

A Proposed Framework of Regulating Direct Potable Reuse in California
Addendum
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DPR Framework 2nd edition Addendum – Early Draft of Anticipated Criteria for Direct Potable Reuse

To be added in [Title 22, Division 4, Chapter 17](#), Surface Water Treatment, as new Article 10, Direct Potable Reuse.

This draft includes a brief citation or explanation (under “Rationale”) following each section which provides information to inform the reader about the topic or point the reader to the section in the Framework document that discusses the topic. The rationale sections will not be part of the regulation but may be included in the statement of reasons of the regulation package when it is released.

§ 64669.00 Application

In addition to meeting the requirements of this Chapter, a public water system that is responsible for using municipal wastewater for treatment to produce water that is used to augment a source of supply or is used for drinking water distribution as defined in [section 13561\(b\)](#) of Chapter 7.3, Division 7, Water Code shall meet the requirements of this Article and requirements of articles 7, 8, and 10 of [Chapter 3 of Division 4, Title 22](#), California Code of Regulations¹.

Rationale: This Article applies to a project that receives municipal wastewater for treatment to produce water that is used as a source of supply, or drinking water directly for distribution, thus covering both raw water augmentation and treated water augmentation. This Article does not apply to indirect potable reuse projects, citing the Water Code definition of “Direct Potable Reuse”. “This Chapter” means the Surface Water Treatment Rule (SWTR), “this Article” means the DPR criteria. References to Chapter 3 (water recycling criteria) include: Article 7 on engineering report and operational requirements; Article 8 on the general requirements of design section; and Article 10 on the reliability requirements of full treatment.

¹ Articles 7, 8, and 10 of Chapter 3 may be found in the DDW’s “Drinking Recycled Water-Related Regulations” located here:
https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/Lawbook.html

§ 64669.05 Definitions

(a) Unless noted otherwise, as used in this Article, the following terms are defined as follows:

(1) “Acute exposure threat” is the occurrence of inadequate pathogen log reduction, increased chemical level, or other condition that can result in unacceptable risk to health with short-term exposure.

(2) “Advanced treated water” means municipal wastewater that has undergone treatment pursuant to section 64669.50.

(3) “Chemical control point” is an activity, procedure or process where chemical control can be applied and that is essential for preventing or eliminating chemical hazards that represent acute or chronic exposure threats or reducing them to acceptable levels.

(4) “Chronic exposure threat” is an increase in chemical concentration that can result in an unacceptable risk to health with prolonged exposure.

(5) “Critical limit” is a maximum and/or minimum value of a continuously monitored parameter which indicates that the treatment is effectively controlling the pathogen or chemical risk. Critical limits are established for all pathogen and chemical control points.

(6) “Direct potable reuse project (DPR project)” is a project involving the planned use of municipal wastewater to produce drinking water.

(7) “Direct potable reuse responsible agency (DiPRRA)” is a public water system that is responsible for using municipal wastewater for treatment and provides DPR project water directly for distribution, or for transmission to a water treatment plant prior to distribution.

(8) “Finished water” means the water that is introduced into the distribution system of a public water system without further treatment, except as treatment necessary to maintain water quality in the distribution system (e.g., booster disinfection, addition of corrosion control chemicals).

(9) “Indicator compound” means an individual chemical in 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 compounds removal by treatment processes; and provides an indication of treatment process failure.²

(10) “Log” means logarithm base 10.

(11) “Log reduction value (LRV)” is a measure of the ability of a treatment train or a treatment process to remove or inactivate microorganisms such as bacteria, protozoa and viruses.

(12) “Mechanism” means a physical, biological, or chemical action that reduces the concentration of a pathogen or chemical contaminant.

(13) “Municipal wastewater” means wastewater that includes mostly domestic waste and may include commercial and industrial waste.

(14) “Notification Level” means the concentration of a contaminant established by the Department pursuant to section [116455\(c\)\(3\) of the Health and Safety Code](#).

(15) “Partner agency” means any agency other than the DiPRRA that participates in a Joint Plan to achieve the requirements of this Article.

(16) “Pathogen control point” is an activity, procedure, or process where pathogen control can be applied, and that is essential for removing pathogen hazards that represent acute exposure threats or reducing them to acceptable levels.

(17) “Response Level” means the concentration of a contaminant established by the Department pursuant to [section 116455\(c\)\(4\) of the Health and Safety Code](#).

(18) “Supervisory control and data acquisition system (SCADA)” means a system that allows monitoring and control of equipment and processes within a treatment plant.

(19) “Surrogate parameter” is a measurable physical or chemical property that has been demonstrated to provide a direct correlation with the concentration of an indicator compound or pathogen, can be used to monitor the efficiency of trace organic compound or pathogen reduction by a treatment process, and/or provides an indication of a treatment process failure.

(20) “Total organic carbon (TOC)” means the concentration of organic carbon present in water.

(21) “Validation” means a demonstration of the pathogen log reduction, chemical contaminant removal, or reduction capacity of a treatment process.

² The term is defined in [section 60301.450](#), Article 1, Chapter 3, Division 4, Title 22.

(22) “Verification” means ongoing monitoring to demonstrate the effectiveness of a treatment process for compliance determination.

§ 64669.10 General Requirements

(a) The source water for a DPR project shall be municipal wastewater.

(b) Prior to delivery of water from a DPR project, a DiPRRA shall demonstrate to the State Board that all treatment processes required to control pathogens and chemicals are designed, installed, and operated pursuant to the criteria in this Article and in accordance with an Operations Plan approved by the State Board.

(c) A protocol describing actions to be taken to meet subsection (b) shall be included in the Engineering Report submitted pursuant to section 64669.75.

(d) The wastewater collection system source control program is in compliance with the criteria in this Article.

(e) There shall be no bypass of untreated or partially treated municipal wastewater from the DPR project to the finished water point of use.

(f) A DiPRRA shall comply with the California Waterworks Standards, [Title 22, Division 4, Chapter 16](#).

(g) The DiPRRA shall be subject to an annual inspection of its facilities and operations pursuant to [Health and Safety Code section 116735](#), including evaluation of:

(1) Source and treatment;

(2) Cross-connection control program;

(3) Enhanced source control program pursuant to section 64669.40;

(4) Technical, managerial, and financial capacity of the DiPRRA and partner agency(ies) in the Joint Plan;

(5) Operations Plan, Monitoring Plan, and Water Safety Plan; and

(6) Other aspects of facilities or operations determined by the State Board on a project-specific basis.

Rationale: A DPR project makes drinking water and therefore a public water system should play the lead role. A DiPRRA is a public water system and is responsible for ensuring the

critical treatment barriers are operated as required by the Operations Plan and monitored and evaluated to ensure compliance with the criteria. A DiPRRA will be responsible for establishing pathogen and chemical control points, meeting microorganism log reductions and required chemical treatment, no matter where the treatment occurs.

For (d), (e), (f), and (g) see [Framework](#) section 7.12, source assessment and source control; section 7.17, cross-connection; section 7.18, application of the California Waterworks Standards; and section 8.1, potable reuse inspection and supervision program, respectively.

§ 64669.15 Permit

(a) A DiPRRA is the agency responsible for complying with the requirements of this Article. Only one DiPRRA shall be designated for a DPR project.

(b) A DiPRRA shall submit a permit application pursuant to [section 64001](#), Article 1, Chapter 14, Division 4, Title 22 and receive a permit prior to operating the DPR project. The application shall include:

- (1) An Engineering Report pursuant to section 64669.75;
- (2) A Joint Plan pursuant to section 64669.25;
- (3) Demonstration of technical, managerial, and financial (TMF) capacity pursuant to section 64669.30;
- (4) For an initial permit for a public water system, the requirements pursuant to [section 64552](#), Article 2, Chapter 16, Division 4, Title 22;
- (5) For an amended permit for a public water system, the information needed to assess the changes set forth in [section 64556](#), Article 2, Chapter 16, Division 4, Title 22; and
- (6) Other submittals determined by the State Board on a project-specific basis.

(c) A public water system whose source of supply is DPR project water from a DiPRRA in whole or part shall participate in the DiPRRA Joint Plan pursuant to section 64669.25 as a partner agency, submit a permit application pursuant to [section 64001](#), Article 1, Chapter 14, Division 4, Title 22 and receive a permit prior to using DPR project water.

(d) A public water system that plans to use finished water from a DiPRRA DPR project directly for distribution, shall submit a permit application pursuant to [section 64001](#), Article 1, Chapter 14, Division 4, Title 22 and receive a permit prior to using DPR project water.

Rationale: The agency that delivers water from a DPR project is a public water system. A DPR project may involve several different agencies and public water systems. Only one agency will be designated as the responsible agency (called the DiPRRA) and the other agency(ies) or public water system(s) will be partner agency(ies) under the Joint Plan. There is to be one permit application submission by the DiPRRA that covers the entire DPR project, including roles played by partner agency(ies). A DPR project can supply finished water directly to customers or can discharge the advanced treated water to a source of supply of another public water system to be further treated. Consecutive systems receiving DPR advanced treated water as a source of water supply must be part of the Joint Plan. Consecutive systems that receive DPR finished water are not required to be part of the Joint Plan, but a permit application must be submitted so that the State Board can review the change in water source and update any permit provisions or monitoring requirements pursuant to existing drinking water regulations.

§ 64669.20 Public Meeting

(a) A DiPRRA shall facilitate, and provide information for, at least one public meeting held by the State Board. The public meeting shall be held before a permit or permit amendment can be issued for the DPR project.

(b) In coordination with partner agency(ies), a DiPRRA shall develop information to be provided to the public for each public meeting. The information shall include, but not be limited to:

- (1) description of the DPR project;
- (2) identification of the municipal wastewater source(s) for the DPR project;
- (3) description of the treatment processes, monitoring, contingency plans;
- (4) anticipated State Board permit provisions as provided by the State Board; and
- (5) other materials determined by the State Board on a project-specific basis.

(c) A DiPRRA shall provide to the State Board, for its review and written approval, the information developed pursuant to subsection (b).

(d) Following the State Board's approval pursuant to subsection (c), and at least 30 days prior to the public meeting, the DiPRRA shall place the information to be presented at the public meeting in locally accessible public repositories, on the DiPRRA internet website, and on all public water system partner agency internet websites. A DiPRRA shall provide accessible copies of the information directly to customers upon request;

(e) At least 30 days prior to the public meeting, the DiPRRA shall provide notification of the public meeting and of the availability of information approved pursuant to subsection (c) in the following manner.

(1) At minimum, the public notice shall contain the following information:

- (A) the location and hours of operation of the repository,
- (B) the Internet website address where the information may be viewed,
- (C) the purpose of the repository and public meeting,
- (D) the manner in which the public can provide comments, and
- (E) the date, time, and location of the public meeting; and

(2) Public notification shall be designed to reach persons served by the DPR project.

Unless otherwise directed by the State Board, the DiPRRA shall:

(A) Mail or direct delivery to each customer receiving a bill including those that provide their drinking water to others (e.g., schools, apartment buildings, offices), and

(B) Use of one or more of the following methods to reach persons not likely to be reached by mailing or direct delivery:

1. Local newspaper,
2. Local television, radio and/or social media,
3. Posting in conspicuous public places, or
4. Delivery to community organizations.

Rationale: The public meeting requirements are similar to those contained in IPR regulations and for permitting of extremely impaired sources. Public meetings are a public right to know process and are conducted in order for the State Board to receive relevant information about a DPR project that it might not have received from the project proponents. See [Framework](#) section 7.3.

§ 64669.25 Joint Plan

(a) A DiPRRA shall submit a Joint Plan that describes the partner agency(ies) involved in the DPR project, the roles and responsibilities of the partner agency(ies) involved in the project, the legal authority of each to fulfill its role and the overall organizational structure

involved in implementing the Joint Plan. At a minimum, the Joint Plan shall include the following:

(1) Procedures to ensure that the DiPRRA will have current knowledge of the status of treatment for the entire DPR project;

(2) A description of corrective actions to be taken if water delivered from a treatment facility fails to meet the treatment or water quality requirements of this Article;

(3) The procedures a DiPRRA will implement for notifying partner agency(ies) and the State Board of:

(A) Operational changes that may adversely affect the quality of water delivered by the treatment facility;

(B) Treatment failure incidents and the corresponding corrective actions taken;

(4) A plan to optimize corrosion control to reduce lead and copper levels in the distribution system; and

(5) The steps the DiPRRA and partner agency(ies) will take to provide an alternative source of domestic water supply or drinking water in the event that the DPR project is unable to supply water.

(b) A DiPRRA must submit an updated Joint Plan when there is a change in the organizational or legal structure of the DPR project management.

(c) A DiPRRA shall submit copies of agreements such as Joint Powers Authority or bilateral agreements that are essential to the operation of a DPR project compliant with this Article to the State Board with the permit application.

Rationale: For DPR projects, multiple agencies may be involved due to existing authorities, jurisdictions and ownerships (wastewater collection system, wastewater treatment system, drinking water system). Establishing the legal authorities, roles and responsibilities, and structure of the overall DiPRRA organization for the DPR project is foundational to ensuring safe drinking water. See [Framework](#) section 7.6.

§ 64669.30 Technical, Managerial, Financial Capacity

(a) Prior to operation of a DPR project, all participating agencies involved in wastewater collection, treatment, monitoring, or control of the DPR project prior to finished water distribution shall demonstrate to the State Board that the agencies possess adequate

technical, managerial, and financial capability to assure compliance with this Article. The demonstration shall include the following:

- (1) The Engineering Report must describe in detail the facilities, staffing, and support services necessary to comply with regulations, and continuously produce safe drinking water;
- (2) The Engineering Report must specify elements that have costs associated. Ongoing costs must be determined for each element described in the Engineering Report. Costs shall include operation and maintenance costs, 20-year life-cycle costs of equipment, capital replacement costs, energy costs, personnel costs, and other elements specified by the State Board on a project-specific basis;
- (3) Reliable and continuing funding sources must be identified for the necessary costs. Funding shall include budget set asides for maintenance and capital replacement subject to a strategic asset management plan;
- (4) Management must ensure that financial, material, and personnel resources will be provided when and where needed;
- (5) Management must institute a quality assurance process to demonstrate that data and information gathered to make compliance determinations and operations and management decisions are based on best practices;
- (6) Management must implement a continuous improvement program for the DPR project based on best practices; and
- (7) Any additional information as determined by the State Board on a project-specific basis.

Rationale: Technical, managerial, and financial capacity (TMF) is the measure of a water system's ability to conduct a safe DPR project. DPR requires extraordinary TMF because of the heavily contaminated source. Whereas most systems rely on prudent source selection and protection to minimize reliance on treatment, DPR projects must commit to an extensive treatment and monitoring burden. A decision to undertake use of an extremely impaired source requires an exceptional recognition of the need to prioritize public safety. The TMF requirements herein are sufficient to allow the regulating agency to judge the adequacy of the capacities for each DPR project.

§ 64669.35 Operator Certification

(a) A DiPRRA shall designate at least one chief treatment operator and at least one shift treatment operator for each operating shift who holds a valid treatment operator certification pursuant to [Title 22, Division 4, Chapter 13](#) for each water treatment facility included in the DPR project that delivers finished water. Each treatment facility shall be classified pursuant to [Title 22, Division 4, Chapter 15, Article 2](#). Treatment pursuant to section 64669.50 provided at separate treatment facilities shall be considered as a single treatment facility for the purposes of determining the level of operator certification required.

(b) A DiPRRA shall designate at least one chief operator and at least one shift operator for each operating shift that possess valid California-Nevada Section of the American Water Works Association/California Water Environment Association advanced water treatment operator (AWTO™) grade AWT5 certificate for each treatment facility included in the DPR project that provides treatment pursuant to section 64669.45 and/or 64669.50. Operators not designated by a DiPRRA as a chief or shift operator pursuant to this section shall be certified as an AWTO™ but may hold AWTO™ certificate of any grade.

(c) For each DPR project water treatment facility not included in subsection (a), a DiPRRA shall designate at least one chief treatment operator who holds either a valid treatment operator certification pursuant to [Title 22, Division 4, Chapter 13](#) or a valid wastewater treatment operator certification pursuant to [Title 23, Division 3, Chapter 26](#) and at least one shift treatment operator for each operating shift who holds a valid treatment operator certification or a valid wastewater treatment operator certification. The treatment facility shall be classified as a water treatment facility pursuant to [Title 22, Division 4, Chapter 15, Article 2](#), or as a wastewater treatment plant pursuant to [Title 23, Division 3, Chapter 26](#), as approved by the State Board.

(d) A chief operator or shift operator shall be on-site at all times when a treatment facility included in a DPR project that provides treatment pursuant to section 64669.45 and/or section 64669.50 is operating.

Rationale: Treatment operators must be sufficiently educated, trained, and pursue continuing education. Requirements for drinking water treatment facility classification and operator certification are contained in section 63765. The CA-NV AWWA/CWEA AWTO™ certification

program requires either wastewater treatment grade 3 or water treatment grade 3 certification as a minimum qualification. Operators holding AWTO™ certification provide additional assurance of competency in advanced treatment operations with emphasis on drinking water safety. See [Framework](#) section 7.5.

§ 64669.40 Wastewater Source Control

(a) A DiPRRA shall ensure that the municipal wastewater used to supply a DPR project is from a wastewater management agency that is in compliance with the wastewater management agency's waste discharge requirements issued pursuant to [section 13263 of Article 4, Chapter 4, Division 7 the Water Code](#) and:

(1) Has the legal authority to implement an industrial pretreatment and pollutant source control program, including authority for oversight and inspection, and review of new connections to the collection system;

(2) Administers a source control program that limits contaminants in wastewater that is used in DPR projects;

(3) Implements and maintains a source control program that includes, at a minimum:

(A) an assessment of the fate of State Board-specified chemicals and contaminants through the wastewater and DPR treatment systems;

(B) chemical and contaminant source investigations and monitoring that focuses on State Board-specified chemicals and contaminants;

(C) an outreach program to industrial, commercial, and residential communities within the portions of the wastewater collection agency's service area that serves as the source for the DPR project, for the purpose of managing and minimizing the discharge of chemicals and contaminants at the source; and

(D) 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; and

(4) Conducts quantitative risk assessments on each contaminant documented in subsection (3) to ensure no contaminant will have a deleterious effect on the DPR project treatment facilities or contribute to exceedance of MCLs or Notification Levels.

(b) A DiPRRA shall work with the wastewater management agency to utilize local limits and other discharge control methods such that the DPR treatment is not adversely affected. Local limits must be designed to protect the public health and water quality for potable reuse.

(c) The source control program must be audited by an independent party at least every five years. The audit shall use the “Control Authority Pretreatment Audit Checklist and Instructions”, [EPA, 833-B-10-001, February 2010](#).

(d) A DiPRRA shall implement a sewershed surveillance program to receive early warning of a potential occurrence that could adversely affect the DPR treatment and that contains the following:

(1) On-line monitoring instrumentation at critical locations that measure surrogate(s) that may indicate a chemical peak;

(2) Notification by the pretreatment program of any failure that results in the release of contaminants above allowable limits;

(3) Monitoring of local county public health disease surveillance programs to communicate when community outbreaks of disease occur; and

(4) Other aspects of a surveillance program determined by the State Board on a project-specific basis.

(e) A DiPRRA shall form and maintain a source control committee that includes representatives from all the wastewater management agency(ies) that supply wastewater to the DPR project and partner agency(ies) that operate the wastewater treatment plant and DPR project treatment facilities, representatives from industrial users and others that discharge chemicals of concern to the wastewater collection system.

(f) A DiPRRA must institute a continuous improvement process to address all aspects of an enhanced source control program.

Rationale: Requirements (a)(1) through (a)(3) are the existing requirements for IPR. Requirements (a)(4) through (f) are the additional requirements that are needed for better source control of contaminants for DPR. A DiPRRA must submit to an independent audit of its wastewater source control program. The frequency of audit of the source control program is consistent with watershed sanitary survey requirements (every five years). See [Framework](#) section 7.12. Refer to “Enhanced Source Control Recommendations for Direct Potable Reuse

in California”, [Enhanced Source Control Expert Panel report, March 2020](#)), executive summary, pp ES-5 – ES-7.

§ 64669.45 Pathogen Control

A DPR project shall ensure that the municipal wastewater receives continuous treatment prior to entering the distribution system as drinking water as follows:

(a) The sum of the treatment process validated log reductions for the treatment train must be at least 20 log for enteric virus, 14 log for Giardia cysts, and 15 log for Cryptosporidium oocysts.

(1) The treatment train must consist of at least four separate treatment processes each for enteric virus, Giardia, and Cryptosporidium. A separate treatment process may be credited with no more than 6 log reduction, with at least four processes each being credited with no less than 1.0 log reduction. A single treatment process may receive log reduction credits for one or more pathogens.

(2) The treatment train must utilize at least three diverse treatment mechanisms. The treatment train must utilize the following treatment mechanisms: at least one physical separation mechanism, one chemical disinfection mechanism, and one UV disinfection mechanism.

(3) Each treatment process used to meet the requirements in subsection (a) must have the microorganism log reduction validated by a study. The validation study protocol must be submitted to the State Board for review and approval prior to conducting the study. A report documenting the study methodology and results must be submitted to the State Board for review and approval prior to approval of the Operations Plan. The validation study protocol and report must each be prepared by an engineer licensed in California with at least five years of experience as a licensed engineer in water/wastewater treatment and public water supply evaluating treatment processes for pathogen control. The validation study protocol and study report may rely on validation study protocols and reports previously approved by the State Board. The validation study report must identify the treatment log reduction value(s) and critical limit(s) for each validated treatment process. The validation study protocol must:

(A) Identify the mechanism(s) of pathogen reduction by the treatment process.

(B) Identify the pathogen(s) being addressed by the treatment, or appropriate surrogate(s) for the pathogen(s), that are used in the validation study. Selection of the pathogen must be based on its resistance to the treatment.

(C) Ensure that the reference pathogens or surrogates are present in the test water in sufficient concentration to demonstrate a log reduction.

(D) Identify the influencing factors that affect the efficacy of the treatment process to reduce the pathogen. Influencing factors include, but not are limited to, feed water characteristics such as temperature and pH; hydraulic loading; deterioration of components, and integrity failure.

(E) Identify the operational monitoring parameters that can be measured continually and that will relate with the reduction of the pathogen or surrogate.

(F) Identify the validation methodology to demonstrate the capability of the treatment process.

(G) Describe the method to collect and analyze data to formulate evidence-based conclusions.

(H) Describe the method to determine the critical limit(s) and the operational monitoring and control strategy.

(I) For each specific treatment process unit performing within the defined critical limits, the lower 5th percentile LRV established during the challenge testing is the LRV attributed to each treatment process for each microorganism.

(J) Provide the means for re-validation or additional on-site validation when conditions are inconsistent with the previous validation test conditions.

(4) The treatment train LRV for virus, Giardia, and Cryptosporidium is the sum of the treatment process validated 5th percentile LRVs for each pathogen.

(5) The treatment train must include UV disinfection with a dose of at least 300 mJ per cm².

(b) The treatment must be operated continuously to achieve the 20 log for enteric virus, 14 log for Giardia cysts, and 15 log for Cryptosporidium oocysts while conforming to the Operations Plan prepared pursuant to section 64669.80.

(1) To determine compliance with the microorganism log reductions pursuant to subsection (a), treatment LRVs must be tracked continuously with a SCADA system utilizing

on-line monitoring for each process that was approved to receive credit for pathogen reduction based on the validation study report submitted pursuant to subsection (a)(3).

(2) If the treatment train LRV falls below 20 log for enteric virus, 14 log for Giardia cysts, or 15 log for Cryptosporidium oocysts but not below 16 log for enteric virus, 10 log for Giardia cysts, or 11 log for Cryptosporidium oocysts, the DPR project must restore the 20 log for enteric virus, 14 log for Giardia cysts, and 15 log for Cryptosporidium oocysts within 24 hours or discontinue delivery of the finished water.

(3) A DiPRRA shall discontinue delivery of DPR project water if 16 log for enteric virus, 10 log for Giardia cysts, or 11 log for Cryptosporidium oocysts reduction are not met, with compliance determined based on subsection (b)(1). A DiPRRA shall notify the State Board and each public water system receiving water from the DPR project within 60 minutes of knowledge of a failure to meet the minimum 16 log for enteric virus, 10 log for Giardia cysts, or 11 log for Cryptosporidium oocysts reduction.

(4) A DiPRRA shall discontinue delivery of DPR project water if the minimum number of treatment processes identified in subsection (a)(1) for any pathogen listed in subsection (a) are not functional.

(5) A DiPRRA shall discontinue delivery of DPR project water if the treatment mechanisms identified in subsection (a)(2) for any pathogen listed in subsection (a) are not functional.

(6) A DiPRRA shall notify the State Board before commencing delivery of finished water after an incident pursuant to subsection (b)(3) occurs, and restart the DPR plant in conformance with a protocol approved by the State Board. A DiPRRA shall submit an incident report, including corrective actions, to the State Board with the monthly report.

(7) The control system must be designed to identify a failure of a process to meet its critical limit and must be able to automatically discontinue delivery of water to the distribution system if the treatment train does not meet the 16 log for enteric virus, 10 log for Giardia cysts, or 11 log for Cryptosporidium oocysts reduction. The control system must be able to discontinue water delivery within the pathogen control point response time determined in section 64669.85(j). The control system shall have associated alarms that indicate when the process is not operating as designed.

(c) Water delivered to the distribution system shall meet the disinfection performance standards in [section 64654\(b\)](#).

Rationale: See [Framework](#) section 5.1 and 7.7.

§ 64669.50 Chemical Control

A DPR project shall ensure that the municipal wastewater receives continuous treatment prior to its distribution as drinking water as follows:

(a) The treatment train must consist of at least three separate treatment processes, using diverse treatment mechanisms, for chemical reduction. The treatment train shall include:

- (1) An ozone/biological activated carbon process that meets the criteria in this section;
- (2) A reverse osmosis membrane process that meets the criteria in this section; and
- (3) An advanced oxidation process that meets the criteria in this section.

(b) The treatment train must treat wastewater with an ozone/biological activated carbon (ozone/BAC) process followed by a reverse osmosis membrane process followed by an oxidation process, in that order.

(c) To demonstrate a sufficient ozone/BAC treatment process has been designed for implementation, a DiPRRA shall conduct testing demonstrating that an ozone/BAC process will provide no less than 1.0 log (90 percent) reduction of formaldehyde.

(1) A DiPRRA shall submit a testing protocol, as well as the subsequent testing results, to the State Board for review and written approval. The testing protocol shall include challenge or spiking tests, using formaldehyde, to demonstrate the proposed ozone/BAC treatment process will achieve the minimum 1.0 log reduction under the proposed ozone/BAC treatment process's normal full-scale operating conditions.

(2) A DiPRRA shall establish and submit to the State Board for review and written approval, surrogate and/or operational parameters that indicate whether the minimum 1.0 log formaldehyde 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.

(3) The ratio of the applied ozone dose to the design feed water total organic carbon (TOC) concentration shall be greater than 1.

(4) The empty-bed contact time of the BAC contactor shall be at minimum 15 minutes.

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

(e) A DiPRRA shall select for use a reverse osmosis membrane such that:

(1) Each membrane element used in the DPR project has achieved a minimum rejection of sodium chloride of no less than 99.0 percent and an average (nominal) rejection of sodium chloride of no less than 99.2 percent, 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,

(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 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.

(f) For the reverse osmosis treatment process, a DiPRRA 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.

(g) If the RO permeate TOC exceeds 0.15 ppm continuously for more than five days, a DiPRRA shall investigate the integrity of the RO treatment and perform a conductivity profile to

identify the underperforming RO vessel or RO element. The DiPRRA shall submit the investigation report to the State Board for review with the monthly compliance report.

(h) If the RO permeate TOC exceeds 0.1 ppm continuously for more than 24 hours, a DiPRRA shall collect a grab sample of the RO permeate and perform a 5-day total trihalomethane formation potential study. The DiPRRA shall submit the study results to the State Board for review with the monthly compliance report.

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

(1) A DiPRRA shall submit a testing protocol, as well as the subsequent testing 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 log reduction under the proposed oxidation treatment process's normal full-scale operating conditions. A DiPRRA shall conduct re-validation testing when full-scale operating conditions or control strategy are inconsistent with the previous validation test conditions.

(2) A DiPRRA 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 log 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.

(j) During full-scale operation of the oxidation treatment process designed pursuant to paragraph (i), a DiPRRA shall continuously monitor the surrogate and/or operational parameters established pursuant to paragraph (i)(2). A DiPRRA shall implement, in full-scale operation, the oxidation process as designed pursuant to paragraph (i).

(k) The treatment train, storage, and conveyance must provide continuous longitudinal mixing of the flow, between the terminus of the wastewater collection system and the entry to the drinking water distribution system, sufficient to attenuate a one hour elevated concentration of a contaminant by a factor of ten. Mixing that occurs between the wastewater treatment plant inlet chamber and the DPR project finished water compliance point may be used to meet this requirement.

(l) The TOC shall not exceed 0.5 ppm prior to distribution.

(1) To determine compliance with this section, TOC must be monitored continuously. Continuous monitoring must be conducted at a frequency of no less than once every five minutes.

(2) If the TOC exceeds 0.25 ppm at a monitoring point that provides representative sampling of the combined RO permeate, a DiPRRA shall collect samples for laboratory analysis to investigate the peak. A DiPRRA shall submit findings from the investigation to the partner agency(ies) responsible for source control and submit a summary of the investigation to the State Board in the monthly compliance report.

(m) A DiPRRA shall notify the State Board and each public water system receiving DPR project water within 24 hours of knowledge of a failure to meet the minimum required chemical or surrogate removals pursuant to this section.

(n) The control system must be designed to identify a failure of a process to meet its critical limit and must be able to automatically discontinue delivery of water to the distribution system if the treatment train does not meet the TOC limit set forth in paragraph (l), if the on-line monitoring pursuant to section 64669.60(j) indicates exceedance of the nitrate MCL, or if on-line monitoring, if installed pursuant to section 64669.60(k), indicates exceedance of the applicable drinking water standards. The control system shall have associated alarms that indicate when the process is not operating as designed.

(o) Within sixty (60) days after completing the first 12 months of full-scale operation, a DiPRRA shall submit a written report to the State Board:

(1) For the reverse osmosis process, the report must describe the effectiveness of the treatment, process failures that occurred, and actions taken in the event the on-going monitoring, conducted pursuant to subsection (f), indicated that process integrity was compromised.

(2) For the ozone/BAC and oxidation processes, the report must include:

(A) Results of surrogate and/or operational parameter monitoring conducted pursuant to subsections (d) and (j);

(B) A description of the efficacy of the surrogate and/or operational parameters to reflect the reduction criteria for formaldehyde and 1,4-dioxane, for the ozone/BAC and oxidation processes, respectively; and

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

1. The formaldehyde 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,
2. If formaldehyde was present, the continuous surrogate and/or operational parameter monitoring failed to correspond to the reduction criteria for formaldehyde,
3. The 1,4-dioxane reduction did not meet the associated design criteria in subsection (i), as indicated by the on-going continuous operational surrogate and/or operational parameter monitoring,
4. If 1,4-dioxane was present, the continuous surrogate and/or operational parameter monitoring failed to correspond to the reduction criteria for 1,4-dioxane,
5. Any failure, interruption, or other incident that may have resulted in insufficient ozone/BAC or oxidation treatment having occurred.

(p) A DiPRRA shall conduct a chemical characterization and control study that evaluates treatment precursors, production of treatment byproducts including disinfection byproducts, and options for optimizing operation to minimize public health impacts of treatment byproducts. A DiPRRA shall develop a plan for optimization of chemical control and incorporate the optimization strategy into the Operations Plan.

Rationale: See [Framework](#) sections 5.2 and 7.8.

§ 64669.55 Water Safety Plan

(a) A DiPRRA shall develop a Water Safety Plan for the DPR project. The DiPRRA shall establish periodic reviews of the Water Safety Plan every five years and conduct an audit of the efficacy of the Plan by the independent advisory panel established pursuant to section 64669.120. The DiPRRA shall require a review of the Water Safety Plan following an incident by the independent advisory panel established pursuant to section 64669.120, to ascertain whether all hazards have been considered by the Water Safety Plan. The Plan shall address risk assessment and risk management and shall:

(1) Include a comprehensive hazard analysis that considers all steps in a drinking water supply chain from wastewater source to consumer.

(2) Describe the risk management control(s) that are necessary beyond the requirements in sections 64669.40, 64669.45, and 64669.50. The description of the risk management control(s) should include treatment effectiveness, critical limits, monitoring, corrective action in case of a lapse of control, and an operations plan for the control(s).

Rationale: Each DPR project must conduct an independent risk assessment and identify risk management controls as a precaution against unaddressed site-specific hazards.

§ 64669.60 Regulated Contaminants & Physical Characteristic Control

(a) Once a month, a DiPRRA shall collect representative samples at the following sampling locations:

- (1) municipal wastewater that feeds the DPR project;
- (2) advanced treated water at a location immediately after advanced oxidation; and
- (3) finished water prior to an entry point to the distribution system.

(b) A DiPRRA shall have the samples collected pursuant to subsection (a) analyzed for contaminants with a primary MCL, secondary MCL, or action level, including the following:

- (1) Inorganic chemicals in section 64431;
- (2) Radionuclide chemicals in sections 64442 and 64443;
- (3) Organic chemicals in section 64444;
- (4) Disinfection byproducts in section 64533;
- (5) Secondary parameters in section 64449; and
- (6) Lead and copper.

(c) With State Board approval, monitoring conducted at a location identified in subsection (a)(3) can be used to satisfy the monitoring requirement set forth in subsection (a)(2).

(d) After 12 consecutive months of monitoring pursuant to subsection (b) at locations identified in subsections (a)(2) and (a)(3) with no analytical results exceeding an MCL, a DiPRRA may apply to the State Board for a reduced monitoring frequency. The reduced monitoring frequency shall be no less than quarterly.

(e) After 12 consecutive months of monitoring pursuant to subsection (b) at the location identified in subsection (a)(1) with no analytical results exceeding an MCL, a DiPRRA may apply to the State Board for a reduced monitoring frequency based on an assessment conducted pursuant to section 64669.40. A reduced monitoring frequency shall be no less than annually.

(f) Once a week, a DiPRRA shall collect a representative sample at the location identified in subsection (a)(3) and analyze the sample for nitrate, nitrite, perchlorate, and lead.

(g) If a result of the monitoring at the location identified in subsection (a)(1) exceeds a contaminant's primary MCL or action level, a DiPRRA shall collect a sample within 24 hours of notification of the result and have it analyzed for the contaminant to confirm the initial result. 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, a DiPRRA shall increase the sampling frequency to monthly, notify the source control staff, and initiate an investigation pursuant to section 64669.40.

(h) If a result of the monitoring at the locations identified in subsections (a)(2) or (a)(3) exceeds a contaminant's primary MCL or action level, a DiPRRA shall collect a sample within 24 hours of notification of the result and have it analyzed for the contaminant to confirm the initial result. If the average of the initial and confirmation sample exceeds a contaminant's MCL or action level, or if a confirmation sample is not collected and analyzed pursuant to this subsection:

(1) for the location identified in subsection (a)(2), a DiPRRA shall notify the State Board within 24 hours, take corrective action, and initiate an investigation of the treatment process.

(2) For the location identified in subsection (a)(3), a DiPRRA shall notify the State Board within 24 hours and immediately discontinue delivery of water to the distribution system. A DiPRRA shall notify partner agency(ies) in the Joint Plan, any public water system that receives the DPR project water, customers who are served by the DPR project, and the local governing bodies overlying the areas served by the DPR project.

(i) If a result of the monitoring at a subsection (a)(2) or (a)(3) sampling location exceeds a contaminant's secondary MCL in Table 64449-A or the upper limit in Table 64449-B, a DiPRRA shall collect a sample within 24 hours of notification of the result and have it analyzed for the contaminant to confirm the initial result. If the average of the initial and confirmation

sample exceeds the contaminant's MCL, or the confirmation sample is not collected and analyzed pursuant to this subsection, a DiPRRA shall initiate monthly monitoring and calculate the running 3-month average, take corrective action, and initiate an investigation of the treatment process. If the running 3-month average exceeds the MCL for 3 consecutive months, a DiPRRA shall notify the State Board within 24 hours and discontinue delivery of water to the distribution system. A report of the incident shall be included in the monthly report.

(j) A DiPRRA shall continuously monitor for nitrate/nitrite at a sampling point representative of the combined reverse osmosis permeate.

(k) If the State Board's review of the analytical results of monitoring conducted pursuant to subsection (f) indicates that continuous monitoring for perchlorate and/or lead is appropriate, a DiPRRA shall continuously monitor for perchlorate and/or lead as directed by the State Board.

Rationale: Monitoring is conducted to characterize the feed water chemical quality, the quality of the water downstream of the advanced treatment (similar to IPR requirements), and the quality of the water prior to an entry point to the distribution system. See [Framework](#) section 7.9

§ 64669.65 Additional Monitoring

(a) Once a month, a DiPRRA shall collect representative samples at the following sampling locations:

- (1) municipal wastewater that feeds the DPR project;
- (2) advanced treated water at a location immediately after advanced oxidation; and
- (3) finished water prior to an entry point to the distribution system.

(b) A DiPRRA shall analyze samples collected pursuant to subsection (a) for the following chemicals not monitored pursuant to section 64669.60, including:

- (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 DPR project Engineering Report;
- (2) Contaminants with Notification Levels;

(3) Chemicals specified by the State Board based on its review of the DPR project Engineering Report and findings from assessments performed pursuant to section 64669.40;

(4) The following solvents: acetone, N,N-dimethylacetamide, methanol, and methyl ethyl ketone; and

(5) Treatment byproducts and their precursors.

(c) If the monitoring at the location identified in subsection (a)(3) shows a contaminant with a Notification Level is detected, a DiPRRA shall collect a sample within 24 hours of notification of the initial result and have the sample analyzed for the contaminant to confirm the initial result. If the average of the initial and confirmation sample confirms the contaminant is detected or if a confirmation sample is not collected, a DiPRRA shall notify the State Board within 24 hours, increase the monitoring frequency of the contaminant to weekly for two months, and report the analytical results in the consumer confidence report pursuant to section 64669.130 unless the DiPRRA discontinues delivery of water to the distribution system. If a DiPRRA discontinues delivery of water to the distribution system, the DiPRRA shall notify the State Board within 24 hours.

(d) If a result of the monitoring at the locations identified in subsections (a)(2) or (a)(3) exceeds a contaminant's Notification Level, a DiPRRA shall collect a sample within 24 hours of notification of the initial result and have the sample analyzed for the contaminant to confirm the initial result.

(1) If the average of the initial and confirmation sample exceeds a contaminant's Notification Level, or if a confirmation sample is not collected and analyzed pursuant to this subsection, a DiPRRA shall:

(A) Notify the State Board within 24 hours;

(B) Initiate an investigation of the source and treatment process within 24 hours and increase the monitoring frequency of the contaminant to weekly;

(C) Notify the partner agency(ies) in the Joint Plan, all public water systems who receive DPR project water, DiPRRA governing body, and governing body of any local agency within the areas served by the DPR project within 24 hours; and

(D) Report the analytical results in the consumer confidence report pursuant to section 64669.130 unless a DiPRRA discontinues delivery of water to the distribution system.

(2) If the average of the initial and confirmation sample exceeds a contaminant's Response Level, or if the initial sample exceeds a contaminant's Response Level and no confirmation sample was collected, a DiPRRA shall notify the State Board within 24 hours and discontinue delivery of water to the distribution system.

(e) A DiPRRA may reduce the monitoring frequency for the chemicals in this section to quarterly following State Board written approval based on the State Board's review of no less than the most recent two years of analytical results of the monitoring conducted pursuant to this section.

(f) Each year, a DiPRRA shall identify chemicals within their sewage collection area(s) that are not otherwise required to be monitored that are:

(1) From industrial sources identified in section 64669.40;

(2) From nonindustrial sources of pharmaceuticals, personal care products, and household hazardous substances, based on analyses of wastewater and environmental waters sampled locally;

(3) Pursuant to the Safe Drinking Water and Toxic Enforcement Act of 1986 ([Health and Safety Code, division 20, chapter 6.6, section 25249.5](#)), listed as known to the State of California to cause:

(A) Cancer, as set forth in [Title 27, Division 4, Chapter 1, Article 9](#), section 27001(b),

or

(B) Reproductive toxicity, as set forth in [Title 27, Division 4, Chapter 1, Article 9](#), section 27001(c); and

(g) A DiPRRA shall sample from locations identified in subsections (a)(1), (a)(2), and (a)(3) on a quarterly basis for not less than two years for the chemicals identified in subsection (f) using analytical methods approved pursuant to section 64669.70. Analytical results shall be transmitted to the State Board within 30 days following the end of the quarter in which the sample was collected. If analytical results cannot be transmitted from the laboratory directly to the State Board, a DiPRRA shall submit the analytical results directly to the State Board.

(h) Each year, a DiPRRA shall sample from the location identified in subsection (a)(2) while the DPR plant is operating under normal conditions for indicator compound(s) specified by the State Board, after the State Board's review of the following:

(1) The DPR project Engineering Report;

(2) The information developed pursuant to section 64669.40;

(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 and associated indicator compound.

(i) A chemical or contaminant detected as a result of monitoring conducted pursuant to this section shall be reported to the State Board in the monthly report within 30 days of notification of the analytical results.

Rationale: This section addressed monitoring of unregulated chemicals. Sampling at locations specified in subsection (a) for unregulated chemicals under subsection (b) is generally similar to IPR requirements. Monitoring for solvents and disinfection byproducts have been added for DPR to address concerns for chemicals that may persist through treatment. New requirements in subsection (f) provides a means to assess classes of chemicals identified as being of concern for DPR. The 2016 Advisory Group recommended that "the monitoring regimen should include a methodical and robust search for CECs and other potentially harmful constituents." (p 11, [Advisory Group report](#)) Notification requirements have been refined to include public notification requirements of AB 756 (Garcia, 2019) which added section 116378 to the Health and Safety Code regarding public water systems PFAS monitoring, reporting and public notification. Subsection (g) is an existing IPR requirement. See [Framework](#) section 7.10.

§ 64669.70 Laboratory Analysis

(a) All analysis shall be performed by laboratories accredited by the State Board pursuant to section 64415.

(b) 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.

(c) Analytical methods used shall be described in a DiPRRA's Monitoring Plan prepared pursuant to section 64669.90. Unless otherwise approved by the State Board, the selection of analytical methods for unregulated contaminants shall be according to the following approach:

(1) Use State Board approved drinking water methods, if available;

(2) If no State Board approved drinking water method is available, use the most sensitive of the EPA-approved methods available for the constituent;

(3) If no EPA-approved method is available for the constituent, and one or more methods are available from the scientific literature (e.g., peer-reviewed journals), after consultation with the State Board and submitting the method to the State Board for review and securing its written approval, use the method approved by the State Board; and

(4) If no published method is available for a constituent, a DiPRRA laboratory-developed method, including use of wastewater methods optimized to increase sensitivity for the drinking water matrix, may be used after submitting the method to the State Board for review and written approval. The laboratory-developed method may be used until one of the methods described in subsections (1), (2), or (3) are available for use.

(d) Unless otherwise approved by the State Board, sample collection and field tests shall be performed pursuant to section 64415(b).

Rationale: Requirement for regulated constituents is consistent with drinking water regulations. A tiered approach to selecting analytical methods for unregulated contaminants ensures that the most appropriate analytical method is used and provides assurance that the most sensitive method is selected to reliably detect to the lowest levels achievable by available methods. See [Framework](#) section 7.11.

§ 64669.75 Engineering Report

(a) An Engineering Report shall clearly indicate the means for compliance with this Article and any other requirements specified by the State Board. The Report shall be prepared by a qualified engineer licensed in California and experienced in the field of wastewater treatment and drinking water treatment and shall contain a description of the design of the proposed DPR treatment system.

(b) Every five years from the date of the initial approval of the Engineering Report, a DiPRRA shall update the Engineering Report to address any project changes and submit the report to the State Board. The update shall include:

- (1) Summary of any updates to the Joint Plan;
- (2) Most recent audited report of the enhanced source control program;
- (3) Evaluation of treatment process optimization and treatment efficacy;
- (4) Results of 5-year review of the Water Safety Plan;

- (5) Assessment of operations, summary of operator training, and needed improvements;
- (6) Update of the 5-year capital replacement cost and budget forecast; and
- (7) Other information determined by the State Board on a project-specific basis

Rationale: The requirement to submit an Engineering Report is the same as required for IPR.

§ 64669.80 Operations Plan

(a) A DiPRRA shall operate the DPR project in accordance with an Operations Plan approved in writing by the State Board.

(b) Prior to operation of a DPR project, a DiPRRA shall submit an Operations Plan to the State Board. At a minimum, the Operations Plan shall describe the operations, maintenance, analytical methods, and monitoring necessary for a DiPRRA to meet the requirements of this Article, and the reporting of analytical results to the State Board. The Plan shall also identify an on-going training program that includes the elements of the training required pursuant to subsection (c) of this section. A DiPRRA update the Plan to ensure that it is, at all times, representative of the current operations, maintenance, and monitoring of the DPR project. A DiPRRA shall make the Operations Plan immediately available to the State Board for review upon request.

(c) Prior to operation of a DPR project, a DiPRRA shall, at a minimum, demonstrate to the State Board that the personnel operating and overseeing the DPR project operations have received training in the following:

- (1) The proper operation of the treatment processes utilized pursuant to section 64669.35;
- (2) The California Safe Drinking Water Act and its implementing regulations, including the provisions of this Article;
- (3) The potential adverse health effects associated with the consumption of drinking water that does not meet California drinking water standards; and
- (4) Implementation of an enhanced source control program as set forth in section 64669.40.

(d) The plan must address operator certification and appropriate type and level of certification for each treatment facility associated with the DPR project.

(e) Include a staffing plan that describes the staffing level at each treatment plant associated with the DPR project.

(f) A DiPRRA shall describe in the Operations Plan how it will optimize the treatment processes to maximize reduction of the following:

(1) microbial contaminants identified in section 64669.45;

(2) regulated contaminants identified in section 64669.60; and

(3) chemicals and contaminants required pursuant to section 64669.65.

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

(h) The plan must describe how the SCADA system identifies a failure to meet the required log reduction and be able to automatically prevent water from reaching the distribution system if the treatment train does not meet the minimum log reductions pursuant to section 64669.45.

(i) The plan must describe how the SCADA system identifies the LRV performance status of each process for which LRV has been attributed to meet the required log reductions pursuant to section 64669.45.

(j) The plan must describe treatment operations quality control including processes to review operator decision making and compliance with standard operating procedures, review of records, and review of standard operating procedures as part of a continuous improvement process.

(k) If partner agency(ies) are responsible for providing treatment for partially treated DPR water, the plan must describe operator and SCADA control system communications between the partner agency treatment plant and DiPRRA treatment facilities.

(l) The DiPRRA shall have a plan that describes how the SCADA system will be secured and protected from unauthorized use and cyberattack.

Rationale: See [Framework](#) section 7.13.

§ 64669.85 Pathogen and Chemical Control Point Monitoring and Response Plan

(a) A DiPRRA shall operate the DPR project in accordance with a Pathogen and Chemical Control Point Monitoring and Response Plan approved in writing by the State Board.

(b) Prior to operation of a DPR project, a DiPRRA shall submit a Pathogen and Chemical Control Point Monitoring and Response Plan to the State Board. At a minimum, the plan must describe the monitoring and response for each treatment process used to comply with the required log reductions specified in section 64669.45. A DiPRRA must update the plan to ensure that it is, at all times, representative of the current control point monitoring and response.

(1) The plan shall include on-line monitoring for pathogenic microorganism of concern or microbial, chemical, and/or physical surrogate parameter(s) that verify the performance of each treatment process's ability to achieve its credited log reduction as identified in section 64669.45.

(2) The plan shall describe the control system and how the control system identifies and responds to incidents, including response to water quality not meeting critical limits and response to loss of data signal, protocols for corrective action, and protocols for returning to normal operation, and other situations determined by the State Board on a project-specific basis.

(3) The plan shall describe the protocols to test the treatment control and alarm system.

(c) Any pathogen control point parameter that is not meeting the critical limit means the treatment process is not assigned the credited LRV.

(d) If the on-line monitoring is unable to demonstrate compliance with this Article, the associated critical limit(s) shall be deemed to not have been met.

(e) The following failures of the treatment train and facilities are considered acute exposure threats:

(1) Failure to provide 16 log reduction of enteric virus, 10 log reduction of Giardia cysts, and 11 log reduction of Cryptosporidium oocysts;

(2) Failure to meet nitrate and nitrite MCLs; and

(3) Failure to meet the 0.5 mg/L TOC limit.

(f) The plan must describe the pathogen control points and chemical control points designated to address the listed acute exposure threats and the process to be used to restart

the treatment plant in the event of an acute exposure threat. The plan shall describe how the SCADA system will identify the failure condition in paragraph (4), alert the operator, halt the distribution of water, and generate a record of the incident.

(g) A failure to operate all required chemical control treatment processes (ozone/BAC, reverse osmosis, and advanced oxidation) within the validated limits established pursuant to section 64669.50 is a chronic exposure threat.

(h) The plan must describe the chemical control points designated to address chronic exposure threats and the process to be used to correct each possible failure scenario.

(i) The plan must identify trending degradation and significant excursions of water quality or surrogate parameters that indicates the need for treatment adjustment, maintenance, or other operator intervention. Any trending degradation or significant excursions of water quality or surrogate parameters that indicates the need for treatment adjustment, maintenance, or other operator intervention must generate a water quality alert. The SCADA system must alert the operator and generate a record of the incident.

(j) The plan must identify the response times for the pathogen control points and chemical control points, which is the time it takes for the control system to identify and respond to an acute exposure threat and at minimum includes:

(1) The time interval(s) between on-line measurements taken at a pathogen or chemical control point;

(2) The time it takes for on-line measurements to be accessed by the SCADA system, and an assessment made as to whether the critical limit is being met;

(3) The time it takes for the SCADA system to:

(A) determine if the 16 log for enteric virus, 10 log for Giardia cysts, and 11 log for Cryptosporidium oocysts are being achieved, if the TOC concentration meets the 0.5 mg/L limit, and if the nitrate concentration complies with the MCL;

(B) actuate a diversion or shutoff valve if 16 log for enteric virus, 10 log for Giardia cysts, or 11 log for Cryptosporidium oocysts are not achieved, if the TOC concentration exceeds the 0.5 mg/L limit, or if the nitrate concentration exceeds the MCL; and

(C) to divert or completely stop the flow to the distribution system.

(k) The time it takes for ten percent of the water to flow along the flow path from each pathogen and chemical control point to the point of diversion or shutoff shall be no less than the pathogen or chemical control response time.

Rationale: See [Framework](#) section 7.14.

§ 64669.90 Monitoring Plan

(1) The DiPRRA shall prepare a Monitoring Plan which shall describe the monitoring conducted pursuant to this Article, including monitoring conducted to support the enhanced source control program pursuant to section 64669.40, treatment process monitoring pursuant to sections 64669.45 and 64669.50 not included in section 64669.85, monitoring required pursuant to sections 64669.60 and 64669.65, and other monitoring required by the State Board on a project-specific basis. The plan must describe the follow-up actions that will be taken if laboratory analysis identifies a concentration above an MCL or Notification Level in water sampling collected after the advanced treatment.

(b) The DiPRRA shall submit the Monitoring Plan to the State Board for review and written approval. The Monitoring Plan shall contain the following:

(1) An organizational chart, a description of staff roles and responsibilities, and contact information;

(2) Monitoring schedules;

(3) Laboratories used and laboratory turn-around times to receive analytical results;

(4) Analytical methods used pursuant to section 64669.70 for each constituent monitored;

(5) Sample handling and processing procedures;

(6) A quality assurance project plan with measurement and data quality objectives that support the water monitoring objectives/goals described in the Engineering Report;

(7) Training and instruction provided for sample collectors, sample schedulers, sample handlers, water quality data reviewers, water quality data submitters, and other personnel associated with sampling and data quality assurance;

(8) Calibration and verification of continuous on-line monitoring equipment associated with pathogen or chemical control points;

- (9) Field test kit calibration and verification;
- (10) Recordkeeping and maintenance of records;
- (11) Procedures for communication and coordination between sample collector personnel, treatment operations personnel, and water quality data reviewers;
- (12) Procedures to track sampling status and review of analytical results;
- (13) Notification plan to report analytical results;
- (14) Reporting of results to the State Board; and
- (15) Other information determined by the State Board on a project-specific basis.

Rationale: The monitoring requirements for a DPR project is complex, and written monitoring plan is required to ensure the monitoring is conducted as required. For IPR the monitoring plans are typically included in the operations plan.

§ 64669.95 Compliance Reporting

(a) For each calendar month, a DiPRRA shall submit a report to the State Board by the tenth day of the following month that includes a summary and results of the month's treatment plant compliance monitoring conducted pursuant to section 64669.90. The report shall be signed by the chief water treatment plant operator, plant superintendent, or other person directly responsible for the operation of the water treatment plant. The report shall include:

- (1) Record of treatment performance;
- (2) Summary of overall treatment plant LRV performance;
- (3) Excursions of operational parameters outside approved operating conditions;
- (4) Violation of performance standards;
- (5) Number of instrument readings that did not meet the surrogate and/or operational parameter critical limits established to assure proper on-going performance of the treatment processes set forth in section 64669.45(a);
- (6) Calibration records for instruments monitoring pathogen or chemical control points;
- (7) Dates and descriptions of failures to comply with a critical limit, including the duration of failure, a description of the response, and corrective actions taken;
- (8) Dates and description of major equipment and process failures and corrective actions taken;

(9) Dates and summary of testing of the treatment control and alarm system consistent with the protocols in the Operations Plan; and

(10) Other records or information as specified by the State Board on a project-specific basis.

(b) Each month, a DiPRRA shall include the following in the monthly compliance report:

(1) Investigation or incident reports required to be prepared pursuant to sections 64669.45, 64669.50, 64669.60, and 64669.65;

(2) A summary of an investigation of a potential chemical peak conducted pursuant to section 64669.50(l)(2);

(3) A summary of activities of the enhanced source control program

(4) A summary of chemicals detected as a result of monitoring conducted pursuant to sections 64669.60 and 64669.65;

(5) Investigation or incident report of a cross-connection;

(6) A summary of water quality complaints and reports of gastrointestinal illness received from customers; and

(7) Other information as specified by the State Board on a project-specific basis.

(c) Analytical results of water quality monitoring conducted pursuant to sections 64669.60 and 64669.65 shall be reported to the State Board electronically by the 10th day of the month following the end of the monitoring period pursuant to sections 64469.

Rationale: See [Framework](#) section 7.16

§ 64669.100 Annual Report

(a) No later than six months after the end of each calendar year, a DiPRRA shall provide a report to the State Board. Public water systems receiving DPR project water 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 drinking water and wastewater treatment and public water supply. The report shall include the following:

(1) A summary of the DiPRRA's compliance status with the monitoring requirements and criteria set forth in 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 plant shutdowns or diversions resulting from a violation, and

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

(3) Any detections or observed trends of monitored chemicals or contaminants;

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

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

(6) The quantity of the municipal wastewater used in the last calendar year, and the quantity of drinking water produced by the DPR plant for the last calendar year;

(7) Any expected change in quantity and quality of the municipal wastewater in the next calendar year;

(8) A summary of the measures taken to comply with section 64669.40, and the effectiveness of the implementation of the measures;

(9) The findings associated with a quantitative risk assessment conducted pursuant to section 64669.40(a)(4);

(10) Updates to the 5-year audit of the pretreatment program conducted pursuant to section 64669.40(c);

(11) A summary of any failures of the enhanced source control program that result in the release of contaminants above allowable limits pursuant to section 64669.40(d)(2);

(12) A summary of the chemical characterization and control study conducted pursuant to section 64669.50(p); and

(13) Other information as specified by the State Board on a project-specific basis.

Rationale: The requirement to submit an Engineering Report is the same as required for IPR.

§ 64669.105 Cross-Connection Control

(a) Each year, a DiPRRA shall conduct a cross-connection control survey and hazard assessment of the DPR plant and works. The survey and hazard assessment shall be conducted by a cross-connection control specialist as defined in the Cross-Connection Control Policy Handbook.

Rationale: see [Framework](#) section 7.17

§ 64669.110 Corrosion Control and Stabilization

(a) A DiPRRA shall provide water that is stabilized as agreed upon by the DiPRRA and a public water system receiving advanced treated water or finished water from the DPR project.

(b) Prior to delivery of water from a DPR project, a DiPRRA and a public water system receiving advanced treated water or finished water shall jointly submit a Corrosion Control and Stabilization Plan to the State Board for review and written approval describing how it will assess and address potential impacts resulting from the introduction of advanced treated water into a water treatment plant and/or introduction of finished water into a drinking water distribution system. At minimum, the plan shall include information on:

(1) Maintaining chemical and microbial stability in the drinking water distribution system as the drinking water quality changes with anticipated increasing fractions of finished water; ;

(2) Maintaining treatment effectiveness throughout the water treatment plant as the source water quality changes with anticipated increasing fractions of advanced treated water;

(3) Assessments to be performed prior to and during operation of the DPR project with respect to paragraphs (1) and (2); and

(4) Assessment outcomes of which the DiPRRA and public water systems receiving advanced treated water or finished water will notify the State Board.

Rationale: See [Framework](#) section 7.19.

§ 64669.115 Alternatives

(a) A DiPRRA may use an alternative to a requirement in this Article if a DiPRRA:

(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 assures 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, conducts a public meeting on the proposed alternative, disseminates information to the public, and receives public comments, pursuant to section 64669.20.

(b) Unless specified otherwise by the State Board, a demonstration pursuant to subsection (a)(1) shall include a review of the proposed alternative by an independent advisory panel pursuant to section 64669.120.

(c) An alternative to a requirement in section 64669.50 (a) through (j) shall comply with the following:

(1) A treatment train must use at least three different mechanisms for chemical reduction. A separation mechanism is required; and

(2) A chemical treatment technology shall be tested in accordance with a validation study protocol approved in writing by the State Board that encompasses a range of operating conditions and feed water quality for which the treatment technology will be expected to perform. The validation study protocol must be submitted to the State Board for review and approval prior to conducting the study. A report documenting the study methodology and results must be submitted to the State Board for review and written approval prior to approval of the Operations Plan. The validation study protocol and report must each be prepared by an engineer licensed in California with at least five years of experience as a licensed engineer in water/wastewater treatment and public water supply, evaluating treatment processes for chemical control. The validation study protocol and study report may rely on validation study protocols and reports previously approved by the State Board. The validation study report must identify the critical limit(s) for each validated treatment process. A means for re-validation or additional on-site validation must be provided when operating conditions are inconsistent with the previous validation test conditions.

Rationale: The ability to provide alternatives to certain requirements in this Article may spur innovation while maintaining an equivalent level of public health protection. Alternatives are not allowed for requirements that set the standard for public health protection, such as requirements for the number of treatment mechanisms and the minimum number of barriers. Alternatives are not used for monitoring waivers or monitoring reduction, which are specified as part of the monitoring requirements.

§ 64669.120 Independent Advisory Panel

(a) If required by the State Board, a DiPRRA must establish and administer an independent advisory panel or committee to conduct tasks including:

(1) Reviewing proposed alternatives pursuant to section 64669.115;

(A) The panel shall be approved by the State Board, and shall include a toxicologist, engineer licensed in California with at least three years of experience in water and wastewater treatment and public drinking water supply, a microbiologist, a chemist, and other experts determined to be appropriate by the State Board on a project-specific basis.

(2) Reviewing effectiveness and continuous improvement of the enhanced source control program, including use of local limits and outreach efforts;

(3) Reviewing continuous improvement plans to support treatment optimization, enhance a culture of public health protection within the DiPRRA and DPR project, or development of TMF capacity;

(4) Auditing a Water Safety Plan pursuant to section 64669.55;

(5) Reviewing water quality data and providing recommendations for water quality investigations; or

(6) Any additional review as determined by the State Board on a project-specific basis.

(b) A DiPRRA shall allow State Board representatives, as guests, to join all independent advisory panel or committee meetings and discussions.

Rationale: Independent advisory panels (IAP) are specified for IPR regulations. IAPs may be necessary to provide scientific and/or specialized technical expertise, or an independent assessment of risk, water quality, treatment, or operations. A DiPRRA must have the TMF capacity to convene IAPs.

§ 64669.125 Public Notification

(a) A DiPRRA shall provide initial public notice to persons served by the DPR project that describes the project and when the DPR project water is scheduled to be delivered.

(b) A DiPRRA shall provide public notice to persons served by the DPR project pursuant to Title 22, Division 4, [Chapter 15, Article 18](#).

(c) A DiPRRA shall provide public notice pursuant to section 64463.1 for the following:

- (1) A failure to meet the minimum 16 log for enteric virus, 10 log for Giardia cysts, or 11 log for Cryptosporidium oocysts reduction requirement pursuant to section 64669.45;
- (2) A failure to comply with an MCL associated with an acute health effect;
- (3) A failure to meet the 0.5 mg/L TOC limit.
- (4) A failure to discontinue delivery of water pursuant to sections 64669.45, 64669.50, 64669.60, or 64669.65; and
- (5) A failure to monitor the pathogen or chemical control points pursuant to section 64669.85.

Rationale: see [Framework](#) section 7.16

§ 64669.130 Consumer Confidence Reporting

(a) A DiPRRA shall prepare a Consumer Confidence Report pursuant to [Title 22, Division 4, Chapter 15, Article 20](#), and include the following information related to the DPR project: description of the wastewater used; description of the enhanced source control program; description of the treatment technologies; and a summary of water quality data collected pursuant to sections 64669.40, 64669.45, 64669.50, 64669.60, 64669.65, and 64669.80. The CCR shall also include information on how consumers can access the Annual Report required to be submitted pursuant to section 64669.100.

Rationale: see [Framework](#) section 7.16

Other Considerations

Sections under Chapter 7 and 8 which are either incorporated with other criteria, or will likely not be address in criteria (but may be addressed during implementation on project-specific basis as needed) include:

7.15. Environmental Buffer Monitoring

Requirements will be specified on a project-specific basis.

8.2. Treatment System Resilience

Built into pathogen control and chemical control criteria.

8.3. Operations Quality Control

Addressed in the TMF and Operations Plan sections.

8.4. Public Health Protection Culture

Included in the TMF section.

8.5. Public Health Surveillance

Existing requirements already include procedures for notifying water consumers, local environmental health agencies, local county health officers, CDPH food and drug branch and licensing and certification program, and other public health officials of unsafe water alerts, which may include boil water notices, “do not drink” notices, and “do not use” notices. The county public health agencies are responsible for surveillance activities and reporting, such as those required by disease and outbreak reporting. Public water systems cooperate with local public health agencies to provide information about the water and extent of contamination of the distribution system. The county health officer is responsible for advising the county environmental health program to shut down restaurants and other public access to unsafe water. CDPH food and drug branch is responsible for the same with bottled water vending machines and water bottling operations. CDPH licensing and certification program notifies care facilities and hospitals.

8.6 Aesthetic Issues

Aesthetic issues are generally addressed under secondary MCLs. Aesthetic issues not addressed by secondary MCLs, such temperature of the tap water, can be addressed on a project-specific basis during the design of the project and permitting process.