

DEPARTMENT OF ENVIRONMENTAL PROTECTION
Bureau of Water Supply and Wastewater Management

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TITLE: Reuse of Treated Wastewater Guidance Manual

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AUTHORITY: Act 537 of 1966, the Pennsylvania Sewage Facilities Act (as amended), the Clean Streams Law (35 P.S. §§691.1-691.1001) and 25 Pa. Code Chapter 91.

POLICY: To reduce the demand on potable water supplies from groundwater and surface waters in the Commonwealth by reusing treated wastewater where appropriate.

PURPOSE: To provide guidance to Department Staff and the Public for reusing treated wastewater in an environmentally protective manner in accordance with Department Regulations.

APPLICABILITY: This guidance applies to the reuse of treated wastewater from Domestic Wastewater Treatment Facilities.

DISCLAIMER: The policies and procedures outlined in this guidance are intended to supplement existing requirements. Nothing in the policies or procedures shall affect regulatory requirements.

The policies and procedures herein are not an adjudication or a regulation. There is no intent on the part of DEP to give the rules in these policies that weight or deference. This document establishes the framework within which DEP will exercise its administrative discretion in the future. DEP reserves the discretion to deviate from this policy statement if circumstances warrant.

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Reuse of Treated Wastewater Guidance Manual

I. INTRODUCTION

A. ACTIVITIES COVERED BY THIS MANUAL

This manual was developed to assist in implementing a program to reuse treated wastewater. The approval of any activity listed in this Manual may only occur under the authority of a permit issued by DEP.

B. ACTIVITIES NOT COVERED BY THIS MANUAL

This manual does not cover land application of wastewater for additional treatment purposes. For information on that subject see the Department's "Manual for Land Application of Treated Sewage and Industrial Wastewater".

C. INFORMATION CONTAINED IN THIS MANUAL

This manual includes design, operation, and maintenance requirements for wastewater systems discharging treated water for beneficial reuse. Using this manual, treatment plant owners and operators can establish flexible designs and sound engineering practices for managing wastewater in an environmentally sound manner. The manual is also intended to ensure wastewater discharges are free from substances that pose a serious threat to the public health, safety, and welfare.

This manual also includes:

- Types of reuse possible
- Details on the documents and reports needed to receive approval from the Department
- An explanation of the approval process, the operations protocol process, and the report review
- How to implement a water reuse program
- A summary of the treatment requirements for various reuse applications
- Effluent level requirements

D. BENEFITS OF WATER REUSE

- Reuse reduces demands on valuable ground water supplies used for drinking water and irrigation.
- Reuse helps reduce pollutant loading to surface waters.
- Reuse may postpone costly investment for development of new water sources and supplies.
- Reuse allows multiple uses of land for agriculture and reuse of treated water.
- Reuse can save money and can provide aesthetic value.
- Reuse can allow for non-discharge alternatives in Special Protection Watersheds

II. PLANNING REQUIREMENTS FOR BENEFICIAL REUSE SYSTEMS

A. SOURCES OF TREATED EFFLUENT FOR REUSE

For the purposes of this guidance, the source of treated effluent will be from Domestic Wastewater Treatment Facilities. This will not address reuse from industrial processes except indirectly if the Domestic Wastewater Treatment Facility has pretreatment programs or if the water is reused within the same industrial facility that generated it.

Existing sources must be characterized to roughly establish the effluent's suitability for reclamation and reuse. To compare the quality and quantity of available reuse water with requirements of potential users, information on the operation and performance of the existing Domestic Wastewater Treatment Facilities and related facilities must be examined. Important factors to consider in this preliminary stage of reuse planning are:

- Level of treatment (e.g. primary, secondary, advanced) and specific treatment processes (e.g., ponds, activated sludge, filtration, disinfection, nutrient removal)
- Effluent quality
- Effluent quantity (daily and seasonal average, maximum, and minimum flows)
- Industrial wastewater contributions to flow
- System reliability
- Supplemental facilities (e.g., storage, pumping, transmission)

B. POTENTIAL USES OF THE WATER

The DEP has identified 4 main categories of water reuse. They are:

- Public Access Systems
- Restricted Access and Non Edible Crop Systems
- Industrial Systems
- Groundwater Recharge Systems

1. Public Access Systems

Public access systems involve the use of reclaimed water where public exposure is likely and can include:

- Irrigation of public parks and recreation centers, athletic fields, school yards and playing fields, highway medians and shoulders, and landscaped areas surrounding public buildings and facilities
- Irrigation of the landscaped areas of single-family and multi-family residences, general washdown, and other maintenance activities
- Irrigation of landscaped areas surrounding commercial, office, and industrial developments
- Irrigation of golf courses
- Commercial uses such as vehicle washing facilities, window washing, mixing water for pesticides, herbicides, and liquid fertilizers

- Ornamental landscape uses and decorative water features, such as fountains, reflecting pools and waterfalls
- Dust control and concrete production on construction projects
- Snowmaking
- Toilet and urinal flushing in commercial and industrial buildings.*

*The Department does not condone the use of urban reuse systems for internal non-potable residential uses such as toilet flushing. There is too great a risk that the system could be replumbed by the homeowner or outside contractor not familiar with how the system is suppose to work. The reuse of treated wastewater for these types of uses has the potential to cause severe water borne diseases and could even lead to death. At this time, such use will only be considered under carefully controlled, site-specific conditions.

2. Restricted Access and Non-Edible Crop Systems

Restricted access and non-edible crop systems involves the use of reclaimed water where public exposure is controlled and can include:

- Spray irrigation of sod farms and pasturelands
- Irrigation of cover crops used to prevent erosion

3. Industrial Reuse

Reclaimed water for industrial reuse may be derived from in-plant recycling of industrial wastewaters and/or municipal water reclamation facilities. Industrial uses for reclaimed water include:

- Evaporative cooling water
- Boiler-feed water
- Process water
- Irrigation and maintenance of plant grounds

4. Groundwater Recharge

Although practices such as irrigation may contribute to groundwater augmentation, the replenishment is an incidental byproduct of the primary activity. The purposes of groundwater recharge using reclaimed water include:

- Provide a non-degrading and non-discharge alternative for projects in High Quality (HQ) and Exceptional Value (EV) watersheds
- Establish saltwater intrusion barriers in coastal aquifers
- Groundwater augmentation
- Provide storage of reclaimed water
- Control or prevent ground subsidence
- A means of disposal where soils are inadequate for additional treatment

III. TREATMENT REQUIREMENTS FOR REUSED WATER

One of the most critical objectives in a reuse program is assuring public health protection is not compromised through the use of reclaimed water. Other objectives, such as meeting user requirements, avoiding public nuisances and preventing environmental degradation, are also important considerations. Treatment should be based on meeting these objectives.

Traditional wastewater treatment processes reduce the concentrations of wastewater pollutants to levels protective of receiving water since the potential for human contact, inhalation and/or ingestion is minimal. When considering water reuse, an additional level of public health protection is necessary to further reduce pathogenic organisms. Advanced wastewater treatment processes are generally utilized for this purpose, particularly when high quality reclaimed water is necessary for public access areas.

The DEP has identified the following 4 main categories of water reuse and specific requirements for each. The standards associated with each category of water reuse are based on the United States Environmental Protection Agency's *2004 Guidelines for Water Reuse*.

- Public Access Systems
- Restricted Access and Non Edible Crop Systems
- Industrial Systems
- Groundwater Recharge Systems

A. Public Access Systems

Public access systems will involve the greatest public exposure to reused waters and therefore will require a high degree of treatment. Examples would include reusing treated water on golf courses, athletic fields, parks, and snowmaking. The minimum treatment would require secondary treatment followed by filtration and disinfection. DEP requires that reclaimed water used for these activities meet the following minimum standards.

Parameter	Standard	Monitoring Frequency
pH	6-9	weekly
BOD	<10 mg/L	weekly
TSS	<10 mg/L	weekly
Turbidity	<2 NTU	continuous
Fecal Coliform	Not Detectable	daily
Chlorine Residual	*1 mg/L	continuous
UV	100 mj/cm ²	continuous
**Total Nitrogen	<10 mg/L	weekly

* - Minimum 15 minute contact time.

** - Only for snowmaking or where runoff may occur

The application of the reclaimed water shall not result in sheet flow or persistent ponded water on the ground surface or infiltration into the groundwater. The application of water shall only occur during the growing season except for snowmaking. The maximum

hydraulic loading rate shall not exceed peak loading of 2 inches per week including rain unless an analysis of the information provided in the design engineers report indicates a more restrictive loading rate is needed.

B. Restricted Access and Non-Edible Crop Systems

These systems will involve the use of reclaimed water where public access is controlled. Examples could include irrigation of pasturelands and sod farms. The minimum treatment would require secondary treatment and disinfection. DEP requires that reclaimed water used for these activities meet the following minimum standards.

Parameter	Standard	Monitoring Frequency
pH	6-9	weekly
BOD	<30 mg/L	weekly
TSS	<30 mg/L	daily
Fecal Coliform	<200 fecal col/100ml	daily
Chlorine Residual	*1 mg/L	continuous
UV	75 mj/cm ²	continuous

* - Minimum 15 minute contact time.

The application of the reclaimed water shall not result in sheet flow or persistent ponded water on the ground surface or infiltration into groundwater. The water shall only be applied during the growing season. The maximum hydraulic loading rate shall not exceed peak loading of 2 inches per week including rain unless an analysis of the information provided in the design engineers report indicates a more restrictive loading rate is needed. For a period of 15 days from the last application of reclaimed water, land application areas shall not be used for the grazing of cattle whose milk is intended for human consumption.

C. Industrial Systems

Industrial systems involve the use of reclaimed water in industrial application such as cooling water and/or washing operations. The uniqueness of each industrial reuse application makes it impossible to establish specific treatment standards for this general category of reuse. Prior to implementation, all industrial reuse systems require a case-by-case review by the Department. Some applications, such as the reuse of effluent for non-contact cooling water, may require very little, if any changes to the level of treatment the wastewater is already receiving at the wastewater treatment plant.

Examples of construction uses can be dust control, washing of aggregate, and cement mixing. Maintenance activities utilizing reclaimed water can include sewer jetting, vehicle washing, and street cleaning to name a few. Water used for irrigation and maintenance of the plant ground should be relatively uncontaminated water such as from boiler cool down.

D. Groundwater Recharge Systems

These systems will involve the use of reclaimed water to recharge groundwater. This section will apply to groundwater recharge where the water will be used to augment aquifers, provide storage for reclaimed water, and to control or prevent ground subsidence. It will not apply to situations where the groundwater recharge system is intended to provide further treatment to the reclaimed water or where reclaimed water would be used to augment potable water supplies.

Minimum treatment for groundwater recharge would be secondary treatment, disinfection, filtration, other advanced treatment necessary to meet standards. Methods of application could include infiltration basins, or by direct injection. If using direct injection, certain requirements for EPA’s Underground Injection Control (UIC) Program may need to be met. Contact EPA Region III in Philadelphia for further information. The method of application should be discussed extensively in the design engineers report.

DEP requires that reclaimed water used for these activities meet the following minimum standards:

Parameter	Standard	Monitoring Frequency
PH	6.5-8.5	Daily
BOD	<2 mg/l	Daily
Turbidity	≤ 2 NTU	Continuous
Fecal Coliform	ND	Daily
Chlorine Residual	*1 mg/l	Continuous
UV	100 mj/cm ²	Continuous
**Other Contaminants	Drinking Water Standards	Quarterly

* - Minimum 15 minute contact time.

** - any other contaminant suspected of being in the effluent

Direct injection may require further treatment to prevent clogging of the injection area. Effluent from POTWs accepting industrial wastewater under a pretreatment program shall not be eligible for groundwater recharge. These are the minimum standards. The permit writer based on information provided in the Design Engineer’s report may modify them.

When applying for groundwater recharge, the applicant shall include Module 19 (Supplementary Geology and Groundwater Information) and include sufficient information that a soils scientist and hydrogeologist can determine if the soils on site and the geologic conditions on site are adequate to keep water from ponding or moving off-site before recharging groundwater. This determination shall be made by referencing EPA’s “Process Design Manual - Land Treatment of Municipal Wastewater” and EPA’s “Land Treatment of Municipal Wastewater - Supplement on Rapid Infiltration and Overland Flow”.

E. Water Reuse on a Temporary or Limited Basis

Wastewater treatment plant operators may request approval to supply water on a temporary or limited basis to users that will apply reused water no more than 4 times per year at least 2 weeks apart at a particular location without obtaining a Water Quality Management Permit provided they meet the following conditions:

1. The reuse water shall meet the criteria established for public access systems in Section A above.
2. No more than 2 inches of water including rainwater per week shall be applied at each application and the application of the reclaimed water shall not result in sheet flow or persistent ponded water on the ground surface or infiltration into the groundwater. The reuse water shall not be applied after a rainfall event in the previous 24 hours exceeding 0.1 inches.
3. The wastewater treatment plant operator shall notify the Department at least 48 hours before the reuse water application and provide the time and date when it will take place.
4. The purpose of the water reuse shall be to establish vegetation or prevent die out of vegetation due to drought or other circumstances.

IV. IMPLEMENTING A WATER REUSE PLAN

A. Permitting Procedures and Requirements

Since the use of reclaimed water for reuse will not involve discharge to a stream, the person or persons proposing the reuse activity will need to obtain a Water Quality Management Permit rather than an NPDES Permit from the Department. Depending on the type of activity being proposed, the application may require the completion of Modules 13 (Stream Encroachments and Crossings), 14 (Spray Irrigation), 19 (Supplementary Geology and Groundwater Information), and/or 20 (Impoundments). The application must identify any additional treatment units or change in treatment processes. Attached to the application, will need to be a Design Engineers Report describing the reuse activity as outlined below. Before beginning any water reuse activity, the permittee will need to obtain approval from the Department.

B. Design Engineer's Report

A Design Engineer's Report shall accompany a Water Quality Management Permit Application requesting authorization for new or expanded water reuse projects. The Design Engineer's Report shall include the following:

1. Treatment and Operation to Assure Compliance with Required Effluent Limits Shall Include:
 - a. The basis for the design of individual unit processes or systems. This summary should briefly describe the function each unit process or system

will provide, including all of the basic assumptions and rationale used in its design. The narrative should clearly identify all key process design parameters including the appropriate calculations.

This section should discuss the ability of the treatment system to meet the established minimum standards for the reuse water. The discussion should include the expected removal rates of each unit process and any factors that may affect its performance or operational efficiency. These expected levels of treatment may be based on literature reviews, bench scale tests or pilot plants, on the performance of similar treatment facilities, or on data from existing operations if the plant is currently in use.

- b. Supplemental chemical addition or treatment. If supplemental chemical or specific chemical treatment is used in conjunction with any of the wastewater treatment processes, the types of chemicals used, the dosage rates, the points of application, and the feeder equipment used should be described.
- c. A description of pumping and distribution equipment. The report should describe any pumping equipment that may be used as part of the treatment or storage facilities and distribution equipment such as pipes, open channels etc. This description should indicate the capacity of the pump, and where and for what the pump will be used.
- d. A description of monitoring and control equipment. The report should briefly discuss the facility's monitoring and control equipment and how it is applied at each particular point in the facility's scheme. The discussion should indicate the point of usage, the type of monitoring and recording or control device, and the purpose of application.
- e. A discussion of alarms and sensing devices. Attention should be given to the types and locations of all alarms and sensing devices which are used to monitor normal operating conditions such as liquid levels, pressure, temperatures, etc. This discussion should also address the procedures for responding to these alarms.
- f. A description for controlling the quantity and quality of wastewater when the facility is inoperative. This portion of the report should include a discussion on the procedures which will be used at the facility to control the quantity and quality of the wastewater in the event that the treatment or disposal facility is inoperative, or the storage impoundment is not usable because of routine maintenance, power outages, equipment failure, etc. This discussion should also include a description of any facility control measures that may be taken, such as the cessation or alteration of selected operations, or the complete discontinuation of the use of the facility, during the inoperative period. The narrative should also include a discussion of any provisions for standby or backup systems, such as alternative electrical service, duplicate treatment units, or storage

facilities. These are especially important during the construction phase of the facility.

- g. A description of personnel training. The report should describe the provisions at the facility for providing training to personnel, which will enable them to understand the treatment or disposal processes an/or the long-term storage system, and prepare them for proper operation, maintenance, and any emergency situation that may occur.
- h. Availability of instructions and guidelines for the operation and maintenance of treatment units. The report should briefly describe the availability of an instructions and guidelines document for the proper operation and maintenance of the treatment or disposal facility or storage impoundment system. This document may coincide with the facilities personnel training program and should address such items as inspections, monitoring, preventative maintenance, and good housekeeping practices, along with the areas of emergency response.
 - i. A description of site security. The report should address security measures employed at the wastewater treatment or storage facility.

2. Land Use Requirements Shall Include:

- a. The exact boundaries of the reuse project, with setback distances shown on the most recent USGS topographic maps. These maps shall show present land uses within 0.5 miles of the site boundaries.
- b. All potable and non-potable water supply wells and monitoring wells located on USGS maps. The well depths, yield, and screen interval within a 0.5 mile radius of the reuse application sites along with the use and ownership. This information is not needed for projects where there is no expected groundwater infiltration.
- c. If expansion of a water reuse project is anticipated, the area likely to be used in the expansion shown on the maps.
- d. Surface water locations, within 0.5 miles of the project site, provided on the maps and classification, uses, and approximate distance from the site.

3. Project Evaluation Shall Include:

- a. An evaluation of the overall long-term effect of the proposed project on environmental resources in the area. The evaluation shall include aspects such as changes in water table elevations due to natural fluctuations and the reuse project, prediction of the rate and direction of movement of applied reuse water, changes in water quality in the area associated with the project, and similar information.

- b. Justification and documentation for using setback distances, selection of hydraulic loading rates, and loading and resting cycles.
 - c. An evaluation of the proposed project with respect to public health, safety, and welfare.
 - d. Forecasts of flows and reuse water characteristics for the current and design year, including:
 - i. Physical, chemical, and biological characteristics and concentrations.
 - ii. Reuse water flow patterns -- total annual, monthly average, daily average, daily maximum, and seasonal peak one-hour flow during current and design years.
 - e. A site plan showing existing and proposed operations and unit processes.
 - f. Technical information and design criteria for a reuse system, including:
 - i. Hydraulic, organic, and nutrient loadings -- minimum, average, and maximum quantities.
 - ii. Flow metering (at the wastewater treatment facility).
 - iii. Monitoring points.
 - iv. Concentrations of reuse water percolated to ground water or being discharged to surface waters, with supporting data including design calculations.
 - g. A description of operation, maintenance and control strategies. The Department places a priority on operation and maintenance, and will carefully review this section.
 - h. An analysis of the affect of removing some or all of the effluent to be reused on the flow of a receiving stream. The flow of the receiving stream may not go below Q_{7-10} levels due to reuse of the effluent.
4. Soils Information Shall Include:
- a. A soils map of the site. The soils named and described in accordance with the standard criteria (e.g. soil surveys) of the USDA Soil Classification System unless advised by the soil scientist of the NRCS that soils present are not appropriate for such characterization.
 - b. Physical characteristics of each significant soil, subsoil, or substratum layer to a depth of 7 feet Representative soil profiles of the site. Soil characteristics such as texture, hydraulic conductivity, available water capacity, organic matter content, pH, sodium adsorption ratio, and cation exchange capacity. Appropriate chemical characteristics determined for soil profile horizons active in the chemical and biological renovation of reclaimed water or effluent.

Specific sites used for determining hydraulic conductivity shown on the soils map, and data submitted to substantiate that the proposed site is hydrologically capable of accommodating the design loading and whether or not the application rate will cause a groundwater recharge.

- c. For projects with an approved reuse location, where expansion of the existing site or the addition of a new similar reuse location (similar in soil, hydrogeologic and land management systems profiles), the Department may accept an abbreviated report of the soil characteristics at the proposed site.

5. Hydrogeologic Survey Shall Include:

- a. Hydrogeologic data necessary to evaluate the capability of the proposed project to perform successfully at the site on a long-term basis. This information shall include, but not be limited to, geophysical information concerning known “solution openings” and sinkhole features within one mile of the site; the identification (with applicable geologic sections), extent or continuity, and hydrologic characterization of aquifers and confining zones underlying the site (i.e., horizontal and vertical hydraulic conductivity, porosity, thickness); head relationships between aquifer systems; and information on the annual range of ground water elevations at the proposed site.
- b. The velocity and direction of existing ground water movement, and the points of discharge, shown on maps of the area. Similar information regarding environmental impact conditions anticipated, as a result of the project.
- c. Information on potable and non-potable water supply wells (and monitoring wells, as appropriate, including the depth, length of casing, cone of depression and, geophysical surveys of the wells (if available)).
- d. Flood prone areas on the proposed site and within 0.5 miles of the site located on a map. Flooding frequencies and magnitude based on Pennsylvania State Flood Plans.

6. Land Management System Shall Include:

- a. The present and intended soil-vegetation management program and the reuse location’s vegetative covers. Reclaimed water to be applied characterized in terms of its physical, chemical, and biological properties. Data and other documentation to verify the uptake of nutrients (such as nitrogen and phosphorus), moisture and salt tolerances, pollutant toxicity levels, yield of crops and similar information. For projects requesting authorization for reuse, detailed water and nutrient budgets (balances).

- b. Harvesting frequencies and the ultimate use of crops. Length of operating seasons, application periods and rates, and resting or drying periods.
- c. The best available information (and technical assistance) from organizations or individuals qualified in the agricultural/agronomic aspects of reuse and irrigation used in the preparation of the above report information.
- d. Plans for storage, reuse, or disposal of reuse water during crop removal, wet weather, control of pests, equipment failures, or other problems precluding land application.

7. Abbreviated Reports

For projects involving only the expansion of existing reuse sites in public access areas, the Department may accept an abbreviated engineering report with the following conditions:

- a. An analysis of the existing system performance including how the project is managed to prevent environmental or health impacts.
- b. A description of the proposed expanded use with documentation that the project will be managed to prevent environmental or public health impacts.

C. Operating Protocols

An operating protocol is a document, describing how a wastewater treatment facility is operated to ensure that only reuse water meeting the applicable standards is released to a reuse system. It is a detailed set of instructions for the operators of facilities. An operating protocol shall be submitted to the Department in support of all water reuse authorization requests. The Department may waive the requirement for an operating protocol for certain types of industrial reuse, depending on the intended reuse application if wastewater quality is not an issue for any reason. An operating protocol shall be approved by the Department before a reuse system is operated. The operator should be aware that the Department places an emphasis on operation and maintenance, and will expect a thorough explanation of the operating protocol. Only operating protocols providing reasonable assurances that treatment and disinfection requirements will be met will be approved.

1. Minimum Operating Protocol Requirements

- a. The criteria used to make continuous determinations of the acceptability of the reuse water being produced. This shall include the setpoints for parameters measured by continuous on-line monitoring equipment.
- b. The physical steps and procedures followed by the operator when substandard water is produced.

- c. The physical steps and procedures to be followed by the operator when the treatment facility returns to normal operation and acceptable quality reuse water is again being produced.
- d. Procedures to be followed during a period when an operator is not present at the treatment facility.
- e. The physical steps and procedures to be followed by the operator when the operator returns to the treatment facility, following an unattended period.

2. Operating Protocol Updates

The permittee shall periodically review and revise the operating protocol, as appropriate, to ensure satisfactory system performance. The operating protocol shall also be submitted for Department review if the Water Quality Management Permit is amended. Applications for amending the permit shall include the following:

- a. Current procedures and criteria addressing the requirement of reuse.
- b. Evaluation of the effectiveness of the procedures and criteria in ensuring that reuse requirements are met. This shall include an evaluation of any violations of permit requirements during the existing permit.

D. Reuse Supplier and User Agreement

A copy of all Reuse Supplier and User Agreements shall be submitted to the Department in support of reuse authorization requests. A Reuse Supplier and User Agreement is a binding agreement between the party who supplies reuse water and the user. The agreement is to ensure that construction, operation, maintenance, and monitoring for the reclaimed water meets the requirements of PADEP Rules and Regulations for reuse water.

- 1. Where the wastewater treatment plant permittee reuses water using property owned by another party, a binding agreement between the involved parties is required to ensure that construction, operation, maintenance, and monitoring meet the requirements of PADEP Rules and Regulations. Such binding agreements are required for all reuse sites not owned by the permittee. The permittee shall retain primary responsibility for ensuring compliance with all requirements of the PADEP Rules and Regulations.
- 2. The copy of the Reuse Supplier and user Agreement submitted to the Department shall detail how compliance with the reuse program requirements will be met.

E. Design Considerations

- 1. Cross-Connection Control
 - a. Reuse water shall not be used in primary contact recreation applications.

- b. A truck used to transport and distribute reused water may not be used to transport potable water or other fluids intended for human consumption, and may not be used to transport waters or other fluids that do not meet the treatment requirements for reuse water as specified in this manual, unless the tank has been evacuated and properly cleaned prior to the addition of the reuse water.
- c. No cross-connections to potable water systems shall be allowed.

2. Setback Distances

a. Reclaimed Water for Beneficial Reuse for Public Access Systems

- i. There shall be a setback distance of 100 feet from the edge of a wetted public access land application area to potable water supply wells that exist or have been approved for construction.
- ii. Setback distances for Special Protection Streams shall be determined on a case-by-case basis.
- iii. Low trajectory nozzles, or other means to minimize aerosol formation shall be used within 100 feet from outdoor public eating, drinking and bathing facilities.
- iv. A setback distance of 100 feet shall be maintained from the indoor aesthetic features (such as decorative pools or fountains) and adjacent indoor eating and drinking facilities when the aesthetic features and eating and drinking facilities are within the same room or building space.
- v. The edge of the wetted perimeter of the reuse application shall not cross into adjoining sites, properties or public roadways that are not part of the Department approved location.
- vi. Direct spraying or aerosol transmission of reuse water onto any structure or across property lines is prohibited. Additional setbacks from the wetted perimeter may be required for privately owned occupied dwellings adjacent to commonly owned or leased land utilizing reuse water.

b. Restricted Access and Non-Edible Crop Systems

- i. There shall be a setback distance of 500 feet from the edge of a wetted public access land application area to potable water supply wells that exist or have been approved for construction.
- ii. Setback distances of 500 feet shall be provided from Special Protection Waters.

- iii. Setback distances of 100 feet shall be provided from any property line, outdoor public eating, drinking and bathing facilities.
- iv. The edge of the wetted area of the reuse water shall not cross into adjoining sites that are not part of the Department approved reuse location.
- v. Setback distances of 400 feet shall be provided from any residence, dwelling or occupied structure.

3. Access Control and Advisory Signs

For reused water for public access systems, no access control provisions are needed. However, the public shall be notified of the use of reused water. This shall be accomplished by posting advisory signs designation the nature of the reuse project area where reuse is practiced, notes on scorecards, or by other methods. International signage is also encouraged. Examples of some of the notification methods include posting of advisory signs at entrances to residential neighborhoods where reuse water is used for landscape irrigation, and posting advisory signs at golf course entrances and at the first and tenth tees. The use of purple as a prominent color on advisory signs and written notices related to a reuse project is recommended and encouraged, but is not required.

For restricted access reuse areas, access controls are needed and appropriate advisory signs designating the location as “Restricted Access” shall be posted around the site boundaries to designate the nature of the project area. For water reuse for restricted areas and agricultural crops, all employees with access to the areas must be notified in writing of the activity and must receive awareness instruction with respect to the exposure of the reused water, which does not meet public access criteria. This awareness instruction must be specified in the Operations Protocol.

F. Annual Reuse Report Requirements

After a facility has received Department approval for water reuse, the operator shall submit an annual report on the total reuse water flow to the Department. The report shall include the following information:

- 1. The total flow reused with respect to the total flow treated by the wastewater treatment facility expressed in terms of the percentage flow reused, total flow accepted and total flow reused.
- 2. The total annual flow to each approved reuse location (Name each reuse location).
- 3. The monthly average flow over the past twelve months for each reuse site, and

4. If no flow was sent to a reuse location, the report shall include an explanation as to why flow was not diverted to the particular reuse location. The report will be due by March 31 of each year.