

STATE WATER CONTROL BOARD
9VAC25-740-10 et seq. - WATER RECLAMATION AND REUSE REGULATION

Adopted: December 4, 2007 – Effective: October 1, 2008

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PART I
DEFINITIONS AND GENERAL PROGRAM REQUIREMENTS

9VAC25-740-10 Definitions

The following words and terms, when used in this chapter, shall have the following meaning unless the context clearly indicates otherwise.

“Biological Nutrient Removal (BNR)” means treatment which achieves an annual average of 8.0 mg/l total nitrogen (N) and 1.0 mg/l total phosphorus (P).

“Board” means the Virginia State Water Control Board or State Water Control Board.

“Bulk irrigation reuse” means reuse of reclaimed water for irrigation of an area greater than five acres on one contiguous property.

“Class I reliability” means a measure of reliability that requires a treatment works design to provide continuous satisfactory operation during power failures, flooding, peak loads, equipment failure, and maintenance shut-down. This class includes design features, such as additional electrical power sources, additional flow storage capacity, and additional treatment units, that provide operation in accordance with the issued certificate or permit requirements.

“Controlled use” means a use of reclaimed water authorized in accordance with this chapter.

“Corrective action threshold” means a bacterial, turbidity or total residual chlorine standard for reclaimed water at which measures shall be implemented to correct operational problems of the reclamation system within a specified period, or divert flow from the reclamation treatment process in accordance with this chapter.

“Direct beneficial use” means the use of reclaimed water in a manner protective of the environment and public health that involves transport of the reclaimed water from the point of reclamation treatment and production to the point of use without an intervening discharge to waters of the state.

“Direct potable reuse” means the discharge of reclaimed water directly into a drinking water treatment facility or into a drinking water distribution system. This includes storage facilities associated with the drinking water treatment facility or drinking water distribution system that are not surface or ground waters of the state.

“Director” means the Director of the Department of Environmental Quality or an authorized representative.

“Disinfection” means the destruction, inactivation, or removal of pathogenic microorganisms by chemical, physical, or biological means. Disinfection may be accomplished by chlorination, ozonation, or other chemical disinfectants; UV radiation; or other processes.

“Disposal” means the discharge of effluent to injection wells, effluent outfalls, subsurface drain fields, or other facilities utilized primarily for the release of effluents into the environment without deriving a direct beneficial use.

"Domestic sewage" means sewage derived from the normal family or household activities, including drinking, laundering, bathing, cooking, heating, cleaning and flushing toilets.

“Drip irrigation” means the slow and uniform above-ground application of water to individual plants and vegetated cover using tubing and drip devices or emitters. Drip irrigation may include below-ground applications of reclaimed water as specified in 9VAC25-740-90 B.

“Effluent”, unless specifically stated otherwise, means treated wastewater that is not reused after flowing out of any treatment works.

“End user” means a person or entity that directly uses reclaimed water.

“Filtration” means the passing of wastewater through a conventional technology, such as sand, anthracite or cloth; or an advanced technology, such as microfiltration, ultrafiltration, nanofiltration or reverse osmosis membrane.

“Food crops commercially processed” means food crops that, prior to sale to the public or others, have undergone chemical or physical processing sufficient to remove or destroy pathogens.

“Food crops not commercially processed” means food crops that, prior to sale to the public or others, have not undergone chemical or physical processing sufficient to remove or destroy pathogens.

“Gray water” means untreated wastewater from bathtubs, showers, lavatory fixtures, wash basins, washing machines, and laundry tubs. It does not include wastewater from toilets, urinals, kitchen sinks, dishwashers, or laundry water from soiled diapers.

“Ground water” means any water, except capillary moisture, beneath the land surface in the zone of saturation or beneath the bed of any stream, lake, reservoir or other body of surface water wholly or partially within the boundaries of this Commonwealth, whatever the subsurface geologic structure in which such water stands, flows, percolates or otherwise occurs.

“Indirect potable reuse” means the discharge of reclaimed water to a receiving surface water for the purpose of intentionally augmenting a water supply source, with subsequent withdrawal after mixing with the ambient surface water and transport to the withdrawal location, followed by treatment and distribution for drinking water and other potable water purposes.

“Indirect reuse” means the use of reclaimed water subsequent to discharge to surface waters of the state, including wetlands, pursuant to a VPDES permit.

“Industrial wastewater” means wastewater resulting from any process of industry, manufacture, trade or business, or from the development of any natural resources.

“Irrigation” means the application of water to land for plant use at a rate that undesirable plant water stress does not occur.

“Landscape impoundment” means a body of water that contains reclaimed water, is not intended for public contact, and is used primarily for aesthetic enjoyment. Landscape impoundments include, but are not limited to, decorative pools, fountains, ponds and lagoons; located outdoors or indoors.

“Level 1” means a degree of treatment at which reclaimed water has received, at a minimum, secondary treatment with filtration and higher-level disinfection, and meets all other applicable standards specified in 9VAC25-740-70.

“Level 2” means a degree of treatment at which reclaimed water has received, at a minimum, secondary treatment and standard disinfection, and meets all other applicable standards specified in 9VAC25-740-70.

“Municipal wastewater” means sewage.

“Non-bulk irrigation reuse” means the reuse of reclaimed water for irrigation of individual areas less than or equal to five acres.

“Non-potable water” means any water, including reclaimed water, not meeting the definition of potable water.

“Non-system storage” means storage for reclaimed water that is other than system storage and is used at a location downstream of the service connection to the reclaimed water distribution system to equalize flow to end users.

“Nutrient management plan (NMP)” means a plan prepared by a nutrient management planner certified by the Department of Conservation and Recreation to manage the amount, placement, timing, and application of plant nutrients from liquid, solid or semisolid manures, fertilizers, biosolids, or other materials, for the purpose of producing crops and reducing nutrient loss to the environment.

“Owner” means the Commonwealth or any of its political subdivisions including, but not limited to, sanitation district commissions and authorities, and any public or private institution, corporation, association, firm or company organized or existing under the laws of this or any other state or country, or any officer or agency of the United States, or any person or group of persons acting individually or as a group that owns, operates, charters, rents, or otherwise exercises control over or is responsible for the production or distribution of reclaimed water, or any facility or operation that produces or distributes reclaimed water.

“Permit” means an authorization, certificate, license, or equivalent control document issued by the board to implement the requirements of this chapter.

“Point of compliance” means a point at which compliance with the standards of this chapter is required.

“Pollutants of concern” means any pollutants that might reasonably be expected to be discharged to a publicly or privately owned treatment works in sufficient amounts to pass through or interfere with the works, contaminate sludge generated by the works, cause problems in the collection system of the works, or jeopardize the health of employees at the works and the public.

“Potable water” means water fit for human consumption and domestic use which is sanitary and normally free of minerals, organic substances, and toxic agents in excess of reasonable amounts for domestic usage in the area served and normally adequate in quantity and quality for the minimum health requirements of the persons served.

“Public access area” means an area that is intended to be accessible to the general public, such as golf courses, cemeteries, parks, athletic fields, school yards, and landscape areas. Public access areas include private property that is not open to the public at large, but is intended for frequent use by many persons. Presence of authorized farm personnel or other authorized treatment plant, utilities system, or reuse system personnel does not constitute public access.

“Reclamation” means the treatment of domestic, municipal or industrial wastewater or sewage to produce reclaimed water for a water reuse that would not otherwise occur.

“Reclamation system” means a treatment works that treats domestic, municipal or industrial wastewater or sewage to produce reclaimed water for a water reuse that would not otherwise occur.

“Reclaimed water” means water resulting from the treatment of domestic, municipal or industrial wastewater that is suitable for a water reuse that would not otherwise occur. Specifically excluded from this definition is “gray water”.

“Reclaimed water agent” means a person or entity that holds a permit to distribute reclaimed water to one or more end users.

“Reclaimed water distribution system” means a network of pipes, pumping facilities, storage facilities, and appurtenances designed to convey and distribute reclaimed water from one or more reclamation systems to one or more end users.

“Reject water storage” means storage for water diverted by a reclamation system or satellite reclamation system that does not meet applicable reclaimed water standards.

“Reuse” or “water reuse” means the use of reclaimed water for a direct beneficial use, an indirect potable reuse, or a controlled use in accordance with this chapter.

“Reuse system” means an installation or method of operation that uses reclaimed water for a water reuse in accordance with this chapter.

“Restricted access” means limited access by humans to areas where, non-potable water, including reclaimed water, is used, resulting in minimal or no potential for human contact.

“Satellite reclamation system” means a conjunctive wastewater treatment works and reclamation system that operates within or parallel to a sewage collection system to treat a portion of the available wastewater flow in the collection system to produce reclaimed water for reuse. Satellite reclamation systems do not have a discharge to surface waters, but may return their treatment process wastewater and residuals to the sewage collection system.

“Secondary treatment” means a biological treatment process for wastewater that achieves the minimum level of effluent quality defined by the federal secondary treatment regulation in 40 CFR §133.102 (2001).

“Service area” means a geographic area that receives reclaimed water from a reclaimed water distribution system or directly from a reclamation system for approved reuses within that area.

“Sewage” means the water-carried human wastes and non water-carried human excrement, kitchen, laundry, shower, bath or lavatory wastes, separately or together with such underground, surface, storm and other water and liquid industrial wastes as may be present from residences, buildings, vehicles, industrial establishments or other places.

“State waters” or “waters of the state” means all water, on the surface and under the ground, wholly or partially within or bordering the Commonwealth or within its jurisdiction, including wetlands.

“State Water Control Law or Law” means Chapter 3.1 (§62.1-44.2 et seq.) of Title 62.1 of the Code of Virginia.

“Supplemental irrigation” means irrigation, which in combination with rainfall, meets but does not exceed the water necessary to maximize production or optimize growth of the irrigated vegetation.

"Surface waters" means all waters in the Commonwealth, except ground water as defined in §62.1-255 of the Code of Virginia.

“System storage” means storage on or off the site and considered part of a reclamation system, satellite reclamation system, or reclaimed water distribution system that is used to store reclaimed water produced by the reclamation system or satellite reclamation system and to equalize flow to or within a reclaimed water distribution system.

“Treatment works” means any devices and systems used for the storage, treatment, recycling or reclamation of sewage or liquid industrial waste, or other waste, or that are necessary to recycle or reuse water, including intercepting sewers, outfall sewers, sewage collection systems, individual systems, pumping, power and other equipment and their appurtenances, extensions, improvements, remodeling, additions, or alterations thereof; or any works, including land that

will be an integral part of the treatment process or is used for ultimate disposal of residues resulting from such treatment; or any other method or system used for preventing, abating, reducing, storing, treating, separating, or disposing of municipal waste or industrial waste, including waste in combined sewer water and sanitary sewer systems.

“Unrestricted access” means unlimited or minimally limited access by humans to areas where non-potable water, including reclaimed water, is used, resulting in a high potential for human contact.

“User” means end user.

“Virginia Pollution Abatement (VPA) Permit” means a document issued by the board, pursuant to the Virginia Pollution Abatement Permit Regulation (9VAC25-32), authorizing pollutant management activities under prescribed conditions.

"Virginia Pollutant Discharge Elimination System (VPDES) Permit" means a document issued by the board, pursuant to the Virginia Pollutant Discharge Elimination System Permit Regulation (9VAC25-31), authorizing, under prescribed conditions the potential or actual discharge of pollutants from a point source to surface waters and the use or disposal of sewage sludge. Under the approved state program, a VPDES permit is equivalent to an NPDES permit.

“Wastewater” means untreated liquid and water carried industrial wastes and domestic sewage from residential dwellings, commercial buildings, industrial and manufacturing facilities and institutions.

“Water reclamation” means the reclamation of wastewater or treated effluent for reuse.

9VAC25-740-20 Purpose

In accordance with §§62.1-44.2, 62.1-44.3 and 62.1-44.15 of the Code of Virginia, it is the purpose of this chapter to promote and encourage the reclamation of wastewater, here after referred to as water reclamation, and water reuse in a manner that is protective of the environment and public health, and as an alternative to discharging treated effluent to state waters. For this purpose, the chapter establishes permitting requirements, general requirements for design, operation and maintenance; quality standards, monitoring requirements, and approved reuses for reclaimed water.

9VAC25-740-30 Applicability and transition

A. The requirements of this chapter shall apply to water reclamation systems, reclaimed water distribution systems, and water reuse unless specifically excluded under 9VAC25-740-50 A. The requirements shall apply to all new water reclamation systems, reclaimed water distribution systems and, as applicable, water reuses for which Virginia Pollution Abatement (VPA) or Virginia Pollutant Discharge Elimination System (VPDES) permit applications are received after October 1, 2008. The requirements may also be applied to all existing permitted facilities producing, distributing or using reclaimed water through a permit modification or reissuance

procedure and shall be applied when such facilities are to be modified or expanded unless specifically excluded under 9VAC25-740-50 A. The owners of existing water reclamation systems, reclaimed water distribution systems and, as applicable, water reuses that do not have a VPA or VPDES permit shall submit a complete VPA or VPDES permit application or other necessary information as prescribed under 9VAC25-740-40 within 180 days of being requested by the board.

B. For the purposes of this chapter:

1. The incorporation of standards, monitoring requirements and special conditions for water reclamation and reuse into a VPA permit shall be considered a minor modification unless they alter other conditions of the permit specifically related to the pollutant management activity for which the permit was originally issued.
2. Standards, monitoring requirements and special conditions for water reclamation and reuse may be administratively authorized for a VPDES permit without a permit modification unless they effectively alter other conditions of the permit specifically related to the effluent discharge for which the permit was originally issued. The administrative authorization shall have the full effect of the VPDES permit until such time that it is incorporated into the VPDES permit through reissuance or major modification.
3. Minor modification of a VPA permit or an administrative authorization associated with a VPDES permit described in subdivisions B 1 and B 2 of this section, shall require an application for a water reclamation and reuse project in accordance with 9VAC25-740-100 of this chapter.

9VAC25-740-40 Permitting requirements

A. The owner of the reclamation system and the owner of the reclaimed water distribution system or the reclaimed water agent shall obtain a VPDES or VPA permit to produce and distribute reclaimed water, unless otherwise excluded from the requirements of this chapter under 9VAC25-740-50 A. Where both the reclamation system and the reclaimed water distribution system are under common ownership and management, one permit may be issued to the owner. Permit coverage may be provided through modification or reissuance of an existing VPA permit, or reissuance of or administrative authorization for an existing VPDES permit to include standards, monitoring requirements and special conditions that address water reclamation and reuse.

B. The owner of a satellite reclamation system shall obtain a VPA permit. Alternatively and at the discretion of the board, a satellite reclamation system may be authorized under a VPA or VPDES permit issued to a wastewater treatment works that is under common ownership or management with the satellite reclamation system and receives wastewater and residuals discharged by the satellite reclamation system.

C. Monitoring and management of individual end users of reclaimed water shall be by the permittee with whom the end users have a service connection, and through service agreements or contracts between the permittee and the individual end users.

D. Where a reclamation system and a reclaimed water distribution system that receives reclaimed water from the reclamation system are under separate ownership and management, and the reclaimed water distribution system does not distribute reclaimed water to end users other than to the owner or management of that system, the reclaimed water distribution system shall not require a permit provided a service agreement is established between the reclamation system and the reclaimed water distribution system.

E. A separate permit may be required for end users receiving reclaimed water directly from more than one reclamation system, satellite reclamation system, reclaimed water distribution system, or a combination thereof. An end user may be authorized under the permit issued to one of the reclamation systems, satellite reclamation systems, or reclaimed water distribution systems that supply reclaimed water to the end user, provided the end user is under common ownership or management with the permitted system.

F. Property irrigated with reclaimed water from a reclamation system, satellite reclamation system or reclaimed water distribution system under common ownership or management with that property, shall be regulated by the permit issued to the reclamation system, satellite reclamation system or reclaimed water distribution system providing reclaimed water to the irrigated property.

G. A reclamation system shall not discharge reclaimed or reject water to surface waters of the state in lieu of providing storage, discharging to another permitted reuse system, if applicable; returning reclaimed or reject water to a wastewater treatment works; or suspending production of reclaimed water; without authorization to discharge under a VPDES Permit.

9VAC25-740-50 Exclusions and prohibitions

A. Exclusions

The following are excluded from the requirements of this chapter:

1. Activities permitted by the Virginia Department of Health, such as, but not limited to, septic tank drainfield systems and other on-site sewage treatment and disposal systems, and water treatment plant recycle flows.
2. Utilization of gray water.
3. Non-potable water produced and utilized on-site by the same treatment works for facilities permitted through a VPDES or VPA permit. This includes the use of non-potable water at the treatment works site for incidental landscape irrigation that is not identified as land treatment defined in the Sewage Collection and Treatment Regulations (9VAC25-790). The treatment works site shall include property that is either contiguous to or in the immediate vicinity of the parcel of land upon which the treatment works is located, provided such property is under common ownership or management with the treatment works. This exclusion does not apply to non-potable water produced by treatment works authorized by the VPDES General Permit for Domestic Sewage Discharges Less Than or Equal to 1,000 Gallons Per Day (9VAC25-110).
4. Recycle flows within a treatment works.

5. Industrial effluents or other industrial water streams created prior to final treatment and used for water re-circulation, recycle, or reuse systems located on the same property as the industrial facility, provided:
 - a. The water used in these systems does not contain or is not expected to contain pathogens or other constituents in sufficient quantities and with a potential for human contact as may be harmful to human health;
 - b. These systems are closed or isolated to prevent worker contact with the water of the systems; or
 - c. Other measures are in place, including but not limited to, applicable federal and state occupational safety and health standards and requirements, to adequately inform and protect employees from pathogens or other constituents that may be harmful to human health in the water to be re-circulated, recycled or reused at the facility.
6. Land treatment systems defined in the Sewage Collection and Treatment Regulations (9VAC25-790). Such use of wastewater effluent, either existing or proposed, must be authorized by a VPA or VPDES permit and must be on land owned or under the direct long-term control of the permittee.
7. Indirect reuse with the exception of indirect potable reuse projects proposed after October 1, 2008.
8. Existing indirect potable reuse projects that upon October 1, 2008 are authorized by a VPDES permit to discharge to surface waters of the state, and future expansions of these projects.
9. Direct injection of reclaimed water into any underground aquifer authorized by EPA under the Safe Drinking Water Act, Underground Injection Control Program (UIC), 40 CFR Part 144; or other applicable federal and state laws and regulations.

Exclusion from the requirements of this chapter does not relieve any owner of the above operations of the responsibility to comply with any other applicable federal, state or local statute, ordinance or regulations.

B. Prohibitions

The following are prohibited under this chapter:

1. Direct potable reuse;
2. The reuse of reclaimed water for any purpose inside a residential or domestic dwelling or a building containing a residential or domestic unit;
3. The reuse of reclaimed water to fill residential swimming pools, hot tubs or wading pools;
4. The reuse of reclaimed water for food preparation or incorporation as an ingredient into food or beverage for human consumption;
5. Bypass of untreated or partially treated wastewater from the reclamation system or any intermediate unit process to the point of reuse unless the bypass complies with standards and requirements specified in 9VAC25-740-70 and is for essential maintenance to assure efficient operation; and

6. The return of reclaimed water to the reclaimed water distribution system after the reclaimed water has been delivered to an end user.

9VAC25-740-60 Relationship to other board regulations

A. Virginia Pollution Abatement (VPA) Permit Regulation (9VAC25-32).

The VPA Permit Regulation delineates the procedures and requirements to be followed in connection with the VPA permits issued by the board pursuant to the State Water Control Law. While any treatment works treating domestic, municipal or industrial wastewater that produces reclaimed water or a facility that distributes reclaimed water in a manner that does not result in a discharge to surface waters is required to obtain a VPA permit, this chapter prescribes design, operation and maintenance standards for water reclamation and water reuse. These requirements shall be incorporated into the VPA permit application and the VPA permit when applicable. Water reclamation and reuse requirements contained in a VPA permit shall be enforced through existing enforcement mechanisms of the VPA permit.

B. Virginia Pollutant Discharge Elimination System (VPDES) Permit Regulation (9VAC25-31).

The VPDES Permit Regulation delineates the procedures and requirements to be followed in connection with VPDES permits issued by the board pursuant to the Clean Water Act and the State Water Control Law. While any treatment works treating domestic, municipal or industrial wastewater that produces reclaimed water or a facility that distributes reclaimed water in a manner that results in a discharge to surface waters is required to obtain a VPDES permit, this chapter prescribes design, operation and maintenance standards for water reclamation and reuse. These requirements shall be incorporated into the VPDES permit application and the VPDES permit when applicable. Water reclamation and reuse requirements contained in a VPDES permit shall be enforced through existing enforcement mechanisms of the VPDES permit.

C. Sewage Collection and Treatment Regulations (9VAC25-790).

The Sewage Collection and Treatment Regulations establish standards for the operation, construction, or modification of a sewerage system or treatment works, including land treatment systems. This chapter prescribes design, operation and maintenance standards for water reclamation and reuse.

D. Regulation for Nutrient Enriched Waters and Discharges within the Chesapeake Bay Watershed (9VAC25-40).

Sections 62.1-44.19:12 through 62.1-44.19:19 of the Code of Virginia, which establishes the Regulation for Nutrient Enriched Waters and Discharges within the Chesapeake Bay Watershed (9VAC25-40), allows for credit to be given for reductions in total nitrogen and total phosphorus discharged loads through recycle or reuse of wastewater when determining technology requirements associated with new or expanded discharges.

E. General VPDES Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia (9VAC25-820).

The General VPDES Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia regulates point

sources of nutrients and establishes a framework for nutrient credit trading and offsets. Water reclamation and reuse provides an opportunity to reduce point source nutrient loads.

F. Local and Regional Water Supply Planning Regulation (9VAC25-780).

The Local and Regional Water Supply Planning Regulation requires every county, city, and town to develop a water plan in accordance with established planning criteria. Where appropriate, the plan may consider nontraditional means of increasing supplies such as interconnection, desalination, recycling and reuse.

**PART II
RECLAIMED WATER STANDARDS, MONITORING REQUIREMENTS AND
REUSES**

9VAC25-740-70 Standards for reclaimed water

A. Standards for reclaimed water are as follows:

1. Level 1:

a. Secondary treatment with filtration and higher-level disinfection

b. Bacterial standards:

(1) Fecal coliform^{*}: monthly geometric mean^{**} less than or equal to 14 colonies/100 ml; corrective action threshold at greater than 49 colonies/100 ml, or

(2) E. coli^{*}: monthly geometric mean^{**} less than or equal to 11 colonies/100 ml; corrective action threshold at greater than 35 colonies/100 ml, or

(3) Enterococci^{*}: monthly geometric mean^{**} less than or equal to 11 colonies/100 ml; corrective action threshold at greater than 24 colonies/100 ml

c. Total Residual Chlorine (TRC)^{***}: corrective action threshold at less than 1.0 mg/l^{****} after a minimum contact time of 30 minutes at average flow or 20 minutes at peak flow

d. pH 6.0-9.0 standard units

e. Five-day Biochemical Oxygen Demand (BOD₅): monthly average less than or equal to 10 mg/l; or Carbonaceous Biochemical Oxygen Demand (CBOD₅)^{*****}: monthly average less than or equal to 8 mg/l

f. Turbidity: Daily average of discrete measurements recorded over a 24-hour period less than or equal to 2 nephelometric turbidity units (NTU); corrective action threshold at greater than 5 NTU

2. Level 2:

a. Secondary treatment and standard disinfection

b. Bacterial standards:

(1) Fecal coliform^{*}: monthly geometric mean^{**} less than or equal to 200 colonies/100ml; corrective action threshold at greater than 800 colonies/100 ml, or

- (2) *E. coli*^{*} : monthly geometric mean^{**} less than or equal to 126 colonies/100ml; corrective action threshold at greater than 235 colonies/100 ml, or
- (3) Enterococci^{*} : monthly geometric mean^{**} less than or equal to 35 colonies/100ml; corrective action threshold at greater than 104 colonies/100 ml
- c. Total Residual Chlorine (TRC)^{***} : corrective action threshold at less than 1.0 mg/l^{****} after a minimum contact time of 30 minutes at average flow or 20 minutes at peak flow
- d. pH 6.0-9.0 standard units
- e. BOD₅: monthly average less than or equal to 30 mg/l; maximum weekly average 45 mg/l; or CBOD₅^{*****} : monthly average less than or equal to 25 mg/l; maximum weekly average 40 mg/l
- f. TSS: monthly average less than or equal to 30 mg/l; maximum weekly average 45 mg/l

* After disinfection.

** For the purpose of calculating the geometric mean, bacterial analytical results below the detection level of the analytical method used shall be reported as values equal to the detection level.

*** Applies only if chlorine is used for disinfection.

**** TRC less than 1.0 mg/l may be authorized by the board if demonstrated to provide comparable disinfection through a chlorine reduction program in accordance with the Sewage Collection and Treatment Regulations (9VAC25-790).

***** Applies only if CBOD₅ is used in lieu of BOD₅.

B. Point of compliance. Excluding the turbidity standard for Level 1 treatment, reclaimed water for reuse shall meet all other applicable standards in accordance with this chapter, at the point of compliance. The point of compliance for Level 1 and Level 2 treatment shall be after all reclaimed water treatment and prior to discharge to a reclaimed water distribution system. The point of compliance for the turbidity standard of Level 1 treatment shall be just upstream of disinfection.

C. Reclaimed water that fails to comply with the standards shall be managed as follows:

1. Should reclaimed water reach the corrective action threshold (CAT) for turbidity in the standard for Level 1, or for TRC in the standards for Level 1 or 2, whichever applies, the operator of the reclamation system shall immediately initiate a review of treatment operations and data to identify the cause of the CAT monitoring results to bring the reclaimed water back into compliance with the standards. Resampling or diversion shall occur within one hour of first reaching the CAT. Procedures for resampling, operational review and diversion shall be as described in an approved operations and maintenance manual for the reclamation system. If subsequent monitoring results of the resamples collected within one hour of the first CAT monitoring results for turbidity or TRC continue to reach the CAT of the standards, the reclaimed water shall be considered substandard or reject water and shall be diverted to

either storage for subsequent additional treatment or retreatment, or discharged to another permitted reuse system requiring a lower level of treatment not less than Level 2 or to a VPDES permitted effluent disposal system provided the reject water meets the effluent limits of the permit. If the reclamation system is unattended, the diversion of reject water shall be initiated and performed with automatic equipment. There shall be no automatic restarts of distribution to reuse until the treatment problem is corrected. Failure to divert the substandard or reject water after one hour of CAT monitoring results shall be considered a violation of this chapter. Upon resuming discharge of reclaimed water to the reclaimed water distribution system for which the CAT was reached, resampling for turbidity or TRC shall occur within one hour to verify proper treatment.

2. Should reclaimed water reach the CAT for bacteria (i.e., fecal coliform, E. coli or enterococci) in the standards for Level 1 or 2, whichever applies, the operator of the reclamation system shall immediately initiate a review of treatment operations and data to identify the cause of the CAT monitoring results to bring the reclaimed water back into compliance with the standards. Procedures for operational review shall be as described in an approved operations and maintenance manual for the reclamation system. Two consecutive bacterial monitoring results that reach the CAT of the standards shall be considered a violation of this chapter.

3. Repeated, although temporary, failure to comply with all other standards by the reclamation system may be considered a violation of this chapter determined by the frequency and magnitude of the non-compliant monitoring results and other relevant factors. Failure to resample after determination that monitoring results are not in compliance with the standards to make adjustments to the treatment process to bring the reclaimed water back into compliance with the standards, or to divert substandard or reject water in accordance with subdivision 1 of this subsection shall be considered a violation of this chapter.

D. Treatment other than or in addition to the standards of 9VAC25-740-70 A may be necessary based on the quality and character of the wastewater to be reclaimed or the intended reuse or reuses of the reclaimed water. Such alternative or additional treatment may be exempt from this chapter unless required by the board to protect public health and the environment.

E. Standards for the reclamation of industrial wastewater will be determined on a case-by-case basis relative to the proposed reuse or reuses of the reclaimed water and for the purpose of protecting public health and the environment. Industrial wastewater may also be subject to disinfection requirements of Level 1 or Level 2 if the industrial wastewater contains sewage or is expected to contain organisms pathogenic to humans, such as, but not limited to, wastewater from the production and processing of livestock and poultry. The point of compliance for reclamation standards of industrial wastewater shall also be determined on a case-by-case basis.

9VAC25-740-80 Reclaimed water monitoring requirements for reuse

A. The monitoring requirements for the standards provided under 9VAC25-740-70 A, are as follows:

1. Turbidity analysis shall be performed by a continuous, on-line turbidity meter equipped with an automated data logging or recording device and an alarm to notify the operator when the CAT for turbidity in the standard for Level 1 has been reached. Compliance with the average turbidity standard shall be determined daily, based on the arithmetic mean of hourly

or more frequent discrete measurements recorded during a 24-hour period. Monitoring for the turbidity CAT shall be continuous.

Should the on-line turbidity meter go out of service for either planned or unplanned repair, the permittee shall be allowed to manually collect samples for turbidity analysis at four-hour intervals up to a maximum of five days. Following the five-day period of repair, continuous, on-line monitoring with a turbidity meter shall resume.

2. Sampling and analysis for residual concentrations of disinfectants, including total residual chlorine (TRC):

a. Shall for Level 1, be continuous on-line monitoring, equipped with an automated data logging or recording device and an alarm to notify the operator when the CAT for the disinfectant has been reached. For disinfectants other than chlorine, continuous on-line monitoring shall be provided at the point of compliance monitoring. For TRC, continuous on-line monitoring shall be provided at the end of the contact tank or contact period. Monitoring for the TRC CAT shall be continuous.

Should the on-line disinfectant monitoring equipment go out of service for either planned or unplanned repair, the permittee shall be allowed to manually collect samples for disinfectant analysis at four-hour intervals up to a maximum of five days. Following the five-day period of repair, continuous, on-line disinfectant monitoring shall resume.

b. Shall for Level 2, be based on the design flow of the reclamation system and be the same sampling type and frequency as specified for sewage treatment works in the Sewage Collection and Treatment Regulations (9VAC25-790). For chemical disinfectants other than TRC, monitoring shall be provided at the point of compliance monitoring. For TRC, monitoring shall be provided at the end of the contact tank or contact period.

3. Sampling for TSS and BOD₅ or CBOD₅ shall be at least weekly or more frequently based on the design flow of the reclamation system, and shall be the same sampling type and frequency as specified for sewage treatment works in the Sewage Collection and Treatment Regulations (9VAC25-790). Compliance with the monthly average TSS and BOD₅ or CBOD₅ standards shall be determined monthly, based on the arithmetic mean of all samples collected during the month. Compliance with the maximum weekly average TSS and BOD₅ or CBOD₅ standards shall be determined monthly, using the same procedures applied in the VPDES Permit program for point source discharges.

4. Sampling for fecal coliform, E. coli or enterococci:

a. Shall for Level 1, be grab samples collected at a time when wastewater characteristics are most representative of the treatment facilities and disinfection processes for water reuse, and at the following frequencies.

Reclamation System Design Flow (MGD)⁽¹⁾	Bacterial Sampling Frequency⁽²⁾
>0.500	Daily with the ability to reduce to no less than 4 days per week ⁽³⁾

0.050 to 0.500	4 days per week with the ability to reduce to no less than 3 days per week ⁽³⁾
<0.050	3 days per week with no reduction allowed

(1) MGD means million gallons per day.

(2) For reclamation systems treating municipal wastewater, bacterial samples shall be collected between 10:00 a.m. and 4:00 p.m. to coincide with peak flows to the reclamation system. An exception to this requirement may be approved upon demonstration to the board that peak flows to the reclamation system occur outside this period.

(3) Monitoring frequency may be reduced after demonstrating compliance with bacterial standards for Level 1 and adequate correlation between bacterial monitoring results and measurements for surrogate disinfection parameters, such as TRC and turbidity.

Compliance with the geometric mean standards for fecal coliform, E. coli or enterococci shall be determined monthly, based on all bacteriological monitoring results for that month. Monitoring of the CAT for fecal coliform, E. coli or enterococci shall be based on the bacteriological monitoring results determined for each day a sample is collected.

b. Shall for Level 2, be based on the design flow of the reclamation system and be the same sampling type and frequency as specified for sewage treatment works in the Sewage Collection and Treatment Regulations (9VAC25-790). Compliance with the geometric mean standard and monitoring of the CAT for fecal coliform, E. coli or enterococci shall be in accordance with the same procedures specified for Level 1 in subdivision A 4 a of this section.

5. Samples for pH shall be grab samples collected at least daily. Compliance with the range of the pH standard shall be determined daily based on the pH of the samples.

B. Samples collected for TSS, BOD₅ or CBOD₅, and fecal coliform, E. coli or enterococci analyses, shall be analyzed by laboratory methods accepted by the board.

C. A reclamation system that produces reclaimed water intermittently or seasonally shall monitor only when the reclamation system discharges to a reclaimed water distribution system, a non-system storage facility, or directly to a reuse.

D. Monitoring other than or in addition to that described under 9VAC25-740-80 A may be required for treatment of reclaimed water that is provided pursuant to 9VAC25-740-70 D and 9VAC25-740-70 E.

9VAC25-740-90 Minimum standard requirements for reuses of reclaimed water

A. Minimum standard requirements for reclaimed water shall be determined, in part, by the reuse or reuses of that water. For specific reuses, the minimum standard requirements of reclaimed water are as follows:

Reuse Category	Reuse	Minimum Standard Requirements ^a
<p>1. Urban – Unrestricted Access</p>	<p>All types of landscape irrigation in public access areas (i.e., golf courses, cemeteries, public parks, school yards and athletic fields) Toilet flushing – non-residential Fire fighting or protection and fire suppression in non-residential buildings Outdoor domestic or residential reuse (i.e., lawn watering and non-commercial car washing) Commercial car washes Commercial air conditioning systems</p>	<p>Level 1</p>
<p>2. Irrigation – Unrestricted Access^b</p>	<p>Irrigation for any food crops not commercially processed, including crops eaten raw</p>	<p>Level 1</p>
<p>3. Irrigation – Restricted Access^{b, c}</p>	<p>Irrigation for any food crops commercially processed</p>	<p>Level 2</p>
	<p>Irrigation for non-food crops and turf, including fodder, fiber and seed crops; pasture for foraging livestock; sod farms; ornamental nurseries; and silviculture</p>	
<p>4. Landscape Impoundments^d</p>	<p>Potential for public access or contact</p>	<p>Level 1</p>

Reuse Category	Reuse	Minimum Standard Requirements ^a
	No Potential for public access or contact	Level 2
5. Construction^e	Soil compaction Dust control Washing aggregate Making concrete	Level 2
6. Industrial^e	Commercial laundries	Level 1
	Livestock watering ^f Aquaculture ^g Stack scrubbing Street washing Boiler feed Ship ballast Once-through cooling ^h Recirculating cooling towers ^h	Level 2

^a For reclaimed industrial wastewater, minimum standards required shall be determined on a case-by-case basis relative to the proposed reuse or reuses.

^b Reclaimed water treated to Levels 1 or 2 may be used for surface irrigation, including spray irrigation. Reclaimed water treated to Level 2 may be used for spray irrigation if the area to be irrigated restricts access to the public and has appropriate setbacks in accordance with 9VAC25-740-170. Reclaimed water treated to Level 1 or 2 may be used for irrigation of food crops eaten raw, excluding root crops, only when there will be no direct contact (or indirect contact via aerosol carry) between the reclaimed water and edible portions of the crop.

^c For irrigation with reclaimed water treated to Level 2, the following shall be prohibited unless Level 1 disinfection is provided:
1. Grazing by milking animals on the irrigation reuse site for 15 days after irrigation with reclaimed water ceases, and

2. Harvesting, retail sale or allowing access by the general public to ornamental nursery stock or sod farms for 14 days after irrigation with reclaimed water ceases.
 - ^d Landscape impoundments may also be used to store reclaimed water for other subsequent reuses of that reclaimed water, such as irrigation, if included in an inventory of reclaimed water storage facilities submitted to the board pursuant to 9VAC25-740-110 C 15.
 - ^e Worker contact with reclaimed water treated to Level 2 shall be minimized. Level 1 disinfection shall be provided when worker contact with reclaimed water is likely.
 - ^f Level 1 disinfection shall be provided when the reclaimed water is consumed by milking livestock.
 - ^g Level 1 disinfection shall be provided for aquaculture production of fish to be consumed raw, such as for sushi.
 - ^h Windblown spray generated by once-through cooling or recirculating cooling towers using reclaimed water treated to Level 2, shall not reach areas accessible to workers or the public unless Level 1 disinfection is provided. See also setback requirements in 9VAC25-740-170 for open cooling towers.

B. For any type of reuse not addressed in this chapter, including, but not limited to, indirect potable reuse and below-ground drip irrigation reuse, that is newly proposed after October 1, 2008, the board may prescribe specific reclaimed water standards and monitoring requirements needed to protect public health and the environment. When establishing these requirements for the proposed reuse, the board shall consider the following factors:

1. The risk of the proposed reuse to public health with specific input from the Virginia Department of Health;
2. The degree of public access and human exposure to reclaimed water by the proposed reuse;
3. The reclaimed water treatment necessary to prevent nuisance conditions by the proposed reuse;
4. The reclaimed water treatment necessary for the proposed reuse to comply with this and other applicable regulations of the board;
5. The potential for improper or unintended use of the reclaimed water;
6. Other federal or state laws, regulations and guidelines that would apply to the proposed reuse;
7. The similarity of the proposed reuse to reuses listed in this chapter with regard to potential impact to public health and the environment;
8. Whether the proposed reuse may be excluded or prohibited by 9VAC25-740-50; and
9. For new indirect potable reuse proposals, residence or transport time, mixing ratios, and other relevant information deemed necessary by the board.

PART III APPLICATION AND TECHNICAL REQUIREMENTS

9VAC25-740-100 Application for permit

A. The need for an owner to obtain a permit or modification or reissuance of an existing permit from the board for a proposed or an existing reclamation system, reclaimed water distribution system, satellite reclamation system, or, as applicable, water reuse, shall be determined in accordance with 9VAC25-740-30. Where required, permit coverage for these systems or activities shall be provided in accordance with 9VAC25-740-40, contingent upon receipt of a complete application from the owner. The application shall contain supporting documentation and information required by subsections B and C of this section.

B. General information. For projects that involve water reclamation and the distribution of reclaimed water, the following information shall be submitted with an application for a permit. For projects that involve exclusively the distribution of reclaimed water, information for only subdivisions 1, 2, and 5 of this section shall be submitted with an application for a permit.

1. A description of the design and a site plan showing operations and unit processes of the proposed project, including and as applicable, treatment, storage, distribution, reuse and disposal facilities, and reliability features and controls. Treatment works, reclamation systems and reclaimed water distribution systems previously permitted need not be included,

unless they are directly tied into the new units or are critical to the understanding of the complete project. Design approaches shall be consistent with accepted engineering practice and any applicable state regulations;

2. A general location map, showing orientation of the project with reference to at least two geographic features (e.g., numbered roads, named streams or rivers, etc.). A general location map for a reclaimed water distribution system may be included in the map of a service area required in accordance with subdivision C 1 a of this section;
3. Information regarding each wastewater treatment works that diverts or will divert effluent or source water to the reclamation system to be permitted, including:
 - a. All unit processes used for the treatment of wastewater at the facility prior to diversion to the reclamation system,
 - b. Any significant industrial users defined in 9VAC25-31-10 that indirectly discharge to the wastewater treatment works; and
 - c. Analyses of the effluent or source water to be diverted by the facility to the reclamation system.
4. Information regarding the sewage collection system that diverts or will divert sewage to the satellite reclamation system to be permitted, including:
 - a. The name of the sewage collection system and the owner of that system;
 - b. Any significant industrial users (SIUs) defined in 9VAC25-31-10 that discharge directly or indirectly to the collection line from which sewage will be diverted to the satellite reclamation system, excluding any downstream SIUs whose discharge has no potential to backflow to the satellite reclamation system intake. This information shall include the location of the SIUs and distance between the SIUs and the satellite reclamation system along the sewage collection line or lines; and
 - c. Characterization of the sewage to be diverted from the sewage collection system to the satellite reclamation system at the point of diversion. Analysis of the sewage may be required where SIUs described in subdivision 4 b of this subsection discharge to the sewage collection system.
5. Information regarding each reclamation system or satellite reclamation system to be permitted, including:
 - a. The standards specified in 9VAC25-740-70 A to be achieved;
 - b. Any other physical, chemical, and biological characteristics and constituent concentrations that may affect the intended reuse of the reclaimed water with respect to adverse impacts to public health or the environment; and
 - c. Design flow.
6. Information, if applicable, regarding any type of proposed reuse not listed in this chapter, by which the board can evaluate the need to prescribe specific reclaimed water treatment and monitoring requirements in accordance with 9VAC25-740-90 B; and

Information required for subsection B of this section may be provided by referencing specific information previously submitted to the board unless changes have occurred that require the submission of new or more current information.

C. Reclaimed water management (RWM) plan.

1. A RWM plan shall be submitted in support of permit applications for new or expanded reclamation systems, satellite reclamation systems or reclaimed water distribution systems that provide reclaimed water directly to an end user or end users, including an end user that is also the applicant or permittee. The RWM plan shall contain the following:

a. A description and map of the expected service area to be covered by the RWM plan for the term of the permit for the project (i.e., five years for a VPDES or ten years for a VPA permit). The map shall identify all reuses according to reuse categories shown in 9VAC25-740-90 A or other categories for reuses that are or shall be authorized pursuant to 9VAC25-740-90 B, and their locations within the service area. The map shall also identify and show the location of all public potable water supply wells and springs, and public water supply intakes, within the boundaries of the service area. The description and map of the service area shall be updated by the permittee with each permit renewal.

b. A current inventory of impoundments, ponds or tanks that are used for system storage of reclaimed water and, as applicable, reject water storage under the control of the permittee, and non-system storage located within the service area of the RWM plan in accordance with 9VAC25-740-110 C 15.

c. A water balance that accounts for the volumes of reclaimed water to be generated, stored, reused and discharged (i.e., through a VPDES permitted outfall, back to a sewage collection system, or otherwise disposed). The water balance shall include projected volumes of seasonal and annual reclaimed water demand for each reuse category.

d. An example of service agreements or contracts to be established by the applicant or permittee with end users regarding implementation of and compliance with the RWM plan. A service agreement or contract shall contain conditions and requirements specified in subdivisions 3 b and c of this subsection and in 9VAC25-740-170 that apply to the particular planned reuse of each end user. Terms of the agreement shall require property owners to report to the applicant or permittee all potable and non-potable water supply wells on their property and to comply with appropriate setback distances for wells where reclaimed water will be used on the same property. Within the agreement or contract, the applicant or permittee shall also reserve the right to terminate the agreement and withdraw service for any failure by the end user to comply with the terms and conditions of the agreement or contract if corrective action for such failure is not taken by the end user.

e. A description of monitoring of end users by the applicant or permittee to verify compliance with the terms of their agreements or contracts. Monitoring shall include, at a minimum, metering the volume of reclaimed water consumed by end users.

f. An education and notification program required in accordance with 9VAC25-740-170 A;

g. A cross-connection and backflow prevention program that:

- (1) Evaluates the potential for cross-connections of the reclaimed water distribution system to a potable water system and backflow to the reclaimed water distribution system from industrial end users,
- (2) Evaluates the public health risks associated with possible backflow from industrial end users,
- (3) Describes inspections to be performed by the applicant or permittee at the time end users connect to the reclaimed water distribution system and periodically thereafter to prevent cross-connections to a potable water system and backflow from industrial end users as determined necessary through the program evaluation, and
- (4) Insures that cross-connection and backflow prevention design criteria specified in 9VAC25-740-110 B for reclaimed water distribution systems are implemented.

A backflow prevention device shall be required on the reclaimed water service connection to an industrial end user, unless evaluation by the cross-connection and backflow prevention program determines that there is minimal risk to public health associated with possible backflow from the industrial end user or that there will be no backflow from the industrial end user capable of contaminating the reclaimed water supply.

- h. A description of how the quality of reclaimed water in the reclaimed water distribution system shall be maintained to meet the standards for the intended reuse or reuses of the reclaimed water in accordance with 9VAC25-740-90.
 - i. Where the applicant or permittee is the provider of reclaimed water, the exclusive end user of that reclaimed water and is not otherwise excluded under 9VAC25-740-50 A, information for only subdivisions C 1 a, b and c of this section is required.
2. All irrigation reuses of reclaimed water shall be limited to supplemental irrigation.
 3. Nutrient management requirements for irrigation reuse will be established in the RWM plan according to the concentration of total N and total P in the reclaimed water compared to "Biological Nutrient Removal (BNR)" as defined in 9VAC25-740-10.
 - a. Except as specified in subdivision 4 of this subsection, a nutrient management plan (NMP) shall not be required for irrigation reuse of reclaimed water treated to achieve BNR or nutrient levels below BNR.
 - b. For bulk irrigation reuse of reclaimed water not treated to achieve BNR, a NMP shall be required of the end user.
 - (1) Where the applicant or permittee is the end user, the NMP shall be submitted with the RWM plan to the board and shall be the responsibility of the applicant or permittee to properly implement.
 - (2) Where the end user is other than the applicant or permittee, the NMP shall be required as a condition of the service agreement or contract specified in subdivision C 1 d of this section between the applicant or permittee and the end user. The end user shall be responsible for obtaining, maintaining and following a current NMP; providing a copy of the most current NMP to the applicant or permittee prior to

- initiating bulk irrigation reuse of reclaimed water; and providing proof of compliance with the NMP at the request of the permittee.
- c. For non-bulk irrigation reuse of reclaimed water not treated to achieve BNR, a NMP shall not be required. However, the RWM plan shall describe other measures to be implemented by the applicant or permittee to manage nutrient loads by non-bulk irrigation reuse of reclaimed water not treated to achieve BNR within the service area. These shall include, but are not limited to the following:
- (1) The inclusion of language in the service agreement or contract specified in subdivision C 1 d of this section, explaining proper use of the reclaimed water by the end user for the purpose of managing nutrients;
 - (2) Reclaimed water metering of individual non-bulk irrigation end users;
 - (3) Routine distribution of literature not less than annually, to individual non-bulk irrigation end users addressing the proper use of reclaimed water for irrigation in accordance with 9VAC25-740-170 A; and
 - (4) Monthly monitoring of N and P loads by non-bulk irrigation reuses to the service area of the RWM plan based on the total monthly metered use of reclaimed water for the service area and the monthly average concentrations of total N and total P in the reclaimed water.
4. Independent of the reclaimed water nutrient content, a NMP shall be required for a bulk irrigation reuse site where:
- a. A wastewater treatment works, a reclamation system, satellite reclamation system or reclaimed water distribution system and the irrigation reuse site or sites are under common ownership or management, and
 - b. In addition to irrigation reuse:
 - (1) There is no option to dispose of the reclaimed water through a VPDES permitted discharge, or
 - (2) There is an option to dispose of the reclaimed water through a VPDES permitted discharge, but the VPDES permit does not allow discharge of the full nutrient load under design flow (e.g., a treatment works with a VPDES permitted discharge implements water reclamation and reuse in lieu of providing treatment to meet nutrient effluent limits at design flow).
- The NMP shall be approved by the DCR and submitted with the RWM plan to the board. The applicant or permittee shall be responsible for proper implementation of the NMP.
5. If required for a specific irrigation reuse, the NMP shall be prepared by a nutrient management planner certified by the DCR and shall be maintained current in accordance with the Nutrient Management Training and Certification Regulations, 4VAC5-15. A copy of the NMP for each irrigation reuse site shall be maintained at the site or at a location central to all sites covered by the plan. Another copy shall be provided to and retained by the applicant or permittee.
6. A site plan is required for each bulk irrigation reuse site, displayed on the most current USGS topographic maps (7.5 minutes series, where available) and showing the following:

- a. The boundaries of the irrigation site;
- b. The location of all potable and non-potable water supply wells and springs, public water supply intakes, occupied dwellings, property lines, areas accessible to the public, outdoor eating, drinking and bathing facilities; surface waters, including wetlands; limestone rock outcrops and sinkholes within 250 feet of the irrigation site; and
- c. Setbacks areas around the irrigation site in accordance with 9VAC25-740-170.

Where expansion of an existing irrigation site is anticipated, the same information shall be provided for the area of proposed expansion.

7. The site plan for a bulk irrigation reuse site shall be prepared by:
 - a. The applicant or permittee for submission with the RWM plan to the board when the irrigation site is under common ownership or management with a wastewater treatment works, a reclamation system or satellite reclamation system from which it receives reclaimed water for irrigation; or
 - b. The bulk irrigation end user for submission with the service agreement or contract between the end user and the applicant or permittee when the irrigation site is not under common ownership or management with a wastewater treatment works, a reclamation system or satellite reclamation system from which it receives reclaimed water for irrigation.
8. For the addition of new end users not contained in the original RWM plan submitted with the application for a permit, the permittee shall submit to the board an amendment to the RWM plan identifying new end users not less than 30 days prior to connection and reclaimed water service to these users. For each new end user, the permittee shall also provide all applicable information required by subsection C of this section. Amendment of the RWM plan for the addition of new end users after the issuance or reissuance of the permit shall not be considered a modification of the permit unless the new end users will require the addition of different reclaimed water standards, monitoring requirements and conditions not contained in the permit.

9VAC25-740-110 Design criteria

A. Reclamation system. The design of systems for the reclamation of municipal wastewater or the effluent derived from a municipal wastewater treatment works shall adhere to the standards of design and construction specified in the Sewage Collection and Treatment Regulations (9VAC25-790) and other applicable engineering standards and regulations. Design standards for reclamation systems of industrial wastewater or the effluent derived from an industrial wastewater treatment works shall be determined and evaluated on a case-by-case basis.

B. Reclaimed water distribution system

1. All reclaimed water distribution systems shall be designed and constructed in accordance with this chapter and applicable sections of the Sewage Collection and Treatment Regulations (9VAC25-790) pertaining to force mains, so that:
 - a. Reclaimed water does not come into contact with or otherwise contaminate a potable water system;

- b. The structural integrity of the system is provided and maintained; and
 - c. The capability for inspection, maintenance, and testing is maintained.
 2. For a reclaimed water distribution system, the following shall be implemented as part of the cross-connection and backflow prevention program submitted with the RWM plan:
 - a. There shall be no direct cross-connections between the reclaimed water distribution system and a potable water supply system.
 - b. The reclaimed water distribution system shall be in compliance with the cross connection control and backflow prevention requirements of the Article 3 (12VAC5-590-580 et seq.) of Part II of the Commonwealth of Virginia Waterworks Regulations, the Uniform Statewide Building Code, and local building and plumbing codes.
 - c. Potable water may be used to supplement reclaimed water for a reuse, provided there is an air gap separation of at least eight inches between the potable water and the reclaimed water or a reduced pressure principle backflow prevention device installed at the potable water service connection to the reuse. The installation of the reduced pressure principal backflow prevention device shall allow for proper inspection and testing of the device.
 - d. Reclaimed water shall not be returned to the reclaimed water distribution system after the reclaimed water has been delivered to an end user.
 3. In-ground reclaimed water distribution pipelines shall be installed and maintained to achieve minimum separation distance and configurations as follows:
 - a. No reclaimed water distribution pipeline shall pass within 50 feet of a potable water supply well, potable water supply spring or water supply intake that are part of a regulated waterworks. The same separation distance shall be required between a reclaimed water distribution pipeline and a non-public or private potable water supply well or spring, but may be reduced to not less than 35 feet provided special construction and pipe materials are used to obtain adequate protection of the potable water supply.
 - b. Reclaimed water distribution pipeline shall be separated horizontally by at least 10 feet from a water main. The distance shall be measured edge-to-edge. When local conditions prohibit this horizontal separation, the reclaimed water distribution pipeline may be laid closer provided that the water main is in a separate trench or an undisturbed earth shelf located on one side of the reclaimed water distribution pipeline and the bottom of the water main is at least 18 inches above the top of the reclaimed water distribution pipeline. Where this vertical separation cannot be obtained, the reclaimed water distribution pipeline shall be constructed of water pipe material in accordance with AWWA specifications and pressure tested in place without leakage prior to backfilling. The hydrostatic test shall be conducted in accordance with the AWWA standard (ANSI/AWWA C600-05, effective December 1, 2005) for the pipe material, with a minimum test pressure of 30 psi.
 - c. Distribution pipeline that conveys Level 1 reclaimed water shall be separated horizontally by at least 2 feet from a sewer line. The distance shall be measured edge-to-edge. When local conditions prohibit this horizontal separation, the reclaimed water distribution pipeline may be laid closer provided that the sewer line is in a separate trench

or an undisturbed earth shelf located on one side of the reclaimed water distribution pipeline and the bottom of the reclaimed water distribution pipeline is at least 18 inches above the top of the sewer line. Where this vertical separation cannot be obtained, either the reclaimed water distribution pipeline or the sewer line shall be constructed of water pipe material in accordance with AWWA specifications and pressure tested in place without leakage prior to backfilling. The hydrostatic test shall be conducted in accordance with the AWWA standard (ANSI/AWWA C600-05, effective December 1, 2005) for the pipe material, with a minimum test pressure of 30 psi.

d. Reclaimed water distribution pipeline shall cross under water main such that the top of the reclaimed water distribution pipeline is at least 18 inches below the bottom of the water main. When local conditions prohibit this vertical separation, the reclaimed water distribution pipeline shall be constructed of AWWA specified water pipe and pressure tested in place without leakage prior to backfilling, in accordance with the provisions of the Sewage Collection and Treatment Regulations (9VAC25-790). Where reclaimed water distribution pipeline crosses over water main, the reclaimed water distribution pipeline shall:

- (1) Be laid to provide a separation of at least 18 inches between the bottom of the reclaimed water distribution pipeline and the top of the water main.
- (2) Be constructed of AWWA approved water pipe and pressure tested in place without leakage prior to backfilling, in accordance with the provisions of the Sewage Collection and Treatment Regulations (9VAC25-790).
- (3) Have adequate structural support to prevent damage to the water main.
- (4) Have joints placed equidistant and as far as possible from the water main joints.

e. Sewer line shall cross under distribution pipeline that conveys Level 1 reclaimed water such that the top of the sewer line is at least 18 inches below the bottom of the reclaimed water distribution pipeline. When local conditions prohibit this vertical separation, the sewer line shall be constructed of AWWA specified water pipe and pressure tested in place without leakage prior to backfilling, in accordance with the provisions of the Sewage Collection and Treatment Regulations (9VAC25-790). Where sewer line crosses over distribution pipeline that conveys Level 1 reclaimed water, the sewer line shall:

- (1) Be laid to provide a separation of at least 18 inches between the bottom of the sewer line and the top of the reclaimed water distribution pipeline.
- (2) Be constructed of AWWA approved water pipe and pressure tested in place without leakage prior to backfilling, in accordance with the provisions of the Sewage Collection and Treatment Regulations (9VAC25-790).
- (3) Have adequate structural support to prevent damage to the reclaimed water distribution pipeline.
- (4) Have joints placed equidistant and as far as possible from the reclaimed water distribution pipeline joints.

- f. No reclaimed water distribution pipeline shall pass through or come into contact with any part of a sewer manhole. Distribution pipeline that conveys Level 1 reclaimed water shall be separated horizontally by at least 2 feet from a sewer manhole whenever possible. The distance shall be measured from the edge of the pipe to the edge of the manhole structure. When local conditions prohibit this horizontal separation, the manhole shall be of watertight construction and tested in place.
4. No setback distance is required to any non-potable water supply well and no vertical or horizontal separation distances are required between above-ground reclaimed water pipelines and potable water, sewer or wastewater pipelines.
 5. All reclaimed water outlets shall be of a type, or secured in a manner, that permits operation by authorized personnel. Public access to reclaimed water outlets shall be controlled in areas where reclaimed water outlets are accessible to the public as follows:
 - a. If quick connection couplers are used on above-ground portions of the reclaimed water distribution system, they shall differ materially from those used on the potable water supply.
 - b. Use of above-ground hose bibs, spigots or other hand-operated connections that are standard on local potable water distribution systems shall be prohibited for use on the local reclaimed water distribution system. If above-ground hose bibs, spigots or other hand-operated connections are used on the reclaimed water distribution system, they must differ materially from those used on the local potable water distribution system and must be clearly distinguishable as reclaimed water connections (i.e., painted purple, valve operation with a special tool) so as not to be mistaken for potable water connections. Where below-grade vaults are used to house reclaimed water connections, the connections in the vault may have standard potable water distribution system thread and bib size services provided the bib valves can be operated only by a special tool. The below-grade vaults shall also be labeled as being part of the reclaimed water distribution system (i.e., painted purple, labeled).
 6. Existing potable water, sewer and wastewater pipelines may be converted for use as reclaimed water distribution pipelines. The following information shall be submitted to the board for approval of the conversion:
 - a. The location and identification of the facilities to be converted;
 - b. The location of all connections to the facilities to be converted;
 - c. A description of measures to be taken to ensure that existing connections will be eliminated;
 - d. Description of procedures to be used to ensure that all connections and cross-connections shall be eliminated. This may include physical inspections, dye testing, or other testing procedures;
 - e. Description of marking, signing, labeling, or color coding to be used to identify the converted facility as a reclaimed water transmission facility;
 - f. Description of cleaning and disinfection procedures to be followed before the converted facilities will be placed into operation for reclaimed water distribution;

- g. Assessment of the physical condition and integrity of facilities to be converted; and
 - h. Reasonable assurance that cross-connections will not result, public health will be protected, and the integrity of potable water, wastewater, and reclaimed water systems will be maintained when the conversion is made.
7. Tank trucks may be used to transport and distribute reclaimed water only if the following requirements are met:
- a. The truck is not used to transport potable water that is used for drinking water or food preparation;
 - b. The truck is not used to transport waters or other fluids that do not meet the requirements of this chapter, unless the tank has been evacuated and properly cleaned prior to the addition of the reclaimed water;
 - c. The truck is not filled through on-board piping or removable hoses that may subsequently be used to fill tanks with water from a potable water supply; and
 - d. The reclaimed water contents of the truck are clearly identified as non-potable water on the truck.
8. Reclaimed water distribution systems shall have the following identification, notification and signage:
- a. All reclaimed water piping shall have the words "CAUTION: RECLAIMED WATER - DO NOT DRINK" embossed, integrally stamped, or otherwise affixed to the piping, and shall be identified by one or more of the following methods:
 - (1) Painting the piping purple (Pantone 522) and stamping the piping with the required caution statement on opposite sides of the pipe, repeated at intervals of three feet or less.
 - (2) Using stenciled pipe with two- to three-inch letters on opposite sides of the pipe, placed at intervals of three to four feet. For pipes less than two inches in diameter, lettering shall be at least five eighths inch, placed on opposite sides of the pipe, and repeated at intervals of one foot.
 - (3) Wrapping the piping with purple (Pantone 522) polyethylene vinyl wrap or adhesive tape, placed longitudinally at three-foot intervals. The width of the wrap or tape shall be at least three inches, and shall display the required caution statement in either white or black lettering.
 - (4) Permanently affixing purple (Pantone 522) vinyl adhesive tape on top of the piping, parallel to the axis of the pipe, fastened at least every ten feet to each pipe section, and continuously for the entire length of the piping. The tape shall display the required caution statement in either white or black lettering.
 - b. All visible, above-ground portions of the reclaimed water distribution system including reclaimed water piping, valves, outlets (including fire hydrants) and other appurtenances shall be colored coded, taped, labeled, tagged or otherwise marked to notify the public and employees that the source of the water is reclaimed water, not intended for drinking or food preparation. For reclaimed water treated to Level 2, such

notification shall also inform employees to practice good personal hygiene for incidental contact with reclaimed water and the public to avoid contact with the reclaimed water.

c. Each mechanical appurtenance of a reclaimed water distribution system shall be colored purple and legibly marked "RECLAIMED WATER" to identify it as a part of the reclaimed water distribution system and to distinguish it from mechanical appurtenances of a potable water distribution system or a wastewater collection system.

d. Existing underground distribution or collection pipelines and appurtenances retrofitted for the purpose of distributing reclaimed water shall be colored coded, taped, labeled, tagged or otherwise identified as described in subdivisions 8 a, b and c of this subsection. This identification need not extend the entire length of the retrofitted reclaimed water distribution system but is required within 10 feet of locations where the distribution system crosses a potable water supply line or sanitary sewer line.

e. Valve boxes for reclaimed water distribution systems shall be painted purple. Valve covers for reclaimed water distribution lines shall not be interchangeable with potable water supply valve covers.

9. All reclaimed water distribution systems shall be maintained to minimize losses and to ensure safe and reliable conveyance of reclaimed water such that the reclaimed water will not be degraded below the standards required for the intended reuse or reuses in accordance with 9VAC25-740-90.

C. Storage requirements

1. To ensure reliable reclamation system operation in accordance with the requirements of this chapter, all reclamation systems shall have the ability to implement one or more of the following options:

- a. Store reclaimed water,
- b. Discharge reclaimed water to another permitted reuse system, if applicable;
- c. Discharge reclaimed water to surface waters of the state under a VPDES permit;
- d. Suspend all or a portion of water reclamation for planned periods; or
- e. In the case of a satellite reclamation system, discharge reclaimed water into the sewage collection system from which it received water for reclamation.

2. Storage for reclaimed water shall be required only when subdivision 1 b, c, or d of this subsection or, as applicable, subdivision 1 e of this subsection are not available or approved by the board.

3. Separate, off-line storage shall be provided for reject water of the reclamation system unless the reject water can be diverted to another permitted reuse system, discharged to surface waters of the state under a VPDES permit, returned directly to an appropriate point of treatment in the reclamation system, or in the case of a satellite reclamation system, sent to the sewage collection system from which the reclamation system received water for reclamation. Where reject water is stored, provisions shall be incorporated into the design of the reclamation system to distribute the reject water from storage to other parts of the reclamation system for additional or repeated treatment.

4. Storage for reject water may also be used for emergency storage to ensure Class I reliability of the reclamation system in accordance with 9VAC25-740-130.
5. Reject water and reclaimed water may be stored in water-tight tanks placed above-ground or in-ground. Labeling of tanks used for reject water storage, system storage or non-system storage shall be in accordance with 9VAC25-740-160 B, and shall, at a minimum, identify the contents of each tank as either reject water or reclaimed water.
6. For all impoundments or ponds that are used for reject water storage or system storage, with the exception of impoundments and ponds specified in C 7 of this section, the following are required:
 - a. A minimum two-foot free board shall be maintained at all times. Any emergency discharge or overflow device and the disposition of the overflow discharge shall be identified in the engineering report.
 - b. There shall be a minimum two-foot separation distance between the bottom of the impoundment or pond and the seasonal high water table.
 - c. The impoundment or pond shall have a properly designed and installed synthetic liner of at least 20 mils thickness or a compacted soil liner of at least one foot thickness. Synthetic liners shall be installed in accordance with the manufacturer's specifications and recommendations. The soil liner shall be composed of separate lifts not to exceed six inches. The maximum coefficient of permeability for the synthetic and soil liners shall not exceed 1×10^{-6} cm/sec and 1×10^{-7} cm/sec, respectively. A plan of quality assurance and quality control which substantiates the adequacy of the liner and its installation shall be included in or shall accompany the preliminary engineering report or supporting documentation for the CTC. Documentation of quality assurance and quality control activities on liner installation along with permeability test results, shall be submitted with the statement of construction completion to the board.
 - d. If the requirements of subdivision 6 b or c of this subsection cannot be met, the board may allow use of the impoundment or pond for storage provided that a groundwater monitoring plan for the facility is submitted to the board for review and approval. The plan shall identify the direction of groundwater flow and the proposed location and depth of groundwater monitoring wells at the location of the impoundment or pond, parameters to be monitored, a monitoring schedule, and procedures for proper sample collection and handling.
 - e. The design of the impoundment or pond shall prevent the entry of surface water or storm water runoff from outside the facility embankment or berm.
 - f. Where the embankment of the impoundment or pond is composed of soil, the embankment shall have:
 - (1) A top width of at least five feet,
 - (2) Interior and exterior slopes no steeper than one foot vertical to three feet horizontal unless alternate methods of slope stabilization are used,
 - (3) Shallow-rooted vegetative cover or other soil stabilization to prevent erosion, and

- (4) Erosion stops and water seals installed on all piping that penetrates the embankment.
- g. There shall be routine maintenance of the impoundment or pond liner, embankments and access areas.
- h. Impoundments and ponds shall be sited to avoid areas of uneven subsidence, sinkholes, or unstable soils unless provisions are made for their correction. Results from field and laboratory tests from an adequate number of test borings and soil samples shall be the basis for computations pertaining to permeability and stability analyses.
- i. Impoundments or ponds shall not be located on a floodplain unless protected from inundation or damage by a 100-year frequency flood event.
- j. There shall be a minimum setback distance measured horizontally from the perimeter of the storage impoundment or pond to potable water supply wells and springs, and public water supply intakes, of 100 feet for storage of Level 1 reclaimed water and 200 feet for storage of Level 2 reclaimed water or reject water.
7. Reject water storage and system storage impoundments or ponds that exist upon October 1, 2008 shall be exempt from the design, construction, and operation requirements specified in subdivision 6 of this subsection until such time these facilities are modified or expanded, or unless they have failed to comply with other existing regulatory or permitting requirements.
8. The capacity of reject water storage and system storage facilities, including impoundments, ponds or tanks, shall be as follows:
- a. For reject water, the capacity of the storage facility shall, at a minimum, be the volume equal to the average daily permitted flow of the reclamation system unless other options exist for immediate disposal or retreatment of the reject water in addition to storage.
- b. For reclaimed water, the capacity of the storage facility shall be determined by the seasonal variability in demand, intended reuses with intermittent, variable demand, such as fire protection or fighting; and the availability of other options to generate or manage reclaimed water as specified in subdivision 1 of this subsection.
- (1) Where there is no or minimal seasonal variability in demand and no other options are available for alternative generation or management of all or a portion of the reclaimed water, the capacity of the storage facility shall, at a minimum, be the volume equal to three times that portion of reclaimed water average daily flow for which no other options to generate or manage the reclaimed water are permitted.
- (2) Where there is seasonal variability in demand and no other options are available for alternative generation or management of all or a portion of the reclaimed water during periods of low seasonal demand, storage facilities shall have sufficient storage capacity to assure the retention of the reclaimed water under conditions and circumstances that preclude reuse. The methods, assumptions and calculations used to determine the system storage requirements shall be provided and justified in the preliminary engineering report or supporting documentation for the CTC. Analytical means of determining system storage requirements, such as water balance

calculations or computer hydrological programs, shall be used and shall account for all water inputs into the system. Analysis shall be based on site-specific data. Irrigation efficiencies or rainfall efficiencies shall not be used in storage volume determinations.

9. Requirements specified in subdivision 6 of this subsection shall not apply to lakes, impoundments or ponds used for non-system storage with the exception of those specified in subdivision 11 of this subsection.

10. Landscape impoundments may also be used for non-system storage of reclaimed water prior to another subsequent reuse, such as irrigation.

11. Impoundments or ponds used for non-system storage of reclaimed water, including landscape impoundments, for subsequent irrigation reuse on sites under common ownership or management with the reclamation system or satellite reclamation system that provides reclaimed water to the sites, shall comply with the design, construction and operation requirements specified in subdivision 6 of this subsection.

12. For lakes, impoundments or ponds used for non-system storage of reclaimed water, the following setback distances shall apply:

a. There shall be a 50-foot minimum setback distance measured horizontally from the perimeter of the lake, impoundment or pond to property lines.

b. For an impoundment or pond with a liner meeting the requirements specified in subdivision 6 c of this subsection, there shall be a minimum setback distance measured horizontally from the perimeter of the storage impoundment or pond to potable water supply wells and springs, and public water supply intakes, of 100 feet for storage of Level 1 reclaimed water and 200 feet for storage of Level 2 reclaimed water.

c. For an unlined impoundment or pond, there shall be a minimum setback distance measured horizontally from the perimeter of the storage impoundment or pond to potable water supply wells and springs, and public water supply intakes, of 200 feet for storage of Level 1 reclaimed water and 400 feet for storage of Level 2 reclaimed water.

13. Where more than one setback distance applies to storage for reclaimed water or reject water, the greater setback distance shall govern.

14. All storage facilities, including landscape impoundments used for non-system storage, shall be designed and operated to prevent a discharge to surface waters of the state except in the event of a storm greater than the 25-year 24-hour storm.

15. Permittees shall maintain current inventories of reject water storage, system storage and non-system storage facilities located within the service area of the RWM plan. An inventory or a revised inventory shall be submitted as part of the RWM plan in the permit application. For the addition of new storage facilities to an inventory after permit issuance, the permittee shall submit to the board an amended inventory at least 30 days before reclaimed water will be introduced into the new storage facilities. An inventory of reject water storage, system storage and non-system storage facilities shall include the following:

a. Name or identifier for each storage facility,

b. Location of each storage facility (including latitude and longitude),

- c. Function of each storage facility (i.e., reject water storage, system storage or non-system storage),
- d. Type of each storage facility (i.e., covered tank, uncovered tank, lined pond, unlined pond, etc.), and
- e. Location (latitude and longitude) and distance of the nearest potable water supply well and spring, and public water supply intake, to each storage facility within 450 feet of that facility.

16. Storage requirements as specified in 9VAC25-740-110 C shall not apply to reclaimed water storage facilities provided at the site of an industrial end user where such facilities are regulated by an existing water permit issued by the board to the industrial end user, or the industrial end user is also the generator of reclaimed water stored in the these facilities and is excluded under 9VAC25-740-50 A.

9VAC25-740-120 Construction requirements

A. Preliminary engineering report. A preliminary engineering report shall be submitted for new water reclamation projects and for modification or expansion of existing reclamation systems, satellite reclamation systems and reclaimed water distributions systems. At the request of the applicant or permittee, the board may waive the need for a preliminary engineering report or portions of a preliminary engineering report for modification or expansion of an existing reclamation system, satellite reclamation system or reclaimed water distributions system based on the scope of the proposed project.

B. Certificate to construct and certificate to operate

1. No owner shall cause or allow the construction, expansion or modification of a reclamation system or satellite reclamation system except in compliance with a certificate to construct (CTC) from the board unless otherwise provided for by this chapter. Furthermore, no owner shall cause or allow any reclamation system or satellite reclamation system to be operated except in compliance with a certificate to operate (CTO) issued by the board, which authorizes the operation of the reclamation system or satellite reclamation system unless otherwise provided for by this chapter. The need for a CTC and CTO for modifications shall be determined by the board on a case-by-case basis. Conditions may be imposed on the issuance of any CTC or CTO, and no reclamation system or satellite reclamation system may be constructed, modified, or operated in violation of these conditions.

2. CTC

a. Upon approval of the proposed design by the board, including any submitted plans and specifications, if required, the board will issue a CTC to the owner of such approval to construct or modify his reclamation system or satellite reclamation system in accordance with the approved plans and specifications.

b. Any deviations from the approved design or the submitted plans and specifications significantly affecting hydraulic conditions (flow profile), unit operations capacity, the functioning of the reclamation system or satellite reclamation system, or the quality of the reclaimed water, must be approved by the board before any such changes are made.

3. CTO

- a. Upon completion of the construction or modification of the reclamation system or satellite reclamation system, the owner shall submit to the board a Statement of Construction Completion signed by a licensed professional engineer stating that the construction work has been completed in accordance with the approved plans and specifications, or revised only in accordance with subdivision 2 b of this subsection. This statement shall be based upon inspections of the reclamation system or satellite reclamation system during and after construction or modifications that are adequate to ensure the truth of the statement.
- b. Upon receipt of the construction completion statement, the board may issue a final CTO. However, the board may delay the granting of the CTO pending inspection, or satisfactory evaluation of reclaimed water test results, to ensure that the work has been satisfactorily completed.
- c. A conditional CTO may be issued specifying final approval conditions, with specific time periods for completion of unfinished work, revisions to the operations and maintenance manual, or other appropriate items. The board may issue a conditional CTO to owners of a reclamation system or satellite reclamation system for which the required information for completion of construction has not been received. Such CTOs will contain appropriate conditions requiring the completion of any unfinished or incomplete work including subsequent submission of the statement of completion of construction.
- d. Consideration will be given to issuance of an interim CTO to individual unit operations of the treatment system so as to allow utilization of these unit operations prior to completion of the total project. A final CTO shall be issued upon verification that the requirements of this chapter have been complied with.
- e. Within 30 days after placing a new or modified reclamation system or satellite reclamation system into operation, the reclaimed water produced should be sampled and tested in a manner sufficient to demonstrate compliance with approved specifications and permit requirements. The board shall be notified of the time and place of the tests, and shall be sent the results of the tests for evaluation as part of the final CTO.
- f. Within 90 days of placing the new or modified reclamation system or satellite reclamation system into operation, the owner shall submit a new or revised operations and maintenance manual for the water reclamation system, satellite reclamation system, or both, as applicable, to be covered by the same permit. The manual shall contain information as specified in 9VAC25-740-140.
- g. The board may amend or reissue a CTO where there is a change in the manner of treatment or the source of water that is reclaimed at the permitted location, or for any other cause incidental to the protection of the public health and welfare, provided notice is given to the owner.

9VAC25-740-130 Operator requirements and system reliability

A. Operator requirements. In accordance with the Virginia board for Waterworks and Wastewater Works Operators Regulations (18VAC160-20), each reclamation system shall be assigned a classification based on the treatment processes used to reclaim water and the design capacity of the facility. The classification of both the reclamation system and the operator in

responsible charge shall be the same as that specified in the Sewage Collection and Treatment Regulations (9VAC25-790) for sewage treatment works with similar treatment processes and design capacities. The reclamation system shall be manned while in operation and under the supervision of the operator in responsible charge unless the system is equipped with remote monitoring and, as applicable, automated diversion of substandard or reject water in accordance with 9VAC25-740-70 C 1 a.

B. Class I reliability as defined in 9VAC25-740-10 is required for Level 1 reclamation systems and satellite reclamation systems unless there is a permitted alternate treatment or discharge system available which has sufficient capacity to handle any reclaimed water flows which do not meet the reclaimed water standards of this chapter or performance criteria established in the operations and maintenance manual.

C. For independent reclamation systems and systems consisting of an industrial wastewater treatment works and reclamation system, the applicability of Class I reliability requirements as specified in the Sewage Collection and Treatment Regulations (9VAC25-790), shall be determined by the board for each proposed or existing system.

D. The board may approve alternative measures to achieve Class I reliability specified in the Sewage Collection and Treatment Regulations (9VAC25-790) if the applicant or permittee can demonstrate in the engineering report, using accepted and appropriate engineering principles and practices, that the alternative measures will achieve a level of reliability equivalent to Class I reliability.

9VAC25-740-140 Operations and maintenance

A. The permittee shall develop and submit to the board an operations and maintenance manual in accordance with 9VAC25-740-120 B 3 f for each reclamation system, satellite reclamation system, or combination of these facilities covered by the same permit. The permittee shall maintain the manual and any changes in the practices and procedures followed by the permittee shall be documented and submitted to the board within 90 days of the effective date of the changes.

B. For each reclaimed water distribution system, the permittee shall develop an operations and maintenance manual to be made available at a location central to the system. The permittee shall maintain the manual and include any changes in the practices and procedures followed by the permittee in the manual. The operations and maintenance manual for a reclaimed water distribution system may be included in the operations and maintenance manual described in subsection A of this section where the reclaimed water distribution system and a reclamation system or satellite reclamation system, or all these facilities are covered by the same permit.

C. For a reclamation system authorized under the permit of a wastewater treatment works that provides flow to the reclamation system, the operations and maintenance manual of the reclamation system may be made a part of the operations and maintenance manual for the wastewater treatment works.

D. The operations and maintenance manual is a set of detailed instructions developed to facilitate the operator's understanding of operational constraints and maintenance requirements for the reclamation system, satellite reclamation system or reclaimed water distribution system; and the monitoring and reporting requirements specified in the permit issued for each system.

The scope and content of the manual will be determined by the complexity of the system or systems described by the manual.

1. For a reclamation system or satellite reclamation system, the operations and maintenance manual shall, at a minimum, contain the following:
 - a. A description of unit treatment processes within the reclamation system or satellite reclamation system and step-by-step instructions for the operation of these processes;
 - b. Routine maintenance and schedules of maintenance for each unit treatment process in the system;
 - c. The criteria used to make continuous determinations of the acceptability of the reclaimed water being produced and shall include set points for parameters measured by continuous on-line monitoring equipment;
 - d. Descriptions of sampling and monitoring procedures and record keeping that comply with the requirements of this chapter and any applicable permit conditions;
 - e. The physical steps and procedures to be followed by the operator when substandard water is being produced, including resampling and operational review in accordance with 9VAC25-740-70 C;
 - f. The physical steps and procedures to be followed by the operator when the treatment works returns to normal operation and acceptable quality reclaimed water is again being produced;
 - g. Procedures to be followed during a period when an operator is not present at the treatment works;
 - h. Information necessary for the proper management of sludge or residuals from reclamation treatment that is not specifically requested in the application for a VPDES or VPA permit; and
 - i. A contingency plan to eliminate or minimize the potential for untreated or inadequately treated water to be delivered to reuse areas. The plan shall, as applicable, reference and coordinate with the education and notification program specified in 9VAC25-740-170 A for any release of untreated or inadequately treated water to the reclaimed water distribution system.
2. For a reclaimed water distribution system, the operations and maintenance manual shall, at a minimum, contain the following:
 - a. A description of all components within the distribution system and step-by-step instructions for the operation of specific mechanical components;
 - b. Routine and unplanned inspection of the distribution system, including required inspections for the cross-connection and backflow prevention program as specified in 9VAC25-740-100 C 1 g;
 - c. Routine maintenance and schedules of maintenance for all components of the distribution system. Maintenance shall include, but is not be limited to, initial and routine flushing of the distribution system, measures to prevent or minimize corrosion, fouling and clogging of distribution lines; and detection and repair of broken distribution

lines, flow meters or pumping equipment; and

d. Procedures to handle and dispose of any wastes or wastewater generated by maintenance of the distribution system in a manner protective of the environment.

E. The permittee shall review and revise the operations and maintenance manual, as needed and appropriate, to ensure that the manual contains procedures and criteria addressing the requirements of subsection D of this section for satisfactory system performance. Any revision to the manual shall be reviewed and approved by the board.

F. The permittee of a reclamation system, satellite reclamation system, or reclaimed water distribution system shall be responsible for making the facility protective of the environment and public health at all times, including periods of inactivation or closure. Included in the operations and maintenance manual for the reclamation system, satellite reclamation system, or reclaimed water distribution system, the permittee shall submit a plan for inactivation or closure of the facility, specifying what steps will be taken to protect the environment and public health.

G. Where a reclamation system or satellite reclamation system and a bulk irrigation reuse site or sites are under common ownership or management, the operations and maintenance manual for the reclamation system or satellite reclamation system shall include the following:

1. Measurements and calculations used to determine supplemental irrigation rates of reclaimed water for the irrigation reuse sites,
2. Operating procedures of the irrigation system,
3. Routine maintenance required for the continued design performance of the irrigation system and reuse sites,
4. Identification and routine maintenance of reclaimed water storage facilities dedicated to bulk irrigation reuse,
5. Schedules for harvesting and crop removal at the irrigation reuse sites,
6. An inventory of spare parts to be maintained for the irrigation system, and
7. Any other information essential to the operation of the irrigation system and reuse sites in accordance with the requirements of this chapter.

9VAC25-740-150 Management of pollutants from significant industrial users

A. A reclamation system that receives effluent from a wastewater treatment works having significant industrial users (SIUs) as defined by the VPDES Permit Regulation (9VAC25-31-10), shall not be permitted to produce reclaimed water treated to Level 1 or for reuse in areas accessible to the public or where human contact with the reclaimed water is likely, unless the wastewater treatment works providing effluent to the reclamation system is:

1. A publicly owned treatment works (POTW) as defined in the VPDES Permit Regulation (9VAC25-31-10), that has a pretreatment program developed, approved and maintained in accordance with Part VII of the VPDES Permit Regulation (9VAC25-31-730 through 9VAC25-31-900); or
2. Any other POTW or privately owned treatment works as defined in the VPDES Permit Regulation (9VAC25-31-10), with either a VPA or VPDES permit that has developed a

program to manage pollutants of concern discharged by SIUs, equivalent to a pretreatment program required in the VPDES Permit Regulation for qualifying POTWs.

B. The permittee of a reclamation system authorized to produce reclaimed water treated to Level 1 or for reuse in areas accessible to the public or where human contact is likely, shall establish a contractual agreement with all wastewater treatment works providing effluent or source water to the reclamation system. The purpose of the contractual agreement shall be to ensure that reclaimed water discharged from the reclamation system is safe for use in areas accessible to the public or where human contact is likely. Prior to execution of the contractual agreement, a draft copy of the contract agreement shall be provided to the Board for review and approval. A contractual agreement will not be required where the permittee of the reclamation system is also the permittee of the wastewater treatment system that provides effluent or source water to the reclamation system.

9VAC25-740-160 Access control and advisory signs

A. There shall be no uncontrolled public access to reclamation systems, satellite reclamation systems and system storage facilities. Access to any wastewater treatment works directly associated with a reclamation system or satellite reclamation system shall be controlled in accordance with the Sewage, Collection and Treatment Regulations (9VAC25-790). System storage ponds shall be enclosed with a fence or otherwise designed with appropriate features to discourage the entry of animals and unauthorized persons.

B. Where advisory signs or placards are required as described in subsections C and D of this section, each sign shall state, at a minimum, "CAUTION: RECLAIMED WATER – DO NOT DRINK" and have the equivalent standard international symbol for non potable water. The size of the sign and lettering used shall be such that it can be easily read by a person with normal vision at a distance of 50 feet. Alternate signage and wording that assures an equivalent degree of public notification and protection may be accepted by the board.

C. For all reuses of reclaimed water treated to Level 2, public access shall be restricted and advisory signs shall be posted around reuse areas or reuse site boundaries. The advisory signs shall additionally state the nature of the reuse and no trespassing. Fencing around the site boundary is not required.

D. Advisory signs or placards for all reuses of reclaimed water treated to Level 1 shall be posted within and at the boundaries of reuse areas. The advisory signs or placards shall additionally state the nature of the reuse. Examples of some notification methods that may be used by permittees include posting advisory signs at entrances to residential neighborhoods where reclaimed water is used for landscape irrigation and posting advisory signs at the entrance to a golf course and at the first and tenth tees.

E. Advisory signs shall be posted adjacent to impoundments or ponds, including landscape impoundments, used for non-system storage of reclaimed water.

F. For industrial reuses, advisory signs shall be posted around those areas of the industrial site where reclaimed water is used and at the main entrances to the industrial site to notify employees and the visiting public of the reclaimed water reuse. Access control beyond what is normally provided by the industry is not required.

9VAC25-740-170 Use area requirements

A. Education and notification program. An education and notification program (program) shall be developed and submitted with the RWM Plan for reuses that require Level 1 reclaimed water, will be in areas accessible to the public, or are likely to have human contact. The program shall be the responsibility of the permittee to implement.

1. Education. The purpose of the education component of the program is to ensure that end users and the public likely to have contact with reclaimed water are informed of the origin, nature, and characteristics of the reclaimed water; the manner in which the reclaimed water can be used safely; and uses for which the reclaimed water is prohibited or limited. The program shall describe all modes of communication to be used to educate and inform, including, but not limited to, meetings, distribution of written information, the news media (i.e., news papers, radio, television or the internet), and advisory signs as described in 9VAC25-740-160. Program education for individual end users shall be at the time of their initial connection to the reclaimed water distribution system and may be provided in the service agreement or contract with the permittee established in accordance with 9VAC25-740-100 C 1 d. For non-bulk irrigation reuse of reclaimed water not treated to achieve BNR, education of individual end users shall be, at a minimum, annually after the reclaimed water distribution system is placed into operation.

2. Notification. The notification component of the program shall contain procedures to notify end users and the affected public of treatment failures at the reclamation system that can adversely impact human health, or result in loss of reclaimed water service. Where treatment of the reclaimed water fails more than once during a seven-day period to comply with Level 1 disinfection or other standards developed in accordance with 9VAC25-740-70 D or 9VAC25-740-70 E for the protection of human health, and the non-compliant reclaimed water has been discharged to the reclaimed water distribution system, the permittee shall notify the end user of the treatment failures and advise the end user of precautions to be taken to protect public health when using the reclaimed water in areas accessible to the public or where human contact with the reclaimed water is likely. These precautions shall be implemented for a period of seven days or greater depending on the frequency and magnitude of the treatment failure. Where reclaimed water service to end users will be interrupted due to planned causes, such as scheduled repairs, the permittee shall provide advance notice to end users of the anticipated date and duration of the interrupted service. Where reclaimed water service to end users is disrupted by unplanned causes, such as an upset at the reclamation system, the permittee shall notify end users and the affected public of the disrupted service if it can not or will not be restored within eight hours of discovery.

B. Reclaimed water shall be used in a manner that is consistent with this chapter and with the conditions of the VPDES or VPA permit, such that public health and the environment shall be protected.

C. Reclaimed water delivered to end users shall be of acceptable quality for the intended reuses at the point of delivery to end users.

D. There shall be no nuisance conditions resulting from the distribution, use, or storage of reclaimed water.

E. For all irrigation reuses of reclaimed water, the following shall be required:

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1. There shall be no application of reclaimed water to the ground when it is saturated, frozen or covered with ice or snow, and during periods of rainfall.
 2. The chosen method of irrigation shall minimize human contact with the reclaimed water.
 3. Reclaimed water shall be prevented from coming into contact with drinking fountains, water coolers, or eating surfaces.
- F. For bulk irrigation reuse of reclaimed water, the following shall be required:
1. Irrigation systems shall be designed, installed and adjusted to:
 - a. Provide uniform distribution of the reclaimed water over the irrigation site,
 - b. Prevent ponding or pooling of reclaimed water at the irrigation site,
 - c. Facilitate maintenance and harvesting of irrigated areas and precludes damage to the irrigation system from the use of maintenance or harvesting equipment,
 - d. Prevent aerosol carry-over from the irrigation site to areas beyond the setback distances described in H. of this section, and
 - e. Prevent clogging from algae or suspended solids.
 2. All pipes, pumps, valve boxes and outlets of the irrigation system shall be designed, installed, and identified in accordance with 9VAC25-740-110 B.
 3. Any reclaimed water runoff shall be confined to the irrigation reuse site unless authorized by the board.
- G. Overspray of surface waters, including wetlands, from irrigation or other reuses of reclaimed water is prohibited.
- H. Setback distances for irrigation reuses of reclaimed water.
1. For sites irrigated with reclaimed water treated to Level 1, the following setback distances are required:

a. Potable water supply wells and springs, and public water supply intakes	100 feet
b. Non-potable water supply wells	10 feet
c. Limestone rock outcrops and sinkholes	50 feet
 2. For sites irrigated with reclaimed water treated to Level 1, no setback distances are required from occupied dwellings and outdoor eating, drinking and bathing facilities. However, aerosol formation shall be minimized within 100 feet of occupied dwellings and outdoor eating, drinking and bathing facilities through the use of low trajectory nozzles for spray irrigation, above-ground drip irrigation, or other means.
 3. For sites irrigated with reclaimed water treated to Level 2, the following setback distances are required:

a. Potable water supply wells and springs, and public water supply intakes	200 feet
b. Non-potable water supply wells	10 feet

- | | |
|--|----------|
| c. Surface waters, including wetlands | 50 feet |
| d. Occupied dwellings | 200 feet |
| e. Property lines and areas accessible to the public | 100 feet |
| f. Limestone rock outcrops and sinkholes | 50 feet |
4. For sites irrigated with reclaimed water treated to Level 2, the setback distances may be reduced as follows:
- a. Up to but not exceeding 50 % from occupied dwellings and areas accessible to the public if it can be demonstrated that alternative measures shall be implemented to provide an equivalent level of public health protection. Such measures shall include, but are not limited to, disinfection of the reclaimed water equivalent to Level 1, application of the reclaimed water by methods that minimize aerosol formation (e.g., low trajectory nozzles for spray irrigation, above-ground drip irrigation), installation of permanent physical barriers to prevent migration of aerosols from the reclaimed water irrigation site, or any combination thereof. Written consent of affected landowners is required to reduce setback distances from occupied dwellings.
 - b. Up to 100 % from property lines with written consent from adjacent landowners.
 - c. To but not less than 100 feet from potable water supply wells and springs, or public water supply intakes if it can be demonstrated that disinfection of the reclaimed water is equivalent to Level 1 and there are no other constituents of the reclaimed water present in quantities sufficient to be harmful to human health.
 - d. To but not less than 25 feet from surface waters, including wetlands, where reclaimed water shall be applied by methods that minimize aerosol formation (e.g., low trajectory nozzles for spray irrigation, above-ground drip irrigation); or permanent physical barriers are installed to prevent the migration of aerosols from the reclaimed water irrigation site to surface waters.
5. For irrigation reuses where more than one setback distance may apply, the greater setback distance shall govern.
6. Unless specifically stated otherwise, all setback distances shall be measured horizontally.
- I. Minimum separation distances for in-ground reclaimed water distribution pipelines specified in 9VAC25-740-110 B 3, shall apply to in-ground piping for irrigation systems of reclaimed water.
- J. A setback distance of 100 feet horizontally shall be maintained from indoor aesthetic features (i.e., decorative waterfalls or fountains) that use reclaimed water treated to Level 1, to adjacent indoor public eating and drinking facilities where the aesthetic features have the potential to create aerosols and eating and drinking facilities are within the same room or building space.
- K. A setback distance of 300 feet horizontally shall be provided from an open cooling tower to the site property line where reclaimed water treated to Level 2 is used in the tower. No setback distance shall be required from an open cooling tower to the site property line where a drift or mist eliminator is installed and properly operated or reclaimed water treated to Level 1 disinfection standards is used in the tower. Treatment of the reclaimed water to Level 1 disinfection standards may be provided by the industrial end user through the contract or

agreement established by the permittee in accordance with 9VAC25-740-100 C 1 d.

9VAC25-740-180 Operational flow requirements

A. When the monthly average flow into a reclamation system or satellite reclamation system reaches 95% of the design capacity authorized by the VPDES or VPA permit issued to that system for each month of any three-month period, the permittee shall within 30 days notify the board in writing and within 90 days submit a plan of action for ensuring continued compliance with the terms of the permit.

1. The plan shall include the necessary steps and a prompt schedule of implementation for controlling any current problem, or any problem which could be reasonably anticipated, resulting from high flows entering the reclamation system or satellite reclamation system.
2. Upon receipt of the permittee's plan of action, the board shall notify the owner whether the plan is approved or disapproved. If the plan is disapproved, such notification shall state the reasons and specify the actions necessary to obtain approval of the plan.
3. Failure to timely submit an adequate plan shall be deemed a violation of the permit.
4. Nothing herein shall in any way impair the authority of the board to take enforcement action under §62.1-44.15, 62.1-44.23, or 62.1-44.32 of the Code of Virginia.

9VAC25-740-190 Record keeping

A. Operating records shall be maintained at the reclamation system or a central depository within the reclaimed water distribution system for a period as specified in the VPDES or VPA permit issued to the facility. Operating records shall include all analyses specified in this chapter, records of operational problems, alarm failures, unit process and equipment breakdowns, diversions to reject storage or emergency storage, discharge to another permitted reuse system requiring a lower level of treatment, or disposal via a permitted effluent discharge; and all corrective or preventive action taken.

B. A monthly summary of operating records as specified under subsection A of this section shall be maintained at the facility.

9VAC25-740-200 Reporting

A. Permittees of water reclamation systems and satellite reclamation systems shall submit a monthly monitoring report to the board. The report shall include monitoring results for parameters contained in the VPDES or VPA permit to demonstrate compliance with applicable reclaimed water standards of this chapter.

B. Interruption or loss of reclaimed water supply or discharge of any untreated or partially treated water that fails to comply with standards specified in the VPDES or VPA permit to the service area of intended reuse, shall be reported in accordance with procedures specified in the permit. This report shall also contain a description of any notification provided in accordance with 9VAC25-740-170 A 2.

C. Permittees of reclaimed water distribution systems shall submit an annual report to the board on or before February 10 of the following year. The annual report shall, at a minimum:

1. Estimate the volume of reclaimed water distributed to the service area of the RWM plan, reported as monthly totals for a 12-month period from January 1 through December 31;
2. Provide for reclaimed water not treated to achieve BNR that is used within the service area of the RWM plan, the monthly average concentrations of total N and total P in the reclaimed water, an estimate of the monthly total volume of reclaimed water used for non-bulk irrigation and for bulk irrigation, the monthly total nutrient loads (N and P) to the service area resulting from non-bulk irrigation reuse and from bulk irrigation reuse, and the area in active reuse for non-bulk irrigation and for bulk irrigation within the service area, all reported for a 12-month period from January 1 through December 31; and
3. Provide a summary of ongoing education and notification program activities, including copies of education materials, as required by 9VAC25-740-170 A.

9VAC25-740-210 Delegation of authority

The director or the director's designee may perform any act of the board provided under this chapter, except as limited by §62.1-44.14 of the Code of Virginia.