(4) Automatic devices for switching to full chlorine cylinders. Automatic residual control of chlorine dosage, automatic measuring and recording of chlorine residual, and hydraulic performance studies may also be required.

(b) All disinfection unit processes where chlorine is used as the disinfectant shall be provided with one of the following reliability features:

(1) Alarm and standby chlorinator;

(2) Alarm, short-term retention or disposal provisions, and standby replacement equipment;

(3) Alarm and long-term storage or disposal provisions;

(4) Automatically actuated long-term storage or disposal provisions; or

(5) Alarm and multiple point chlorination, each with independent power source, separate chlorinator, and separate chlorine supply.

§60355. Other alternatives to reliability requirements

Other alternatives to reliability requirements set forth in Articles 8 to 10 may be accepted if the applicant demonstrates to the satisfaction of the State Department of Health that the proposed alternative will assure an equal degree of reliability.

Chapter 3.5. Onsite Treatment and Reuse of Nonpotable Water [Effective April 22, 2026]

Article 1.General

§60600. Definitions.

(a) "Air-gap separation" means a physical vertical separation of at least two (2) times the inside pipe diameter (or the largest inside pipe diameter, when multiple pipes are present) between the free-flowing discharge end of a potable water supply pipeline and the flood level of an open or non-pressurized receiving vessel, and in no case can the physical vertical separation be less than one (1) inch.

(b) "ANSI" means American National Standards Institute.

(c) "Backflow prevention assembly" means a mechanical assembly designed and constructed to prevent backflow, such that while in-line it can be repaired, and its ability to prevent backflow, as designed, can be field tested, inspected and evaluated.

(d) "Baffling factor" means the ratio of the actual contact time to the theoretical hydraulic detention time. For the purpose of these regulations, actual contact time is T10; and theoretical hydraulic detention time is reactor volume divided by flow rate.

(e) "Blackwater" means wastewater originating from toilets, urinals, and/or kitchen sources, such as from kitchen sinks or dishwashers.

(f) "Calibrated field meter" means a field test instrument (such as one used to test pH, temperature, dissolved oxygen, and electrical conductivity) that is used in accordance with the following conditions:

(1) The instrument is field calibrated at the frequency recommended by the manufacturer prior to use;

(2) The instrument is serviced at the recommended service frequency by the manufacturer or manufacturer-authorized service provider; and

(3) Field calibration reports are maintained and available for inspection by the local jurisdiction for at least three years.

(g) "Certified backflow prevention assembly tester" means a person who is certified as a backflow prevention assembly tester by a certifying organization recognized by the State Board pursuant to the State Board's Cross-Connection Control Policy Handbook adopted pursuant to section 116407 of the Health and Safety Code.

(h) "Certified cross-connection control specialist" means a person who is a certified as a cross-connection control specialist from a certifying organization recognized by the State Board pursuant to the State Board's Cross-Connection Control Policy Handbook adopted pursuant to section 116407 of the Health and Safety Code.

(i) "Challenge test" means a study comparing a pathogen surrogate parameter, or indicator compound concentration between the influent and effluent of a treatment process to determine the removal capacity of the treatment process. The influent concentration must be high enough to ensure that a measurable concentration is detected in the effluent.

(j) "Commercial building" means a building, the operations of which will affect commerce and is intended for nonresidential use. For the purpose of this Chapter, commercial buildings do not include buildings or portions of buildings that are used for medical care, mental hospitals, other facilities operated by a public agency for the treatment of persons with mental disorders, adult care facilities, childcare facilities, and other buildings or portions of buildings serving similar functions and/or populations, as determined by the State Board.

(k) "Commissioning" means the procedures used by the responsible entity to inspect, test, and commence operation of an OTNWS and to train duly authorized agents or other staff to operate the OTNWS.

(l) "Community sewer system" means any system of pipes, pump stations, sewer lines, or other conveyances upstream of a wastewater treatment plant headworks that collects and/or conveys untreated or partially treated wastewater to a publicly owned wastewater treatment facility.

(m) "Continuous process verification monitoring" means ongoing confirmation of system performance using sensors for continuous observation of selected parameters, including but not limited to, surrogate parameters that are correlated with pathogen log reduction target requirements.

(n) "Critical limit" means a maximum and/or minimum value of a continuously monitored parameter which indicates that a treatment process or an operation is controlling the pathogen risk.

(o)"Cross-connection" means a connection or arrangement, physical or otherwise, between a potable water supply system and a plumbing fixture or a tank, pipeline, receptor, equipment, or device through which it may be possible for nonpotable, used, unclean, polluted, and/or contaminated water or other substances to enter a part of such potable water system under any condition.

(p) "CT" means the product of free chlorine residual and T10 measured at the same point, measured in milligram-minutes per liter (mg-min/L).

(q) "District-scale project" means an OTNWS for a defined service area and untreated alternate water source collection area that includes more than one multifamily building, commercial building, mixed-use building, or a combination of such buildings. A district-scale project may be located on one or more land parcels and may cross public rights-of-way.

(r) "Duly authorized agent" means a person legally designated by a responsible entity as having authority for the oversight and management of the OTNWS to ensure compliance with this Chapter. A duly authorized agent may be the same individual that is responsible for the operation and maintenance of the OTNWS collection, treatment, and distribution facilities. The authorization must be made in writing by the responsible entity and submitted to the local jurisdiction for local jurisdiction approval.

(s) "Field verification" means a performance confirmation study conducted using challenge testing, including surrogate microorganisms and/or other non-biological surrogates, during the commissioning period.

(t) "Graywater" has the same meaning as defined in section 17922.12 of the Health and Safety Code, which may include foundation drainage and condensate water.

(u) "Local jurisdiction" means a city, county, or city and county that has established a program for OTNWSs and has the authority to create, implement, and enforce the program requirements pursuant to subdivision (b) of section 13558 of the Water Code.

(v) "Log reduction" means the logarithm base 10 of the ratio of the levels of a pathogenic organism or other contaminant before and after treatment. A 1-log reduction is equal to 90% removal, 2-log reduction to 99% removal, 3-log reduction to 99.9% removal, and so on.

(w) "Log Reduction Target" or "LRT" means the log reduction required for the specified pathogen group to achieve an acceptable level of risk to individuals.

(x) "MBR" means membrane bioreactor, which consists of a biological treatment that is capable of reliably producing nonpotable water in which the organic matter has been stabilized, is nonputrescible, and contains dissolved oxygen, to feed into its filtration process.

(y) "Mixed-use building" means a building that contains both multifamily residential and commercial uses.

(z) "Multifamily residential building," as used in this Chapter, means a building containing three or more dwelling units and does not include townhouses.

(aa) "Nonpotable water" means water that is not suitable for human consumption. Human consumption is defined in subdivision (e) of section 116275 of the Health and Safety Code.

(bb) "Normal operating condition" means the operational condition where the treatment train influent and effluent quantity and quality are consistently within the expected operational parameters.

(cc) "NSF" means National Sanitation Foundation.

(dd) "NTU" has the same meaning as defined in section 60301.630.

(ee) "Onsite treated nonpotable water" means nonpotable water that has been collected, treated, and intended to be used on-site and is suitable for specified uses in Article 3.

(ff) "Onsite treated nonpotable water system" or "OTNWS" means a nonpotable water treatment system that does all of the following:

(1) Collects and treats one or more of the untreated alternate water sources as described in subsections (a) and (b) of section 60610;

(2) Distributes the treated water for use onsite (within or surrounding a building(s)) for nonpotable purposes; and

(3) Serves a building or buildings that are connected to a community sewer system as the only means for discharge of waste, regardless of whether onsite wastewater is used as an OTNWS source water.

(gg) "Onsite wastewater" means comingled graywater and blackwater.

(hh) "Public water system" has the same meaning as defined in subdivision (h) of section 116275 of the Health and Safety Code.

(ii) "Regional Board" means any California Regional Water Quality Control Board.

(jj) "Responsible entity" means the person(s), corporation(s), or any other form of legal entity that holds a valid permit granted by the local jurisdiction to operate an OTNWS and has the necessary legal authority and control to ensure compliance with this Chapter.

(kk) "Roof runoff" means precipitation from rain or snowmelt events that is collected directly from a roof surface not subject to public access.

(ll) "State Board" means State Water Resources Control Board.

(mm) "Stormwater" means precipitation runoff from rain or snowmelt events that flows over land and/or impervious surfaces such as, but not limited to, streets and parking lots. Stormwater also includes runoff from roofs with public access.

(nn) "Supervisory control and data acquisition system" or "SCADA system" means a computer-monitored alarm, response, control, and data acquisition system used to monitor and adjust treatment processes and facilities.

(oo) "Surrogate parameter" or "surrogate" means a measurable chemical or physical property, microorganism, or chemical that has been demonstrated to provide a direct correlation with the concentration of pathogen; that may be used to monitor the efficacy of pathogen reduction by a treatment process; and/or that provides an indication of a treatment process failure.

(pp) "T10" means the time it takes for 10% of the incoming water to exit the disinfection reactor, measured in minutes.

(qq) "Treatment train" means a group or assemblage of physical, chemical, and biological treatment processes that conditions or treats water to achieve a specific water quality objective.

(rr) "Untreated alternate water source" means a source of nonpotable water that may include any of the following: graywater, roof runoff, stormwater, and onsite wastewater.

(ss) "UV" means ultraviolet light.

(tt) "Validation" means a demonstration of the pathogen or chemical contaminant reduction capacity of a treatment process.

§60602. Limitations of this Chapter.

(a) This Chapter does not apply to untreated graywater systems that are used exclusively for subsurface irrigation and are regulated by Chapter 15 (commencing with section 1501.0) of the California Plumbing Code (Part 5 of Title 24 of the California Code of Regulations). For the purpose of this section, graywater is as defined in the California Plumbing Code.

(b) This Chapter does not apply to untreated rainwater systems that are used exclusively for surface, subsurface, or drip irrigation and are regulated by Chapter 16 (commencing with section 1601.0) of the California Plumbing Code (Part 5 of Title 24 of the California Code of Regulations). For the purpose of this section, rainwater is as defined in the California Plumbing Code.

§60604. Implementation Scale.

(a) Applicability of these regulations is limited to an OTNWS that serves a multifamily residential building, a commercial building, or a mixed-use building, or a combination of such buildings in a district-scale project.

(b) If an OTNWS source water collection, treatment, or distribution system is located on more than one land parcel, the responsible entity must provide the local jurisdiction a proof of property covenant filed at the local county recorder's office describing that the combination of parcels are served by an OTNWS's source water collection and onsite treated nonpotable water distribution, and that the sale of one of the participating parcels may impact the source water collection, treatment, and distribution of onsite treated nonpotable water.

§60606. Local Jurisdiction Annual Report.

(a) Local jurisdictions must submit an annual report to the State Board by February 1st following the reporting year. The reporting year commences on January 1 and ends on December 31 of every year. The annual report must include the following information for the reporting year:

(1) Number, location, building type, and description of permits issued for the following OTNWSs within the local jurisdictional boundary:

(A) Existing OTNWSs;

(B) New OTNWSs which were placed into service for the first time during the reporting year, including an OTNWS which replaced a previously permitted OTNWS; and

(C) Any OTNWS which was permanently taken out of service during the reporting year;

(2) Volume and types of nonpotable end uses for each untreated alternate water source that is treated by each OTNWS;

(3) Summary of any violations and corrective actions taken for any OTNWS;

(4) Number and location of complaints and/or malfunctions pertaining to any OTNWS's operation and maintenance, and identification of any OTNWS which was investigated and how any operational or maintenance issues were resolved; and

(5) Number and summary of site inspections conducted by the local jurisdiction.

(b) Local jurisdictions may request an extension of up to sixty (60) days for submittal of the annual report specified in subsection (a), given a written request is provided to the State Board by February 1st following the reporting year.

§60608. OTNWS In Operation Before April 22, 2026.

An OTNWS that is in operation before April 22, 2026, must comply with the requirements of this Chapter by April 21, 2028. If the permitting local jurisdiction finds

that the project proponent is working to come into compliance with the requirements of this Chapter, but due to extenuating circumstances related to the engineering, repair, or replacement of the OTNWS a further extension is warranted, the local jurisdiction may grant an extension to comply with the regulations until April 21, 2031.

Article 2. Sources of Onsite Treated Nonpotable Water

§60610. Source Specifications.

(a) The requirements of this Chapter apply to any OTNWS treating untreated alternate water sources as defined in subsection (rr) of section 60600, in whole or in part.

(b) Untreated alternate water sources must be collected, treated, and used within the defined project boundaries as described in the project's engineering report in accordance with section 60680.

(c) Unless otherwise approved as a supplemental source of water for an OTNWS in accordance with section 60670, sources not addressed in these regulations are prohibited from entering the OTNWS.

Article 3. Uses of Onsite Treated Nonpotable Water

§60620. Allowed Indoor Uses.

(a) Allowable indoor uses of onsite treated nonpotable water are limited to toilet and urinal flushing, clothes washing, and drain trap priming.

(b) Use of onsite treated nonpotable water for clothes washing is allowed if non-potable hot water is available for clothes washing by either:

(1) A clothes washer that has a tankless water heater or a built-in water heater that heats non-potable water at the point of use; or

(2) A building that has a boiler system that provides non-potable hot water to the clothes washer.

§60622. Allowed Outdoor Uses.

(a) Allowable outdoor uses of onsite treated nonpotable water are limited to ornamental plant surface irrigation, landscape surface irrigation, dust suppression, decorative fountains, and car washing.

(b) Outdoor use of onsite treated nonpotable water for decorative fountains must meet the pathogen log reduction targets for indoor use specified in section 60630.

§60624. Use Area Requirements.

(a) Onsite treated nonpotable water use must not create a nuisance condition or odor.

(b) Spray, mist, or runoff from outdoor use of onsite treated nonpotable water must not enter dwellings, designated outdoor eating areas, or food handling facilities.

(c) Drinking water fountains must be protected against contact with onsite treated nonpotable water spray, mist, or runoff.

(d) Onsite treated nonpotable water used for outdoor uses must be used in a manner that will not result in excessive ponding, pooling, or runoff.

(e) Onsite treated nonpotable water used outdoors in areas accessible to the public must be applied at times when contact with the public is minimized.

(f) There can be no physical connection between any OTNWS and any separate system conveying or storing potable water. A temporary connection from an OTNWS to a potable water supply may be temporarily allowed for initial cross-connection testing, prior to introduction of onsite treated nonpotable water into the OTNWS, in accordance with section 60704.

(g) The portions of the OTNWS that are in areas subject to access by the general public must not include any hose bibs. The OTNWS must only use quick couplers that are incompatible with those used on the potable water system on the portions of the onsite treated nonpotable water piping system in areas subject to public access.

(h) All use areas where onsite treated nonpotable water is used must be posted with signs that are visible in accordance with section 60692.

(i) Indoor uses of onsite treated nonpotable water are prohibited for any building that produces or processes food products or beverages. For purposes of this subsection, cafeterias or snack bars in a building whose primary function does not involve the production or processing of foods or beverages are not considered buildings that produce or process foods or beverages.

Article 4. Pathogen Control

§60630. Pathogen Log Reduction Targets.

(a) An OTNWS must be designed and operated to achieve the minimum pathogen log reduction targets for onsite wastewater, graywater, stormwater, and roof runoff as set forth in Table 60630-1 using a pathogen control treatment train meeting the requirements

of section 60632 or an alternative to a pathogen control treatment train meeting the requirements of section 60634.

(b) When multiple types of untreated alternate water sources are blended to supply the OTNWS, the most restrictive pathogen log reduction target must be met.

Table 60630-1. Pathogen log reduction targets for OTNWS

Untreated alternate water source	Use type	Enteric virus	Giardia	Cryptosporidium
Onsite wastewater	Indoor use	8.0	6.5	5.5
Onsite wastewater	Outdoor use	7.5	5.5	5.0
Stormwater	Indoor use	7.0	5.5	4.5
Stormwater	Outdoor use	6.5	4.5	4.0
Graywater	Indoor use	6.0	4.5	3.5
Graywater	Outdoor use	5.5	3.5	3.0
Roof runoff	Indoor use	-	1.5	-
Roof runoff	Outdoor use	-	1.0	-

§60632. Pathogen Control Treatment Trains.

(a) An OTNWS must use one of the pathogen control treatment trains prescribed in Table 60632-1 meeting the corresponding specification for each treatment process described in subsections (b) through (e) and must be capable of demonstrating the log reduction targets pursuant to section 60642.

Table 60632-1. Pathogen control treatment train for untreated alternate water sources

Pathogen control treatment train	Untreated alternate water source
Train A: MBR - UV - Chlorination	Onsite wastewater, stormwater, graywater, roof runoff
Train B: MBR - UV - Chlorination	Stormwater, graywater, roof runoff
Train C: MBR - UV - Chlorination	Graywater, roof runoff
Train D: MBR - UV	Graywater, roof runoff
Train E: Membrane filtration - UV - Chlorination	Graywater, roof runoff
Train F: UV	Roof runoff

(b) UV disinfection process must be tested and certified as meeting the specifications of NSF/ANSI 55-2024 Ultraviolet Microbiological Water Treatment Systems (February 2024), which is hereby incorporated by reference, for Class A UV disinfection systems with UV sensor and alarm set point. This requirement must be met under testing conducted by a product certification organization accredited for this purpose by ANSI. If UV reactors are installed in series, installation of such reactors must conform to the specifications provided by the UV reactor manufacturer.

(c) An MBR process must utilize hollow fiber or flat sheet membranes with pore sizes up to 0.4 micrometers operating in a submerged configuration.

(d) A chlorine disinfection process must provide a CT value specified for the respective pathogen control treatment trains through continuous process monitoring specified in section 60642.

(e) Membrane filtration process must use a microfiltration, ultrafiltration, nanofiltration, or reverse osmosis membrane so that the turbidity of the filtrate does not exceed any of the following:

(1) 0.2 NTU more than 5 percent of the time within a 24-hour period; and

(2) 0.5 NTU at any time.

§60634. Alternatives.

(a) Alternatives to pathogen control treatment trains specified in section 60632 may be used if the proposed alternative will meet the requirements of pathogen log reduction targets in Table 60630-1. The local jurisdiction must consult with the State Board for any alternatives to pathogen control treatment trains prior to approving and issuing a local jurisdiction permit for the operation of an OTNWS.

(b) Alternatives to pathogen control treatment trains in section 60632 must:

(1) Consist of multiple treatment processes which include at least one filtration process and one disinfection process. Each treatment process may be credited with no more than 6-log reduction for each pathogen;

(2) Consist of treatment processes that are validated for pathogen log reduction as documented by a validation study report approved by the local jurisdiction and meeting the requirements of section 60682; and

(3) Complete a field verification of treatment train performance during the commissioning period pursuant to section 60640.

(c) An alternative to pathogen control treatment trains in section 60632 are exempt from the requirements of subsections (b)(2) and (b)(3) of section 60634 if:

(1) The treatment train solely consists of treatment processes meeting the requirements of subsections (b) through (e) of section 60632; or

(2) The treatment train is an alternative to pathogen treatment train that:
(A) Has successfully met the requirements of subsection (b); and
(B) Has been approved for operations by a local jurisdiction.

Article 5. Monitoring Requirements

§60640. Field Verification of Alternative Treatment Train Performance.

(a) Pathogen control treatment trains described in section 60632 are exempt from the requirements of this section.

(b) Alternatives to pathogen control treatment trains, as authorized pursuant to section 60634, must be field verified during the commissioning period to confirm that the full-scale treatment train can achieve the required pathogen log reduction, and that operational monitoring and control systems are functional.

(c) Field verification test runs must be conducted when an OTNWS has achieved normal operating conditions.

(d) Field verification must consist of at least eight different test runs involving different operational parameters. At least one of the eight test runs must demonstrate an operational condition where the expected influent flow rate and/or water quality parameter(s) entering the treatment train is the most challenging for one or more treatment processes.

(e) The procedure and test run conditions for field verification must be described in the commissioning plan submitted for the local jurisdiction's review and approval as described in section 60684. The local jurisdiction must consult with the State Board prior to the approval of the field verification study.

§60642. Continuous Process Verification Monitoring.

(a) Each OTNWS must be equipped with a continuous process verification monitoring system that can verify, at all times, the proper operation of each treatment process' ability to achieve its credited log reduction consistent with its validation conditions. Each pathogen control treatment train must meet its designated critical limits provided in subsections (c) through (i).

(b) Alternatives to pathogen control treatment trains, authorized pursuant to section 60634, must perform continuous process verification monitoring utilizing either a pathogenic microorganism of concern or a microbial, chemical, or physical surrogate parameter(s) consistent with each treatment process' validation conditions and the treatment train's approved validation study.

(c) Pathogen control treatment Train A, listed in Table 60632-1, must meet the following critical limits:

(1) The turbidity of MBR system effluent must not exceed any of the following:

(A) 0.2 NTU for more than 5 percent of the time within a 24-hour period; and

(B) 0.5 NTU at any time.

(2) The UV disinfection process following the MBR system must provide a minimum UV dose of 160 millijoules per square centimeter through the UV disinfection process at all times. Influent to the UV disinfection process must be at or below the maximum flow rate certified for the system and have UV transmittance greater than or equal to 65 percent;

(3) The chlorine disinfection process following the UV disinfection process must meet the following requirements:

(A) A CT value of not less than 12 mg-min/L at all times, based on maximum flow;

(B) A flow rate through the chlorine contact chamber that does not exceed 1 gpm/100 gallons of reactor volume. Alternative limits on flow rate, baffling factor, and T10 may be proposed through a tracer study conducted in accordance with a protocol that has been reviewed and approved by the local jurisdiction;

(C) A free chlorine residual of at least 1.2 mg/L to be maintained at all times, measured at or downstream of the point at which T10 is achieved;

(D) An influent turbidity entering the chlorine contact chamber not to exceed 0.5 NTU at any time;

(E) An influent ammonia concentration entering the chlorine contact chamber not to exceed 0.5 mg/L at any time;

(F) An influent pH not to exceed 8.0 at any time; and

(G) An influent temperature of at least 15°C (59°F) at all times.

(d) Pathogen control treatment Train B, listed in Table 60632-1, must meet the following critical limits:

(1) The turbidity of MBR system effluent must not exceed any of the following:

(A) 0.2 NTU for more than 5 percent of the time within a 24-hour period; and

(B) 0.5 NTU at any time.

(2) The UV disinfection process following the MBR system must provide a minimum UV dose of 120 millijoules per square centimeter through the UV disinfection process at all times. Influent to the UV disinfection process must be at or below the maximum flow rate certified for the system and have UV transmittance greater than or equal to 65 percent;

(3) The chlorine disinfection process following the UV disinfection process must meet the following requirements:

(A) A CT value of not less than 16 mg-min/L, based on maximum flow;

(B) A flow rate through the chlorine contact chamber that does not exceed 1 gpm/100 gallons of reactor volume. A project proponent may propose an alternative

baffling factor and T10 through a tracer study conducted in accordance with a protocol that has been reviewed and approved by the local jurisdiction;

(C) A free chlorine residual of at least 1.6 mg/L to be maintained at all times, measured at or downstream of the point at which T10 is achieved;

(D) An influent turbidity entering the chlorine contact chamber not to exceed 0.5 NTU at any time;

(E) An influent ammonia concentration entering the chlorine contact chamber not to exceed 0.5 mg/L at any time;

(F) An influent pH not to exceed 8.0 at any time; and

(G) An influent temperature of at least 10°C (50°F) at all times.

(e) Pathogen control treatment Train C, listed in Table 60632-1, must meet the following critical limits:

(1) The turbidity of MBR system effluent must not exceed any of the following:

(A) 0.2 NTU for more than 5 percent of the time within a 24-hour period; and

(B) 0.5 NTU at any time.

(2) The UV disinfection process following the MBR system must provide a minimum UV dose of 160 millijoules per square centimeter through the UV disinfection process at all times. Influent to the UV disinfection process must be at or below the maximum flow rate certified for the system and have UV transmittance greater than or equal to 65 percent;

(3) A chlorine disinfection process following the UV disinfection process must meet the following requirements:

(A) A CT value of not less than 7 mg-min/L at all times, based on maximum flow;

(B) A flow rate through the chlorine contact chamber must not exceed 1 gpm/100 gallons of reactor volume. A project proponent may propose an alternative limit on flow rate, baffling factor, and T10 through a tracer study conducted in accordance with a protocol that has been reviewed and approved by the local jurisdiction;

(C) A free chlorine residual of at least 0.70 mg/L must be maintained at all times, measured at or downstream of the point at which T10 is achieved;

(D) An influent turbidity entering the chlorine contact chamber must not exceed 0.5 NTU at any time;

(E) An influent ammonia concentration entering the chlorine contact chamber must not exceed 0.5 mg/L at any time;

(F) An influent pH not to exceed 8.0 at any time; and

(G) An influent temperature at least 15°C (59°F) at all times.

(f) Pathogen control treatment Train D, listed in Table 60632-1, must meet the following critical limits:

(1) The turbidity of MBR system effluent does not exceed any of the following:

(A) 0.2 NTU for more than 5 percent of the time within a 24-hour period; and

(B) 0.5 NTU at any time.

(2) The UV disinfection process following the MBR system must provide a minimum UV dose of 240 millijoules per square centimeter through the UV disinfection process at all times. Influent to the UV disinfection process must be at or below the maximum flow rate certified for the system and have UV transmittance greater than or equal to 65 percent.

(g) Pathogen control treatment Train E, listed in Table 60632-1, must meet the following critical limits:

(1) The turbidity of membrane filtration system effluent does not exceed any of the following:

(A) 0.2 NTU for more than 5 percent of the time within a 24-hour period; and

(B) 0.5 NTU at any time.

(2) The UV disinfection process following the MBR system must provide a minimum UV dose of 160 millijoules per square centimeter through the UV disinfection process at all times. Influent to the UV disinfection process must be at or below the maximum flow rate certified for the system and have UV transmittance greater than or equal to 65 percent.

(3) A chlorine disinfection process following the UV disinfection process must meet the following requirements:

(A) A CT value of not less than 10.0 mg-min/L at all times, based on maximum flow;

(B) A flow rate through the chlorine contact chamber not to exceed 1 gpm/100 gallons of reactor volume. A project proponent may propose an alternative limit on flow rate, baffling factor, and T10 through a tracer study conducted in accordance with a protocol that has been reviewed and approved by the local jurisdiction;

(C) A free chlorine residual of at least 1.0 mg/L to be maintained at all times, measured at or downstream of the point at which T10 is achieved;

(D) An influent turbidity entering the chlorine contact chamber not to exceed 0.5 NTU at any time;

(E) An influent ammonia concentration entering the chlorine contact chamber not to exceed 0.5 mg/L at any time;

(F) An influent pH not to exceed 8.0 at any time; and

(G) An influent temperature of at least 15°C (59°F) at all times.

(h) Pathogen control treatment Train F, listed in Table 60632-1, must meet the following critical limits:

(1) The UV disinfection process must provide a minimum UV dose of 40 millijoules per square centimeter through the UV disinfection process at all times. Influent to the UV disinfection process must be at or below the maximum flow rate certified for the system and have UV transmittance greater than or equal to 65 percent.

(i) Any treatment train that includes an MBR process treating either onsite wastewater or graywater sources, and has not been operational or receiving onsite wastewater or

graywater influent for at least 96 hours, must meet the following critical limits until the treatment train reaches normal operating condition:

(1) The turbidity of MBR system effluent does not exceed any of the following:

(A) 0.2 NTU for more than 5 percent of the time within a 24-hour period; and

(B) 0.5 NTU at any time.

(2) The MBR process effluent must have UV transmittance greater than or equal to 65 percent; and

(3) The MBR process effluent ammonia concentration must not exceed 0.50 mg/L at any time.

Article 6. Design Requirements

§60670. Supplemental Source of Water for OTNWS.

(a) An OTNWS producing onsite treated nonpotable water for indoor uses must have potable water supplied by a public water system serving as a supplemental source of water. Connection to this water supply must be protected by an air gap separation.

(b) If recycled water is used as a supplemental source of water ancillary to the supplemental source of water described in subsection (a), it must be disinfected tertiary recycled water as defined in section 60301.230 or better. Connection to recycled water must be protected by an air gap separation.

(c) The responsible entity must obtain the public water system's and, if applicable, the recycled water supplier's approval that potable water and/or recycled water will be used as the OTNWS's supplemental source of water. The approval must be obtained prior to the local jurisdiction permit issuance.

§60672. Automatic Diversion.

(a) An OTNWS must be able to automatically cease delivery of onsite treated nonpotable water when the water does not comply with section 60642.

(b) No more than 15 minutes of time delay is allowed between when the alarm is triggered by the SCADA system and the delivery of onsite treated nonpotable water is ceased.

(c) An OTNWS must be equipped with all necessary provisions to enable fully automatic diversion, including diversion devices, provisions for odor control, conduits, pumping equipment, and any and all necessary sensors, instruments, valves, and other devices. The diversion equipment must be able to function independently of the primary power supply used for the OTNWS. If diversion is directed as discharge to the community sewer, storm sewer, or off-site storm drainage systems, the responsible entity

must confirm the necessary requirements and obtain approvals from the relevant local jurisdiction and/or utility providers prior to discharging.

(d) Prior to restarting delivery of onsite treated nonpotable water following diversion of the water, the responsible entity must investigate the cause of not meeting pathogen log reduction targets and complete corrective actions. The responsible entity must submit a report describing the incident and completed corrective actions to the local jurisdiction. Local jurisdiction approval must be obtained prior to restarting the OTNWS operation.

§60674. Reliability Requirements for Disinfection Unit Processes.

(a) An OTNWS with a UV disinfection process must be equipped with a built-in automatic reliability feature that is triggered when the measured UV dose is below the required minimum UV dose. If the measured UV dose goes below the required minimum UV dose, the SCADA system must automatically start up the next available UV lamp bank or reactor. If no redundant lamp bank or reactor is available, the SCADA system must initiate automatic diversion pursuant to section 60672.

(b) An OTNWS with a chlorine disinfection process must have reliability features for uninterrupted chlorine feed listed in this subsection. In the absence of these reliability features, the SCADA system must be capable of initiating automatic diversion pursuant to section 60672.

(1) Standby chlorine supply;

(2) Chlorine metering pump; and

(3) Automatic residual control of chlorine dosage and automatic measuring and recording of chlorine residual.

(c) An OTNWS using a disinfection unit process other than a chlorine disinfection process or UV disinfection process must describe and propose reliability features to ensure uninterrupted pathogen inactivation or removal in the engineering report pursuant to section 60680.

§60676. Alarms.

(a) Each OTNWS must be equipped with alarm devices to provide warnings of:

(1) Loss of power;

(2) Treatment train failure to meet section 60642; and

(3) Any other incidents for which warning is required by the local jurisdiction to minimize threats to public health resulting from an OTNWS failure.

(b) All required alarm devices must be capable of operating independently of the power supply for the OTNWS.

(c) The personnel to be warned by an alarm device must be capable of taking prompt corrective actions necessary to prevent delivery of inadequately treated onsite treated nonpotable water to the use area.

§60678. Microbial Regrowth Control for Storage and Distribution.

(a) A free chlorine minimum residual of 0.5 mg/L must be maintained at the farthest end-use fixture(s). If chloramines are used to maintain disinfection residual, 0.7 mg/L total chlorine must be maintained at the farthest end-use fixture(s). The responsible entity must measure residual disinfectants weekly using a calibrated field meter.

(b) If the required disinfectant residual pursuant to subsection (a) is not met, the responsible entity must restore the disinfectant residual and retest within 48 hours upon discovery in accordance with the corrective action plan required in section 60686.

Article 7. Plans and Reports

§60680. Engineering Report.

(a) No person shall produce, supply, or use nonpotable water from an OTNWS that does not have an engineering report which has been approved by the local jurisdiction.

(b) The engineering report must be prepared by a professional engineer licensed in California and who has a minimum of three (3) years' experience in wastewater treatment.

(c) The engineering report must contain the following information:

(1) An identification of the responsible entity and all other entities that will be involved in the construction, commissioning, and ongoing operation and maintenance of the OTNWS, including a description of any legal arrangements outlining roles and responsibilities associated with each entity and proof of filing of property covenants for district-scale projects pursuant to section 60604(b);

(2) A description of the untreated alternate water source(s) proposed for treatment by the OTNWS, method and manner of collection, location of collection and/or storage facilities, and estimated proportion of water sources to be treated by the OTNWS if multiple untreated alternate water sources are collected for treatment;

(3) Description and, if available, any documentation of the collection, storage, and distribution system(s) components, which includes the following information:

(A) Plans and specifications;

(B) Existing and proposed piping systems;

(C) Pipe locations of nonpotable and potable systems;

(D) Type and locations of the outlets and plumbing fixtures;

(E) Type, size, and material of storage tanks; and

(F) The backflow prevention assemblies to prevent backflow of onsite treated nonpotable water into the public water systems and municipal recycled water systems;

(4) A description of the OTNWS treatment train, which includes the following information:

(A) A complete schematic of the treatment train, including how it connects to the collection, storage, and distribution system;

(B) A description of how the treatment train will meet the pathogen log reduction target in Table 60630-1, either by compliance with section 60632 or section 60634; and

(C) A description of each treatment process, including design and operational parameters;

(5) A description of how the SCADA system performs all of the following:

(A) Identifies, acquires, and uses monitoring data to inform operators, generate reports, and take autonomous actions;

(B) Identifies, alerts, and responds to a failure of a control point to meet a critical limit and halts or diverts the flow of inadequately treated water; and

(C) Identifies the log reduction value performance status of each treatment process for which a log reduction has been credited and uses that status to determine the treatment train's ability to meet the pathogen log reduction targets pursuant to section 60630;

(6) A description of each supplemental water supply, which includes the following information: source(s), quality, anticipated capacity available, cross-connection control(s), and backflow prevention measure(s);

(7) A description of planned monitoring and reporting, which includes the method and frequency of calibration for any continuous monitoring instrument;

(8) A description of how the project proponent will comply with design requirements in Article 6 of this Chapter;

(9) A description of contingency planning designed to prevent inadequately treated water from being delivered to the users that includes the following:

(A) A list of conditions which would require an immediate diversion to take place;

(B) A description of the diversion or disposal facilities and capacity; and

(C) A list of local jurisdiction contacts to notify of any treatment failures that could result in the delivery of inadequately-treated onsite treated nonpotable water to the use area;

(10) A description of the use area that includes the following information:

(A) Type of occupancy;

(B) Type of use;

(C) Method for application or use of onsite treated nonpotable water;

(D) Availability of onsite treated nonpotable water and, if applicable, scheduled application time and duration of water application;

(E) Public access, hours of operation, and maximum occupancy;

(F) Use area containment measures and use area requirements;

(G) A map and description of locations of signage, along with types of signage installed, meeting the requirements of section 60692; and

(H) Design or construction drawings showing all piping networks within the use area including onsite treated nonpotable water, sewage, drinking water, and any other piping as applicable.

(11) A description of staffing for the full operation and maintenance of the entirety of the OTNWS facilities;

(12) A description of means for compliance with cross-connection control requirements in Article 9 of this Chapter;

(13) A validation study report prepared in accordance with section 60682, if required;

(14) A commissioning plan prepared in accordance with section 60684;

(15) Other report elements specified by the local jurisdiction to evaluate the effectiveness of the proposed OTNWS; and

(16) Other report elements specified by the sewer service provider to prevent significant adverse impacts to community sewer system from operation of the OTNWS.

§60682. Validation Study Protocol and Report.

(a) An OTNWS using a pathogen control treatment train in accordance with section 60632 is exempt from the requirements of this section.

(b) Each treatment process used to meet the pathogen log reduction targets in Table 60630-1 must be validated for pathogen log reduction or inactivation. A validation study report must be submitted to the local jurisdiction for review and approval. The validation study report must follow a validation study protocol approved by the local jurisdiction.

(c) Local jurisdictions must consult with the State Board prior to approving the validation study protocol and validation study report.

(d) The validation study protocol and report must be prepared by a California licensed engineer, with at least five (5) years of experience as a licensed engineer in drinking water or wastewater treatment evaluating treatment processes for pathogen control. A UV disinfection process validation study report may be prepared by an engineer licensed in a state other than California as long as the other qualifications in this subsection are met.

(e) The validation study report must demonstrate that the proposed treatment process and the overall treatment train provides reliable and continuously verifiable pathogen removal and must contain the following information:

(1) A validation study protocol prepared in accordance with subsection (f) and approved by the local jurisdiction;

(2) A summary of the log reduction value demonstrated by each treatment process for each pathogen identified in subsection (f)(2), the operating envelope, and the critical limit(s) for each validated treatment process; and

(3) Evidence of the treatment technology's ability to achieve the pathogen log reduction value reliably and consistently, including information on the required operating conditions and surrogate parameters proposed for continuous process verification monitoring.

(f) A validation study protocol must:

(1) Identify the treatment mechanism(s) of pathogen reduction by the treatment process;

(2) Identify the pathogen(s) being addressed by the treatment, or appropriate surrogate(s) for the pathogen(s), that are used in the validation study. The pathogen(s) and surrogate(s) selected for the validation study shall be the one(s) most resistant to the treatment mechanisms;

(3) Ensure that the pathogen(s) or surrogate(s) are present in the test water in concentrations sufficient to demonstrate a pathogen log reduction;

(4) Identify the factors that influence the pathogen reduction efficiency for treatment mechanism(s). Influencing factors include, but are not limited to, feed water characteristics such as temperature and pH, hydraulic loading, deterioration of components, and integrity failure;

(5) Identify the surrogate and/or operational parameters that can be measured continuously and that will correlate with the reduction of the pathogen(s) or surrogate(s) for the pathogen(s).

(6) Identify the validation methodology to demonstrate the capability of the treatment process. The validation methodology shall involve a challenge test to quantify the reduction of the target pathogen or appropriate surrogate while concurrently monitoring the operational parameters to determine an operating envelope;

(7) Describe the method to collect and analyze data to formulate evidence-based conclusions;

(8) Describe the method to determine the critical limit(s) and the operational monitoring and control strategy;

(9) Describe the method to be used to calculate the log reduction value for the treatment process for each pathogen. The validated log reduction value shall not exceed that achieved by 95 percent of the challenge test results when the treatment process is operating in compliance with the critical limit(s); and

(10) Identify the circumstances that would require a re-validation or additional onsite validation, including but not limited to, when conditions are inconsistent with the previous validation test conditions.

§60684. Commissioning Plan and Report.

(a) Each OTNWS must successfully perform and complete a commissioning period prior to supplying onsite treated nonpotable water for indoor and outdoor uses.

(b) The commissioning plan and report must be prepared by a professional engineer licensed in California and who has a minimum of three (3) years' experience in wastewater treatment.

(c) Each OTNWS must have a commissioning plan approved by the local jurisdiction prior to commissioning.

(d) The commissioning plan must contain the following information:
(1) Hydraulic load during the test;
(2) Location and schedule for all sampling or measurements;
(3) Methods used to analyze water quality samples or make measurements, if applicable;
(4) Person(s) responsible for conducting the test and, if applicable, processing samples;
(5) Indicators of normal operating condition;
(6) Methods used to verify that the required pathogen log reduction values are achieved;
(7) Test plan for triggering critical alarms, reliability features, and automatic diversion features;
(8) Procedure and proposed test run conditions for a field verification study pursuant to section 60640 for alternatives to pathogen control treatment trains; and
(9) Any additional information that the local jurisdiction determines is necessary to demonstrate how the OTNWS will operate as designed at the anticipated operating conditions.

(e) The duration of the commissioning period must be sufficient for all treatment processes to reach steady operating conditions, to experience at least one continuous operation between two consecutive backwash cycles (or other actions that renew treatment function yield or efficacy), and to collect sufficient treatment system performance data to determine that the treatment train meets the reliability requirements for compliance with section 60674.

(f) A commissioning report documenting the OTNWS commissioning must be submitted to the local jurisdiction for review and approval within 30 days of completion of the commissioning period. The commissioning report must also be submitted to the public water system, sewer service provider, and when applicable, recycled water agency within 30 days of completion of the commissioning period. The commissioning report must include the following information:
(1) Identification of any deviation from the local jurisdiction-approved commissioning plan;

(2) Efficacy of treatment;

(3) Functionality of treatment unit operations such as pumping, aeration, level controls, and chemical feed rates;

(4) Any situations resulting in out-of-specification performance of each treatment process not anticipated in the commissioning plan; and

(5) Finding(s) on whether the OTNWS treatment facility commissioning demonstrates that it can reliably comply with the requirements in Articles 4, 5, and 6, and any additional local jurisdiction requirements necessary to demonstrate that the OTNWS will operate in a manner that is protective of public health.

§60686. Operations Plan.

(a) Each OTNWS must have an operations plan approved by the local jurisdiction prior to delivery of onsite treated nonpotable water. The operations plan must include the following:

(1) A compilation of equipment operations and maintenance manuals, including preventive maintenance recommendations and frequencies, a list of spare parts, and technical cut sheets;

(2) A user guide for OTNWS personnel on how to operate and navigate the OTNWS facility SCADA system;

(3) As-built construction drawings and specifications of the OTNWS treatment, storage, and distribution facilities;

(4) Best management practices for corrosion control for the onsite treated nonpotable water storage and distribution system designed to minimize the risk of illness resulting from opportunistic pathogens;

(5) Standard operating procedures which include detailed startup and shutdown procedures, operator log sheets and checklists, and troubleshooting procedures;

(6) A summary of regulatory compliance information which includes monitoring and reporting requirements to comply with the local jurisdiction's permit, methods of compliance, and monitoring locations;

(7) Health and safety protocols, including information about personal protective equipment and emergency contact information;

(8) Contingency planning information which includes procedures for actuation of supplemental water sources, disposal of inadequately-treated onsite treated nonpotable water, actions to be taken and a disposal plan in the event of a UV lamp breakage that can result in mercury release, customer notification, and key contact information in the event of emergencies;

(9) Staffing information which includes: a list of personnel responsible for operation and maintenance of the OTNWS treatment facility including certifications or licenses, if applicable; staffing schedules; contact information for personnel responsible for onsite operations and if applicable, backup personnel, offsite or on-call maintenance staffing contact information and frequency of scheduled onsite visits, if applicable; a signed statement by the responsible entity certifying that the personnel responsible for

operating the treatment facility possess the knowledge and basic understanding of subjects described in subsection (b) of section 60690;

(10) Quick reference section that includes the following information:

(A) Critical alarms with required responses; and

(B) Location and inventory of monitoring instrumentation with the listed frequency of the manufacturer's recommended calibration and maintenance;

(11) Sampling plan, including a corrective action plan to address undetectable or very low disinfectant residual, to demonstrate compliance with section 60678; and

(12) Any additional information that the local jurisdiction determines is necessary to ensure the OTNWS operates as designed and is protective of public health.

(b) The operations plan must be representative of the current operations, maintenance, and monitoring of the OTNWS at all times. Operations plan updates reflecting changes that may affect compliance with these regulations must be approved by the local jurisdiction prior to the changes being implemented.

(c) The operations plan must be kept onsite and available to all personnel responsible for operation of the OTNWS at all times. When requested onsite, the operations plan must be made available to local jurisdiction staff for inspection.

§60688. Monitoring Report.

OTNWS monitoring results must be reported to the local jurisdiction in a format approved by the local jurisdiction at least quarterly. The monitoring report must include the following information:

(a) The OTNWS's treatment system's daily average treated flow in gallons per day;

(b) Volume of onsite treated nonpotable water produced and used daily in gallons;

(c) Daily summaries of continuous process verification monitoring parameters pursuant to Table 60688-1 for a pathogen control treatment train or parameters approved for an alternative treatment train pursuant to subsection (b) of section 60642;

(d) Descriptions of any malfunctions, breakdowns, upsets, bypasses, or other system operation anomalies, which includes information on dates, duration, and personnel responses to investigate and remediate the issue(s);

(e) Any public or building occupant and/or tenant complaints related to the OTNWS and any personnel responses or plans to follow up, investigate, and remediate the issue(s);

(f) Results of the monitoring performed in accordance with section 60678; and

(g) Any additional monitoring parameters that the local jurisdiction determines are necessary to demonstrate how the OTNWS will operate as designed.

Table 60688-1. Continuous process verification monitoring parameters for reporting

Treatment Process	Parameter	Units	Reporting parameter
MBR	Effluent turbidity	NTU	Daily maximum, Rolling 24-hour 95th percentile
UV disinfection	Influent turbidity	NTU	Daily maximum, Rolling 24-hour 95th percentile
UV disinfection	Ultraviolet dose	mJ/cm2	Daily minimum
UV disinfection	Ultraviolet transmittance	%	Daily minimum
Chlorine disinfection	Flow rate	gpm	Daily minimum, daily maximum
Chlorine disinfection	Influent chlorine dose	mg/L	Daily minimum
Chlorine disinfection	Effluent free chlorine residual	mg/L	Daily minimum
Chlorine disinfection	Influent ammonia	mg/L	Daily maximum
Chlorine disinfection	Influent turbidity	NTU	Daily maximum
Chlorine disinfection	Influent pH	Standard units	Daily maximum
Chlorine disinfection	Influent water temperature	°C or °F	Daily minimum

Article 8. Other Requirements

§60690. Personnel.

(a) Any plumbing modifications to any part of the OTNWS collection, treatment, or distribution facilities must be performed by a licensed contractor or any other licensed, certified, or registered persons in accordance with state and local plumbing codes.

(b) The responsible entity must maintain adequate staffing for the operation of the OTNWS and must submit staffing information and a signed statement in the operations

plan for submittal to the local jurisdiction pursuant to section 60686, which certifies that personnel operating the OTNWS treatment facility possess the following:

(1) Knowledge of the requirements of this Chapter and local jurisdiction program requirements;

(2) Knowledge of the operation and maintenance of the OTNWS treatment processes;

(3) Knowledge of operating the process treatment, flow control, pressure control, and storage facilities using a SCADA system;

(4) Knowledge of pathogen control and public health protection;

(5) Knowledge of and ability to carry out personnel tasks and functions to ensure that the OTNWS treatment facility is operating in a manner that is consistent with the approved operations plan;

(6) Knowledge of cross-connection control measures, including how to comply with the requirements in Article 9 of this Chapter; and

(7) Other requirements that the local jurisdiction determines are necessary to ensure the OTNWS operates as designed and in a manner that is protective of public health.

(c) The responsible entity must report the change of a duly authorized agent to the local jurisdiction within 30 calendar days of the effective date of the change.

§60692. Signage.

(a) All indoor and outdoor use areas where onsite treated nonpotable water is accessible to the public or common areas must be posted with permanent and durable signs that are visible to the public, in a size no less than 4 inches high by 8 inches wide, and that include the following wording: "CAUTION: ONSITE TREATED NONPOTABLE WATER – DO NOT DRINK." Each sign must contain letters of a highly visible color on a purple or other contrasting color background. Each sign must display an international symbol similar to that shown in figure 60310-A.

(b) A sign must be installed in each publicly accessible or common area restroom of commercial, mixed-use, and multifamily buildings using onsite nonpotable treated water for water closets, urinals, or both. Each sign must contain letters of a highly visible color on a purple or other contrasting color background. The location and appearance of each sign must be such that the sign is visible and legible to users and must be approved by the local jurisdiction. Each sign must contain the following text: "TO CONSERVE WATER, THIS BUILDING USES ONSITE TREATED NONPOTABLE WATER TO FLUSH TOILETS AND URINALS."

(c) Where tank-type toilets are flushed with onsite treated nonpotable water, a permanent sign (made from material such as plastic or stainless steel) must be installed inside the tank to warn that the water within the tank is not a suitable emergency drinking

water supply. The sign must include the following language: "CAUTION: ONSITE TREATED NONPOTABLE WATER - DO NOT DRINK."

(d) A sign must be installed in each publicly accessible or common area laundry facility of commercial, mixed-use, and multifamily buildings using onsite nonpotable treated water for clothes washing machines. Each sign must contain letters of a highly visible color on a purple or other contrasting color background. The location and appearance of each sign must be such that the sign is visible and legible to users and must be approved by the local jurisdiction. Each sign must contain the following text: "TO CONSERVE WATER, THIS BUILDING USES ONSITE TREATED NONPOTABLE WATER FOR CLOTHES WASHING."

(e) Each equipment room containing OTNWS equipment must have a sign posted in a location that is visible to anyone working on or near OTNWS equipment. Each sign must contain letters that are at least 1 inch (25.4 mm) in height of a highly visible color on a purple or other contrasting color background: "CAUTION: ONSITE TREATED NONPOTABLE WATER, DO NOT DRINK. DO NOT CONNECT TO DRINKING WATER SYSTEM. NOTICE: CONTACT BUILDING MANAGEMENT BEFORE PERFORMING ANY WORK ON THIS WATER SYSTEM."

(f) The local jurisdiction may accept alternative signage and wording, provided that the responsible entity demonstrates to the local jurisdiction that the alternative approach will ensure an equivalent degree of public notification.

§60694. Notifications.

(a) Prior to supplying onsite treated nonpotable water for indoor uses, building tenants and/or residents must be informed of the use of onsite treated nonpotable water, and any plumbing modifications or repairs in the building unit require approval by the responsible entity. The responsible entity must document that the tenants and/or residents are provided with the information.

(b) The responsible entity must notify the local jurisdiction by phone and electronic mail as soon as possible and no later than 24 hours of discovery of the delivery of inadequately-treated onsite treated nonpotable water to a use area.

(c) The responsible entity must provide written notification to building tenants and/or residents no later than 24 hours of discovery of the delivery of inadequately-treated onsite treated nonpotable water for indoor uses.

§60696. Decommissioning.

(a) The responsible entity must provide notification to the local jurisdiction, the public water system, sewer service provider, and when applicable, recycled water agency,

at least 30 days prior to the start of decommissioning activities. The notification must include the following information:

(1) Procedures related to inactivation, demolition, or removal of mechanical and electrical equipment from the OTNWS project site;

(2) Procedures related to abandonment or removal of internal and external pipeline necessary for onsite treated nonpotable water storage and delivery;

(3) Any other necessary activities to decommission an OTNWS as determined by the local jurisdiction; and

(4) Timeline to complete items in subsections (a)(1), (a)(2), and (a)(3).

(b) The responsible entity must provide notification to the local jurisdiction, the public water system, sewer service provider, and when applicable, recycled water agency, no later than 30 days after the completion of decommissioning activities.

Article 9. Cross-connection Controls

§60700. Cross-connection Hazard Assessment.

(a) A site-specific cross-connection hazard assessment of the onsite nonpotable water treatment facility, storage facility, and distribution system must be conducted prior to the initial delivery of onsite treated nonpotable water and at least once every four years thereafter to confirm that the onsite potable water system is protected from contamination or pollution resulting from unintended cross-connection with the OTNWS.

(b) The site-specific cross-connection hazard assessment must consider and identify the following elements:

(1) Actual and potential cross-connections between the onsite potable water system, nonpotable water system, and if applicable, any recycled water system;

(2) Distribution system conditions that increase the likelihood of a backflow event;

(3) Proper backflow protection(s) or action(s) required to eliminate and prevent any cross-connection(s) identified in subsections (b)(1) and (b)(2);

(4) Connection(s) to supplemental water supply(ies); and

(5) Any method to ensure containment at the point of potable water service connection, and if available, recycled water service connection.

§60702. Visual Inspection.

(a) A visual inspection must be conducted before commencing a cross-connection test pursuant to section 60704 and at least annually thereafter.

(b) A visual inspection must include the following elements:

(1) Meter locations of potable water lines and if available, meter locations of nonpotable water lines, such as recycled water, must be checked to verify that no cross-connection exists;

(2) Pumps and equipment, equipment room signs, and exposed piping in the equipment room must be checked to confirm that no signs have been removed and that nonpotable facility markings are clear and visible;

(3) Valves must be checked to confirm that the valve lock seals are still in place and intact. Valve control door signs must be checked to verify that no signs have been removed;

(4) Each supplemental source of water supply to the OTNWS must be checked to confirm it is protected by the appropriate type of backflow prevention assembly or air gap, is intact, and has not been compromised; and

(5) Signs in publicly accessible or common areas served by onsite treated nonpotable water as described in section 60692 must be checked to confirm that no signs have been removed and that nonpotable facility markings are clear and visible.

§60704. Cross-connection Test.

(a) A cross-connection test is required prior to the initial delivery of onsite treated nonpotable water and at least once every four (4) years thereafter.

(b) A cross-connection test for the onsite nonpotable water treatment facility must be conducted in accordance with a cross-connection test procedure developed specifically for the treatment facility to determine whether a cross-connection has occurred. A site-specific cross-connection control test procedure for the onsite nonpotable water treatment facility must be prepared by a certified cross-connection control specialist and developed in accordance with the cross-connection hazard assessment required by section 60700 subsection (a).

(c) The cross-connection test procedure for the onsite treated nonpotable water distribution system must include the following steps:

(1) The onsite potable water system shall be activated and pressurized. The onsite treated nonpotable water distribution system shall be shut down, depressurized, and drained;

(2) The onsite potable water system must remain pressurized for a minimum period specified by the local jurisdiction while the onsite treated nonpotable water distribution system is depressurized and drained. The minimum period the onsite treated nonpotable water distribution system is to remain depressurized and drained shall be determined on a case-by-case basis, taking into account the size and complexity of the potable and the onsite treated nonpotable water distribution systems, but in no case shall that period be less than one (1) hour;

(3) All fixtures for the onsite potable and onsite treated nonpotable water source, shall be tested and inspected for flow. Flow from an onsite treated nonpotable water

outlet indicates a cross-connection. No flow from a potable water outlet may indicate that it is connected to the onsite treated nonpotable water distribution system and must be investigated to confirm that a cross-connection does not exist;

(4) The drain on the onsite treated nonpotable water distribution system shall be checked for flow during the test and at the end of the test. Flow from an onsite treated nonpotable water distribution system outlet indicates a cross-connection with the onsite potable water system;

(5) The onsite potable water system shall then be depressurized and drained;

(6) The onsite treated nonpotable water distribution system must then be activated and pressurized. For the initial cross-connection test, a temporary connection to a potable water supply may be required to test the onsite nonpotable water system plumbing if approved by the public water system. The potable water supply shall be protected by a reduced pressure principle backflow prevention assembly or an air gap. At the conclusion of the initial test, the temporary connection to the potable water supply must be disconnected. Documentation of the disconnected temporary supply must be provided to the local jurisdiction;

(7) The onsite treated nonpotable water distribution system must remain pressurized for a minimum period specified by the local jurisdiction while the onsite potable water system is depressurized and drained. The minimum period the potable water system is to remain depressurized and drained shall be determined on a case-by-case basis, but in no case shall that period be less than one (1) hour;

(8) All fixtures for the onsite potable water system and the onsite treated nonpotable water distribution system must be tested and inspected for flow. Flow from a potable water system outlet indicates a cross-connection. No flow from an onsite treated nonpotable water outlet may indicate that it is connected to the onsite potable water system and must be investigated to confirm that a cross-connection does not exist;

(9) The drain on the onsite potable water system must be checked for flow during the test and at the end of the test; and

(10) Where there is no flow detected in the fixtures that indicates a cross-connection, the onsite potable water system may be repressurized.

(d) The responsible entity may propose an alternative cross-connection test procedure prepared by a certified cross-connection control specialist demonstrating that the procedure provides the same level protection of public health as subsection (c). The alternative cross-connection test procedure must be submitted in writing to the local jurisdiction and State Board. The alternative cross-connection test procedure must be approved by the local jurisdiction and State Board prior to conducting the cross-connection test.

§60706. Cross-connection Control General Requirements.

(a) All cross-connection hazard assessments, inspections, and tests must be conducted by a certified cross-connection control specialist.

(b) A written report prepared by a certified cross-connection control specialist documenting the result of a hazard assessment, inspection, and test must be submitted to the local jurisdiction and the public water system within 30 days following the completion of the hazard assessment, inspection, and/or test.

(c) A cross-connection test pursuant to section 60704 shall be performed on the premises of an OTNWS when there is material reason to believe that the onsite potable water system separation from the onsite treated nonpotable water treatment and distribution system has been compromised. A material reason to believe that the separation between the two systems has been compromised may be based on, but is not limited to, any of the evidence gathered:

(1) During a visual inspection performed pursuant to section 60702;

(2) As a result of an inspection performed following complaints of water quality or flow conditions consistent with a compromised system; or

(3) During a visual inspection that indicates that the OTNWS has been modified.

§60708. Backflow Prevention Assembly.

(a) Any backflow prevention assembly installed to protect the potable water system serving the onsite treated nonpotable water use area must be inspected and tested annually.

(b) Backflow prevention assembly must be tested by a certified backflow prevention assembly tester.

(c) A completed backflow prevention assembly field test or air gap inspection reports must be provided to the local jurisdiction within thirty (30) days of completion of a field test or inspection.

§60710. Discovery of Cross-connection.

(a) If a cross-connection between an onsite potable water system and an onsite nonpotable water system (treated or untreated) is discovered, the responsible entity must conduct the following procedures immediately:

(1) Notify the local jurisdiction, the public water system, and building tenants and/or residents of the cross-connection no later than 24 hours upon discovery;

(2) Cease delivery of onsite treated nonpotable water to the building and use area premises, and drain the onsite treated nonpotable water riser, if applicable;

(3) Shut down the potable water service to the building and its premises at the user's service connection. User's service connection is as defined in the State Board's Cross-Connection Control Policy Handbook adopted pursuant to section 116407 of the Health and Safety Code;

(4) Uncover and disconnect the cross-connection;

(5) Perform another visual inspection, in accordance with section 60702, and cross-connection test, in accordance with section 60704;

(6) Chlorinate the onsite potable water system with 50 parts-per-million (ppm) chlorine for 24 hours; and

(7) Flush the onsite potable water system after 24 hours and perform a standard bacteriological test acceptable to the local jurisdiction. Where test results are acceptable to the local jurisdiction, the onsite potable water system can be permitted to be recharged.

(b) Prior to restarting delivery of onsite treated nonpotable water, the responsible entity must investigate the cause of the cross-connection and complete corrective actions. The responsible entity must submit a report describing the incident and completed corrective actions to the local jurisdiction for the local jurisdiction's approval prior to restarting OTNWS operations.

Chapter 17. Surface Water Treatment[5]

Article 9. Indirect Potable Reuse: Surface Water Augmentation

§64668.05. Application.

In addition to meeting the applicable requirements of this Chapter, a water supplier whose approved surface water source of supply is augmented utilizing a Surface Water Source Augmentation Project (SWSAP) shall meet the requirements of this Article and the applicable requirements of Article 5.3 of Chapter 3. For the purpose of this Article, the water supplier shall be referred to as a Surface Water Source Augmentation Project Public Water System (SWSAP PWS).

§64668.10. General Requirements and Definitions.

(a) Unless noted otherwise, as used in this Article, the following terms are defined as follows:

(1) "Augmented Reservoir" has the same meaning as defined in section 60301.120 of Article 1, Chapter 3.

(2) "Surface Water Source Augmentation Project" or "SWSAP" has the same meaning as defined in section 60301.851 of Article 1, Chapter 3.

(3) "Surface Water Source Augmentation Project Public Water System" or "SWSAP PWS" has the same meaning as defined in section 60301.852 of Article 1, Chapter 3.

[5] Article 9 of Chapter 17 has been included in this "Recycled Water-Related Regulations" compilation. Chapter 17, in its entirety, may be found in the DDW's "Drinking Water-Related Regulations" located here: https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/Lawbook.html

(4) "Surface Water Source Augmentation Project Water Recycling Agency" or "SWSAP WRA" has the same meaning as defined in section 60301.853 of Article 1, Chapter 3.

(b) Prior to using an augmented reservoir as a source of supply, a SWSAP PWS shall submit an application for a domestic water supply permit or permit amendment, and have an approved joint plan with a SWSAP WRA, as required pursuant to section 60320.301(a), of Article 5.3, Chapter 3. The SWSAP PWS shall revise its emergency plan and operations plan required pursuant to sections 64660(c)(2) and 64661 to include the elements of the joint plan and, at a minimum, include the means of providing an alternative source of domestic water supply, a State Board-approved treatment mechanism, or other actions to be taken, to ensure a reliable supply of water is delivered that meets all drinking water standards, in the event that the surface water from the augmented reservoir, as a result of a SWSAP:

(1) Could not be or has not been treated to meet California drinking water standards;

(2) Has been degraded to the degree that it is no longer a safe source of drinking water, as determined by the State Board; or

(3) Receives water that fails to meet the requirements of section 60320.308(d) of Article 5.3, Chapter 3.

(c) A SWSAP PWS shall demonstrate to the State Board and Regional Board that the SWSAP PWS has sufficient control over the operation of an augmented reservoir to ensure its ability to comply with the requirements of this Article and the applicable requirements in Article 5.3, Chapter 3.

(d) A SWSAP PWS with knowledge of a SWSAP WRA failing to meet a requirement of the SWSAP WRA's permit or a requirement of Article 5.3, Chapter 3, shall immediately notify the State Board.

§64668.20. Public Hearings.

A SWSAP PWS may not use an augmented reservoir without a domestic water supply permit or permit amendment for the use of the augmented reservoir as an approved surface water source, and unless the SWSAP PWS facilitates at least three public hearings held by the State Board and the SWSAP PWS does the following:

(a) In coordination with and with the assistance of the SWSAP WRA, develop information to be provided to the public at the public hearings and on the SWSAP PWS's Internet Web site. The information shall include, but not be limited to:

(1) descriptions of the SWSAP,

(2) identification of the municipal wastewater source for the SWSAP,

(3) descriptions of the treatment processes, monitoring, contingency plans, and

(4) the anticipated State Board and Regional Board permit provisions applicable to the SWSAP;

(b) Provide the State Board, for its review and written approval, the information the SWSAP PWS develops pursuant to subsection (a). Following the State Board's approval of the information, the SWSAP PWS shall place the information on a Web site managed and operated by the SWSAP PWS, and in a repository (such as a local public library) in a manner that provides at least 30 days of public access to the information prior to each public hearing. For each of the public hearings, the SWSAP PWS shall make copies of the information available to the public;

(c) No less than 30 days prior to placing the information required pursuant to subsections (a) and (b) in a repository, notify its customers and all public water systems that may receive drinking water impacted by the SWSAP of the following:

(1) the location and hours of operation of the repository,

(2) the Internet address where the information may be viewed,

(3) the purpose of the public hearing and the repository, along with a brief description of the project,

(4) the manner in which the public can provide comments, and

(5) the date, time, and location of the public hearing; and

(d) Deliver the public notification required pursuant to subsection (c), in a manner to reach all public water systems and persons whose source of drinking water may be impacted by the SWSAP. The manner of delivery shall be by direct mail and using one or more of the following methods:

(1) local newspaper(s) publication of general circulation, and

(2) television and/or radio broadcast locally.

§64668.30. SWSAP Augmented Reservoir Requirements.

(a) The SWSAP PWS shall ensure that prior to augmentation of a surface water reservoir by a SWSAP, the surface water reservoir to be used as an augmented reservoir was in operation as an approved surface water supply pursuant to this Chapter for a period of time sufficient to establish a baseline record of the surface water reservoir's raw water quality (including, but not limited to, the monitoring required pursuant to section 60320.326, Chapter 3), and treated drinking water quality. A surface water reservoir shall have been operating as an approved surface water source for at least five years prior to receiving recycled municipal wastewater from a SWSAP, unless approved otherwise in writing by the State Board, but in no case less than two years.

(b) The SWSAP PWS shall ensure that a surface water reservoir used as an augmented reservoir has a minimum theoretical retention time of no less than that which has been approved by the State Board. Monthly, the SWSAP PWS shall calculate and

record the theoretical retention time. The theoretical retention time shall be the value (in units of days) resulting from dividing the volume of water in the surface water reservoir at the end of each month, by the total outflow from the surface water reservoir during the corresponding month. The total outflow shall include, but not be limited to, all outflows and withdrawals from the surface water reservoir. An initial approved minimum theoretical retention time may be no less than 180 days.

(1) If a month's theoretical retention time is determined to be less than the SWSAP PWS's approved theoretical retention time, the SWSAP PWS shall, by the end of the subsequent month, submit a report to the State Board and Regional Board describing the corrective actions to be taken to ensure future theoretical retention times will be no less than the approved theoretical retention time.

(2) A SWSAP PWS may apply to the State Board, for written approval, for a reduced on-going alternative minimum theoretical retention time of less than 180 days, but no less than 60 days. The SWSAP PWS's application shall include all information requested by the State Board for its consideration of a proposed alternative minimum theoretical retention time, including the following:

(A) Evidence that the SWSAP PWS and SWSAP WRA have reliably and consistently met the requirements of this Article and Article 5.3, Chapter 3, under varying operating conditions;

(B) At the proposed alternative minimum theoretical retention time, the maximum anticipated recycled municipal wastewater flow to the surface water reservoir, the total anticipated outflows from the reservoir, and the total available flows of approved reservoir sources of supply;

(C) The maximum percent, by volume, of recycled municipal wastewater that will be delivered to the surface water reservoir during any 24-hour period, in accordance with subsection (c), at the proposed alternative minimum theoretical retention time;

(D) A description of total proposed treatment and total log10 reduction for enteric virus, Giardia cysts, and Cryptosporidium oocysts. For proposed alternative minimum theoretical retention times less than 120 days, no less than one log10 reduction of such pathogens beyond that otherwise required pursuant to this Article and Article 5.3, Chapter 3, shall be provided;

(E) The ability to adequately respond to potential SWSAP treatment failures in a timely manner, such that there is no interruption of drinking water, meeting all applicable standards, supplied to customers; and

(F) A demonstration that the alternative minimum theoretical retention time provides, based on information provided pursuant to subsection (b)(2), an equivalent or better level of protection of public health than otherwise required pursuant to this Article and Article 5.3, Chapter 3. If required by the State Board, the SWSAP PWS's demonstration shall include a review by an independent scientific advisory panel approved by the State Board.

(c) Prior to augmentation and whenever requested to do so by the State Board based on information that previous tracer studies or hydrodynamic modeling may not accurately

reflect current conditions, the SWSAP PWS shall demonstrate to the State Board, utilizing tracer studies and hydrodynamic modeling, that at all times under all operating conditions, the volume of water withdrawn from the augmented reservoir to be ultimately supplied for human consumption contains no more than:

(1) one percent, by volume, of recycled municipal wastewater that was delivered to the surface water reservoir during any 24-hour period, or

(2) ten percent, by volume, of recycled municipal wastewater that was delivered to the surface water reservoir during any 24-hour period, with the recycled municipal wastewater delivered by the SWSAP WRA having been subjected to additional treatment producing no less than a 1-log10 reduction of enteric virus, Giardia cysts, and Cryptosporidium oocysts, as noted pursuant to section 60320.308(a)(2). With regard to the additional treatment:

(A) The additional treatment need not be a unique type of process from other treatment processes utilized by the SWSAP WRA to meet the requirements of section 60320.308.

(B) The SWSAP PWS, in consultation with the SWSAP WRA, shall obtain the additional treatment process information necessary for demonstrating that the requirements of subsection (c)(2) of this section, and section 60320.308(a)(2), will be met.

(d) To verify that the requirements of subsection (c) are being met, within the first six months of operation, under hydraulic conditions representative of normal SWSAP operations, the SWSAP PWS shall initiate a tracer study utilizing an added tracer. The results of the tracer study shall be used to validate the hydrodynamic modeling required in subsection (c). Prior to performing the tracer study, the SWSAP PWS shall submit a tracer study protocol for State Board review and written approval. The SWSAP PWS shall perform the verification required by this subsection whenever requested by the State Board.

(e) Notwithstanding a change in operation allowed pursuant to the SWSAP PWS's domestic water supply permit, prior to initiating a change in operation, including physical changes to the surface water reservoir, that may impact the hydraulic characterization utilized to determine compliance with the requirements of this section, the SWSAP PWS shall notify the State Board and:

(1) demonstrate that the hydraulic characterization used to comply with this section remains valid under the changed operation, or

(2) if requested by the State Board, demonstrate compliance pursuant to this section under the new hydraulic conditions.

(f) Unless directed otherwise by the State Board, a SWSAP PWS shall utilize an independent scientific advisory panel to meet the requirements of this section pertaining to the hydraulic characterization of the reservoir, including tracer study verifications and hydraulic modeling used to demonstrate compliance with subsection (c). The

independent scientific advisory panel shall be approved by the State Board and include, at a minimum, a limnologist with experience modelling the hydraulic characterization of surface water reservoirs, or a limnologist and an individual with experience modelling the hydraulic characterization of surface water reservoirs. The SWSAP PWS shall allow State Board representatives, as guests, to join all independent scientific advisory panel meetings and discussions.

(g) Prior to augmentation of a surface water reservoir using a SWSAP, a SWSAP PWS shall submit a plan, for State Board review and approval, describing the actions the SWSAP PWS will take to assess and address potential impacts resulting from the introduction of advanced treated water into the SWSAP PWS's surface water treatment plant and, indirectly, into the drinking water distribution system. At a minimum, the plan shall address:

(1) maintaining chemical and microbial stability in the drinking water distribution system as the drinking water quality changes with anticipated increasing fractions of advanced treated water;

(2) maintaining treatment effectiveness throughout the surface water treatment plant as the source water quality changes with anticipated increasing fractions of advanced treated water in the reservoir;

(3) assessments to be performed prior to and during operation of the SWSAP with respect to paragraphs (1) and (2); and

(4) assessment outcomes of which the SWSAP PWS will notify the State Board.

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