# SECTION 5

# DESIGN CRITERIA RECYCLED WATER FACILITIES

## 5.1 General

All potential uses of recycled water, including, but not limited to, uses for landscape irrigation systems, agricultural irrigation systems, industrial process systems, construction purposes, natural treatment system irrigation, recreational impoundment systems, cooling towers, flushing toilets and urinals, and trap primers in non-residential buildings, shall be reviewed by Irvine Ranch Water District (IRWD). If recycled water is to be used, the facilities shall be constructed in accordance with the procedures and requirements set forth below.

The IRWD recycled water program is supervised by the California Department of Public Health (CDPH) and the Orange County Health Care Agency (OCHCA). As set forth in the IRWD's "Rules and Regulations for Water, Sewer, and Recycled Water Service" (Rules and Regulations), IRWD shall determine whether a given service will be furnished with recycled water or potable water. The determination shall be in accordance with the standards of treatment and water quality requirements set forth in Title 22, Chapter 4 of the California Code of Regulations, with the intent of IRWD to work in conjunction with the health agencies to protect the public health, and with the availability and/or feasibility of making available recycled water facilities. All on-site facilities using recycled water will have an annual cross-connection test unless otherwise approved by the state and county health agencies on a case-by-case basis. Details of specific cross-connection tests can be found in subsequent portions of Section 5. All inspections and any cross-connection found are reportable to both state and county health agencies.

## 5.2 Design and Construction Criteria

The design criteria for recycled water facilities are separated into two categories. Off-site recycled water facilities typically consist of those recycled water facilities which are, or will be, owned, operated, and maintained by IRWD such as transmission or distribution mains in public rights of way and irrigation facilities for natural treatment systems. Typically these are facilities on the upstream side of the water meter. On-site recycled water facilities typically consist of facilities that will be owner, operated, and maintained by the customer, and are downstream of the water meter. IRWD typically constructs, operates, and maintains recycled water facilities, upstream of the water meter, which are 4-inch and larger.

## 5.3 Off-Site Recycled Water Facilities

### 5.3.1 Minimum Size

The typical minimum size distribution main shall be a 4-inch looped line. Smaller diameter mains may be individually approved by the District Engineer on dead-end mains or the possibility of future tie-ins with other mains. These mains shall be sized so that sufficient water is regularly drawn to prevent stagnation. Only 1-inch and 2-inch copper, and 4-inch Class 150 PVC are approved for service lines.

Developer facilities will be recycled water mains 4-inch diameter and smaller, capital facilities will be recycled water mains 6-inch diameter and larger as defined by IRWD's Master Plan or SAMP and will be designed and constructed by IRWD.

Developer facilities will be designed by the developer and transferred to IRWD upon satisfactory completion of final inspection. Capital facilities will be designed and constructed by IRWD in most cases.

Sizing of recycled water mains for irrigation of natural treatment systems will be determined by the developer and/or the District's consultant, but final approval by the District will be required. The developer shall be responsible for these facilities during the one-year establishment/monitoring phase, after which they will be turned over to the District. The developer shall also be responsible for applying for the recycled water meter for natural treatment system irrigation.

### 5.3.2 Approved pipe materials

C-900 PVC pipe, either Class 150 or 200, may be used for off-site water mains up to 10-inch in diameter. The pipe shall be purple in color and shall be marked in accordance with IRWD standards to warn anyone who sees it that there is recycled water in the pipe. AC or DIP may be used if properly marked with purple marking tape.

### 5.3.3 Minimum Cover Requirements

(A) The top of distribution mains, 4-inch and smaller, shall be a minimum of 42 inches below the finished street grade unless indicated otherwise on job plans or directed otherwise by the District Inspector because of unusual field conditions.

(B) The top of transmission mains, 6-inch and larger, shall be a minimum of 48 inches below the finished street grade unless indicated otherwise on job plans or directed otherwise by the District Inspector because of unusual field conditions.

### 5.3.4 Separation between Water, Sewer, and Recycled Water Lines

See Section 3.6 and IRWD Standard Drawing W-18.

### 5.3.5 Standard location

Off-site recycled water facilities shall typically be located either 4 feet or 8 feet from the curb face on the opposite side of the street from the potable water mains. Recycled water facilities for irrigation of natural treatment systems shall be installed in a location approved by the District and shall adhere to the separation requirements of Section 5.3.4.

### 5.3.6 Recycled Water Facilities for Natural Treatment Systems

All recycled water systems for irrigation of natural treatment systems shall conform to the requirements of Section 6 (Design of Natural Treatment Systems), in addition to the requirements of Section 5.3.

## 5.4 Standard Off-Site Recycled Water Notes

The following notes must appear on all plans for construction of off-site recycled water facilities and be identified as "Recycled Water Notes." In addition the Standard Water Notes shown in Section 3.10 of this Guide must appear on the plan as well

(1) All off-site recycled water systems shall be constructed in accordance with the requirements of the potable water systems.

(2) Recycled water pipe shall be purple PVC C-900 pipe, either class 150 or 200, marked as required by IRWD standards to identify it as recycled water. ACP or DIP may be used with the approval of IRWD but it must be marked with purple marking tape.

(3) All 1-inch and 2-inch copper services shall be wrapped continuously with purple marking tape from end to end.

## 5.5 On-Site Recycled Water Facilities

### 5.5.1 General

Design of all on-site facilities, including, but not limited to, those for landscape irrigation systems, agricultural irrigation systems, industrial process systems, cooling towers, construction purposes, toilet and urinal flushing in non-residential buildings, and recreational impoundment systems, shall conform to the provisions set forth herein and to any conditions, standards, and requirements set forth by IRWD in addition to these standard specifications.

### 5.5.2 Design of Recycled Water Facilities with Temporary Potable Water Service

Before design, the developer should obtain the following from IRWD:

A. Approval to use recycled water for the proposed system, as stated in the previous section.

B. Verification of locations and size of proposed points of connection (meter facilities).

C. Design pressures for the proposed facilities.

As set forth in the IRWD Rules and Regulations, where recycled water is not immediately available for use when the design area is ready for construction, and if IRWD has determined that recycled water will be supplied in the future, the on-site facilities shall be designated to use recycled water. The on-site system shall be designed and constructed to IRWD's construction specifications as set forth herein. Provisions shall be made as directed by IRWD and these specifications followed to allow for connection to the recycled water facilities when they become available. In the interim, potable water will be supplied to the recycled water facilities through a temporary potable water connection. Until recycled water is available, potable water rates will be charges as set forth in the Schedule of Rates and Charges, Exhibit "B" to the IRWD Rules and Regulations. A

backflow prevention assembly, acceptable to OCHCA and IRWD, will be required as long as the on-site facilities area uses potable water. The backflow prevention assembly shall be downstream of the meter and a part of the on-site facilities. When recycled water becomes available, the backflow prevention assembly will be removed by the owner with coordination and approval of the IRWD On-Site Recycled Water Group, and the on-site facility reconnected to the meter. Contact the On-Site Recycled Water Group at 949-453-5300.

### 5.5.3 Backflow Prevention Assemblies and Signage

Backflow prevention assemblies will not be required on the on-site recycled water facilities using recycled water. However, in accordance with the section on water backflow prevention in the IRWD Rules and Regulations, "backflow protection assemblies may be required on the developer's, owner's, or customer's potable water service." All new common areas where recycled water is used and that are accessible to the general public shall be posted with conspicuous permanent signs that include the following wording in a size no less than 4 inches high by 8 inches wide: "RECYCLED WATER - DO NOT DRINK." Each sign shall also display an international symbol conveying the same warning.

### 5.5.4 Prohibitions and Limitations

Design of on-site recycled water facilities shall conform to the following:

(A) The recycled water system shall be separate and independent of any potable water system. Cross-connections between potable water facilities and on-site recycled water facilities are prohibited.

(B) Hose bibs on recycled water facilities are prohibited.

(C) Drinking fountains shall be protected from the mist and spray of recycled water in a manner approved by the District Engineer, prior to installation.

(D) Overspray and runoff shall be limited or prevented.

(E) Potable and recycled water lines are not to be installed in the same trench.

(F) Recycled water shall not be used for any purpose other than the approved uses as set forth herein.

(G) The system shall be designed to irrigate the design area within the allowable time periods as set forth herein.

(H) On-site looped meters are prohibited.

(I) Designated outdoor eating areas shall be protected from overspray.

### 5.5.5 Control of Runoff and Application Areas

IRWD encourages new and innovative methods of irrigation. The use of drip or subsurface irrigation may prove effective in the reduction of total water consumption and control of unnecessary runoff by containment of the water to the design area.

In accordance with the requirements of the IRWD Rules and Regulations for control of runoff and for control of the areas to which recycled water is applied, the design of irrigation systems shall conform to the following:

(A) The on-site recycled water facilities shall be designed to meet the peak moisture demand of all plant materials used within the design area. The use of moisture sensors is encouraged, but not mandatory.

(B) On-site recycled water facilities shall be designed to prevent discharge onto areas not under control of the customer. Part circle sprinklers shall be used adjacent to roadways and property lines to confine the discharge from sprinklers to the design area.

(C) The design of the on-site recycled water irrigation facilities shall provide for watering during the periods of minimal use of the service area. This is typically between the hours of 9 p.m. and 6 a.m., or as directed by the District Engineer. Consideration shall be given to allow a maximum dry out time before the design area will be used by the public.

(D) The total time required to irrigate the design area shall not exceed 9 hours in any 24-hour period. Irrigation systems shall be designed to operate within this time requirement.

(E) Recycled water shall be applied at a rate that does not exceed the infiltration rate of the soil. Where varying soil types are present, the design of the recycled water facilities shall be compatible with the lowest infiltration rate present. Copies of the developer's soils test reports shall be made available to IRWD upon request.

### 5.5.6 Minimum Depth to Top of On-Site Recycled Water Piping

For on-site recycled water piping, the minimum depth from finished grade to top of pipe (minimum cover) shall be as follows:

(A) Constant pressure lines 3 inches and larger: 24 inches

(B) Constant pressure lines 2-1/2 inches and smaller: 18 inches

(C) Intermittent pressure lines: 12 inches

Where piping is under paved areas, these dimensions shall be considered below subgrade.

### 5.5.7 Data Required on Plans

(A) Meter Data - The following information shall be supplied for each recycled water meter desired; information is to be provided and shown at each meter location:

a. The meter location and size (inches); meter address and civil station number.

b. The peak flow through the meter (gpm).

c. The (static) design pressure at the meter (psi).

d. The total area served through the irrigation meter (square feet or acres).

e. An estimate of the yearly water requirement through the meter (acre-feet).

(B) Drinking Fountains - Exterior drinking fountains must be shown and called out on the recycled water system plans. If no exterior drinking fountains are present in the design area, it must be specifically stated on the plans that none exist. The potable water line supplying the drinking fountain must have a warning tape installed as provided in Section 5.10.8 herein and shall be so stated on the plans. Drinking fountains must be protected from the direct spray and mist of recycled water either by proper placement of the drinking fountain within the design area or the use of a covered fountain approved for this purpose.

(C) Irrigation Equipment Legend - For irrigation systems, a legend showing the pertinent data for the materials used in the system shall be recorded on the plans. The legend shall include a pipe schedule listing pipe sizes and materials of construction, a listing of valve types including quick-coupling valves, and the following information for each type of sprinkler head:

1. Manufacturer and model number.

2. Sprinkler radius (feet).

3. Operating pressure (psi).

4. Flow (gpm).

5. Sprinkler pattern.

(D) Site Use Information – All recycled water irrigation plans must have the following items shown, with responses provided in blanks indicated:

**Regional Water Quality Control Board Required Information on Recycled Water Irrigation Plans**

1. The average number of people at this use site on a daily basis.

_____

2. Boundaries to the proposed use site, footprint of any facilities on the premises, drinking water fountains, and any recycled water or potable water impoundment to be used.

_____

3. The person or persons responsible for the operation of the recycled water system at each use area.

4. The specific use to be made of the recycled water at each use area.

5. The methods to be used to ensure that the installation and operation of the recycled water system will not result in cross-connections between the recycled water and the potable water piping systems. Describe the pressure test done before the installation of the meter.

6. Pipe locations of both recycled water and potable water systems, or brief explanation for the exclusion of the system not shown.

## 5.6 Plan Check Procedure

The submittal of improvement plans for plan checking is to ensure that the proposed use of recycled water conforms to the approved uses as set forth herein.

### 5.6.1 Plan Check and Inspection

Completed construction drawings for all on-site and natural treatment system recycled water systems must be submitted to IRWD for plan checking and approval before construction. Ten working days should typically be allowed for plan check. Two blueprints of the plans, either 24-inch x 36-inch or 30-inch x 42-inch and two sets of the specifications (only the portion regarding the recycled water system) must be submitted. Submittals for recycled water for natural treatment systems shall include two sets of planting plans. If there are potable water systems within the design area, capture and add to the irrigation plans. If not, one set of blueprints and specifications of the potable water system facilities shall also be submitted. IRWD will review the plans and will return one set with any comments. After any comments have been incorporated into the plans and specifications, the originals of the plans should be submitted to IRWD for approval. IRWD will provide the signature block. After the originals have been approved, three (3) sets of blueprints and one compact disc (CD) shall be submitted to IRWD. The CD shall contain the approved plan set in a single PDF file with the pages arranged in correct order. The PDF file shall store and print out full sized signed documents to the actual drawing scale (size on size). The PDF file shall be submitted to IRWD as a Design set. The CD shall be labeled "Design Set" with plan check number and project name. Minor changes to the systems will be reviewed by the District Inspector (see Subsection 5.7 herein). If

major changes are made to the irrigation system, the owner, applicant, or customer shall provide a new CD showing the modifications to the system. The new CD shall be submitted to IRWD upon written request by the District Engineer.

IRWD shall be given the opportunity to inspect the construction of all on-site facilities and shall be notified two working days in advance of construction by the applicant, owner, or customer. The IRWD Engineering Office should be called at (949) 453-5300. In no case shall recycled lines be backfilled before inspection by the District Inspector.

If the on-site system or system for natural treatment system irrigation is installed prior to plan approval and/or inspection, all or any portion of the systems must be exposed and corrected as directed by the District Inspector in accordance with the standard specification. Failure to comply will result in termination of service as provided for in Section 14 of the IRWD Rules and Regulations.

Subsequent to plan approval, field conditions may dictate modifications to the on-site system either in material or in intended use. If directed by the District Inspector the owner, applicant, or customer shall perform all changes or modify the on-site system to bring the system or use into full compliance with these construction specifications and with the IRWD Rules and Regulations. If for any reason the system cannot be corrected or modified to the satisfaction of the District Inspector, the system will be subject to conversion to a potable water supply.

### 5.6.2 Coverage Test

The owner, applicant, or customer is responsible for controlling overspray and runoff on new systems or systems requesting conversion. To ensure that any overspray and runoff is in accordance with the IRWD Rules and Regulations, an inspection of the on-site system by IRWD is required. When the sprinkler system is completed and the planting installed, the owner or owner's representative shall contact IRWD's Engineering Department at (949) 453-5300 and arrange for a coverage test walk through. The owner or owner's representative must be in attendance and have persons capable of making system adjustments. If modifications to the system are required, other than minor adjustments, the owner will be notified in writing of the changes required. To avoid termination of service, the modifications must be made in a timely manner. All modifications to the system are the responsibility of the owner, applicant, or customer and said owner, applicant, or customer shall pay all costs associated with such modifications.

## 5.7 Record Drawings

Record drawings shall be prepared and shall show 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 including any changes that may be affected by the requirements of these standard specifications, shall be approved by IRWD before implementing the change in the construction contract. Failure to receive prior approval may result in termination of service.

Upon completion of each increment of work, all required information and dimensions shall be transferred to the record drawings. Facilities and items to be located and verified on the record drawings will include, but are not necessarily limited to the following:

A. Point of connection.

B. Routing of sprinkler pressure lines.

C. Gate valves.

D. Sprinkler control valves.

E. Quick-coupling valves.

F. Routing of control wires.

G. Other related equipment as specified by the District Inspector or the owner.

Changes and dimensions shall be recorded in a legible and workmanlike manner. Record construction drawings shall be maintained at the job site during construction. A set of record drawings shall be given to the on-site recycled water User Supervisor.

The applicant, owner, or customer shall provide a complete set of record drawings on CD in PDF format, as referenced in Section 5.6.1, to IRWD upon completion of construction. The CD shall be labeled as "Record Drawings" with plan check number and project name. Prior arrangements must be made with IRWD if water service is to be provided prior to record blue line submittal. Failure to provide record drawings will result in termination of service.

## 5.8 Conversion from a Potable Water to Recycled Water Supply

In general, as provided for in Section 5.4 of the IRWD Rules and Regulations, all irrigation facilities converting from a potable to a recycled water supply shall conform to IRWD's construction specifications as contained herein. IRWD will notify both state and county health agencies of the intent to convert and solicit their involvement throughout the process. The facilities to be converted shall be investigated in detail including review of any record drawings, preparation of required reports, and determinations by IRWD of measures necessary to bring the system into full compliance with these standard specifications. The applicant, owner, or customer shall pay all costs to convert the system.

## 5.9 Conversion of Recycled Water to a Potable Water Supply

As set forth in Section 14 of the IRWD Rules and Regulations, if due to any system failure, use violations, or reasons as determined by IRWD, it becomes necessary to convert from a recycled water supply to a potable water supply, it shall be the responsibility of the owner, applicant, or customer to pay all costs for such conversion, by way of, but not limited to, the following items:

A. After notifying state and county health agencies of IRWD's intention, isolate the recycled water supply, service shall be removed and plugged at the IRWD main or abandoned in a manner approved by the District Engineer. The onsite system will then be disinfected in accordance with the following procedures:

    1. Shock the system to be converted with 50 ppm of chlorine for 24 hours.

2. Measure the chlorine residual after 24 hours. If a residual greater than 25 ppm is maintained, then continue to the next step. If the residual is below 25 ppm, then re-chlorinate by returning to the previous step until the chlorine residual can be maintained above 25 ppm.

3. Flush the system with potable water and perform a standard bacteriological test. The final test results must be acceptable to IRWD before recharging the system.

B. Installation and immediate testing of approved backflow assemblies on any and all meter connections.

C. Removal of the special recycled water quick couplers and their replacement with approved quick coupler valves for potable water systems.

D. Notification to all personnel involved.

E. Removal of all warning labels.

F. Installation of all potable water lines and payment of all connection fees due, as provided for in the IRWD Rules and Regulations, Exhibit B.

## 5.10 Construction Specifications

### 5.10.1 Pipe Identification

All buried on-site piping in the recycled water system shall be purple-colored PVC pipe with stenciling identifying it as recycled water in accordance with the AWWA Guidelines for the Distribution of Non-potable Water. All recycled water main line piping under paved areas shall be installed in a Class 200 purple-colored PVC sleeve.

Standard PVC pipe completely wrapped with purple warning tape, as specified below, may be accepted as an alternative to stenciled purple-colored PVC pipe only on a project-by-project basis with prior written approval from the District Engineer. The color of the tape must be in accordance with the AWWA Guidelines for the Distribution of Non-potable Water.

A. Purple Pipe

Recycled water piping shall be purple-colored PVC. The pipe shall be identified as recycled water pipe by continuous marking. The markings shall include the following:

"CAUTION: RECYCLED WATER - DO NOT DRINK," nominal pipe size, PVC-1120, pressure rating in pounds per square inch at 73 degrees, and ASTM designations such as 1785, 2241, 2672, 3139. Printing shall be placed continuous on two sides of the pipe.

B. Warning Tape

The plastic warning tape shall be prepared with black printing on a purple field having the words, "CAUTION: RECYCLED WATER - DO NOT DRINK." The overall width shall be a minimum of 3 inches.

Warning (caution) tape shall be as manufactured by Thor Enterprises, Inc., P.O. Box 450, Sun Prairie, WI 53590 (1-800-USA-THOR or 1-602-837-7197) or approved equal.

Warning tapes shall be installed directly on the top of the pipe longitudinally and shall be centered. The warning tape shall be installed continuous for the entire length of the pipe and shall be fastened to each pipe length by plastic tape banded around the pipe with fasteners no more than 5 feet apart. Taping attached to the sections of pipe before laying in the trench shall have flaps sufficient for continuous coverage. All risers between the main line and control valves shall be installed with warning tape.

**5.10.2 Quick-coupling Valves**

A. Recycled Water

Quick-coupling valves used in recycled water systems shall conform to the following:

(1) Quick-coupling valves shall be constructed of brass with a purple rubber or vinyl cover, and shall have a 3/4 or 1-inch inlet.

(2) The cover shall have a warning with the following information:

(a) "RECYCLED WATER."

(b) "DO NOT DRINK" in English and Spanish.

(c) The international "Do Not Drink" symbol, such as a glass of water with a slash through it.

(3) The warning shall be permanently stamped or molded into the cover.

(4) Locking covers may be required.

(5) All recycled water quick-coupling valves shall be installed below grade in a round box designed for irrigation use.

B. Potable Water

(1) Quick-coupling valves used in potable water systems shall have a cover made of brass, metal, or yellow rubber or vinyl.

(2) Quick-coupling valves intended for recycled water use are not to be used on potable water systems.

### 5.10.3 Sprinklers

All on-site recycled water facilities shall have restricted public access so that the general public cannot draw water from the system. Facilities, such as wash down hydrants (typically found at tennis courts), blow-off hydrants, blowouts on strainers, and other such facilities, shall be restricted from public access. These facilities, both above and below grade, shall be housed in an approved lockable container and identified as for recycled water. A sign reading "CAUTION: RECYCLED WATER - DO NOT DRINK" shall be installed, and its size must be approved by the District Engineer. An alternative acceptable means of restricting public access is the use of valves that operate by means of a recessed key slot or by means of hexagonal heads (such as those typically found on fire hydrants). Other means of restricting public access may be approved by the District Engineer.

The above conditions may also apply to recycled water facilities for natural treatment system irrigation, as determined by the District.

### 5.10.4 Warning Labels

IRWD may require warning labels, as approved by the District Engineer, to be installed on designated facilities such as on controller panels, blow-off hydrants on water trucks and temporary construction services where designated by the District Engineer or Inspector. The labels will notify that the system contains recycled water that is unsafe to drink.

### 5.10.5 Valve Boxes and Warning Tags

A. Boxes

(1) All gate valves, manual control valves, quick coupling valves, electrical control valves, pressure reducing valves, strainers for on-site recycled water systems shall be installed below grade in a valve box. All appurtenances shall be tagged as described below, B. Valve Tags

(2) Electrical and manual control valve boxes shall have a warning label permanently molded into or affixed onto the lid with rivets, bolts, etc. Warning labels shall be constructed of weatherproof material with the warning permanently stamped or molded into the label. The warning shall contain the following information:

(a) "RECYCLED WATER."

(b) "DO NOT DRINK" in English and Spanish.

(c) The international "Do Not Drink" symbol, such as a glass of water with a slash through it.

B. Valve Tags

All recycled water sprinkler control valves, strainers, pressure regulators, quick couplers, isolation valves shall be tagged with identification tags.

(1) Tags shall be weatherproof plastic, 3-inch x 4-inch, purple in color with the words "WARNING - RECYCLED WATER - DO NOT DRINK" imprinted on one side, and "AVISA - AGUA IMPURA - NO TOMAR" on the other side. Imprinting shall be permanent and black in color. Use tags as manufactured by T. Christy Enterprises or approved equal.

(2) One tag shall be attached to each appurtenance as follows:

(a) Attach to valve stem directly or with plastic tie wrap or

(b) Attach to solenoid wire directly or with plastic tie wrap or

(c) Attach to valve cover with existing valve cover bolt.

(d) Attach to the body of the relative appurtenance with a plastic tie-wrap.

### 5.10.6 Quick Couplers, Strainers, and Pressure Reducing Valves

A. Quick Couplers

Recycled water quick couplers must be purple and installed below grade in a valve box.

B. Strainers

Sprinkler irrigation systems shall have a Y or basket strainer located downstream of the meter. The strainer shall have a 30-mesh or finer screen. Strainers that have automatic backwash features will not normally be allowed unless it can be demonstrated to IRWD that the backwash water will not cause runoff and is disposed of in a manner approved by IRWD. The strainer drain valve shall operate with a recessed key slot.

C. Pressure-Reducing Valves

A pressure-reducing valve must be installed down-stream of the strainer for each system using recycled water, unless otherwise directed by IRWD.

D. Strainer and P.R.V. Boxes

All strainers and pressure-reducing valves shall be installed below grade in a rectangular box of sufficient size to easily allow repair or replacement of the unit(s).

E. Point of Connection (POC) Assembly

Install the POC assembly as follows, quick coupler immediately after the meter, strainer, pressure regulator, master valve (optional) and quick coupler. This POC assembly shall be installed below-grade and as near as possible to the meter or as directed by the On-Site Recycled Water Inspector.

### 5.10.7 Recycled Water Piping

A. General

All on-site recycled water piping shall be installed in accordance with the Uniform Plumbing Code and all other local governing codes, rules, and regulations. All piping shall be continuously and permanently marked with the manufacturer's name or trademark, nominal size, and schedule or class indicating the pressure rating. All on-site recycled water piping shall also be identified as conveying recycled water.

B. Minimal Requirements of Piping and Fittings

The minimum class or schedule of piping and fittings shall be as follows:

(1) Asbestos cement: Class 150, AWWA C3.

(2) Cast-iron fittings for ACP.: ANSI 21.10 and AWWA C110.

(3) Galvanized steel: Schedule 40, mild steel screwed pipe.

(4) Galvanized malleable iron fittings: ANSI B-16.3.1.

(5) Hard drawn copper Type K: ANSI H-26.1 and ASTM B 88.

(6) Wrought copper or bronze solder fittings: ANSI B.16.22.

(7) PVC constant pressure main line piping 2 inches and larger: Rubber-ring joint, PVC Class 200, or solvent weld joint, PVC Class 315.

(8) PVC constant pressure main line piping 1-1/2 inches and smaller: Solvent weld joint, PVC Schedule 40.

(9) PVC intermittent pressure lateral line piping: Solvent weld joint, PVC Class 200, Schedule 40.

(10) PVC fittings: PVC Schedule 40 solvent weld and factory manufactured, or Schedule 40 with rubber-ring joint.

(11) Tubing for drip irrigation systems: Manufactured from virgin polyethylene conforming to ASTM D 1248, Type II, Class C, or approved equals, such as Elastolene and Polybutylene.

(12) Electrical conduits for irrigation wiring: PVC Schedule 40.

(13) Above-ground irrigation pipe: Ultra-Violet Resistant (UVR) and clearly identified as recycled water pipe by continuous marking.

The markings shall include the following: CAUTION RECYCLED WATER – DO NOT DRINK.

C. PVC Piping

PVC plastic pipe fittings shall conform to the following:

(1) PVC plastic pipe and fittings shall be installed below grade.

(2) All PVC pipe shall be made from Grade I compound conforming to ASTM D 1784.

(3) All PVC Schedule 40 and Schedule 80 pipe shall be manufactured conforming to ASTM D 1785 and D 2466 and shall meet requirements set forth in Federal Specifications PS-21.

(4) All PVC Class 200, and Class 315 solvent weld and Ring-Tite pipe shall be manufactured conforming to ASTM D 2241 and meet requirements set forth in Federal Specification PS-22, with Standard Dimension Ration (SDR) for pressure rated pipe. Pipe shall be extruded from approved Class 12454-PVC with resin specifications conforming to ASTM D 1784 and rubber rings conforming to ASTM D 169.

(5) All pipe shall be homogeneous throughout, free from visible cracks, holes, or foreign materials. The pipe shall be free from blisters, dents, wrinkles or ripples, die, and heat marks.

(6) All PVC plastic pipe fittings shall be rigid PVC virgin Type I, minimum Schedule 40, with working pressure no lower than that of the pipe. Sockets shall be tapered to conform to the outside diameter of the pipe, as recommended by the pipe manufacturer. All Schedule 40 fittings shall conform to ASTM D 2466. Schedule 80 fittings shall conform to ASTM D 2464 and D 2467.

(7) All fittings shall be injection molded of an improved PVC fitting compound featuring high tensile strength, high chemical resistance, and high strength. The compound must meet the requirements described in ASTM D 1784 and D 2466, cell classification 13454B. Where threads are required for plastic fittings, they shall also be injected molded. All tees and ells shall be side gated.

(8) PVC solvent cement shall conform to ASTM D 2564.

### 5.10.8 Potable Water Piping

All PVC potable water piping installed within the same project limits as the on-site recycled water piping shall be installed in accordance with the Uniform Plumbing Code and all other local governing codes, rules, and regulations. The pipe shall be continuously and permanently marked with the manufacturer's name or trademark, nominal size, and schedule or class indicating the pressure rating. In addition, all PVC potable water piping shall have blue tape identifying it as a

potable water line and stating "CAUTION: WATER LINE BURIED BELOW." See Section 5.11, item G., for tape installation requirements.

## 5.11 Special On-Site Recycled Water Notes

The following special on-site recycled water notes are to be shown on all on-site recycled water system construction plans:

A. The installation of the irrigation water system shall conform to the regulations for the construction of irrigation water systems within IRWD and the accompanying plans and specifications.

B. All on-site recycled and potable water piping installed on this project shall be identified in accordance with the IRWD Rules and Regulations and the irrigation specifications.

C. Recycled water piping shall be purple PVC. Constant pressure main line piping 2" and larger: Rubber-ring joint, PVC Class 200; solvent weld joint: PVC Class 315. Constant pressure main line piping 1 ½" and smaller: PVC Schedule 40. Intermittent pressure lateral line piping: Solvent weld joint, PVC Class 200, Schedule 40.

D. Marking on the purple PVC pipe shall include the following:

"CAUTION: RECYCLED WATER - DO NOT DRINK," nominal pipe size, PVC-1120, pressure rating in pounds per square inch at 73 degrees, and ASTM designations such as 1785, 2241, 2672, 3139. Printing shall be placed continuously on two sides of the pipe.

E. All recycled water sprinkler control valves, isolation valves, quick couplers, and all appurtenances shall be tagged with identification tags.

(1) Tags shall be weatherproof plastic, 3-inch x 4-inch, purple in color with the words "WARNING - RECYCLED WATER - DO NOT DRINK" imprinted on one side, and "AVISO - AGUA IMPURA - NO TOMAR" on the other side. Imprinting shall be permanent and black in color. Use tags as manufactured by T. Christy Enterprises or approved equal.

(2) One tag shall be attached to each appurtenance as follows:

(a) Attach to valve stem directly or with plastic tie-wrap or

(b) Attach to solenoid wire directly or with plastic tie-wrap or

(c) Attach to valve cover with existing valve cover bolt.

(d) Attach to the body of the relative appurtenance with a plastic tie-wrap.

F. Warning tape shall be used on all constant pressure main line piping carrying potable water.

G. Warning tape shall be a minimum of 3 inches wide and shall run continuously for the entire length of all constant pressure main line piping. The tape shall be attached to the top of the pipe with plastic tape banded around the warning tape and the pipe every five feet on center.

H. Warning tape for the constant pressure potable water piping shall be blue in color with the words "CAUTION: BURIED WATER LINE BELOW" imprinted in minimum 1-inch high letters, black in color. Imprinting shall be continuous and permanent.

I. IRWD shall be notified two days prior to the start of irrigation construction at (949) 453-5300 and each workday thereafter until completion of project.

J. All pressure main line piping from the recycled water system shall be installed to maintain 10 feet minimum horizontal separation from all potable water piping. Where recycled and potable water pressure main line piping cross, the recycled water piping shall be installed below the potable water piping in a Class 200 purple-colored PVC sleeve which extends a minimum of 5 feet on either side of the potable water piping. Provide a minimum vertical clearance of 6 inches. Conventional (white) PVC pipe may be used for sleeving material if it is taped with 3-inch wide purple warning tape which reads "CAUTION: RECYCLED WATER - DO NOT DRINK."

K. The irrigation system must be designed to operate between the hours of 9:00 p.m. and 6:00 a.m. unless otherwise directed by the District Engineer.

L. All new common areas where recycled water is used and that are accessible to the general public shall be posted with permanent conspicuous signs that include the following wording in a sign no less than 4 inches high by 8 inches wide: “RECYCLED WATER – DO NOT DRINK”. Each sign shall also display an international symbol conveying the same warning.

M. Adjust spray heads to eliminate overspray onto areas not under the control of the customer, for example, pool decks, private patios, streets and sidewalks.

N. Contact the IRWD Engineering Department office two days prior to the irrigation system coverage test at (949) 453-5300 and arrange a walk through of the system.

O. Failure to comply with any or all of the above guidelines puts your system in violation of the IRWD Rules and Regulations, and will result in termination of service until the appropriate corrective steps have been taken.

P. Warning tape on recycled water constant pressure main line piping is only allowed on project-by-project approval from the District Engineer. If approved, it must follow these installation specifications.

(1) Warning tape shall be used on all constant pressure mains.

(2) Warning tape shall be a minimum of 3 inches wide and shall run continuously for the entire length of all constant pressure main line piping. The tape shall be attached to the top of the pipe with plastic tape banded around the warning tape and the pipe every 5 feet on center.

(3) Warning tape for the constant pressure recycled water piping shall be purple in color with the words "RECYCLED WATER - DO NOT DRINK" imprinted in minimum 1-inch high, black letters. Imprinting shall be continuous and permanent.

For single-family residences receiving recycled water, the following additional notes shall appear on the plans:

Q. All potable water piping outside of the structure shall be copper pipe, which shall have warning tape installed in accordance with items F, G and H above.

R. All recycled water piping shall be purple colored PVC pipe, which shall be marked in accordance with item D above.

S. An approved backflow prevention assembly conforming to the IRWD Rules and Regulations shall be installed on the downstream side of the potable water meter.

T. All quick couplers must be installed within 5 feet of the recycled water meter.

## 5.12 Guidelines for Recycled Water Use

The following guidelines have been established by IRWD in conjunction with OCHCA and Santa Ana Regional Water Quality Control Board. They are intended to provide the basic parameters for the use of recycled water in landscape irrigation. To operate your system in compliance with these guidelines you must:

A. **Irrigate between the hours of 9:00 p.m. and 6:00 a.m. only.** Watering outside this time frame must be done manually with qualified supervisory personnel on-site. No system shall at any time be left unattended during use outside the normal schedule.

B. **Irrigate in a manner that will minimize runoff pooling and ponding.** The application rate shall not exceed the infiltration rate of the soil. Timers must be adjusted so as to be compatible with the lowest soil infiltration rate present. This procedure may be facilitated by the efficient scheduling of the automatic control clocks, i.e., employing the repeat function to break up the total irrigation time into cycles that will promote maximum soil absorption.

C. **Adjust spray heads to eliminate overspray onto areas not under the control of the customer.** For example, pool decks, private patios, streets and sidewalks.

D. **Do not use quick couplers for wash down of hardscape.**

E. **Monitor and maintain the system to minimize equipment and material failure.** Broken sprinkler heads, leaks, unreliable valves, etc., should be repaired as soon as they become apparent.

F. **Educate all maintenance personnel, on a continuous basis, of the presence of recycled water, and the fact that it is not approved for drinking purposes.** Given the high turnover rate of employees in the landscape industry, it is important that this information be disseminated on an almost daily basis. It is you, the landscape contractor, who is responsible for educating each and every one of your employees.

G. **Obtain prior approval for all proposed changes and modifications to any on-site facilities.** Such changes must be submitted to, and approved by, the IRWD Engineering office and designed in accordance with IRWD standards.

Failure to comply with any or all of the above guide-lines puts your system in violation of IRWD's Rules and Regulations, and will result in termination of service until the appropriate corrective steps have been taken.

IRWD feels that the benefits to be derived from the successful application of recycled water justify the operating requirements that have been established. If you have any questions, or if we can be of assistance, please do not hesitate to call our On-Site Recycled Water Group at (949) 453-5300.

## 5.13 Recycled Water for Construction Grading and Other Interim Use

The following are IRWD procedures and guidelines for the specific use of recycled water for construction grading, dust control, compaction and temporary reservoirs.

Recycled water is to be used **only for the above mentioned uses** and may not be used for any other purpose than stated above. There are **no exceptions**. If there is a need for water other than the above-approved uses, e.g., water to construction trailers, hand washes, hose bibs, and temporary sprinklers, one must obtain an approved potable water connection from IRWD.

(1) All construction connections shall be tagged with warning tags, as follows:

"WARNING - RECYCLED WATER - DO NOT DRINK"

"AVISO - AGUA IMPURA – NO TOMAR"

Use tags as manufactured by T. Christy Enterprises or approved equal. Tags shall be affixed to stationary tanks, water trucks, and all service points or any other inlet or outlet using recycled water.

(2) Water trucks, water tanks, or any other receptacle, including but not limited to pipe or hose used for storage or conveyance of recycled water, shall be dedicated solely to that use. Any use other than recycled water must be approved through IRWD and the health agencies.

(3) No fittings, hose or pipe, or any other appurtenance using recycled water shall connect to a potable water source.

(4) All PVC pipe extending from the point of connection shall be purple, and read: "CAUTION RECYCLED WATER." The PVC piping shall conform to all material specifications as set forth by IRWD.

(5) Any water truck, water tank, or other storage receptacle to be converted from recycled water to potable water shall be thoroughly cleaned and disinfected to the satisfaction of IRWD and the health agencies.

(6) Contact the IRWD On-Site Recycled Water Systems Office prior to connection at (949) 453-5300 and arrange for an inspection to ensure compliance with IRWD standards.

(7) Failure to comply with any or all of the above requirements places your construction site in violation of IRWD's Rules and Regulations, and will result in termination of service until the appropriate corrective steps have been taken.

## 5.14 Recycled Water for Full Yard Irrigation of Residential Lots

The following procedures are specific to design, approval, and use of recycled water for full yard irrigation of residential lots and are in addition to requirements for water use and recycled water facilities.

### 5.14.1 General

If recycled water is to be used for full yard irrigation of residential lots, the facilities shall be constructed in accordance with the procedures and requirements set forth below:

(1) The facilities constructed under this project are all new construction. No portion of this project constitutes the retrofitting of irrigation systems for recycled water use.

(2) Individual recycled water on-site facilities shall be designed, constructed and operated by the property owner or their agent. All of these facilities must be reviewed and approved by IRWD prior to installation. Any revisions to the individual recycled water systems shall be reviewed and approved prior to start of construction.

(3) Recycled water facilities are not available to the general public, but rather to a focused group of users who can be identified and communicated with effectively.

(4) Detailed plans and specifications for the irrigation systems of each single family dwelling with full yard irrigation system where recycled water is proposed for use, shall be reviewed and approved by IRWD and inspected during construction to assure compliance.

(5) From Section 5.11 of the IRWD "Procedural Guidelines for the Construction of Water, Sewer, and Recycled Water Facilities" (Procedural Guidelines), SPECIAL ON-SITE RECYCLED WATER NOTES must appear on the submitted and signed irrigation design drawings. The design and installation will reflect all requirements from those notes.

(6) No direct inter-connection between the potable water system and the recycled water system will be allowed.

(7) Hose bibs on recycled water facilities are forbidden.

(8) Recycled water will not be used for any other purpose except for irrigation.

(9) The public water system will be protected by an appropriate backflow prevention assembly at the potable water meter. An approved backflow assembly will be required on each residential potable water meter where recycled water will be used for full yard irrigation.

(10) All the piping system for the recycled water system will be constructed and maintained to be easily differentiated from the potable water piping system. The piping systems will be of different pipe materials.

(11) The recycled water system piping will be purple plastic pipe conforming to IRWD requirements and shall be clearly labeled.

(12) All exterior potable water lines shall be in copper and identified with blue warning tape as carrying potable water.

(13) Approved warning labels shall be installed on all recycled water controller panels located at single-family residences.

(14) Any outlets from the recycled water system shall not be accessible to the public and shall be clearly marked for worker protection.

(15) No piping system used for conveying recycled water shall be converted to potable water without prior written approval from CDPH, OCHCA, and IRWD.

(16) For each single family dwelling full yard irrigation system provided with recycled water, IRWD shall have a service agreement consisting of a water user management program setting forth operating procedures and responsibilities. Each single family dwelling full yard irrigation system shall have designated a User Supervisor, responsible for control of recycled water regulation requirements and cross-connections, who is typically the homeowner, but may be a member of a homeowner-retained landscape maintenance company. The name of the User Supervisor shall be provided upon request by IRWD to the state and county health agencies.

(17) After activation of recycled water service, an initial cross-connection test and inspection of both the entire potable water and full yard recycled water irrigation systems on the site will be conducted under the supervision of an AWWA- certified Cross-Connection Program Specialist employed by IRWD. The initial activation may be supervised by a health agency representative.

### 5.14.2 Construction Specifications

1. Pipe Identification

   All buried water user piping in the recycled water system shall be purple-colored PVC pipe with stenciling identifying it as recycled water in accordance with IRWD's Procedural Guidelines.

2. Purple Pipe

   Recycled water piping shall be purple-colored PVC. The pipe shall be identified as recycled water pipe by continuous marking. The markings shall include the following:

   "CAUTION: RECYCLED WATER - DO NOT DRINK," nominal pipe size, PVC-1120, pressure rating in pounds per square inch at 73 degrees, and

ASTM designations such as 1785, 2241, 2672, 3139. Printing shall be placed continuous on two sides of the pipe.

3. Warning Labels

Approved warning labels shall be installed on all recycled water controller panels located at single-family residences.

### 5.14.3 Initial Cross-connection Test For Individual Residential Lot Final Approval

Notify in written form, the state and county health agencies of the initial test date with intent that both agencies will attend. For the initial cross-connection test, recycled water will be used for the irrigation piping system. The procedures for the initial cross-connection test shall be as follows:

- Verify that the recycled water system is under pressure and operating normally. This is done by manually operating each valve and quick coupler attached to the recycled water system.
- Shut down the recycled water system at the meter service connection.
- Verify that the recycled water system does not have any pressure. This is done by opening a valve downstream of the recycled water connection to relieve pressure, closing the valve, then manually operating each valve and any quick couplers attached to the recycled water system.
- Verify that the potable water system to the lot is under pressure and operating normally. This step is done while the recycled water system is shut off at the meter. The test is accomplished by manually operating all fixtures being supplied by the potable water meter, both interior and exterior of the home.
- Shut down the potable water system at the backflow. Open the recycled system at the meter connection.
- Verify that the recycled water to the lot is under pressure and operating normally.
- Verify that the potable water system does not have any pressure. This is accomplished by opening a valve downstream of the potable water backflow to relieve pressure, closing the valve, then manually operating all fixtures on the interior and exterior of the house being supplied by the potable water meter.
- Open the potable water system at the backflow. The test is now complete.

### 5.14.4 Annual Cross-connection Test for Individual Residential Lots

Annual testing for cross-connections will be conducted on the recycled water system. IRWD shall notify the state and county health agencies of the outcome of the test(s). The annual cross-connection test shall in no case be less than 15 minutes and may be longer if site situations pose complications. The procedures for the annual cross-connection test shall be as follows:

1. Verify the water system is under pressure and operating normally. This is done by manually operating a valve or quick coupler attached to the recycled water system.

2. Leaving the valve or quick coupler open and running while shutting down the recycled water meter at the service connection. The recycled water system will be drained and remain inactive for 15 minutes.

3. At the end of the 15-minute shut down period, verify that the pressure in the recycled water system has completely dissipated through the open valve or quick coupler. A cross-connection is detected if the pressure has not completely dissipated, and the valve at the service connection is not leaking.

4. Open the recycled water service connection if a cross-connection was not detected.

5. The potable water shall remain pressured at all times during the annual recycled water shut down.

**5.14.5 User Supervisor**

IRWD shall be kept informed of the identity of the person responsible for the water piping systems on all premises covered by these regulations. At each premise a User Supervisor shall be designated. This User Supervisor shall be responsible for the installation and use of pipelines and equipment and for the prevention of cross-connections.

In the event of contamination or pollution of the potable water system due to a cross-connection on the premises, the local health officer and IRWD shall be promptly advised by the person responsible for the water system so that appropriate corrective measures may be taken.

(A) <u>User Supervisor Training Program</u>

If there is a non-resident owner, a local User Supervisor shall be appointed. For single-family residences that have a recycled water service connection, the owner shall be considered to be the User Supervisor unless otherwise indicated on the application for the service connection request. In the event that someone other than the owner is designated as the User Supervisor and this person is no longer associated with the property, the owner shall again be considered the User Supervisor until written notification is made to IRWD.

(B) <u>Water Service Termination</u>

When IRWD determines that water uses or conditions encountered by IRWD represent a clear and immediate hazard to IRWD's water supply that cannot be immediately abated, IRWD shall institute the procedure for discontinuing water use.

Conditions or water uses that create a basis for water service termination shall include, but are not limited to, the following:

1. Refusal to install a required backflow prevention assembly.

2. Refusal to test a backflow prevention assembly.

3. Refusal to repair a faulty backflow prevention assembly.

4. Refusal to replace a faulty backflow prevention assembly.

5. Direct or indirect connection between the potable water system and a sewer or recycled water system.

6. Unprotected direct or indirect connection between the potable water system and a system or equipment containing contaminants.

7. Unprotected direct or indirect connection between the potable water system and an on-site auxiliary water system.

8. A situation that presents an immediate health hazard to the potable water system, as determined by the health agency or IRWD.

9. At single-family residences where copper piping is not installed for the water service or purple PVC pipe not meeting IRWD Procedural Guidelines and General Design Requirements is not installed for the recycled water service.

10. IRWD will terminate service to a customer's premise after written notices have been sent specifying the corrective action needed and the time period in which it must be completed. If no action is taken within the allowed time period, water service may be terminated in accordance with Section 14 of the IRWD Rules and Regulations.

    IRWD will make reasonable effort to advise the water user of intent to terminate water service. Then, IRWD will terminate the water service and lock the service valve in the closed position. Water service will not be reinstated until correction of all violations has been approved by IRWD. Failure to correct the violations may result in permanent termination of water service in accordance with Section 14 of the IRWD Rules and Regulations.

## ON-SITE FACILITIES

A. General

The operation and surveillance of on-site water distribution, sewer collection, and recycled water distribution facilities are the responsibility of the applicant, owner, or customer.

B. On-Site Recycled Water Facilities

Pursuant to Section 8.2 of the IRWD Rules and Regulations, the District Manager or authorized representatives of IRWD shall monitor and inspect the entire recycled water system, including on-site and off-site facilities, and for these purposes shall have the right to enter upon the customer's premises during reasonable hours.

The applicant, owner, or customer shall have the following responsibilities in relation to operation of on-site facilities:

1. To make sure that all operations personnel are informed and familiarized with the use of recycled water.

2. To furnish their operations personnel with maintenance instructions, controller charts, and record drawings to ensure proper operation in accordance with the on-site facilities design and these Rules and Regulations.

3. To notify IRWD of any and all updates or proposed changes, modifications, or additions to the on-site facilities, which changes shall require approval by IRWD and shall be designed and constructed according to the requirements, conditions, and standards set forth in IRWD's Rules and Regulations, including but not limited to Section 5.3 thereof. In accordance with the above referenced requirements, conditions, and standards, changes must be submitted to IRWD for plan check and approval prior to construction. The construction shall be inspected by IRWD, and revised record drawings shall be approved by IRWD. IRWD may, if it deems such to be in the best interest of IRWD, waive or modify any of the foregoing.

4. The recycled water facilities must be maintained in accordance with these Rules and Regulations including IRWD's Standard Specification. For example, but not by way of limitation, as stated in the design criteria section of the above referenced specifications:

    a. Cross-connections between potable water facilities and on-site recycled water facilities are forbidden.

    b. Hose bibs on recycled water facilities are forbidden.

    c. Drinking fountains and pools shall be protected from the spray of recycled water.

5. The operation and control of the on-site system shall prevent direct human consumption of recycled water and control and limit runoff. The applicant, owner, or customer shall be responsible for any and all subsequent uses of the recycled water. Operation and control measures to be utilized in this regard shall include, where appropriate, but not be limited to the following:

    a. On-site recycled water facilities shall be operated to prevent or minimize discharge onto areas not under control of the customer. Sprinklers shall be used adjacent to sidewalks, roadways, and property lines that confine the discharge from sprinklers to the design area.

    b. The operation of the on-site recycled water facilities shall be during the periods of minimal use of the service area. Consideration shall be given to allow a maximum dry-out time before the design area will be used.

    c. Recycled water shall be applied at a rate that does not exceed the infiltration rate of the soil. Where varying soil types are present, the design and operation of the recycled water facilities shall be compatible with the lowest infiltration rate of the soil present.

    d. When the application rate exceeds the infiltration rate of the soil, automatic systems shall be utilized and programmed to prevent or minimize the ponding and

runoff of recycled water. The sprinkler shall not be allowed to operate for a time longer than the landscape's water requirement. If runoff occurs before the landscape's water requirements are met, the automatic controls shall be reprogrammed with additional watering cycles of shorter duration to meet the requirements. This method of operation is intended to control and limit runoff.

e. Report shall be made to IRWD of any and all failures in applicant, owner, or customer's system that cause an unauthorized discharge of recycled water.

6. Project shall comply with any and all applicable federal, state, and local statutes, ordinances, regulations, contracts, these Rules and Regulations, and all requirements prescribed by the District Manager and the Board. In the event of violation, all charges and penalties shall be applied and collected by IRWD.

**RECYCLED WATER SYSTEMS**

Authorized representatives of IRWD shall monitor and inspect the entire recycled water system including both on-site and off-site facilities. IRWD shall conduct monitoring programs, maintain a record as deemed necessary, and provide reports as requested by regulatory agencies. The District Manager or authorized representatives of IRWD, in carrying out these functions, shall have the right to enter the customer's premises during reasonable hours for the purpose of inspecting on-site recycled water facilities and areas of recycled water use and to ensure compliance with these Rules and Regulations. This shall include the provision that runoff shall be controlled and limited and the provision that cross-connections between potable water facilities and recycled water facilities do not exist.

For single-family residences receiving recycled water, the User Supervisor shall be responsible for providing access and cooperation to IRWD's representative so that IRWD's representative can perform an annual cross-connection inspection. This inspection shall include pressure testing of the recycled water system to verify that no cross-connections have been made. The permit holder will be responsible for correcting any work that violates IRWD regulations at their expense including any costs associated with repairing and testing the backflow assembly. In addition, if the permit holder changes, an AWWA-certified Cross-Connection Program Specialist from the Cross-Connection Control Group of IRWD will perform a cross-connection survey to verify that no cross-connections exist.

## 5.15 Interior Use of Recycled Water in Dual-Plumbed Buildings

This section is written to address the planning, design, construction, operation and maintenance procedures, and responsibilities relative to state approved applications in dual-plumbed water systems (potable water and recycled water) in buildings. The recycled water dual-plumbed systems provides water for cooling, toilet and urinal flushing, and floor drain trap priming. All other water demands in these buildings will be served from the potable water system.

This section is written in five parts to cover the five phases of development for a dual-plumbed building: planning, design, construction, start-up, and ongoing operation and maintenance.

This section addresses:

- The responsibilities and procedures of IRWD.

- The involvement of the state and county health agencies and the building authority.
- The responsibilities and procedures to be followed by building owners, developers, contractors, and building maintenance personnel.
- Rules and regulations for the use of recycled water.

It is the intent of this section to ensure the safe and effective use of recycled water, and thereby conserve California's precious water resources.

### 5.15.1 Planning Phase

The planning of dual-plumbed non-residential buildings is a combined effort of IRWD, the building department, state and county health agency representatives, local building developers, and engineers. The processing of a proposed non-residential building follows the steps listed below.

A. Conceptual Design Phase

During this phase of the project, the developer engages the services of their staff or outside consultant to determine the feasibility of constructing a building in the IRWD service area. An assessment of the available water, and sewer service is made, along with the establishment of the requirements for service. In addition, the associated costs of obtaining building department approval, permits, and development credits are determined.

Under IRWD Rules and Regulations, recycled water must be used for all approved uses if it is available, or in the determination of IRWD will be available in the near future. This requirement extends beyond landscape irrigation, to all other approved uses. Interior use of recycled water for flushing toilets and urinals, and priming floor drain trap primers, is an approved use.

B. Preliminary Design/EIR Phase

In conjunction with the preparation of preliminary design drawings for the project, the developer must secure sufficient development credits to build the building. In addition, a Conditional Use Permit (CUP) must be secured from the local regulatory agency. During the acquisition of the CUP, a Notice of Preparation (NOP) is prepared and distributed to all affected agencies, including IRWD. Upon the determination that the proposed building is in an area currently being served recycled water, scheduled for conversion to recycled water, or master planned for recycled water, IRWD will respond back to the NOP that for the project to be supplied with an adequate water and sewer system, the building must be dual-plumbed. This response is then incorporated into the Environmental Impact Report (EIR) as a required mitigation measure. For the building authority to approve the project, the developer must satisfy this mitigation measure with the installation of a dual-plumbed system.

C. Design Phase

All recycled water dual distribution systems are designed in accordance with the Uniform Plumbing Code and the provisions of joint IRWD and City of Irvine installation guidelines for non-potable water.

The plan processing sequence is detailed in Appendix A, Section B, which supports Section 5.15.

### 5.15.2 Design Phase

A. Recycled Water Use Specified

Recycled water supplied by IRWD, may be used to supply cooling, toilets, urinals, and to prime floor drain sewer traps in dual-plumbed buildings.

B. Approval to Use Recycled Water

Approval for the above uses shall be considered (as set forth in IRWD's Rules and Regulations) and determined by IRWD in consultation with the state and county health agencies.

C. Design Criteria: Off-Site Recycled Water

Design of all off-site recycled water facilities shall be as set forth in IRWD's Procedural Guidelines, except as modified for specific on-site projects requiring approved engineering reports.

D. Off-Site Plan Check and Approval

Off-site recycled water facility design plans shall be reviewed and approved in accordance with the procedures outlined in IRWD's Procedural Guidelines, as last revised.

E. Design Criteria: On-Site Recycled Water Facilities

Design of all on-site recycled water facilities shall conform to the Uniform Plumbing Code as adopted by the responsible building authority and the following prohibitions and limitations:

1. The recycled water system shall be separate and independent of any potable water system.

2. Cross-connections between any potable water system and the on-site recycled water system are strictly forbidden.

F. On-Site Plan Check and Approval

The on-site recycled water facility construction plans shall be reviewed and approved in accordance with the procedures outlined in IRWD's Procedural Guidelines and General Design Requirements.

G. Service Agreement with IRWD

During IRWD's review of water utility plans for any development, the developer shall enter into a standard water service agreement with IRWD as set forth in Section 2 of IRWD's "Procedural Guidelines."

### 5.15.3 Construction Phase

A. Pre-Construction Conference

Before plumbing construction begins, the developer's contractor shall arrange a pre-construction conference at which will be present the developer's contractor job superintendent, the plumbing contractor, and IRWD's On-Site Recycled Water Inspector. The purpose of this meeting will be to explain IRWD's inspection process, review IRWD's construction specifications, and discuss the construction schedule and any known circumstances that might affect job installation.

B. Inspection

1. The on-site recycled water and potable water systems shall be subject to inspection by IRWD and shall be left open and uncovered until approved by IRWD's On-Site Recycled Water Inspector, who should be contacted at IRWD's offices.

2. If any part of an on-site water system is to be installed and concealed within walls, ceilings, floors, or below grade prior to plan check approval and/or inspection, that part must be exposed for inspection approval by IRWD before closure. If any portion is completed without IRWD's inspection and approval, that portion not inspected will be re-exposed at the sole cost of the developer.

3. IRWD on-site inspection approval be secured subsequent to final approval of the water systems by the responsible building authority, and issuing of a final use approval.

C. Record Log

IRWD's On-Site Recycled Water Inspector will maintain a record log of all inspections for the building project. The record log will become a permanent part of IRWD's file for that project. The record log will consist of:

1. Photographs - Photographs will be taken of the completed recycled water facilities on each floor of the building to document proper installation. Each photo will include a sign, which clearly indicates the name of the project, floor level, and the date of the inspection. The developed photographs will be placed in clear plastic sleeves and kept in IRWD's project file.

2. Inspection Reports - A written record of each inspection will be kept on a special, triplicate, carbonless-transfer inspection report form prepared by IRWD. All original copies will become a part of IRWD's project file. Copies of all inspection reports will be provided to the contractor's job superintendent, the various health agencies, and the responsible building authority, as requested.

D. Construction Specifications

Construction specifications for all on-site building recycled water systems shall be as set forth in Appendix A, Section C, entitled, "Information Required on Plans."

### 5.15.4 Start-Up Phase

A. Initial Water Service

The on-site building recycled water system shall initially be filled, pressure tested, and operated with potable water.

B. Cross-Connection Testing

**The following testing sequence will be used as the initial procedure for all buildings that will have the internal recycled water system connected to IRWD's recycled water supply, or when recycled water conversion occurs a substantial amount of time after the building is occupied, or under certain other subsequent circumstances.**

If the internal recycled water system is ready to be connected to IRWD's recycled water supply, before the building can be occupied, and before the responsible building authority will issue final use approval, the recycled water system must pass a thorough cross-connection test. If the building is already occupied and a substantial amount of time has elapsed between building occupation and ultimate recycled water conversion, this same testing procedure will be used. Also, during the building's subsequent operation and maintenance under circumstances discussed in Section 5.15.5-A, this same testing procedure will be used.

The cross-connection test will be conducted under the supervision of an AWWA-certified Cross-Connection Control Program Specialist from the On-Site Recycled Water Management Section of IRWD. The test will be performed in the presence of representatives of the state and county health agencies, representatives of the responsible building authority, and representatives of the building owner.

Duration of shutdown shall be determined by IRWD, State and County Health Department based on site conditions prior to commencement of testing. At no time will the deactivation period be less than 1 hour or more than 24 hours. IRWD will coordinate scheduling the test. Procedures for the cross-connection test will be as follows:

1. The recycled water to the building will be shut off at the recycled water meter. Verify potable water system is pressurized by randomly testing

fixtures. The recycled water riser will be drained, and the recycled water system will remain de-activated for a period of up to 24 hours.

2. At the end of the de-activation period, test all recycled and potable water fixtures for cross-connection, floor-by-floor, by operating each fixture and checking for flow or no flow in all restrooms, and where there are recycled and potable water supplied fixtures.

3. If there is no flow detected in any of the fixtures (indicating no cross-connection), reactivate the recycled water riser.

4. The potable water to the building will be shut off at the back-flow assembly. The potable water riser will be drained, and the potable water system will remain de-activated for a period of up to 24 hours.

5. At the end of the de-activation period, test all potable and recycled water fixtures for cross-connection, floor-by-floor, by operating each fixture and checking for flow or no flow in all restrooms, and where there are potable and recycled water supplied fixtures.

6. If there is no flow detected in any of the fixtures (indicating no cross-connection), reactivate the potable water riser.

7. For new installations only, disconnect the recycled water riser from the potable water pipeline, remove the reduced-pressure principle backflow prevention assembly (RPPA) at the potable water connection, and connect the recycled water riser to IRWD's recycled water supply.

IRWD will provide written verification of successful test results to the state and county health agencies and the building authority.

C. Response to Confirmed Cross-connection

In the event that a cross-connection is discovered other than during routine cross-connection testing, the appropriate response will be immediately implemented. The most appropriate procedure and its application will be based on specific circumstances of the discovered cross-connection. This will be mutually determined by IRWD staff and health agency representatives. Required water quality samples will be collected by IRWD personnel, chlorine residual tests will be performed on site by IRWD personnel, and bacteriological testing will be performed by a state-certified laboratory. The following procedures describe the minimum appropriate response:

1. If a cross-connection is found by building personnel, the User Supervisor will immediately notify building management of the cross-connection. Building management will immediately notify building tenants not to drink or otherwise use the potable water, post "Warning: Do Not Drink" signs at all potable water fixtures and equipment, and notify IRWD personnel of the cross-connection.

2. Immediately after notifying building management of the cross-connection, the User Supervisor will shut off the recycled water at the meter and begin draining the recycled water riser.

3. Immediately after the recycled water begins to drain from the building, the User Supervisor will shut off the potable water at the meter and drain the potable water riser.

4. IRWD will immediately notify both the state and county health agencies, followed by a written notice within 24 hours. At this juncture, IRWD staff and health agency representatives, upon their mutual review, may choose to tailor the remaining procedures to the specific circumstances of the discovered cross-connection.

5. Uncover and disconnect the cross-connection(s).

6. Turn on the potable water at the meter, and once the building is repressurized with potable water, check all potable water fixtures for pressure and check all recycled water fixtures for no pressure.

7. If no additional cross-connections are found, turn on the recycled water at the meter and repressurize the building, and proceed to step 8.

   If an additional cross-connection is found, turn off the potable water at the meter and drain the potable water riser. Uncover and disconnect the cross-connection(s). After the cross-connection is disconnected, begin again with step 6 through step 16.

8. Turn off the potable water at the meter, depressurize the potable water system at the riser and check all potable water fixtures for no pressure and verify water pressure at all of the recycled water fixtures.

9. If no additional cross-connections are found, repressurize the potable water system, and proceed to step 10.

   If an additional cross-connection is found, turn off the recycled water at the meter and drain the recycled water riser. Uncover and disconnect the cross-connection(s). After the cross-connection is disconnected, begin again with step 6 through step 16.

10. Remove water filter cartridges, etc., from filters on the potable water system.

11. Flush the potable water system before shock chlorination.

12. Shock the potable water system until at least 50 ppm of chlorine residual is available at each outlet. If at least 25 ppm of chlorine residual is not available at each outlet after 24 hours, repeat steps 11 and 12, otherwise proceed to step 13.

13. Flush the potable water system after 24 hours until a normal chlorine residual is detected, and perform standard bacteriological testing.

14. After acceptable bacteriological results are obtained, retest the building following procedures listed in Section 5.15.4-B.

15. Obtain final approval from IRWD, state and county health agencies, and the building authority to begin using the potable water.

16. After the conclusion of the cross-connection incident, IRWD will prepare a "Cross-Connection Incident Report," which includes an explanation of the nature of the cross-connection, and appropriate plans to minimize reoccurrence of a similar cross-connection. Copies of this report will be sent to the state and county health agencies.

If a cross-connection is discovered during routine cross-connection testing (pressure test) being done by building personnel, IRWD staff and health agency representatives, the following procedures describe the minimum appropriate response:

1. If the cross-connection is found during the pressure test, the recycled water system will ordinarily already be depressurized.

2. The User Supervisor will immediately shut off the potable water at the meter and begin draining the potable water riser. At the same time the User Supervisor will ensure that tenants are notified not to drink or otherwise use the potable water, and ensure that "Warning: Do Not Drink" signs are posted at all potable water fixtures and equipment.

3. Uncover and disconnect the cross-connection(s).

4. Continue the sequence of procedures from Section 5.15.4-C, steps 6 through 16 above, to complete the response to the confirmed cross-connection(s).

D. Final Approval and Activation of Recycled Water Service

When all requirements listed below have been met, the on-site building recycled water system will then be filled and placed into operation with recycled water under the supervision of representatives of IRWD's On-Site Recycled Water Section.

1. Both the potable and recycled on-site systems must have received plan approval, and must have been constructed and passed inspection as set forth in the provisions of Section 5.15.

2. Both the potable and recycled on-site systems must have passed the initial cross-connection test.

3. Final approval to use recycled water must be received from CDPH or OCHCA.

4. After health agency approvals, all signs must be posted in restrooms, equipment rooms, and plumber's closets, and all recycled water control valves and appurtenances must be sealed and/or tagged as set forth in this section. Signs, seals, and tags shall be installed under the supervision of IRWD.

5. Before recycled water is put into service, the IRWD On-Site Recycled Water Inspector shall meet with the developer's/owner's designated User

Supervisor for building maintenance to discuss operating procedures and responsibilities, as specified in Section 5.15.5-E.

### 5.15.5 Ongoing Operation and Maintenance

A. Inspection and Testing Frequencies

Ongoing operation and maintenance of dual-plumbed buildings with interior use of recycled water includes both cross-connection control inspection and testing. Inspections will occur annually, with procedures as described below. Testing will occur as often as annually but no less often than once every four years upon approval by state and local health agencies, with procedures as described below.

Determination of cross-connection control testing frequency will be based on a combination of factors: particular facility construction and recycled water use features, established facility inspection and testing performance history, cooperation by on-site staff and/or representatives, and ongoing evaluation by IRWD staff in concert with state and county health agency representatives. The initial testing frequency will not be less than annual. Subsequent lower or higher frequencies will be based on the above-noted factors and mutually declared and documented by IRWD staff and health agency representatives at the close of the previous testing event.

Water system de-activation duration during testing will depend generally on testing frequency. For annual testing frequencies, a 1-hour water system de-activation will generally be adequate. For testing frequencies of greater than one year, a 1-hour water system de-activation will generally be adequate. Alternative water system de-activation duration will be used only by mutual consent of IRWD staff and health agency representatives.

B. Cross-Connection Testing

All buildings with interior recycled water systems will undergo a cross-connection test in accordance with the determinations of Section A above. In addition, prior to commencing the cross-connection test, a dual system inspection will be conducted by the District's Cross-Connection Control Group Inspector and the building authority in the presence of representatives of the state and county health agencies and representatives of the building owner, as follows:

1. Check meter location of the recycled water and potable water systems; verify that no modifications have been made, or cross-connections are visible.

2. Check the potable water RPPA.

3. Check all pumps and equipment, equipment room signs, and exposed piping in the equipment room.

4. Check all recycled water control valves to make sure that seals are still in place and intact. Check all valve control door signs to verify that none has been removed.

5. Check all restroom entrance signs to make sure they are in place and visible.

6. Check all plumber's closets and verify that all signs are in place.

**The following testing sequence will be used for buildings that will have the internal recycled water system connected to IRWD's recycled water supply <u>after</u> the building is occupied and when a substantial amount of time has <u>not elapsed</u> between building occupation and ultimate recycled water conversion, or under certain subsequent circumstances requiring a 1-hour system de-activation. For those subsequent circumstances requiring cross-connection testing with a 24-hour system de-activation, the procedures of Section 5.15.4-B will be followed.**

After the building is occupied, but before the internal recycled water system can be connected to IRWD's recycled water supply, the recycled water system must pass a thorough a cross-connection test. Buildings that have been previously approved for internal recycled water use, and have been tested for cross-connections will also use this same testing procedure, under circumstances discussed in Section 5.15.5-A.

All testing will be conducted under the supervision of an AWWA-certified Cross-Connection Program Specialist from the Cross-Connection Control Group of IRWD. The test will be performed in the presence of representatives of the state and county health agencies, representatives of the responsible building authority, and representatives of the building owner. IRWD will coordinate the scheduling of the test. Procedures for the cross-connection test will be as follows:

1. The recycled water to the building will be shut off at the recycled water meter. The recycled water riser will be drained, and the recycled water system will remain de-activated for a period of 1 hour.

2. At the end of the 1-hour shutdown period, test all recycled and potable water fixtures for cross-connection, floor-by-floor, by operating each fixture and checking for flow or no flow in all restrooms, and where there are recycled and potable water supplied fixtures.

3. If there is no flow detected in any of the fixtures (indicating no cross-connection), reactivate the recycled water riser.

4. The potable water to the building will be shut off at the back-flow assembly. The potable water riser will be drained, and the potable water system will remain de-activated for a period of 1 hour.

5. At the end of the 1-hour shutdown period, test all potable and recycled water fixtures for cross-connection, floor-by-floor, by operating each fixture and checking for flow or no flow in all restrooms, and where there are potable and recycled water supplied fixtures.

6. If there is no flow detected in any of the fixtures (indicating no cross-connection), reactivate the potable water riser.

7. For new installations only, disconnect the recycled water riser from the potable water pipeline, remove the reduced pressure principle backflow prevention assembly (RPPA) at the potable water connection, and connect the recycled water riser to IRWD's recycled water supply.

IRWD will provide written verification of successful test results to the state and county health agencies and the building authority within 30 days. This verification will be accompanied by the declaration, mutually agreed upon among IRWD and the health agencies, of subsequent testing frequency for the subject site.

C. Emergency Response to Confirmed Cross-connection

In the event that a cross-connection is discovered, the procedures detailed in Section 5.15.4-C will be immediately followed.

D. Cross-Connection Inspection

In addition to the detailed cross-connection control testing described herein, annual inspection of all buildings with dual-plumbed systems will be performed by IRWD's Cross-Connection Control Group. This will consist of at a minimum, visual inspection of pump rooms, pressure reducing stations, all bathrooms, signs, tags, etc. A visual inspection of all potable water use areas will be conducted. Other elements of the annual inspection may consist of, but are not necessarily limited to, the following specific items:

1. Run random water sample tests (laboratory samples) on recycled water and potable water.

2. Check walls for visible repairs that might indicate that plumbing changes may have occurred.

3. Check plumber's closets to see if valve seals have been broken.

4. Check with the User Supervisor to ask whether any routine operations or maintenance work has been performed on plumbing systems.

IRWD personnel will keep a record of all inspections, which will become a part of IRWD's project file for each related building.

E. User Supervisor Responsibilities

Each building provided with recycled water for the flushing of toilets, urinals, and floor drain trap priming shall have a User Supervisor designated by the owner/developer to maintain strict control over interior recycled water usage. IRWD will provide the name of this person to the responsible building authority and to the state and county health agencies. The User Supervisor is responsible for the following:

1. Maintaining strict control over the building's water systems.

2. Controlling cross-connections.

3. Immediately informing IRWD's Cross-Connection Control Group at (949) 453-5300 of any water system failures or emergency shut downs.

4. Informing IRWD's Cross-Connection Control Group in advance of scheduled shutdowns for system maintenance.

5. Informing and providing IRWD's Cross-Connection Control Group with plans for proposed changes to the plumbing systems.

Throughout Section 5.15 the position "User Supervisor" shall mean either an individual so designated by the owner/developer or one or more other individuals acting in the same defined capacity and having the same defined responsibilities, in all cases representing the owner/developer.

F. Non-Compliance

Failure to comply with the IRWD Rules and Regulations, and with the provisions of Section 5.15, shall constitute a basis for terminating recycled water service to the building for all approved uses. The specific procedures and conditions for the termination of recycled water service are contained in the service agreement and in the IRWD Rules and Regulations.

G. IRWD Records

IRWD will maintain a database and written records of all dual-plumbed non-residential buildings in the IRWD service area in order to document, track, and schedule all tests. Reports will be provided to the state and county health agencies and the responsible building authority for all dual-plumbed facilities in the IRWD service area.

## 5.16 Recycled Water for Wetland and Adjacent Riparian Areas

### 5.16.1 Wetland and Riparian Areas

In wetland and riparian areas adjacent to wetland areas, low output non-spray irrigation is preferred over spray irrigation or flood irrigation. Drip irrigation is required for all container plants one gallon or larger. Spray and flood irrigation may be approved on a case by case basis after review of the reasons for utilizing spray or flood irrigation.

1. Spray irrigation is allowed above the bankfull line or maximum operating level.
2. Spray irrigation must be directed away from creeks and ponds tributary to the storm drainage system.
3. Flood irrigation will be allowed in those areas that are physically isolated from the drainage system.
4. Permanent physical barriers such as root stop shall be used in areas where runoff into water courses may occur.
5. Root stop and other physical barriers installed as temporary barriers shall be removed when the project receives final acceptance.

### 5.16.2 Irrigation Systems

The irrigation system for wetland and riparian areas adjacent to wetland areas will be designed to minimize actual and potential discharge of irrigation water into the drainage system.

1. All pressurized irrigation lines must have a manual isolation valve located in an area that drains away from the wetland or watercourse. A master valve with or without connection to an irrigation controller is a manual isolation valve. Manual isolation valves must be accessible and clearly marked.
2. All irrigation controllers will have a logic control to shut off irrigation lines that are broken, have missing sprinklers, or otherwise deliver more than a set flow rate.
3. If the project is a Natural Treatment System (NTS) project or adjacent to a NTS project, refer to the NTS guidelines for additional requirements

### 5.16.3 Plan Requirements

Plans shall describe the irrigation system and its operation and detail the environmental setting, to ensure proper operation and maintenance of the irrigation system.

1. All plans will show the centerline and bankfull lines of streams.
2. All plans will show the low operating and maximum fill elevations of ponds.
3. Plan notes will show that all irrigation will be turned off during the rainy season (Oct-Mar).
4. Plan notes will delineate irrigation procedures.
5. Manual attended irrigation is allowed during the rainy season when needed.
    - Non-pressurized irrigation lines must be used below the high water line.

### 5.16.4 Reporting Requirements

Upon plan approval, the IRWD will submit a letter report to the Regional Water Quality Control Board describing the project and how environmental and regulatory concerns are addressed in a manner consistent with State of California regulations and the IRWD Rules and Regulations. The report will contain the following elements:

1. The report will contain a physical description of the project, the sources of water entering the project, the sources of water leaving the project and identification of downstream water courses all the way to the ocean.
2. In addition to pictures and other graphics, the report will provide a narrative of the location of the project identifying natural and manmade landmarks which locate the project.
3. The report will identify any environmental and regulatory concerns and how such concerns are addressed.
4. The report will include a statement that the project has been reviewed and determined to be consistent with State of California regulations and the IRWD Rules and Regulations.

## 5.17 Recycled Water for Wetland and Adjacent Riparian Areas

In wetland areas or riparian areas adjacent to wetland areas, low output/non-spray irrigation is preferred to over spray irrigation or flood irrigation. Low output/non-spray irrigation is required for all container plants one gallon and larger. Spray and flood irrigation may be approved on a case by case basis after review of the reasons for utilizing spray or flood irrigation.

A. General Design; parameters shall be, but not limited to, the following criteria:

1. Spray irrigation is allowed above the bankfull line or maximum operating level.
2. Spray irrigation must be directed away from creeks, ponds and slopes tributary to the storm drainage system.

3. Flood irrigation will be allowed in those areas that are physically isolated from the drainage system.
4. Permanent physical barriers such as root stop shall be used in areas where runoff into water courses may occur.
5. Root stop and other physical barriers installed as temporary barriers shall be removed when the project receives final acceptance.

B. Accidental Discharge Control: the irrigation system for wetland areas or riparian areas adjacent to wetland areas will be designed to minimize actual and potential discharge of irrigation water into the storm drainage system.

1. All pressurized irrigation lines must have an isolation valve located in an area that drains away from the wetland or watercourse. A master valve with or without connection to an irrigation controller is an isolation valve. Isolation valves must be accessible and clearly marked.
2. All irrigation controllers will have a logic control to shut off irrigation lines that are broken, have missing sprinklers, or otherwise deliver more than a set maximum flow rate.

C. Plans; shall describe the irrigation system and its operation and describe the environmental setting, to ensure proper operation and maintenance of the irrigation system.

1. All plans will show the centerline, flow direction and bankfull lines of streams.
2. All plans will show the low operating and maximum fill elevations of ponds.
3. Plan notes will delineate irrigation procedures.
4. Plan notes will show that all irrigation activities will be manually turned off during the rainy season (Oct-Mar).
5. Manual attended irrigation is allowed during the rainy season when needed.
6. Continuously pressurized main or feed irrigation lines shall not be allowed below the high water line. Only intermittently pressurized laterals that can be isolated manually during the rainy season.

D. A letter report will be prepared and submitted to the Regional Water Quality Control Board describing the project and how environmental and regulatory concerns are addressed in a manner consistent with State of California regulations and the IRWD Rules and Regulations. The report will contain the following elements:

1. The report will contain a physical description of the project, the sources of water entering the project, the sources of water leaving the project and identification of downstream water courses all the way to the bay or ocean.

2. In addition to pictures and other graphics, the report will provide a narrative of the location of the project identifying natural and manmade landmarks which locate the project.
3. The report will identify any environmental and regulatory concerns and how such concerns are addressed.
4. The report will include a statement that the project has been reviewed and determined to be consistent with State of California regulations and the IRWD Rules and Regulations.

## APPENDIX A

## PLAN CHECK PROCEDURES FOR ON-SITE BUILDING RECYCLED WATER SYSTEMS

### A. Purpose of the Plan Check

Submittal of the plan check is intended to ensure that the proposed use of recycled water conforms to the approved uses of recycled water in the IRWD service area. The owner, applicant, or customer is solely responsible for all provisions set forth in IRWD's Section 5.15, "Interior Use of Recycled Water in Non-Residential Buildings," as well as those of the responsible building authority. It is not the purpose of the plan check process to guarantee that all requirements have been met. If, during field inspection, the installation and/or material does not meet IRWD standards, the owner, applicant, or customer shall modify the system, as directed by IRWD, in order to bring the system into full compliance with IRWD's design and construction standards.

### B. Plan Check

1. Completed plumbing plans for all buildings with initial approval to use special plumbing systems to convey recycled water for toilet and urinal flushing and floor drain sewer trap priming must be submitted to IRWD, and approved by the On-Site Recycled Water Management Section.

2. The Owner shall submit two sets of plumbing plans, details, and specifications showing the on-site building recycled water and potable water systems.

3. IRWD will review the plans and make comments, if required. The Owner will be notified by telephone when the first check set is complete and ready for pickup.

4. If necessary, a second check will be performed to assure revisions have been incorporated into the plans, details, and specifications.

5. When all revisions have been incorporated, IRWD will request by telephone that the originals be delivered for approval.

6. The Owner will be notified by telephone when plans have been signed and are ready for pickup.

7. The Owner shall provide IRWD with one 11” x 17” signed copy, and one compact disc (CD) containing the electronic file. The CD shall contain the approved plan set with project name captured in the format and in a single PDF file with the pages arranged in correct order. The PDF file shall store and print out full sized signed documents to the actual drawing scale (size on size). These shall be entered into IRWD's project record.

### C. Information Required on Plans

The following notes are to be shown on all on-site building plumbing plans for recycled water and potable water dual-plumbed systems:

IRVINE RANCH WATER DISTRICT

SPECIAL ON-SITE RECYCLED WATER NOTES FOR DUAL-PLUMBED BUILDINGS

A. The installation of the on-site building recycled water system shall conform to the regulations for the construction of such systems within IRWD; the accompanying plans and specifications, and all applicable codes, ordinances, and amendments of the building authority.

B. Before plumbing construction begins, the developer's contractor shall arrange a pre-construction meeting with IRWD's On-Site Recycled Water Inspector and the plumbing contractor; the District Inspector should be contacted at (949) 453-5300.

C. The on-site recycled water and potable water systems shall be subject to inspection by IRWD and shall be exposed until approved by the On-Site Recycled Water Inspector, who should be contacted at (949) 453-5300.

D. At the owners expense an in-line 5 to 7.5 micron filter is required down stream of the recycled water meter and inside the building or secured covered structure; the manufacturer’s name, size, and type shall be called out on the plans.

E. Piping to be used for the recycled water risers within buildings shall be Type L copper pipe, and shall be continuously wrapped with purple colored mylar tape.

F. The internal recycled water identification wrapping tape shall be a nominal 0.005-inch thick, with a minimum width of two inches. The tape shall be fabricated of polyvinyl chloride with a synthetic rubber adhesive, and a clear polypropylene protective coating. The tape shall be purple (Panatone Color No. 249C), and shall be imprinted in nominal 1/2-inch high, black, upper case letters, with the words, "CAUTION: RECYCLED WATER, DO NOT DRINK." The lettering shall be imprinted in two parallel lines, such that after wrapping the pipe with a one-half width overlap, one full line of text is visible.

G. All below grade recycled water piping shall be identified with warning tape. The warning tape shall be an inert plastic film with a minimum thickness of 4 mils. The tape shall be purple (Panatone Color No. 249C), and shall be permanently imprinted in black, upper case letters, with the words, "CAUTION: RECYCLED WATER, DO NOT DRINK." The overall width of the tape and the height of the letters shall correspond to the size of the pipe as follows:

   1. 6-inch and larger pipe shall have 6-inch wide tape with minimum 1 7/8-inch high letters.

   2. 8-inch and larger pipe shall have 12-inch wide tape with minimum 3 1/2-inch high letters.

H. The below grade warning tape shall be:

   1. Installed directly on the top of the pipe longitudinally.

2. Installed continuously for the entire length of the pipe.

3. Fastened to the pipe by plastic adhesive tape banded around the warning tape and pipe at no more than five-foot intervals.

I. All recycled water control valves within buildings shall be lever handle ball valves equipped with a locking feature and shall be located at 48-inches above finished floor. All mechanical equipment that is appurtenant to the recycled water system shall also be painted to match the mylar wrapping tape.

J. Both the potable and recycled water system risers within the buildings shall be equipped with a manual drain, and an air/vacuum relief valve which will allow the entire riser to be drained. Both sources shall drain to sewer.

K. No cross-connections between recycled water and potable water of any kind shall be made with or without mechanical backflow prevention.

L. All recycled water risers within the building, including appurtenances such as air/vacuum relief valves, pressure reducing assemblies, etc., shall be installed in the opposite end of the bathroom from the potable water risers, or opposite walls as applicable, and where feasible.

M. Recycled water piping and potable water piping within the walls, ceilings, or floors will NOT be installed with parallel runs.

N. No stub-outs beyond the plumbing core will be permitted from the recycled water system.

O. Recycled water lines running parallel to potable water lines shall be installed at least ten feet horizontally from potable water lines **where possible and unless exposed**. Where potable and recycled water lines cross the recycled water lines should cross a minimum of one foot below potable water lines. Where separations cannot be maintained, an effective separator, which may consist of, but is not necessarily restricted to, a single sheet of standard drywall, or aluminum sheeting, is to be installed within the wall between recycled water and potable water headers. The effective separator shall extend the full width of the wall section, and be a minimum of three feet in length centered on the piping headers.

P. No changes or connections shall be made to either piping system without approval by the District's On-Site Recycled Water Inspector.

Q. An initial cross-connection test must be successfully completed by IRWD before the building can be occupied. To schedule the test, the developer's contractor should contact IRWD's On-Site Recycled Water Group at (949) 453-5300.

R. All restrooms using recycled water for toilets, urinals, and trap primers will be identified with signs in accordance with the requirements of IRWD and the responsible building authority. At a minimum, the signs will contain 1/2-inch high letters of a highly visible color on a contrasting background. At least one sign shall be installed in each bathroom location. The location will be such that the sign is visible to all users, and the location will be approved by IRWD and the responsible building authority. The signs will have the following text:

"TO CONSERVE WATER, THE RESTROOMS IN THIS BUILDING USE RECYCLED WATER FOR FLUSHING TOILETS AND/OR URINALS."

S. Each equipment room containing recycled water equipment shall have a sign posted in both English and Spanish with the following wording in one-inch high white letters on a purple background:

"CAUTION
RECYCLED WATER
CAUTION DO NOT DRINK

NOTICE
CONTACT BUILDING MANAGEMENT BEFORE PERFORMING ANY WORK ON THIS WATER SYSTEM"

This sign shall be installed in a location that is visible to anyone working on or near recycled water equipment.

T. Each recycled water control valve within a wall shall have its access door into the wall equipped with a warning sign approximately six inches square with wording in 1/2-inch white letters on a purple background. The size, shape, and format of this sign shall be substantially the same as the equipment room signs. The signs shall be attached in the access doorframe by means of two short lengths of bands, and shall hang in the center of the access doorframe. A Spanish language version of the sign shall be installed on the inside of the access door. This sign requirement will be applicable to any and all access doors, hatches, etc.

U. Each lever handle ball control valve, or appurtenance, shall be sealed in a manner approved by IRWD after the recycled water system has been approved and placed into operation. The type of seal shall be, as applicable, either a plastic and wire snap-off padlock seal, or a plastic pull-tie seal and tag, which, if broken after system approval, shall be deemed conclusive evidence that the recycled water system has been accessed. The seals shall have serial numbers. The seals will be supplied by IRWD or by other arrangements acceptable to IRWD.

V. The dual-plumbed plumbing plans and Tenant Improvement Plans shall have the Tenant Improvement Water Note placed on the Title Page of each plan:

Tenant Improvement Water Note: For proper cross-connection testing of this dual-plumbed building, all angle-stop valves serving refrigerator ice-makers, stand-alone ice-makers, domestic type dishwashers, coffee makers and all other appliances, devices or apparatus not regularly classed as plumbing fixtures, served by potable water, must be readily accessible and shall have an extra port (Test Port) with a threaded cap.
An exposed manifold serving multiple angle-stop valves will require only one test port. All flexible lines shall not be concealed and must be visible. If the flexible lines for these appliances exceed ten feet, copper pipe must be used.
(See Irvine Ranch Water District Tenant Improvement Water Note Drawing)
The Test Port shall be used for cross-connection testing only and shall be so tagged or labeled to prevent its use for any other purpose.
See Irvine Ranch Water District Procedural Guidelines Section 5.15.4, B2 & B5 and Section 5.15.5 B2 & B5 for details on dual-plumbed building cross-connection testing procedures.
**Tenant Improvements on recycled water systems are prohibited unless approved in writing by the Irvine Ranch Water District.**

W. Tenant Improvement water stub-outs are only allowed on the domestic water system and must have a valve, threaded cap and identified as domestic water.

X. Recycled water for cooling will serve only the make-up water to the cooling towers. The cooling system shall comply with the following:
    1. A drift eliminator shall be used whenever the cooling system is in operation.
    2. A biocide shall be used to treat the cooling system recirculating water.