

City of Turlock Recycled Water Program



Rules & Regulations for Recycled Water Use

TABLE OF CONTENTS

Abbreviations.....	1
Introduction.....	2
Section I - Planning for Recycled Water Use.....	3
Section II - Standard Specifications and Operations & Maintenance Requirements to Receive Recycled Water and to Expand/Modify Recycled Water Systems From a Fixed Recycled Water Distribution System.....	4
Section III - Mobile Commercial Use of Recycled Water.....	19
Section IV - Mobile Residential Use of Recycled Water.....	22
Appendix A - Definitions.....	23
Appendix B - Cross-Connection Control Test Procedure for On-Site Recycled Water Systems.....	25
Appendix C - Sample Advisory Sign.....	28
Appendix D - Sample Forms.....	29
Appendix E - References.....	36

Abbreviations

Abbreviations used throughout this document are listed below for reference. Definitions for terms are listed in *Appendix A - Definitions*.

AWWA	American Water Works Association
DDW	Division of Drinking Water, formerly the California Department of Public Health Drinking Water Field Operators Branch (Stockton, CA)
NPDES	National Pollutant Discharge Elimination System
City	City of Turlock
RP Device	Reduced Pressure Principal Backflow Prevention Device
RWQCB	Central Valley Regional Water Quality Control Board
Title 22	California Code of Regulations, Title 22
UPC	Uniform Plumbing Code

Introduction

Purpose

This document contains information about the City of Turlock's (herein referred to as "City") Recycled Water Program including the rules, regulations, and guidance for the operation and expansion of on-site recycled water facilities, agricultural use of recycled water, mobile residential landscape recycled water use and mobile commercial use of recycled water (hereinafter "Rules and Regulations"). This document covers requirements for future and existing sites and should give the User information necessary to meet all applicable regulations. Every effort has been made to ensure that facilities operated and expanded on the basis of this document will comply with all existing codes, laws, statutes, and regulations concerning the use of recycled water.

Authority and Sources

This document draws on a number of references concerning the use of recycled water. Of primary importance are the General Waste Discharge Requirements for Recycled Water Use as adopted by the State Water Resources Control Board Order WQ 2014-0090-DWQ, the regulations regarding the use of recycled water ("Title 22") circulated by the SWRCB Division of Drinking Water (DDW) formerly titled State of California Department of Public Health and the Guidelines for Distribution of Nonpotable Water developed by the California-Nevada Section of the American Water Works Association (AWWA).

This document was developed specifically for User of the Turlock Recycled Water Program and it takes precedence over general guidelines (including AWWA guidance documents) where differences are noted. Since codes, laws, statutes, and regulations can change without prior approval or knowledge of the City; the City does not assume any liability for errors in this document. It is the responsibility of the User to obtain written approval from the City before initiating any changes to their on-site recycled water system or use of recycled water provided by the City. Interested parties may contact the City for copies of documents referenced in the Rules and Regulations.

Acknowledgement

In preparing this document, the City acknowledges the assistance of a number of agencies including DDW and the Central Valley Regional Water Quality Control Board (Regional Board).

Severability

If any section, subsection, clause, or phrase of these Rules and Regulations is determined to be invalid the remaining portions of these Rules and Regulations shall remain in effect.

City of Turlock Contact Information

Any questions regarding the Rules and Regulations should be addressed to the City's Recycled Water Program Coordinator:

Larry Gilley

Phone: (209) 668-4442 Cell: (209) 614-4881

Email: lgilley@turlock.ca.us

Section I - Planning for Recycled Water Use

Determination to Provide Recycled Water

Since the beginning of 2006, the City of Turlock has operated a disinfected tertiary wastewater treatment system. Tertiary treated wastewater from the Turlock Regional Water Quality Control Facility (RWQCF) discharges year-round to the San Joaquin River. In addition, the City also provides tertiary treated water for the Walnut Energy Center Co-Generation Facility owned by Turlock Irrigation District (TID) for cooling water purposes as well as irrigation for the City's Pedretti Park Sports Complex. As the City's Recycled Water Program expands, additional Users may be added to the system. However, the City recognizes that future expansions of the program will require application to the Regional Board for coverage under State Water Resources Control Board (SWRCB) Order WQ 2014-0090-DWQ "water reclamation requirements" and the submission of a Notice of Intent, a Title 22 Engineering Report to the Regional Board and the DDW and any appropriate environmental reports to comply with the California Environmental Quality Act (CEQA).

Protection of Public Health

The City reserves the right to take any action necessary with respect to the operation of the User's recycled water system to safeguard the public health. If real or potential hazards are evidenced any time during construction or operation of the recycled water system, the City reserves the right and has the authority to terminate recycled water service immediately, without notice. These hazards include, but are not limited to cross-connections with the potable system, improper tagging, signing, marking, or unapproved/prohibited uses.

Approved Uses of Recycled Water

Approved uses of disinfected tertiary recycled water may include, but are not limited to: agricultural, water for industrial purposes (including process cooling water) residential landscape irrigation, construction water, and other uses as approved by the City identified within Title 22 California Code of Regulations.

Every User of recycled water must have prior written approval from the City before receiving disinfected tertiary recycled water. The State of California regulates the use of recycled water, pursuant to Title 22 and SWRCB requirements. Sites may only use disinfected tertiary recycled water for uses specifically approved by the City, DDW and the SWRCB.

This Recycled Water Program covers the proper use of recycled water for Industrial Processes (fixed system), Mobile Commercial use (soil compaction, dust control, cement mixing, and landscape irrigation), and Mobile Residential use for landscape, gardening and water features. Every User of recycled water must have prior approval from the City before receiving recycled water. Sites may only use recycled water for those uses specifically approved by the City and DDW.

Local Authority

The City of Turlock is the recognized local authority. The local authority is the provider of recycled water to the User and is responsible for implementation and enforcement of the Rules and Regulations.

Procedures for Obtaining Recycled Water Service

Potential recycled water Users must submit an application for a recycled water permit and submit plans for review and approval, as appropriate. Permit approval will be contingent upon evidence that all State regulatory requirements including Title 22 Engineering Study, Notice of Intent, CEQA and applicable design requirements for a recycled water system are satisfied and that the system as designed can be operated in accordance with the Program Rules and Regulations. Upon complying with all provisions of the permit, the City will furnish recycled water to the User.

SECTION II - STANDARD SPECIFICATIONS AND OPERATION & MAINTENANCE TO RECEIVE RECYCLED WATER AND TO EXPAND/MODIFY RECYCLED WATER SYSTEMS FROM A FIXED RECYCLED WATER DISTRIBUTION SYSTEM FOR INDUSTRIAL PURPOSES, LANDSCAPE IRRIGATION AND LANDSCAPE IMPOUNDMENTS

This section applies to those Users that are approved to connect to the City's recycled water distribution system for industrial process water use, landscape irrigation, landscape impoundments or similar allowable uses of recycled water.

Exceptions for Existing Landscape Irrigation Systems

With the exception of pipe identification and pipe separation, facilities where the existing buried piping system is converted from potable or non-potable to recycled water must meet the same requirements as new facilities. Any new buried piping added to existing piping must meet the identification and separation requirements for new systems. In addition, any existing piping four (4) inches or larger uncovered for any reason during construction must be marked according to pipe identification requirements to the extent feasible.

Separation Requirements

The minimum separation distances set forth in this section shall be measured from the nearest outside edge of each pipe barrel.

Horizontal Separation

All recycled water service laterals and meters must be at least ten (10) feet (horizontal separation) from the nearest potable water facility, including pipelines, meters, and hydrants.

A minimum horizontal separation of ten (10) feet between parallel, buried recycled and potable water pipelines should be maintained. If a ten foot horizontal separation is not practical, a separation of at least four (4) feet may be allowed subject to special construction conditions.

- Solvent welded PVC pipe on recycled water system
- Restrained PVC pipe for recycled or potable water
- Restrained joint ductile iron pipe on recycled water system
- Soldered copper pipe on recycled water system
- Sleeve potable pipe
- Sleeve recycled pipe

Vertical Separation at Crossings

Where a buried constant pressure recycled water pipeline crosses a buried potable water pipeline, it must be located a minimum of one (1) foot below the potable water pipeline. Recycled water pipelines are allowed over potable water pipelines with a minimum of one (1) foot vertical separation if a full standard pipe length is centered over the crossing, or the recycled water pipeline is installed in a pipe sleeve which extends a minimum of ten (10) feet on either side of the potable water piping.

When expanding or modifying the recycled systems, designers should check to see that laterals and meters that serve their site meet these requirements. In the event that a horizontal separation is less than the requirement, designers should bring this to the attention of the developer and the City before proceeding.

Pipe Class

Type of Recycled Water Piping	Size	Class
Constant pressure PVC	1.5" diameter and smaller 2.0" diameter and larger	Schedule 40 or greater Class 315 of greater
Intermittent pressure PVC lateral piping		Class 200 or greater
Copper piping		Type "K" or greater

Depth of Cover and Thrust Blocking

All on-site recycled water piping must be buried to a minimum depth from finished grade to top of pipe (minimum cover) according to the following schedule:

Type of Recycled Water Piping	Minimum Cover
Intermittent Pressure (all sizes)	12"
Constant Pressure, 2.5" diameter and smaller	18"
Constant Pressure, 3" diameter and larger	24"

All recycled water piping other than PVC piping with solvent welded joints must be protected against movement with thrust blocks or restrained joints or other approved methods conforming to UPC Section 609.1.4.

Backflow Prevention

Since recycled water is not used for drinking purposes, *backflow protection is not typically necessary on recycled water systems*. However, the City must ensure the User does not compromise the quality of the recycled water in the distribution system. Therefore, the City will require backflow protection on the Users recycled water system if it is determined there is a backflow hazard on-site which threatens the integrity of the distribution system. Examples of sites that may be required to install backflow protection devices are:

- Irrigation sites where direct chemical fertilizer injection systems are installed on the irrigation system
- Irrigation sites where recycled water impoundment may cause a backflow hazard

In such cases, backflow prevention devices may be required at the recycled water service connection or at specific, on-site locations as appropriate to the situation. Backflow prevention assemblies must be shown on plans and a type approved by DDW. It will be the responsibility of the User to provide test reports for on-site backflow prevention devices. Devices must be properly maintained, inspected quarterly, and tested at least annually. Backflow prevention devices, when required on recycled water systems, must be conspicuously labeled. Test equipment must be dedicated for use only with recycled water. Backflow testing equipment used for recycled water must not be reused on potable water systems.

i. Protection of Public Potable Water Systems

Although not normally a part of on-site recycled water irrigation systems, it must be noted that backflow prevention devices are a required and important part of potable water service connections to sites where recycled water is used. At premises where both recycled water and potable water are present in separate piping systems with no interconnection, a reduced pressure (RP) principal backflow prevention device must be located as close as practical to the downstream side of every potable water meter.

All RP devices must be inspected quarterly and tested at least annually. The User is responsible for coordinating the testing. An AWWA-certified backflow prevention device tester recognized by the City must perform the device testing. Test reports must be provided to the City and the User, and the City and User must maintain records for a minimum of three (3) years.

No Cross-Connections

No cross-connections are allowed between the recycled water system and any other water system.

Prevent Overspray, Runoff, and Ponding

Irrigation systems must be designed and operated to minimize overspray, runoff, and ponding. Designers must specify appropriate irrigation devices to prevent overspray. In the event that, during the coverage test, noticeable overspray, runoff, and/or ponding is observed, facilities must be adjusted or removed and relocated as needed.

Protection of Drinking Fountains and Outdoor Eating Areas

Drinking fountains, outdoor eating areas, and other similar facilities (e.g. snack bars) located within the approved use area must be protected from overspray or contact with recycled water. Protection may be accomplished by relocating the irrigation system, or relocating or modifying the protected facilities.

Protection of Aquifers

Irrigation systems must be designed so that irrigation with recycled water does not take place within 50 feet of any domestic water supply well. In addition, recycled water impoundments must be located at least 100 feet (horizontal separation) from any domestic water supply well.

Hose Bibs

Hose bibs are not allowed on recycled water systems where the general public is allowed access. Only quick couplers that differ from those used on the potable water system shall be used on the portions of the recycled water piping system in areas subject to public access.

Design Approval

Before any existing recycled water system is modified, on-site recycled water system plans prepared by the User must be approved by the City, the DDW and the RWQCB. Approval will be contingent upon evidence that all applicable design requirements for a recycled water system are satisfied and that the system as designed can be operated in accordance with the City Rules and Regulations. While the City and the DDW review plans, the User is responsible for meeting all applicable requirements, even those requirements not shown on the approved plans.

INFORMATION REQUIRED ON RECYCLED WATER USE FROM A FIXED RECYCLED WATER DISTRIBUTION SYSTEM FOR INDUSTRIAL PURPOSES, LANDSCAPE IRRIGATION AND LANDSCAPE IMPOUNDMENTS

The following is a brief list of the information required on the plans for an on-site recycled water system, including modifications to existing systems. Note that compliance with every item on this list does not guarantee the plans will be approved since regulations and policies may change and some sites may require additional provisions.

- Indicate all sources of water on the plans.
- Show the location and size of all water meters on the piping plans.
- Show the location and type of all backflow prevention devices for potable water systems (generally, backflow prevention devices are not used on recycled water systems).
- Show location and type of all strainers, pressure regulating valves, and master valves.
- Show location of all water pipelines (including potable and well lines) crossing the site. If space does not permit this information to be placed on the irrigation plans, then a separate site or utility plan can be used to show this information. Exception for an existing irrigation system converting to recycled water: Although it may not be possible to show the location of all water pipelines at this type of site, all locations where future recycled water piping must be separated from the potable water piping must be clearly indicated on the plans.
- Clearly identify all adjacent streets and locations of all major improvements on the site.
- Show the location of all drinking fountains, outdoor eating areas, and other public facilities supplied with recycled or potable water service. Public facilities include, but are not limited to, restrooms, snack bars, swimming pools, wading pools, decorative fountains, and showers. Show all pipelines feeding all of these facilities.
- Show the location of all wells, lakes, ponds, reservoirs, or other water impoundments located on the site or within 100 feet of the site, and indicate the type of water source.
- Indicate the separation between potable and recycled water lines meets minimum requirements. Show appropriate protections as required where recycled water pipelines cross over potable water pipelines.
- When potable water piping is not present on the site, state in a note that the cross-connection test required by the City is waived for sites where potable water piping is not present.
- Show all details necessary to properly expand/modify the system, including the details conforming to the City's requirements. The purpose of the details are to show the materials and methods necessary to clearly identify all water systems on the site.

- For irrigation equipment include a legend specifying all materials of construction for the system, including:
 - A pipe schedule listing pipe sizes, materials of construction, and type of water conveyed by the piping.
 - A listing of valve types, including quick coupling valves.
 - All pertinent information for each type of sprinkler head and/or emitter.
 - Indication of purple-colored pipe with recycled water stenciling and quick coupling valves with purple covers where recycled water is used.
- All sites using recycled water must post clearly visible advisory signs, indicating the use of recycled water at the site (see Section IV for installation criteria and Appendix C for examples of a sign design). Show proposed sign locations on plans.
 - For many sites, typical locations for signs are at the property line near crosswalks, at driveway entrances, and at outdoor eating areas.
 - For streetscapes (parkways, frontage or backup landscaping), place signs at street corners and entrance areas as appropriate to notify a passersby. In any case, signs must be placed no further than 1,000 feet apart.
 - For medians, a sign should be placed at the beginning and end of every median, and approximately midway equidistant from the ends of the median for longer median areas.
 - For decorative fountains, ponds, and other water features, see the Decorative Fountains, Ponds and Other Water Features section for more information.

INSTALLATION AND CONSTRUCTION INSPECTION FOR RECYCLED WATER FROM A FIXED RECYCLED WATER DISTRIBUTION SYSTEM USE IN INDUSTRIAL PURPOSES, LANDSCAPE IRRIGATION AND LANDSCAPE IMPOUNDMENTS

INSTALLATION CRITERIA

Pipe Identification

All new piping used in expanding/modifying the existing system must be installed according to the approved plans and marked per these requirements to clearly distinguish between recycled water and potable water systems.

1. Identification of Buried Recycled Water Lines

The use of purple colored pipe with continuous wording "RECYCLED WATER – DO NOT DRINK" printed on opposite sides of the pipe is the preferred method for identification of new buried recycled water piping (constant-pressure mainlines/intermittent-pressure laterals). Pipes must be laid with wording facing upwards.

An acceptable alternative: all new buried recycled water lines (constant-pressure mainlines/intermittent-pressure laterals) must be identified by continuous lettering on three inch (3") minimum width, purple marking tape with one inch black or white contrasting lettering bearing the continuous wording "RECYCLED WATER – DO NOT DRINK." This tape must run continuously on top of all piping (mainlines and laterals) and must be attached to piping with plastic tape banded around the marking tape and the pipe every five feet on center. Marking tape must extend to all valve boxes and/or vaults and exposed piping.

2. Identification of Existing Buried Recycled Water Lines

Existing buried piping which will be converted to recycled water use does not need to be marked unless the piping becomes exposed, such as during installation of new pipeline, modification of the system or maintenance of existing pipe. The exposed section must be marked as indicated above for new piping.

3. Identification of Above Grade Recycled Water Lines

All above grade recycled water pipelines, whether new or existing, must be labeled with the words "RECYCLED WATER - DO NOT DRINK" and color-coded purple to differentiate recycled water pipelines from potable water pipelines. If purple identification tape is used to label the pipe and/or color code the pipe, the tape must be adhesive, permanent, and resistant to environmental conditions. Purple bands may also be painted around the circumference of the pipe at ten-foot intervals for color-coding. Purple PVC pipe is not an acceptable alternative for color-coding because the purple color will fade when exposed to sunlight.

4. Identification of Recycled Water Lines Inside Structures

Exposed (not buried) constant pressure recycled water irrigation pipelines, such as copper or galvanized pipelines, that might be used in a structure such as a parking garage to route recycled water, must be identified per UPC Appendix J, with the exception that the labeling on the piping must read "RECYCLED WATER – DO NOT DRINK." Intermittent-pressure lines inside a structure must be identified by affixing decals to this piping at ten-foot intervals and wherever the piping changes directions. These decals must be purple in color and must be imprinted in nominal one-inch-high, black, uppercase letters, with the words "RECYCLED WATER – DO NOT DRINK," and must be adhesive, permanent, and resistant to environmental conditions.

Valve Boxes

All remote control valves, isolation valves, pressure reducing valves, and strainers for on-site recycled water systems must be installed below grade in a valve box. Green, black, or purple valve boxes and lids are acceptable.

Valve boxes must have an advisory label or "nameplate" permanently molded into or affixed onto the lid with rivets, bolts, etc. Labels must be constructed of a purple weatherproof material with the wording "RECYCLED WATER - DO NOT DRINK" permanently stamped or molded into the label.

Quick Coupling Valves

The portions of the recycled water piping system that are in areas subject to access by the general public shall not include hose bibs. Only quick couplers that differ from those used on the potable water system shall be used on the portions of the recycled water piping system in areas subject to public access

New quick coupling valves must be made specifically for recycled water use. New quick coupling valves must be 3/4-inch or one-inch nominal size and of brass construction with a maximum working pressure of 150 psi. The covers on all new quick coupling valves must be permanently attached and made of purple rubber or vinyl with the words "RECYCLED WATER-DO NOT DRINK" imprinted on the locking cover. To prevent unauthorized use, the valve must only be operated by a special coupler key for opening and closing the valve. New quick coupling valves must be installed approximately 12 inches from walks, curbs, header boards or paved areas. Quick coupling valves used in the recycled water system must be installed in a valve box, where applicable, and a recycled water identification tag must be permanently attached to the

quick coupling valve or the inside of the box so that it is clearly visible when the box lid is removed.

Any wands, sprinkler heads, fittings, or other attachments used in conjunction with the quick coupling valves must be labeled with the words, "RECYCLED WATER - DO NOT DRINK." Attachments used in a recycled water system must not be used in a potable water system.

The installation of quick coupling valves on a potable water system in the vicinity of a recycled water irrigation system must be of a different type to prevent accidental cross-connection or contamination by accidentally interconnecting or interchanging attachments. Keys and attachments must not be interchangeable. Retrofitted potable water system quick coupling valves must be modified to meet standards for new recycled water quick coupling valves.

Other Valves and Devices

1. Isolation Valves

New and existing isolation valves must be installed in a marked valve box with a recycled water identification tag on the valve operator or, if the valve operator is too deep to reach they shall be installed at the top of the valve box extension.

2. Remote Control Valves

New and existing remote control valves must be installed in a marked valve box with a recycled water identification tag on the valve.

3. Pressure Regulating Valves and Strainers

New and existing pressure regulating valves and strainers must be installed in a marked valve box with a recycled water identification tag on the valve/strainer.

4. Water Meters, Pumps, Pump Control Valves, Air/Vacuum Relief Valves

The above referenced recycled water devices must be tagged with a recycled water identification tag.

5. Recycled Water Backflow Prevention Devices

If applicable, these devices must be tagged with a recycled water identification tag.

6. Potable Water System Devices

At recycled water use sites where potable water is used, all potable water meters and above grade water devices, such as backflow prevention devices and hose bibs, must be tagged or labeled with potable water identification tags or labels.

Identification Tags and Stickers

Identification tags and stickers must be weatherproof and durable, such as plastic or plastic coated. Recycled water identification tags and stickers must have a purple background with permanent black lettering stating "RECYCLED WATER - DO NOT DRINK. Potable water identification tags and labels must have a blue background with "POTABLE WATER" in permanent black lettering.

Irrigation Controllers

New recycled water system controllers must be automatic with multiple start/stop times for any 24 hour period and installed according to the approved plans and local codes. All recycled water system controllers must be identified by affixing a sticker or “nameplate” to the outside of the controller cabinet, the inside of the controller cabinet, or the outside or inside of the controller cabinet enclosure. Stickers or nameplates must be weatherproof, and must contain wording in English and Spanish indicating the controller is for a recycled water system.

Irrigation and Water Feature Advisory Signs

All sites using recycled water must post clearly visible signs conforming to the requirements of the City Recycled Water Program and be installed per the locations indicated on the approved plans.

Irrigation Systems at Fenced Facilities

Advisory signs indicating the use of recycled water must be installed at all entrances to the User facility. The City may require additional signage on a case-by-case basis.

Irrigation Systems at Facilities Not Surrounded by Fences

Advisory signs must be placed where they can be easily seen. To the extent necessary to advise passersby, signs must be posted at the property line near crosswalks, driveway entrances, outdoor eating areas, or as otherwise determined by the City. For streetscapes (parkways, frontages or backup landscaping), place signs at street corners as appropriate to notify passerby. Signs must be placed no further than 1,000 feet apart. For medians, a sign is usually placed at the beginning and end of every median, and approximately equidistant from the ends of the median for longer median areas.

The signs must include the words "IRRIGATED WITH RECYCLED WATER - DO NOT DRINK." The City may also require the signs to include translations into other foreign languages if appropriate. The lettering on the signs must be a minimum of 1/2-inch in height and must be black or white on a purple colored background and “City of Turlock Recycled Water Program” must be written on the sign. Example advisory signs are provided in Appendix C.

Required Temporary Connection to Potable Water Service

In order to prevent cross-connections, an irrigation system is not allowed to receive recycled water until the site has passed a required cross-connection test. This means the irrigation system must be supplied with water from a “jumper” (temporary connection) to an on-site potable water system up to and during the cross-connection test. After passing this test, the jumper must be removed and the system connected to the recycled water meter. Jumpers, providing water from the public water system into the on-site recycled water system, are prohibited at all times. Irrigation systems not needing a temporary potable water source are usually systems where there is no potable water at the site.

INSPECTION

Construction Inspection and Field Verification

The RWQCB requires the City conduct field verifications (on-site inspections) during the construction phase to ensure materials, installation, and procedures are in accordance with the approved plans, specifications, and all applicable regulations. The field verifications will ensure

that all requirements have been met and the proper tags, labels, and signs are in place. Accordingly, the User must notify the City of the schedule for all phases of planning, construction, and start up so that inspections can be scheduled. The constant-pressure mainline piping portion of all systems must conform to the requirements of the UPC Sections 103.5.1 through 103.5.4.2.

Cross-Connection Test

The User must conduct and pass a cross-connection test before connecting the Users recycled water system to the City's recycled water system at any site where both recycled and potable water are present in separate piping systems. This test is to ensure the separation of the recycled and potable water systems. The User must notify the City at least 48 hours prior to the test so a City representative may be present. The cross-connection test must be done under the supervision of a City representative and performed by an AWWA-certified cross-connection control specialist approved by the City. The Site Supervisor must be present at the test. The test must be done with potable water charging the irrigation system (see *Required Temporary Connection to Potable Water Service*). A written report documenting the test results must be submitted by the AWWA-certified cross-connection control specialist to the Site Supervisor and the City following test completion. Cross-connection test procedures are contained in *Appendix B*.

Approval to Receive Recycled Water

The City must grant final approval before recycled water can be supplied to the site. Final approval will be granted when construction has been completed in accordance with approved plans and specifications, all cross-connection tests have been performed, a final on-site inspection has been conducted, and all requirements have been met satisfactorily. The DDW will be forwarded a copy of all test and inspection reports as well as notification that recycled water service has started. During the lifetime of the recycled water system, the City will periodically inspect the recycled water system to ensure compliance with all applicable Rules and Regulations.

Coverage Test for Landscape Irrigation Systems

The User is responsible for minimizing overspray, runoff, and ponding from their recycled water irrigation systems – new or converted. To ensure any overspray, runoff, or ponding is in accordance with the Rules and Regulations, the City will conduct an inspection of the on-site system. After the on-site system begins receiving recycled water, the User or User's representative must contact the City to schedule a coverage test walk through of the system. The User or User's representative must attend and have persons in attendance capable of making system adjustments. If modifications to the system (other than minor adjustments) are required, the User will be notified in writing of the changes required. Any required modifications to the system must be made in a timely manner. All modifications to the system are the responsibility of the User and the User must pay all costs associated with such modifications.

Record Drawings

The User or User's contractor must prepare record drawings to show the modifications to the recycled water system as constructed. These drawings must include all changes in the work constituting departures from the original contract drawings, including those involving both constant-pressure and intermittent-pressure lines and appurtenances. All conceptual or major design changes must be approved by the City before implementing the changes in the construction contract. The recycled water system record drawings must be submitted to the City within ninety (90) days of the site receiving recycled water.

OPERATION & MAINTENANCE OF RECYCLED WATER SYSTEMS FROM A FIXED RECYCLED WATER DISTRIBUTION SYSTEM FOR INDUSTRIAL PURPOSES, LANDSCAPE IRRIGATION AND LANDSCAPE IMPOUNDMENTS

General requirements for the operation and maintenance of a recycled water systems using recycled water in industrial purposes, landscape irrigation, landscape impoundments.

General User Responsibilities

By accepting recycled water service, the User agrees to comply with and enforce the City Rules and Regulations for Recycled Water Use.

Site Supervisor Designation

The User must designate a representative to be the Site Supervisor of the location(s) where recycled water is used. The Site Supervisor represents the owner, tenant, or property manager as a liaison to the City. The Site Supervisor must have the authority to carry out any requirements of the City. It is recommended that the Site Supervisor be an employee who is permanently stationed at the Use site. At a minimum, the Site Supervisor must make frequent visits to the Use site.

Site Supervisor Training

The designated Site Supervisor must attend a Site Supervisor Certification Workshop, provided by the City. Failure to attend the Site Supervisor Certification Workshop may result in the denial or termination of recycled water service.

Changing the Site Supervisor

The User must notify the City immediately of any change in personnel for the Site Supervisor position. Upon a change in personnel, the new Site Supervisor must attend a Site Supervisor Certification Workshop within 120 days of the position change. Failure to attend the Site Supervisor Certification Workshop may result in the termination of recycled water service.

Site Supervisor Responsibilities

The Site Supervisor:

- Shall be responsible for the recycled water system at the site.
- Shall be responsible for the operation and maintenance of the recycled water system.
- Shall be responsible for avoiding and preventing any potential violations associated with the operation of the recycled water system and the use of recycled water.
- Must ensure that there are no cross-connections made between the potable and recycled water systems.
- Must be present at all cross-connection tests.
- Must inform the City of all failures, violations and emergencies that occur involving the recycled or potable water systems.
- Shall be expected to know the provisions contained in California Code of Regulations Title 17 and Title 22, relating to the safe use of recycled water and the maintenance of accurate records.
- Shall be expected to know the basic concepts of backflow and cross-connection prevention, system testing, and related emergency procedures.

- Shall be responsible for training personnel at the Use site on the proper uses of recycled water.
- Shall conduct an annual self-inspection of the Use site and provide a written report to the City.

Annual Self-Monitoring Report

The RWQCB requires the recycled water User conduct an inspection at least once per year while the recycled water system is in use. The results of this inspection must be documented and submitted in a written report. The City will deliver the report form to the Site Supervisor once a year. The Site Supervisor must submit the results of the observations, along with a description of any corrective actions taken (see *Appendix D - Sample Forms*). Upon completion, the Site Supervisor must keep a copy of the report for their records and must return the original. The questions on the annual inspection report are as follows:

1. Is recycled water escaping the use area through surface runoff or airborne spray?
2. Are any odors associated with use of the recycled water?
3. Is there prolonged ponding of recycled water due to over-irrigation or evidence of mosquito breeding as a result of ponding?
4. Are all warning signs, labels, and markings identifying recycled water in place, legible, and visible?
5. Are there leaks or breaks in the irrigation system piping or evidence of plugged, broken, or otherwise faulty irrigation system components?
6. Is recycled water being sprayed directly on people, dwellings, food-handling facilities, eating areas or drinking fountains?

Unauthorized Discharge

An unauthorized discharge is any incidental amount of recycled water that leaves the designated use site. The Site Supervisor must report to the City any unauthorized discharge of recycled water, at which time the City will specify if a written report is required. In the event of an unauthorized discharge, the Site Supervisor should make every effort to contain the recycled water and prevent it from entering the storm drain. Contact the City for further directions and disposal instructions.

Maintenance

The Site Supervisor is required to perform preventive maintenance to ensure the recycled water system always remains in compliance with the Rules and Regulations. As part of a preventive maintenance program, the Site Supervisor shall:

- Perform regular inspections of the entire recycled water system including sprinkler heads, drip irrigation system emitters, spray patterns, piping and valves, pumps, storage facilities, controllers, etc. Immediately repair all broken sprinkler heads, faulty spray patterns, leaking pipes or valves, or any other noted condition that violates the recycled water use requirements.
- Check all recycled water identification signs, tags, stickers, and above grade pipe markings for their proper placement and legibility. Replace damaged, unreadable, or missing signs, tags, stickers, and pipe markings.
- Check spray patterns to eliminate ponding, runoff, and wind-blown spray conditions. If evidence of ponding or runoff is noted, affected areas should be indicated on a sketch and sprinkler heads should be adjusted to prevent further ponding or runoff.

- Establish and maintain an accurate record keeping system of all inspections, modifications, and repair work.

Personnel Training

The Site Supervisor is responsible for training all personnel involved with recycled water so they are familiar with the Rules and Regulations. At a minimum, the training program should convey the following information:

- The City's recycled water, although highly treated, is non-potable and must never be used for human consumption.
- Regulations prohibit ponding, windblown spray, and runoff of recycled water.
- Working with non-potable recycled water is safe if sound judgment is used and appropriate regulations are followed.
- State law prohibits a connection between the recycled water and the potable water systems.

Training programs should also instruct personnel in proper procedures for reporting unauthorized discharges, identifying and correcting cross-connections, and modifying the system in the event of an earthquake or other disaster.

Transfer of Property/Ownership

If the property is transferred to a new owner or tenant, or a new Site Supervisor or landscape company becomes responsible for system maintenance, the User must notify the City within 30 days.

System Operations and Responsibilities

The City

The City provides high quality recycled water at the appropriate pressure and quantity to City User and is responsible for the operation and maintenance of the entire recycled water distribution system up to the User storage facility, if any, and including the recycled water meter.

The User

The User is responsible for maintaining and operating the on-site recycled water system downstream of the recycled water meter. This includes the following:

- Apply recycled water in accordance with the Rules and Regulations.
- Maintain the on-site recycled water system, including signs, markings, and tags in accordance with all Rules and Regulations.
- Ensure all materials used during the repair and maintenance of the system are approved or recommended for recycled water use.
- Obtain prior authorization from the City before making any modifications to the approved recycled water system.
- Report all violations and emergencies to the appropriate local authority.
- Submit Annual Self-Monitoring Report to the City.

Recycled Water System Modifications and/or Expansions

The User must receive authorization from the City before making any modifications to the approved recycled water system. This includes converting any piping used for recycled water

back to potable water, such as switching from a recycled water system to a back-up potable water system. The City will notify the User if any additional approval is required from other regulatory agencies and if disinfecting procedures are required.

Emergency Procedures

In the event of an earthquake, flood, fire, major freeze, nearby construction, or other incident, which could cause damage to the recycled or potable water systems, the Site Supervisor must inspect the potable and recycled water systems for damage as soon as it is safe to do so. If either system appears damaged, both the potable and recycled water systems should be shut off at their points of connection. The Site Supervisor must immediately contact the City for further instruction.

To prevent contamination, damage, or a public health hazard, the User may make emergency modifications or repairs without the prior approval of the City. As soon as possible, after the modification (but within three days), the User must notify the City of the emergency modifications and file a written report.

OPERATING PROBLEMS

Notification

In the event of a break in the system, low pressure, low flow or poor water quality, during normal business hours the User should notify Larry Gilley, Utilities Division Manager, at phone number 209-668-4442. After hours Mr. Gilley can be reached at (209) 614-4881.

DUAL PLUMBED SITES

Dual plumbed sites are sites where the recycled water is used within a building in conjunction with a potable water system. According to DDW regulations, at dual-plumbed Use sites the User is responsible for conducting a periodic cross-connection test every four years, unless visual inspections reveal a requirement for more frequent testing. This test must be done by an AWWA-certified cross-connection specialist. The User must notify the City at least 48 hours in advance of the test in order for their representative to be present, if appropriate. The Site Supervisor must be present at the test.

Dual Plumbed Regulations

If recycled water is used inside a building, all dual plumbed regulations apply pursuant to Title 22 section 60313.

Visual Inspection and Cross-Connection Review

A visual inspection and thorough cross-connection review of the recycled water system shall be conducted annually by the Site Supervisor.

Cross-Connection Tests

Once every four years, the User must have a cross-connection test performed by an AWWA certified cross-connection control specialist recognized by the City to verify there is not a cross-connection between the recycled water and potable water systems. The certified cross-connection control specialist must submit a written report documenting the test results to the Site Supervisor and the City.

For specific individual uses, other regulations may apply (Food & Drug Administration, OSHA). Contact the City for further information regarding industrial uses.

Cross-Connections

A cross-connection is any physical connection between any part of a water system used or intended to supply water for drinking purposes and any source or system containing water or substance that is not or cannot be approved for human consumption. This includes direct piping between the two systems, regardless of the presence of valves, backflow prevention devices, or other appurtenances. Cross-connection test procedures and certification are contained in Appendices B and D.

Notification of a Cross Connection

The Site Supervisor must immediately notify the City of any failure or cross-connections between the recycled water and potable water system, whether or not he/she believes a violation has occurred. The Site Supervisor must also notify the City of any violation that might occur because of any action User personnel might take during the operation of the recycled water or potable water systems. If there are any doubts whether a violation has occurred, the Site Supervisor must report each occurrence to the City so a decision can be made as to the need for further action.

Scheduling Future Cross-Connection Tests

Periodic cross-connection tests of dual plumbed systems must be performed by an AWWA certified cross-connection specialist recognized by the City, a representative from the City and the Site Supervisor must be in attendance during the test. These tests must be performed according to the procedure listed in Appendix B – Cross-Connection Control Test Procedure for On-site Recycled Water Systems.

Emergency Cross-Connection Procedures

In the event that a cross-connection is suspected or occurs, the following emergency cross-connection response plan must be implemented immediately.

Emergency Cross-Connection Response Plan:

1. User must immediately shut down the recycled water supply to the facility.
2. User must notify the City by telephone immediately at (209) 668-5590. This notification must be followed by a written notice within 24 hours that includes an explanation of the nature of the cross-connection, date and time discovered, and the contact information of the person reporting the cross-connection.
3. City will notify the DDW of the reported cross connection.
4. User must keep the potable system pressurized and post "Do Not Drink" signs at all potable water fixtures and outlets.
5. User must provide bottled water for employees until the potable water system is deemed safe to drink.
6. User must follow the procedures outlined by the DDW and the City to correct the cross-connection.

After final approval has been obtained from the DDW, the City will bring the recycled water system back into service and inform the User to remove the "Do Not Drink" signs from all potable water fixtures and outlets.

Contamination of Potable Water

If contamination of the potable water system is suspected or known, due to a cross-connection on the User premises, the User must immediately notify the City. The User is to invoke immediately the *Emergency Cross-Connection Response Plan* described above.

SECTION III – MOBILE COMMERCIAL USE OF RECYCLED WATER FOR CONSTRUCTION RELATED OR LANDSCAPE IRRIGATION ACTIVITIES

Introduction

This section applies to the use of tertiary disinfected recycled water for the commercial activity related to construction and landscape irrigation activities as regulated by the DDW, RWQCB and the City of Turlock recycled water program. Only approved uses noted below are approved by this program.

General User Responsibilities

By accepting recycled water service, the User (Hauler) agrees to comply with and enforce the City Rules and Regulations for Recycled Water Use.

Training

Site Supervisor Designation

The User (hauler) must designate a representative to be the Site Supervisor for all the location(s) where recycled water is used. In the case of Commercial Haulers the Site Supervisor can be the Hauler/Driver. The Site Supervisor represents the owner, tenant, or property manager as a liaison to the City. The Site Supervisor must have the authority to carry out any requirements of the City. The Site Supervisor can be an employee who is at the Use site during time of recycled water use/application.

Site Supervisor Training

Prior to authorization to use recycled water the designated Site Supervisor must attend a Site Supervisor Certification Workshop, provided by the City.

First Time User Training

Prior to utilization of recycled water, commercial Users must also first attend a mandatory training class on safe use of recycled water.

All Commercial Haulers will be required to attend an onsite first time User training session in order to learn the proper procedures for filling station use.

Continuing Training

Annual refresher training on program rules, regulations and procedures will be required.

Approved uses

- Backfill consolidation around non-potable piping
- Soil compaction
- Mixing concrete
- Dust control on roads and streets
- Cleaning roads, sidewalks and outdoor work areas

Recycled Water Use Restrictions

- A. Workers should be informed that although recycled water has been treated to lower health risks, bacterial and viral contamination is still present and may potentially cause illness or infection. Contact with recycled water by ingestion, inhalation of mist, or on cuts or abrasions should be avoided, and the precautionary measures listed below should be carefully reviewed and followed.
- B. Precautionary measures should be taken to minimize worker contact with constituents of recycled water.
1. Workers should not be subjected to recycled water sprays, mists, or aerosols.
 2. Workers should wear protective clothing when there will be more than casual contact with the recycled water.
- C. Safe drinking water should be supplied for workers. Where bottled water is provided, the water should be in contamination-proof containers and protected from recycled water and dust.
- D. Hand washing facilities should be provided consisting of potable water supply, hand washing soap, and single use sanitary paper towels. The importance of hand washing should be stressed when working with recycled water, especially before eating or smoking.
- E. Workers should not apply recycled water by hand held nozzles or other hand held devices that can produce sprays, mists, or aerosols.
- F. Precautions should be taken to avoid contamination of food taken into recycled water use areas. Food should not be taken into areas still wet with recycled water.
- G. Workers should be notified that recycled water is in use. Notification should include the posting of conspicuous warning signs with proper wording of sufficient size to be clearly read. In those locations where English is not the primary language of the workers, the signs should be in the appropriate language as well as in English.
- H. An adequate first aid kit should be available on location. Cuts or abrasions should be promptly washed, disinfected, and bandaged.
- I. Public contact with recycled water shall be avoided, to the extent practical, under the normal use at the recycled water site.
- J. In all areas where recycled water is used that are accessible to the public, warning signs shall be installed at adequate intervals around the use area as required by the City.

- K. Recycled water shall not be applied where it could contact walkways, passing vehicles, buildings, drinking water facilities, storm drains, or enter areas where food is handled or consumed.
- L. Adequate measures shall be taken to prevent ponding, and to prevent run off of recycled water from the authorized recycled water use area unless it is specifically allowed by the RWQCB or an attachment to this Permit.
- M. Spray of recycled water shall not be allowed to contact an external drinking water fountain.
- N. There shall be no irrigation or impoundment of recycled water within a minimum of 50 feet of any water well.
- O. Distributor's vehicles used for transportation and distribution of recycled water must have water tight valves and fittings, and must not leak, and tanks must be cleaned of contaminants prior to use. A truck or tank that has contained material from a septic tank or cesspool shall not be used to convey recycled water.
- P. Distributor's vehicles that convey recycled water shall be clearly labeled in a prominent location with language stating in English "RECYCLED WATER - DO NOT DRINK".
- Q. Recycled water shall not be put into piping or a storage facility without specific written authorization from the City of Turlock.
- R. Connection of recycled water to a potable water system is strictly prohibited.

Cross-Connection Control

Mobile Commercial recycled water Users must have an approved air gap back-flow device attached to the vehicle being filled.

Commercial recycled water vehicles may not carry potable water or have previously been used to carry septage or similar materials.

Commercial tank trucks carrying potable, non-potable and or recycled water may only obtain potable water from a City hydrant having a City owned and maintained meter/back flow device assembly.

Tank truck or trailers that are delivering recycled water may not be open to the atmosphere during transport.

When not in use hoses used for the application of recycled water shall be stored disconnected from the supply tank and inspected for condition and leaks prior to use.

Signage

All commercial vehicles carrying recycled water must have a City of Turlock approved "RECYCLED WATER - DO NOT DRINK" sign prominently displayed on the vehicle. See Appendix C

SECTION IV - MOBILE RESIDENTIAL USE OF RECYCLED WATER FOR LANDSCAPE RELATED IRRIGATION ACTIVITIES

Introduction

This section applies to the use of tertiary disinfected recycled water for residential and commercial activity related to landscape and garden related irrigation activities as regulated by the DDW, RWQCB and the City of Turlock Recycled Water Program.

Approved Uses

- Residential irrigation
- Food crops where recycled water contacts the edible portion of the crop, including all root crops
- Decorative fountains

Recycled Water Use Restrictions

Prior to utilization of recycled water, residential Users must first attend a mandatory training class on safe use of recycled water.

Cross-Connection Control

Recycled water shall not be placed in a storage container that is connected to the landscape irrigation system or the on-site drinking water supply. Connection to any potable water supply is strictly prohibited.

Collection and storage containers shall have City of Turlock's Recycled Water Notice stickers placed on them to ensure everyone is aware recycled water is stored in the container and the water is not suitable for human consumption.

Signage

All containers carrying recycled water must have a City of Turlock approved "RECYCLED WATER - DO NOT DRINK" sign prominently displayed on the container. See Appendix C

Appendix A - Definitions

Whenever the following terms (or pronouns used in their place) occur in this manual, the intent and meaning shall be interpreted as follows:

AIR GAP	A physical separation between the free flowing discharge end of a water supply pipeline and an open or non-pressure receiving vessel. An approved air gap must be at least twice the diameter of the water supply pipe measured vertically above the overflow rim of the vessel, and in no case less than one inch.
APPROVED USE	An application of recycled water in a manner, and for a purpose, designated in a Recycled Water Use Permit issued by the City and in compliance with all applicable Regulatory Agency requirements.
APPROVED USE AREA	A site with well-defined boundaries designated on the approved Site Drawings, to receive recycled water for an approved use and acknowledged by all applicable Regulatory Agencies.
CROSS-CONNECTION	Any physical connection between any part of a water system used or intended to supply water for drinking purposes and any source or system containing water or substance that is not or cannot be approved for human consumption. This includes direct piping between the two systems, regardless of the presence of valves, backflow prevention devices, or other appurtenances.
USER	Any person, persons or firm including any public utility, municipality or other public body or institution issued a Recycled Water Use Permit by the City. They may be the owner, tenant, or property manager as appropriate.
INSPECTOR	Any person authorized by the City or the local health agencies to perform inspections on or off the User site before construction, during construction, after construction and during operation.
INTERMITTENTLY PRESSURIZED LINE	Also known as a "lateral," it is the pipe section(s) between the control valve and the sprinkler head or drip emitters.
LATERAL	See "INTERMITTENTLY PRESSURIZED LINE"
NON-POTABLE RECYCLED WATER OR RECYCLED WATER	Water that meets California Administration Code Title 22, Division 4 of the Environmental Health Water Reclamation Criteria and is approved for purposes other than human consumption. For the purpose of these Rules and Regulations, "recycled water" refers to "Non-potable recycled water."

NON-POTABLE WATER	Water that has not been treated for human consumption in conformance with the latest edition of the United States Public Health Service Drinking Water Standards, the California Safe Drinking Water Act, or any other applicable standards.
OFF-SITE	Designates or relates to facilities upstream of the recycled water meter.
ON-SITE	Designates or relates to all facilities downstream of the recycled water meter.
OVERSPRAY	The spray of recycled water outside of the approved irrigation/application area.
OWNER	Any holder of legal title, contract purchaser, or lessee under a lease with an unexpired term of more than one (1) year, for property for which recycled water service has been requested or established.
POINT OF CONNECTION	This is the point where the User system ties to the City's system. This is usually at the water meter.
PONDING	Unauthorized retention of recycled water on the surface of the ground or other natural or manmade surface for a period following the cessation of an approved recycled water use activity.
POTABLE WATER	Water that is authorized for human consumption according to the latest edition of the California Safe-Drinking Water Act, United States Public Health Service Drinking Water Standards or other applicable standards.
POTABLE WATER FACILITY	Any facility, including fire service, used to convey potable water.
PUBLIC	Any person or persons other than the site owner or employees who may come in contact with facilities and/or areas where recycled water is approved for use.
REDUCED PRESSURE PRINCIPAL BACKFLOW PREVENTION DEVICE	A type of backflow prevention device, usually installed near a water meter, which prevents backflow by a combination of double check valves and a pressure differential relief valve, with a resilient seated shutoff valve on each end of the device.
REGULATORY AGENCIES	Those public agencies legally constituted to protect the public health and water quality, and whose rules govern the use of recycled water, such as the DDW, the RWQCB, the City and the County DER.
RESTRAINED JOINT	Mechanically restrained. Solvent welded for PVC joints 4-inch diameter and smaller.

RUNOFF	Recycled water that is allowed to drain outside the approved use area.
SERVICE	The furnishing of recycled water to a User through a metered connection to the onsite facilities.
SITE SUPERVISOR	The responsible person designated by the User to provide liaison with the City. This person must have the authority to carry out any requirements of the City and must be responsible for the operation and maintenance of the recycled water system, and must prevent potential violations.
STANDARD PIPE LENGTH	A section of pipe 18 to 20 feet in length that has no joints.
UNAUTHORIZED DISCHARGE	Any release of recycled water that violates the rules and regulations of the City or all applicable Federal, State or local statutes, regulations, ordinances, contracts or other requirements.
VIOLATION	Noncompliance with any condition of the Recycled Water Use Permit by any person, action or occurrence, intentional or unintentional.

Appendix B - Cross-Connection Control Test Procedure for On-Site Recycled Water Systems

Introduction

The following procedures have been established to verify the absence of cross-connections between potable water and recycled water supplies at sites which are served by both types of water. These procedures also describe what to do in the event a cross-connection is discovered. The procedures cover cross-connection testing only and do not incorporate other requirements related to the use of recycled water, which are described elsewhere.

Testing Frequency

The initial cross-connection test shall consist of the Pre-Test Requirements and Visual Inspection and the Cross-Connection Control Test, as described in the Cross-Connection Test and Report Form (*Appendix D*). This initial test shall be performed and passed at all sites converting to recycled water use prior to the site receiving approval to use recycled water. Thereafter, the procedures listed under *Pre-Test Requirements and Visual Inspection (Part I)* shall be performed annually, and the *Cross-Connection Control Testing (Part II)* shall be successfully performed a minimum of once every four years. The City may require more frequent testing if conditions dictate.

Inspection Team

All inspections and testing will be conducted by an Inspection Team consisting of a certified AWWA Cross-Connection Specialist, a representative from the City's Recycled Water Program, the User designated Site Supervisor, and other personnel as required.

PART I - Pre-Test Requirements and Visual Inspection

Prior to the cross-connection testing, a visual inspection of the recycled water system shall be conducted by the Inspection Team. If possible, the visual inspection should be conducted prior to the date scheduled for cross-connection testing. The visual inspection should include the following elements:

1. The User shall provide the Inspection Team with drawings of the recycled and potable water systems. Team members shall review the drawings.
2. Discuss any changes to recycled and potable water systems since the last cross-connection test, and verify that all changes have been recorded on the appropriate recorded drawing(s). If possible, visually inspect changes to verify that no cross-connection has been created.
3. Verify appropriate backflow prevention devices are installed and have been tested annually in accordance with California Title 17 Regulations. Devices are typically located on the potable water line, downstream of the meter.
4. Check meter locations on the recycled water and potable water lines to verify that no modifications have been made and no cross connections are visible.
5. Discuss who has access to the recycled water system (e.g., gardeners, maintenance, and facilities workers). Establish if they are employed by the User or a contractor, if they

read and speak English and what type of training they have had this past year on the use of recycled water.

6. Verify required signs are in place and in good condition.
7. Verify all recycled water fixtures (e.g., hose, quick connect valves) are permanently marked to indicate they are only to be used on the recycled water system.

PART II - Cross-Connection Control Testing

The Cross-Connection Test and Report Form should be completed in conjunction with the testing.

The basic concept employed in checking for cross-connections between the potable and recycled water systems is to pressurize one system at a time, and then check the other system for flow, which would indicate a cross-connection exists.

The following procedure shall be used to determine if a cross-connection exists:

1. The potable water system shall be activated and pressured. The recycled water system shall be shut down at the service connection only, depressurized, and where feasible, drained. Verify all other valves on the recycled system, downstream of service connection, are open.
2. The potable water system shall remain pressurized for a minimum of one hour.
3. All outdoor potable water fixtures and all indoor drinking fountains shall be tested for flow. No flow from a potable water outlet would indicate it could be connected to the recycled water system.
4. The recycled water system shall be tested for flow. This shall be done by opening all quick connect bibs, sprinkler heads, and any other outlets on the irrigation system. Flow from any recycled water outlet shall be an indication that a cross-connection exists.
5. Any drain points or outlets on the recycled water system shall be checked for flow during and at the end of the test period.
6. The potable water system shall then be shut down, and where feasible, drained. The recycled water system shall then be re-activated and pressurized.
7. The recycled water system shall remain pressurized for a minimum of one hour. Recycled water fixtures shall be tested for flow to verify the recycled water system is fully pressurized.
8. All outdoor potable water fixtures and all indoor drinking fountains shall be tested and inspected for flow. A representative number of other indoor potable water fixtures shall be tested. This should include one fixture in each rest room and at least 10 percent of the fixtures on each floor. The specific number will be determined by the Inspection Team based on the site's recycled and potable water systems drawings. Flow from any potable water outlet shall be an indication that a cross-connection exists.

9. If no flow is detected in any fixture which would have indicated a cross-connection, the test is complete and the system may be re-pressurized.

PART III - Procedure if Cross-Connection is Discovered

The Procedure if Cross-Connection is Discovered Form should be used to document the procedure if a cross-connection is discovered. The following procedure shall be activated immediately, in the presence of the AWWA Cross-Connection Control Specialist.

1. Recycled water piping to the facility shall be shut down at the meter, and the recycled water system shall be depressurized and drained where feasible.
2. Potable water service shall be shut down at the meter.
3. The cross-connection shall be determined and disconnected.
4. The systems shall be tested again as described under Cross-Connection Control Testing and Cross-Connection Test and Report completed.
5. The potable water system shall be chlorinated with 50 ppm chlorine for 24 hours, per methods described in AWWA Standard for Disinfecting Water Mains (ANSI/AWWA 065 1-92). A bacteriological test shall be performed. If test results are acceptable, the potable water system may be recharged. If not, repeat this step.
6. The retrofit plans must be revised to reflect any changes required to eliminate the cross-connection and revised plans must be submitted to the City for review.

Appendix C - Sample Advisory Sign



Appendix D - Sample Forms

- Cross-Connection Test and Report Form
- Procedure Check List if Cross-Connection is Discovered
- User Self-Monitoring Report

**CITY OF TURLOCK RECYCLED WATER PROGRAM FOR FIXED RECYCLED WATER SYSTEMS
CROSS-CONNECTION TEST AND REPORT**

This test and report is for disinfected tertiary recycled water.

Site Name:

Address:

Form Completed By:

Test Date:

**Site Cross-Connection Testing History
(To be completed by Water Reuse Program Coordinator prior to test)**

Is this site's first cross-connection test? Yes. Skip to Today's Scheduled Testing No. Continue

Date of last Pre-Test and Visual Inspection / / passed failed

Date of last complete testing (Parts I & II) / / passed failed

If failed, attach a copy of the failed "Testing Report" form

Today's Scheduled Testing

- Part I, Pre-Test and Visual Inspection, only
- Parts I & II

Note: Initial test shall consist of Parts I and II. Thereafter, Part I is required annually, Part II is required at least once every 4 years.

Names of Inspection Team

Recycled Water Program Inspector: _____

City Cross-Connection Control Specialist: _____

User Supervisor: _____

Others Present

Affiliation/Title

Name: _____

Name: _____

PART I: PRE-TEST AND VISUAL INSPECTION

Note: Cross-connection testing shall be performed as described in the applicable "Cross-Connection Test and Discovery Procedures",

YES	NO	For any "no" response, an explanation must be given below under No. 8
		1a. User provided record drawings of recycled and potable water systems?
		1b. Inspection team reviewed drawings?
		2a. Discuss any changes made to recycled and potable systems since last test.
		2b. Have changes (from 2a) been recorded on record drawings?
		2c. Team visually inspected changes to verify absences of cross-connections?
		3a. Team accounted for all backflow prevention devices on site?
		3b. Have all backflow preventers been tested annually in accordance with California Title 17 regulations?
		4a. Team field checked location of recycled water meter and potable water meter?
		4b. Do all meters appear to be correctly installed?
		4c. Are water meters free of visible cross-connections?
		5a. User has provided a list of the individuals with access to use recycled water system?
		5b. Discussed training of recycled water supervisor and workers?
		6a. Are RW quick couplers and other recycled water access points easily identified as RW fixtures by signs or color coding?

PART I: PRE-TEST AND VISUAL INSPECTION (Continued)		
Yes	No	For any "no" response, an explanation must be given below under No. 8
		6b. Is a "Recycled Water - Do Not Drink" sign posted where the public enters a recycled water use area?
		6c. Are appropriate signs or other markers in place at recycled water meters, valve boxes, controllers?
		6d. Are all the signs in good condition, legible and visible?
		7. Are all portable fixtures and hoses used on the RW system (quick connect valves, hoses, etc.) permanently labeled to indicate they are for use only on the RW system?
<input type="checkbox"/> 8. An explanation must be given for any "NO" response above. <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>		
RESULTS OF PRE-TEST AND VISUAL INSPECTION TEST		
<input type="checkbox"/> PASSED. If scheduled, proceed with the Cross-Connection Control Testing		
<input type="checkbox"/> FAILED. The following action must be completed by the User prior to re-testing and must be done by (date) _____. <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>		
By: _____ City Cross-Connection Control Specialist	Received by: _____ User Representative	
Date: _____	Date: _____	
Filing instructions: Retain original in City files, send copy to User		

PART II: CROSS-CONNECTION CONTROL TESTING		
A. TEST OF POTABLE WATER SYSTEM		Check When Complete
Step 1.	Turn off recycled water system at meter.	
Step 2.	Open all valves on the recycled water supply, downstream of the meter.	
Step 3.	Depressurize and drain (if possible) recycled water system. Record pressure in recycled water system _____ psi.	
Step 4.	Confirm potable system is activated and pressurize by operating a few potable fixtures. Record pressure in potable water system _____ psi.	
Step 5.	Potable water system must remain pressurized after recycled water system has been depressurized, while Steps 6 through 10 are performed.	
Step 6.	Identify the location, and obtain access, to all the potable water fixtures to be tested in Steps 7 and 8.	
Step 7.	Open all (one at a time) outdoor potable water fixtures and note any fixtures that have no flow.	

PART II: CROSS-CONNECTION CONTROL TESTING (Continued)		
Step 8.	Try all indoor drinking fountains, and note any that have no flow. List potable fixtures with no flow in Steps 7 and 8: _____	
Step 9.	Open (one at a time) all fixtures on the recycled water system. Note if water flows through any:	
	Quick connects _____ Sprinkler heads _____ Other _____	
Step 10.	Check to see if there is any flow from any fixture or drain point. Note location of flow.	
Step 11.	If no flow was found in Steps 9 and 10, proceed to Step 13. Otherwise a cross-connection has been indicated. Flow discovered in Steps 9 and 10 may be caused by an incomplete drainage of the recycled system. If inspection team suspects this is the case, the duration of the test shall be extended.	
Step 12.	If a valid cross-connection is discovered, continue with testing of recycled water system, then proceed with "Procedures if Cross- Connection is Discovered." Note locations of Cross-Connections: _____ _____ _____ _____	
A. TEST OF RECYCLED WATER SYSTEM		Check When Complete
Step 13	Turn off potable water supply at meter.	
Step 14.	Drain and depressurize potable water supply by opening fixtures downstream of meter. Record pressure in potable water system: _____psi.	
Step 15.	Turn on recycled water system and pressurize. Confirm recycled water system is pressurized by operating a few sprinklers. Record pressure in recycled water system (if available): _____psi.	
Step 16.	Recycled water system must be pressurized while Steps 17-20 are performed.	
Step 17.	Select the indoor potable water fixtures which will be tested in Steps 18 and 19. This should include all drinking fountains, one fixture in each restroom and at least 10 percent of the fixtures on each floor. (Note: In buildings with dual plumbing, all potable fixtures must be tested).	
Step 18.	Check to see if any flow comes out of any of the indoor fixtures identified in Step 16. Flow from any fixture indicates a cross-connections: _____ _____ _____	
Step 19.	Turn on, one at a time, all outdoor potable water fixtures. Flow from any fixture indicates a cross-connection exists. Special attention shall be given to those fixtures listed in Steps 6 and 7. Note location of cross-connections. _____ _____ _____	
Step 20.	Record pressure in recycled water system (if available): _____psi	
RESULTS OF CROSS-CONNECTION CONTROL TESTING		
<input type="checkbox"/>	PASSED , turn on the potable water supply	
<input type="checkbox"/>	FAILED , immediately follow "Procedures if Cross-Connection is Discovered"	
By	_____	Received by: _____
	Cross-Connection Control Specialist	User Representative
Date	_____	Date: _____

_____ File (Original)

_____ User

**CITY OF TURLOCK RECYCLED WATER PROGRAM
 USER SELF-MONITORING REPORT FOR FIXED RECYCLED WATER SYSTEMS
 (To Be Completed By User)**

This monitoring report is for the use of disinfected tertiary recycled water.

Name/Location of Site:	Monitoring frequency specified in permit:	User Designated Recycled Water Supervisor:
------------------------	---	--

MONITORING DATA

Observer's initials and date monitored _____				
Is recycled water escaping the use area through surface runoff or airborne spray? (If yes, note affected area and estimate volume)	Yes <input type="checkbox"/> No <input type="checkbox"/>	Yes <input type="checkbox"/> No <input type="checkbox"/>	Yes <input type="checkbox"/> No <input type="checkbox"/>	Yes <input type="checkbox"/> No <input type="checkbox"/>
Are any odors associate with use of the recycled water? (Note source, characterization and travel distance below.)	Yes <input type="checkbox"/> No <input type="checkbox"/>	Yes <input type="checkbox"/> No <input type="checkbox"/>	Yes <input type="checkbox"/> No <input type="checkbox"/>	Yes <input type="checkbox"/> No <input type="checkbox"/>
Is there prolonged ponding of recycled water due to over-irrigation or evidence of mosquito breeding as a result of ponding?	Yes <input type="checkbox"/> No <input type="checkbox"/>	Yes <input type="checkbox"/> No <input type="checkbox"/>	Yes <input type="checkbox"/> No <input type="checkbox"/>	Yes <input type="checkbox"/> No <input type="checkbox"/>
Are all warning signs labels and markings identifying recycled water in place, legible and visible?	Yes <input type="checkbox"/> No <input type="checkbox"/>	Yes <input type="checkbox"/> No <input type="checkbox"/>	Yes <input type="checkbox"/> No <input type="checkbox"/>	Yes <input type="checkbox"/> No <input type="checkbox"/>
Are there leaks or breaks in the irrigation system piping or evidence of plugged, broken, or otherwise faulty irrigation system components?	Yes <input type="checkbox"/> No <input type="checkbox"/>	Yes <input type="checkbox"/> No <input type="checkbox"/>	Yes <input type="checkbox"/> No <input type="checkbox"/>	Yes <input type="checkbox"/> No <input type="checkbox"/>
Is recycled water being sprayed directly on people, dwellings, food-handling facilities, or drinking fountains?	Yes <input type="checkbox"/> No <input type="checkbox"/>	Yes <input type="checkbox"/> No <input type="checkbox"/>	Yes <input type="checkbox"/> No <input type="checkbox"/>	Yes <input type="checkbox"/> No <input type="checkbox"/>

Explain any "yes" answers. Note date of comment and specific locations within site. Attach additional sheets if necessary.

NOTES

Note any recommended improvements or changes: _____

List any changes in recycled water piping system from previous monitoring report. Explain.

 User Recycled Water Supervisor

 (date)

This report shall be submitted to the Recycled Water Program Coordinator or maintained on-site as specified in the User permit.

Appendix E - References

1. California Code of Regulations (CCR), Title 22, Division 4, Chapter 3, "Water Recycling Criteria" - These regulations are written by the State DHS and specify the approved uses and use area requirements, such as hose bib restrictions, prohibition of irrigation near wells, etc. The regulations govern both the Water Retailer's distribution system as well as the User on-site system.

2. California Code of Regulations (CCR), Title 17, "Drinking Water Supply - Backflow Prevention" - Title 17 specifies requirements intended to protect the public drinking water supply from contamination. Some requirements specified in Title 17 include backflow prevention devices, designation of a User Site Supervisor, and cross-connection testing requirements.

3. State Water Resources Control Board Order WQ 2014-0090_DWQ, General Waste Discharge Requirements for Recycled Water Use adopted June 3, 2014 and related appendices – This Order provides direction and requirements for obtaining the necessary permit for the use of recycled water.

4. American Water Works Association (AWWA), California-Nevada Section, Guidelines For Distribution of Nonpotable Water - This document provides recommended guidelines for planning, designing, constructing, and operating nonpotable water systems, including recycled water systems. The guidelines themselves are not regulations but many agencies have adopted them as general requirements. The document covers both installations of the Water Retailer distribution systems and on-site use systems.

5. International Association of Plumbing & Mechanical Officials (IAPMO) Uniform Plumbing Code, Appendix J - Appendix J of the Uniform Plumbing Code sets forth requirements when recycled water is used within buildings in a dual-plumbed system for nonpotable domestic uses, such as toilet and urinal flushing. This section of the Uniform Plumbing Code does not apply to irrigation sites, where the recycled water system is located outside buildings, or industrial sites, where the recycled water is used for non-domestic industrial purposes. In addition, the pipe separation regulations indicated in this document are different than and take precedence over the Appendix J requirements. Appendix J has not been adopted by Milpitas, Santa Clara, or San Jose, and serves only as a reference.

6. Regional Water Quality Control Board – The Central Valley Regional Water Quality Control Board (RWQCB) is the agency responsible for preserving the quality of California's water resources within their respective boundary. The RWQCB is responsible for issuing National Pollutant Discharge Elimination System (NPDES) permits, which contains regulations concerning discharge of water into surface waters of the State.

7. State Water Resources Control Board, Division of Drinking Water formerly California Department of Public Health, Drinking Water Field Operations Branch – The State Water Resources Control Board, Division of Drinking Water (DDW) is the agency responsible for protecting and promoting the safety of California's drinking water. They are responsible for developing the criteria and regulations for recycled water use, evaluating, and approving recycled water systems, and for making recommendations to the RWQCB regarding the public health implications of recycled water use.