



# Recycled Water Irrigation Guideline



## Table of Contents

<b>Section 1. Introduction.....</b>	<b>1</b>
A. Regulations and Ordinances .....	1
B. Recycled Water Landscape Program .....	1
C. Professional requirements.....	2
D. Contact Information.....	2
<b>Section 2. Recycled Water Irrigation Plan Overview .....</b>	<b>3</b>
A. Regulatory Review .....	4
B. Phase 1 – Planning, Design and Acceptance.....	4
C. Plan Check Requirements .....	6
D. Phase 2 – Construction .....	8
E. As-builts .....	9
F. Final Inspection, Site Acceptance and Meter Release.....	9
G. Compliance Management.....	10
<b>Section 3. Recycled Water Irrigation Design Requirements RWUP, RWUE, &amp; RWIP .....</b>	<b>11</b>
A. Planning.....	11
B. Design.....	11
C. Functional Turf .....	12
D. Irrigation Equipment and Materials.....	13
E. Recycled and Potable Water Separation Clearances.....	17
F. POC Sequence .....	18
G. Initial Source of Water Supply .....	19
H. Irrigation Mainline and Lateral Pipe .....	20
I. Cross Connection Test Isolation/Bypass Tee Assembly.....	20
<b>Section 4. Development of the RWUP.....</b>	<b>21</b>
A. RWUP General Information/Setup .....	21
B. RWUP Drawing Standards.....	21

<b>Section 5.</b>	<b>Development of the RWUE.....</b>	<b>23</b>
A.	RWUE General Information/Setup .....	23
B.	RWUE Drawing Standards.....	23
<b>Section 6.</b>	<b>Development of the RWIP .....</b>	<b>26</b>
A.	RWIP General Information/Setup.....	26
B.	RWIP Drawing Standards .....	26
<b>Section 7.</b>	<b>Irrigation Water Budget Calculations .....</b>	<b>29</b>
A.	RWUP .....	29
B.	RWUE .....	29
C.	RWIP.....	29
<b>Section 8.</b>	<b>EMWD Recycled Water Landscape Guideline Toolbox/CAD Standards .....</b>	<b>31</b>
A.	EMWD Recycled Water Landscape Guideline Toolbox .....	31
B.	CAD Standards .....	32
<b>Section 9.</b>	<b>Glossary of Terms.....</b>	<b>33</b>
A.	Terms and Definitions.....	33

**Section 1. Introduction**

Eastern Municipal Water District (EMWD or District) is a full service agency providing water, wastewater and recycled water services to a 555-square mile service area from Moreno Valley southward along the I-215 corridor to Temecula and eastward to Hemet and San Jacinto. EMWD service area encompasses seven cities and unincorporated Riverside County and has a population of 795,000 residents.

In order to help continue providing sustainable and reliable water supplies to its customers, EMWD is committed to maximizing the beneficial use of recycled water for common area landscape.

This document along with the entire EMWD Recycled Water Landscape Guideline Toolbox (Toolbox – See Section 8 of this document for the Toolbox’s contents) are intended to support land use agencies, park districts, school districts, developers, engineers, landscape architects, and contractors in the safe, cost effective, and sustainable planning, design, construction, and management of landscape systems utilizing recycled water.

NOTE: THIS DOCUMENT IS A GENERAL OVERVIEW OF THE RECYCLED WATER. SEE “CAD STANDARD GUIDELINE” FOR MOST CURRENT DESIGN REQUIREMENTS

**A. Regulations and Ordinances**

1. All public and onsite recycled water facilities and use shall be consistent with and adhere to the requirements described in:
  - a. Eastern Municipal Water District Administrative Code
  - b. Ordinance No. 859, Ordinance of the County of Riverside, Establishing Water Efficient Landscape Requirements
  - c. All applicable Federal, State, or Local statutes, regulations, ordinances , and policies

**B. Recycled Water Landscape Program**

1. Recycled water is a safe, reliable, and sustainable source of supply.
2. EMWD’s regulatory responsibilities necessitate the oversight of “post meter” landscape irrigation systems. EMWD’s Recycled Water Landscape Program addresses the planning, design, construction, and management of recycled water landscape irrigation in accordance with regulatory requirements while achieving maximum beneficial use.
3. EMWD’s Recycled Water Landscape Program main objectives are regulatory compliance and data acquisition.

4. EMWD has provided numerous resources intended to aid engineers, landscape architects, and irrigation designers in file management, drafting, and formatting standards set by EMWD and the Division of Drinking Water’s (DDW) Title 22 California Code of Regulations. The personnel involved in drafting and preparing any recycled water plans and exhibits shall be responsible for complying with the practices outlined in the Toolbox for their respective projects.
5. For a complete list of the contents included in the Toolbox, see Section 8 in this document.

C. Professional requirements

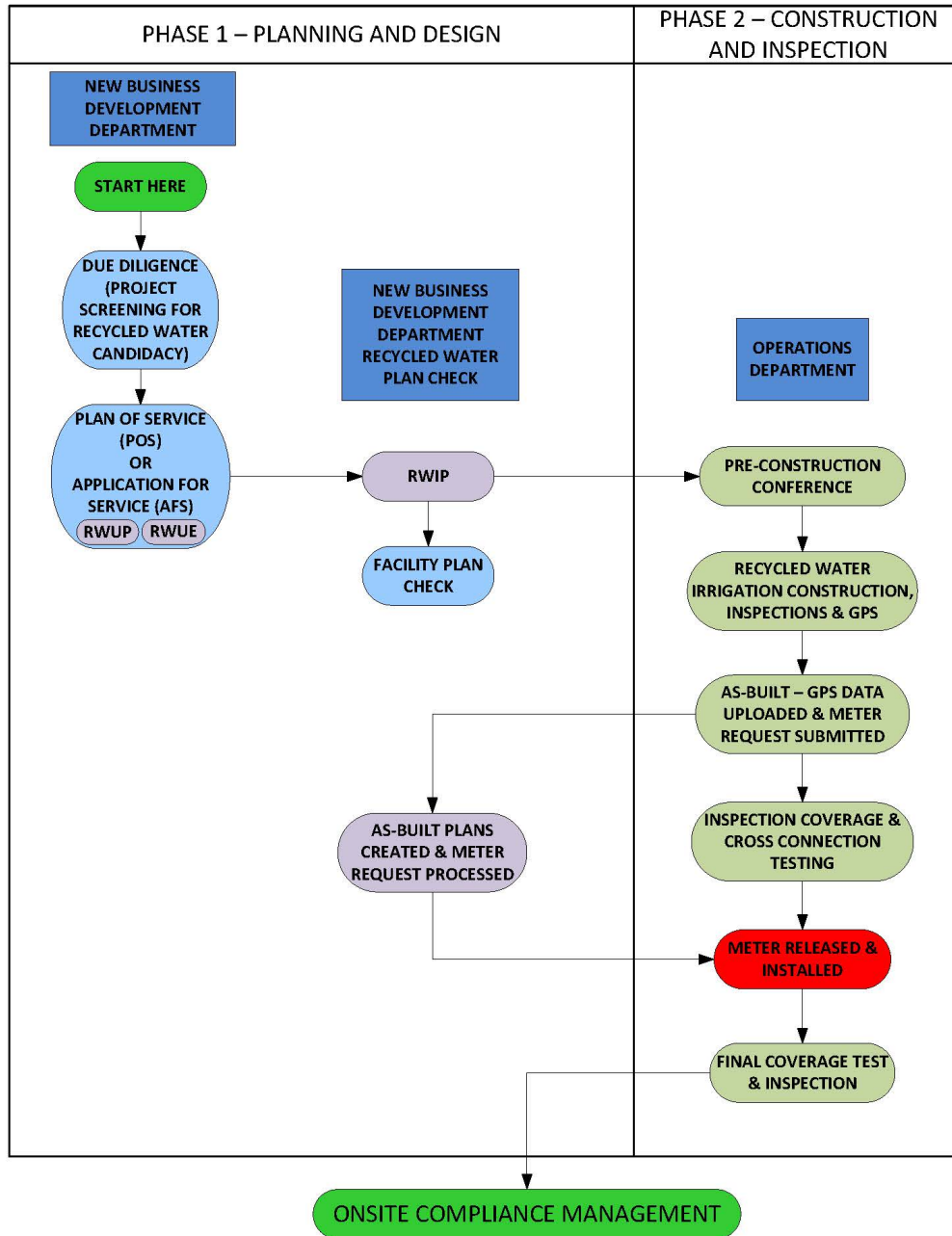
PLAN TYPE	PROFESSIONAL LICENSE REQUIRED	
	CIVIL ENGINEER	LANDSCAPE ARCHITECT
RWUP	YES	YES
RWUE	YES	YES
RWIP		YES

Where both are noted it can be either or.

D. Contact Information

Eastern Municipal Water District  
 ATTN: New Business Development/Recycled Water Plan Check  
 2270 Trumble Road  
 P.O. Box 8300  
 Perris, California 92572-8300  
 Phone: 951.928.3777  
 800.426.3693  
 Fax: 951.928.6177  
 Web: [www.emwd.org](http://www.emwd.org)  
 E-mail: [!RWIrrigationPlanChk@emwd.org](mailto:RWIrrigationPlanChk@emwd.org)  
 Contact: New Business Development/Recycled Water Plan Check

**Section 2. Recycled Water Irrigation Plan Overview**



## A. Regulatory Review

1. Projects requiring a DDW submittal shall be presented to DDW by EMWD. DDW submittal requirements shall be determined by EMWD.
  - a. Project sites that shall require a submittal to DDW include but are not limited to the following:
    - i. Hospitals
    - ii. Schools
    - iii. Project sites deemed to have complex plumbing or contain conditions considered to be high risk by EMWD's ERC Department
    - iv. Retrofit projects

## B. Phase 1 – Planning, Design and Acceptance

### 1. Planning Documents

- a. Recycled Water Use Plan (RWUP)
  - i. The RWUP is a study of recycled water landscape use and the potential effects on future sites that are applying to use recycled water. Multiple and/or phased tracts, parcels, or projects can make up a Study Area (Study Area). The RWUP shall be used for facility planning, facility requirements, pipe alignment, sizing, source of supply information, which may be used for cost participation, land use zones, gross project and Study Area acreage, irrigation total and peak demands, recycled water use restrictions, as well as project phasing.
  - ii. EMWD shall determine when a submittal of an RWUP is required.
- b. Recycled Water Use Exhibit (RWUE)
  - i. The RWUE graphically identifies project elements including:
    - Phasing boundaries (polygon)
    - Parcel boundaries (polygon)
    - Project site area boundaries (polygon)
    - Parcel/ownership boundaries (polygon)
    - Irrigated area and boundaries per POC (polygon)
    - Existing and proposed potable water/recycled water facility sizing and alignment (public and private). This includes including private fire systems
    - Sleeving size, location, and quantity

- Irrigation demand data
- Meter size and location
- Potable and recycled water use area delineation of facilities/use areas
- Source of irrigation water
- Maintenance entity(s)

The RWUE determines the maximum allowable recycled water annual and peak demand for each parcel/property within the Study Area. Therefore, the submittal of RWIPs within a RWUE Study Area shall not exceed the recycled water demand allotment calculated at the RWUE level.

ii. EMWD shall determine when a submittal of an RWUE is required.

c. Recycled Water Irrigation Plan (RWIP)

i. The RWIP is the irrigation construction plan for a specific project site area at a minimum, the plan graphically identifies:

- Project site area boundaries (polygon)
- Parcel boundaries (polygon)
- Phasing boundaries (polygon)
- Existing and proposed potable water/recycled water facility sizing and alignment (private). This includes fire systems
- Meter size and location
- Sleeving size, location, and quantity
- Point of connection (POC) equipment
- Potable water use areas by meter and valve (polygon)
- Recycled water irrigation use areas by meter (polygon)
- Recycled water irrigation use areas by valve (polygon)
- Potable and recycled water use area delineation
- Mainline size and location
- Irrigation system components
- Potable and recycled water line separation
- Irrigation demand data by meter and valve
- Identification of any areas that are restrictive/sensitive to the use of recycled water



- ii. The RWIP provides irrigation specifications allowing EMWD to achieve regulatory compliance through inspections, on-going use site management, and use site data acquisition.
  - d. Recycled Water Irrigation As-Built Plan (RWAB)
    - i. The Recycled Water Irrigation As-Built (As-built) is the As-Constructed condition of the recycled water irrigation system for the project site. EMWD's recycled water irrigation inspector (Inspector) shall GPS the onsite facilities (potable, fire, raw, well, and recycled water) during construction.
    - e. As-built requirements shall be complete prior to meter release.
- C. Plan Check Requirements
- 1. Minimum Submittal Requirements for RWUP, RWUE, & RWIP
    - a. One (1) Hardcopy and a printable PDF (color documents for RWUP and RWUE), or as directed by the plan checker. PDF documents shall be created from the CADD files; no scanned PDF documents shall be accepted.
    - b. AutoCAD files per EMWD's CAD Standard Guideline
    - c. Excel file of the Summary Table
    - d. Project Conditions of Approval from the City, County, or governing agency for the project. If the Conditions of Approval change, EMWD shall be notified and provided with the most current Conditions of Approval. Additional documents that may be required include easements, deeded lots, lot mergers, CCR's, etc. (Failure to provide updated documents may result in delays)
    - e. Private potable water plumbing plan
    - f. Maintenance entity approval of the RWUE and/or RWIP
  - 2. Environmental Restriction Document(s)
    - a. The person or entity applying to receive recycled water on a certain site (Applicant) shall provide documentation from the entity responsible for governing the environmental requirements of any and all restrictions for a site. This may include but is not limited to the following: environmentally sensitive waterways, blue line streams, basins, bio-swales, storm water management, mitigation, habitat area conditions, etc.
  - 3. RWAB Minimum Submittal Documents
    - a. The As-built controller chart(s) from the contractor shall be submitted to the Inspector.

4. Plan Check and Delivery Process of the RWUP, RWUE and RWIP is as follows:
  - a. First Plan Check Submittal
    - i. Once the EMWD Plan Checker (Plan Checker) receives the submittal documents/files and he/she performs an electronic plan check and CAD file review.
    - ii. The Plan Checker shall provide comments back as a PDF file to the developer, engineer, and landscape architect.
  - b. Subsequent Plan Check Submittal
    - i. The Applicant shall re-submit the revised plans, electronic files, and any additional requested documents.
    - ii. Specific re-submittal directions shall be included, if required, in the plan check comments. Digital files can be uploaded or downloaded from the Districts Send Safely site. The Plan Checker shall provide further instructions on how to access the EMWD Send Safely site.
    - iii. Once all comments have been incorporated, EMWD shall notify the Applicant of the accepted document(s) and shall request one (1) set of bonds wet signed by the licensed professional(s).
  - c. Time Limitations
    - i. The time limit on plan check processing shall be six (6) months from the date of the last return of plan check comments or request for information.
    - ii. After six (6) months of inactivity, a response Letter of Notification shall be sent to the Applicant requesting a status or submittal.
    - iii. If there is no response to the notification, the project shall be considered "Idle" and shall be placed on hold.
    - iv. Once the project is placed on hold, an EMWD representative shall forward a letter of intent to the Applicant for information regarding the reason for the delay. Any project expected to be delayed for six (6) months or more shall automatically have the work order closed and final balance refunded or invoiced.
    - v. Should the Applicant want to restart the project after a project is closed, the plan check shall begin at Due Diligence phase.
5. Plan Acceptance Limitations
  - a. The time limit on plan acceptance shall be six (6) months from the date the plan was signed. Any plan that has expired is subject to re-submittal. In addition, any plan that has expired is also subject to re-submittal of the RWUP and/or RWUE.

#### D. Phase 2 – Construction

1. An EMWD Pre-Construction Conference is required prior to the start of Construction. A pre-construction conference is a meeting with the project's superintendent, landscape contractor, project owner, and EMWD. EMWD shall provide accepted RWIP drawings and EMWD's Best Management Practices booklet. Contractor shall provide copies of contractor license(s), material submittals, business cards, and construction schedule. Once all of the above requested items have been received and approved by EMWD, the contractor receives a Notice to Proceed with construction of the recycled water irrigation system.
2. Installation of the irrigation system shall be according to the accepted EMWD plans.
3. EMWD shall conduct onsite inspections during the construction phase to ensure the installation is in accordance with the accepted irrigation plans, and all applicable governing agencies and regulations.
  - a. The recycled water irrigation system shall be inspected for, but not limited to the following:
    - i. Approved emission devices (rotors, spray, drip, bubbler, etc.)
    - ii. Recycled water identification
    - iii. Recycled water separation from all other sources of water
    - iv. POC equipment
    - v. Irrigated area
    - vi. Material
    - vii. Installation depth
    - viii. Valves
    - ix. Sleeves
    - x. Mainline
    - xi. Irrigation controller
    - xii. Coverage tests
    - xiii. Backflow prevention
    - xiv. Cross connection inspection
  - b. All work performed without inspection shall be subject to rejection and removal.
  - c. EMWD reserves the right to access the site any time before, during, and after completion of construction to ensure regulatory compliance.

4. Every project site shall be served from a Temporary Potable Water Construction T-meter during construction. The design of the irrigation system shall account for the potable water pressure operating the system while connected to the temporary potable water source.
  5. Request for Information (RFI)
    - a. RFIs shall be submitted at the direction of the Inspector. Any changes to the site or irrigation system shall receive approval from EMWD prior to the continuation of construction through the RFI process. All approved changes shall be documented through the RWIP update resubmittal, unless otherwise instructed by EMWD.
    - b. The Applicant submits the RFI form to the Inspector who shall review and forward to Plan Checker along with redlines of the revised sheet(s) and/or document package for review.
    - c. The Plan Checker provides comments and/or conditions and, if necessary, requests an updated plan for review and acceptance. Updates to the plans shall be conducted through a delta revision.
- E. As-builts
1. EMWD will as-built POC equipment, mainlines & sleeves, valves, irrigated areas of a set of plan using GPS data.
  2. If requested, EMWD can provide As-built CAD/GIS files of the recycled water irrigation system upon receipt/completion of the following.
- F. Final Inspection, Site Acceptance and Meter Release
1. A final inspection of the recycled water irrigation system shall be conducted by the Inspector with the landscape contractor. The inspection includes a minimum of the following: an irrigation coverage test, irrigation controller operation confirmation, receipt and acceptance of the irrigation controller charts (one complete set of laminated controller charts shall be provided to the District. Second copy of controller charts shall be placed in the controller cabinet), confirmation of identification signs, boxes, tags installation, and the cross connection shut down test.
  2. A cross connection shut down test shall be performed by EMWD prior to final approval and prior to recycled water delivery.
  3. For the meter release, the Inspector shall submit the As-built GPS data, controller charts, and Meter Release form.
    - a. The Applicant completes an Application for Service (AFS) and provides required fees. The Inspector schedules the meter installation with the project's

landscape contractor, the meter is then installed, any final testing is completed, and the irrigation system is released.

#### G. Compliance Management

1. EMWD performs annual site inspections of all recycled water use sites. EMWD may also conduct Cross Connection shut down testing. Testing frequency shall be determined by EMWD.
2. It is the responsibility of the property owner/customer of the recycled water irrigation site to comply with the on-going management inspection correction reports, compliance regulations, record documentation requirements, and to follow EMWD's Best Management Practices.
3. The property owner's/customer's Recycled Water Designated Site Supervisor (Supervisor) shall complete an EMWD approved Recycled Water Designated Supervisor Training course, provided by an EMWD approved trainer.
4. A Supervisor shall be designated in writing. This individual shall be familiar with plumbing systems within the property, with the basic concepts of backflow/cross connection protection, the recycled purveyor's rules and regulations, and the specific requirements of a recycled water system. Said person is required to provide 24-hour contact information, complete EMWD approved site supervisor class, and renew the site supervisor certificate every five (5) years. Up to date contact information for the Supervisor shall be provided to EMWD.
5. All site personnel shall be educated/reminded on a continuous basis of the presence of recycled water. Personnel shall be informed that recycled water is meant for irrigation purposes only and is not approved for drinking purposes, hand washing, cleaning of tools, washing down concrete, etc.
6. Customer's failure to comply with any terms and conditions shall result in an enforcement action, which may include a fee or suspension and/or discontinuance of service.

**Section 3. Recycled Water Irrigation Design Requirements RWUP, RWUE, & RWIP**

## A. Planning

1. It is the responsibility of the Applicant to ensure the civil engineer and the landscape architect collaborate and comply with specified requirements on the development of the public facility alignment, size, irrigation maximum, and peak demands for the Study Area. The demands and public facilities planned from the RWUP set the facility requirements and the limits of water demand for the RWUEs and RWIPs within the Study Area.
2. The civil engineer shall be responsible for designing and providing verification of an infrastructure system that shall support the maximum and peak system demands for the Study Area. This includes the various water pressure conditions for the interim (during construction), temporary potable, and future recycled water source supply conditions so the irrigation system operates with optimum efficiency.
3. It is the responsibility of the Applicant and the licensed professional(s) to coordinate and comply with requirements for all governing agencies within the Study Area to accommodate for all project conditions.

## B. Design

1. The RWUP determines the maximum allowable recycled water annual demand and peak demand for each parcel / property within the Study Area. Therefore, the total water demands of all RWUEs and RWIPs within a RWUP Study Area shall not exceed the recycled water demand allotment calculated at the RWUP level. The plan is comprised of the Site Plan (Civil CAD Base File), the Study Area boundaries, the parcels/properties within each Study Area, and the facilities (existing and proposed serving the Study Area).
2. All recycled water public facilities, including the service lateral and meter shall be adjacent to the parcel it serves.
3. Where conditions require recycled water public facilities installed and connected temporarily to potable water facilities, the location of the temporary intertie shall be identified on the RWUP, RWUEs, and RWIPs.
4. Recycled water irrigation systems using chemical and/or fertilizer injection shall have a Double Check Backflow Device (DC) installed. Backflow devices that release water to the atmosphere are not allowed.

5. Areas sensitive to recycled water uses shall be identified on all recycled water irrigation documents with the restrictions associated with the area indicated. Examples of areas sensitive to recycled water use include mitigation, habitat, potable wells, blue line streams, swimming pools, ponds, basins, drinking fountains, decorative fountains, playground equipment, outdoor eating, and sitting areas.
  - a. Special design considerations are associated with the irrigation design. Requirements shall vary depending on the intended use and level of sensitivity. Specific design criteria shall be provided by the Plan Checker once an RWUE/RWIP has been submitted.
6. The recycled irrigation water shall be contained to the recycled water use site. No discharging/flushing of recycled water into the storm/sewer systems are permitted.
7. The design and installation of irrigation equipment shall eliminate the occurrences of overspray, misting, run-off, and ponding.
8. The irrigation shall be designed to minimize peak system demands.
  - a. Designing to a 9-hour watering window
  - b. The use of bubbler and/or drip irrigation is not limited to the water window restriction
9. All irrigation components shall operate in a manner, which does not allow for unauthorized and/or uncontrolled discharge, flushing, or release of recycled water. For example, internal check valve within irrigation spray heads are required
10. Irrigation valves on a mainline connected to a single meter shall be operated by an automatic irrigation controller
11. Recycled water irrigation shall be designed to operate within a 9-hour irrigation water window (9 PM - 6 AM) for spray and rotor equipment. Upon EMWD approval, drip and bubbler systems may be designed to operate within a 24-hour water window

#### C. Functional Turf

1. Functional turf is defined as a turf area that serves as a surface for such purposes as playing a sport or gathering for group activities
2. Projects that include turf areas for aesthetic purposes shall not be approved

#### D. Irrigation Equipment and Materials

##### 1. Irrigation Design

- a. Any equipment/materials required for a system will vary based on design. However, the following guidelines shall be followed.

##### 2. POC Equipment and Sequence

- a. The equipment and sequence of the POC equipment shall accommodate the system operation and testing regulations. The POC equipment may vary depending upon the water meter type (i.e. temporary potable or recycled), water pressure conditions, use of chemigation or fertigation, etc.
- b. The recycled water POC equipment and sequence is the following: recycled water meter, isolation valve, recycled water quick coupler, backflow device (if necessary), strainer, booster pump (if necessary), pressure regulator (if necessary), master valve (normally closed), flow sensor, chemical and/or fertilizer injector (if necessary)
- c. The POC equipment sequence per meter shall include a ball valve and recycled water quick coupler located directly after the meter (and within 3' of the meter), as a testing station for the Inspector
- d. The irrigation mainline from the water meter to the flow sensor shall be brass piping (for 3" and smaller) or ductile iron/steel piping (for 4" and larger). Dissimilar metal piping requires dielectric coupling
- e. All equipment specified for use within a recycled water irrigation system shall use ethylene propylene diene monomer (EPDM) rubber components, i.e. valve seats, diaphragms, o-rings, etc.
- f. Refer to the POC Sequence Detail available in the Toolbox

##### 3. Quick Coupler Valves

- a. Quick coupler valves shall be of a type approved for recycled water use, have acme threads, be of brass construction, and have a lockable purple cap
- b. Quick coupler valves shall be installed with a recycled water ID tag below grade within a purple lockable valve box with a purple heat branded lid

##### 4. Isolation Valves

- a. Isolation valves shall be installed below grade within a purple lockable valve box with a purple lid
- b. Isolation valves shall include a purple recycled water identification handle, recycled water ID tag, and heat branded lid



- c. Isolation valves shall be included for construction phasing purposes. Refer to the Stub Out Detail available in the Toolbox (The Stub Out Detail illustrates the irrigation mainline is proposed to be phased for construction purposes)
  - d. Isolation valves shall be included for building cross connection purposes. Refer to the Building Cross Connection Bypass Detail in the Toolbox.
5. Backflow Devices (DC or RP)
- a. A Double Check Backflow Device (DC) is required where a permanent or temporary recycled water meter serves an irrigation system containing any form of chemical injection. The DC shall be installed prior to the fertigation or chemigation component
  - b. A Reduced Pressure Backflow Device (RP) is required where a permanent or temporary potable water source serves recycled or potable irrigation system
  - c. Refer to EMWD's Engineering Standards, Specifications, and Drawings: Section 2 (Water Standard Drawings) and Section 8 (Recycled Water Standard Drawings)
  - d. Where backflow prevention is required, the device shall be installed in a manner to restrict public access. EMWD recommends installation within a protected above grade enclosure
6. Strainer
- a. Strainer equipment is required and shall be at least the same nominal size as the irrigation mainline, installed in a manner to restrict public access, within a protected above grade enclosure, and identified as using recycled water
  - b. Strainer equipment with an automatic flush shall be designed and operated to prevent uncontrolled run-off, ponding or discharge outside of the component to atmosphere. All discharge shall be contained within an EMWD approved sump
  - c. Strainers shall be constructed of materials that shall not fail due to sun damage, corrosion, and are approved for use within the recycled water environment
  - d. Strainers shall have the ability to flush the inlet side of the screen
  - e. Strainers shall be factory purple in color with a mesh screen size based on the irrigation system needs
7. Booster Pump
- a. A booster pump is recommended to optimize the operating pressure of the recycled water irrigation system
  - b. Booster pumps shall be designed with a low flow/low pressure cut off switch
  - c. Pressure relief valves shall be piped in a manner that does not release recycled water to atmosphere

- d. Booster pump equipment shall be installed in a manner to restrict public access, within a protected above grade, lockable enclosure and identified as using recycled water
8. Pressure Regulator
    - a. A pressure regulator is recommended to optimize the operating pressure of the irrigation system. Sizing shall meet the design needs of the irrigation system
    - b. A pressure regulator shall be installed below grade within a purple lockable valve box with a purple lid
9. Master Valve
    - a. A master valve shall be normally closed. A parallel master valve and flow sensor configuration is recommended for systems using both drip/bubbler and spray/rotor application methods within a single irrigation system. This will allow the controller to read the lowest flows, as well as the highest flows, minimizing the possibility of uncontrolled discharge due to equipment failure
    - b. The master valve shall be installed in a manner to restrict public access, below grade within a purple lockable valve box with a purple lockable lid, heat branded with component identification, and marked with an ID tag
10. Sensors
    - a. A flow sensor is required and shall be capable of monitoring the lowest and highest flow (in gpm) of the system, which may require a parallel flow sensor system. Refer to the Toolbox for example detail
    - b. The flow sensor shall be installed in a manner to restrict public access, below grade within a purple valve box, with a purple lid, heat branded with component identification, and marked with an ID tag
    - c. A wind sensor is mandatory to prevent over spray of recycled water irrigation during wind events
    - d. A rain sensor is mandatory to prevent the recycled water irrigation system from operating during rain events
    - e. Moisture sensors shall be employed in basins to prevent ponding of recycled water in areas that are already saturated
11. Automatic Irrigation Controllers
    - a. An automatic irrigation controller is required to have the capability to operate the normally closed master valve, flow sensor, booster pump, rain shut off device, moisture sensor, wind sensor, and all other system sensor components
      - i. The irrigation controller shall be installed in a protected enclosure and marked with recycled water identification decals

- b. The irrigation controller shall be capable of turning off the irrigation system during any adverse weather event or irrigation component failure. The irrigation controller shall operate with a real-time evapotranspiration based monitoring system that includes all sensor devices

#### 12. Remote Control Valves

- a. Remote control valves shall have a purple recycled water identification handle
- b. Remote control valves shall be of the type that does not automatically release recycled water to atmosphere
- c. Remote control valves shall be installed with a recycled water ID tag below grade within a purple lockable valve box with a purple heat branded lid

#### 13. Drip Irrigation

- a. The drip irrigation components shall include, but are not limited to the following: pressure regulator, filter, pipe/tubing, adapters, emission devices, etc. Each shall be installed in a manner to identify (purple in color) the use of recycled water, and restrict public access
- b. The drip irrigation flush valve or air release valve shall be of the type that does not automatically release recycled water to atmosphere. Refer to the Manual Flush Valve Detail available in the Toolbox for an example
- c. Irrigation Lateral Line Filters/Valve Strainers
  - i. The irrigation filter and/or valve strainer shall not have a threaded outlet that can accommodate a hose connection
  - ii. The irrigation filter and/or valve strainer shall be of the type that does not automatically release recycled water outside the component to atmosphere
  - iii. The filter and/or valve strainer shall be installed in a manner to restrict public access and shall be identified as using recycled water

#### 14. Irrigation Sleeves

- a. Irrigation sleeves shall be: purple, twice (2) the size of the diameter of the mainline pipe, and a minimum of DR-14 pipe type or EMWD approved equal
- b. EMWD recommends that all recycled irrigation pipe under hardscape, paving, etc., should be carried within an irrigation sleeve and shall be inspected by EMWD at the time of installation
- c. Refer to the EMWD Trench Detail available in the Toolbox
- d. On grade piping shall meet UVR resistance and recycled water identification requirements

### 15. Emission Devices

- a. All irrigation emission devices such as spray heads, rotors, bubblers, drip emitters, or drip assemblies shall be equipped with design features to eliminate recycled water overspray, mist, run-off, or low head drainage. Component features such as, low trajectory, memory arch, internal check valves, precision rotating nozzles, etc., shall be incorporated to meet the latest regulations and optimize the system operation
- b. All recycled water irrigation emission devices shall be permanently color coded or labeled as emitting recycled water

### E. Recycled and Potable Water Separation Clearances

1. All private onsite domestic and fire pipelines shall be designed and installed in a manner that minimizes crossings of recycled water irrigated areas and recycled water mainlines. All domestic and fire pipelines shall be installed under EMWD approved hardscape from the point of connection (meter, DCDA, RPDA, and/or RP) to the point the facility enters a building. An isolation/bypass tee assembly shall be installed where the potable water supply pipeline enters each building/structure. Refer to the Toolbox for Building Cross Connection Bypass detail
2. The recycled water irrigation mainline shall meet the DDW's most current separation requirements:
  - a. Installed with a 4-foot minimum horizontal clearance from all potable, raw, and fire water pipelines
  - b. Installed under all potable, raw, and fire water pipeline crossings with a minimum of one 1-foot vertical clearance
  - c. Where proposed to be installed above the potable, raw, and fire water pipelines, recycled irrigation mainline shall be installed within a 20-foot continuous sleeve (PVC DR-14/CL-200 pipe minimum) with no connection joints. Sleeve shall extend a minimum of ten 10-feet from the center point of the crossing of the potable, raw, or fire water pipeline. 4-inch minimum vertical clearance shall be maintained from the bottom of the sleeve to the top of the adjacent potable, raw, and/or fire water pipeline
3. Potable water services, appurtenances (air-vac, blow-off, meter boxes, etc.), potable water use areas, adjacent properties, adjacent maintenance entities, future installations, etc. shall be separated from the recycled water irrigation use area. The level of separation required is based upon the site condition. Examples of achieving the required separation include the following:
  - a. Sleeve the recycled water irrigation pipe to protect the potable water appurtenance at points of crossing

## Recycled Water Irrigation Design Requirements

- b. Adjust or relocate the irrigation spray equipment to avoid overspray on or in the water potable appurtenance
  - c. Install a concrete mow curb to define the separation of recycled water irrigation use area(s) per meter. Some conditions may require an additional geomembrane barrier to be installed vertically underneath the mow curb
  - d. At a minimum, the installation of a mow curb and a 4-foot minimum offset between recycled water and potable water irrigation emitters shall be maintained when adjacent recycled and potable water irrigation systems are installed
4. Additional Separation Requirements:
- a. Maintain separation from adjacent properties and irrigation system(s) through the use of block walls, fencing, mow curbs, etc. Fencing and wall structures shall be permanent and not have the ability of being easily disassembled (vinyl/wood split rail, etc.)
  - b. Recycled water irrigation shall not be established within 50 feet of wells, ponds, pools, etc. without EMWD and DDW approval
  - c. Recycled water quick coupler valves shall not be established within 50 feet of food preparation areas, outdoor eating areas, play equipment, splash pads, swimming pools, etc.
  - d. Potable quick couplers and potable water hose bibs are not allowed within the recycled water irrigated area unless installed above grade in a lockable enclosure that has been reviewed and approved by EMWD
- F. POC Sequence
1. All recycled water POC equipment shall be installed adjacent to the parcels they serve unless otherwise approved by EMWD
  2. EMWD requires a landscape service connection and meter for landscaped areas. Refer to EMWD Administrative Code for specific service connection requirements
  3. Where conditions require recycled water public facilities (EMWD pipeline) to be installed and connected temporarily to potable water facilities (EMWD pipeline), the RP device model, size and irrigation demand shall be shown on the RWUE. The temporary connection and service lateral shall be sized to accommodate the current and future potential projects that may connect to the recycled water facility that is temporarily fed potable water. A safety factor shall be used in determining the service connection and RP sizing. Refer to the Toolbox for Temporary Intertie Schematic detail

## G. Initial Source of Water Supply

1. A project site may be served by three different types of connections/sources:
  - a. Recycled Water Source: Connected directly to recycled water public facilities (EMWD pipeline) that feed a recycled water meter
  - b. Temporary Potable Water Service: Potable water meter connection to a potable water public facility (EMWD pipeline) designed for future recycled water conversion. Irrigation plans shall require additional review, and approval by EMWD's Conservation Department
  - c. Temporary Potable Water Source: Recycled water mainline (EMWD pipeline) with a recycled water service connection and recycled water meter. The recycled water public facility (EMWD pipeline) has a temporary intertie to a potable water public facility (EMWD pipeline) through an above grade RP device
2. For reference, each recycled water meter/POC shall be assigned a designated numerical value and each potable water meter/POC shall be assigned a designated alphabetical letter. The number/letter designation/identification shall be shown with Standard Drawing Symbols per EMWD's CAD standards. The meter identification/designation shall remain consistent throughout the recycled water irrigation plan check phases (RWUE & RWIP)
3. Water pressure difference due to source of water supply (potable/recycled) may vary due to each system's operation. The Plan Checker shall provide a nominal HGL for the project location
4. It is prohibited to interconnect more than one (1) meter to an irrigation mainline/system
5. Recycled Identification
  - a. The recycled water identification including, warning signs, ID tags, and decals shall comply with the current DDW title 22 and EMWD requirements
  - b. Minimum requirements include the following:
    - i. The location for each recycled water warning sign shall be shown by a symbol on the RWIP. Warning signs shall be posted, at a minimum, at the following locations:
      - Driveway entrances - right hand side
      - Walkway entrances
      - At recycled water meters
      - Every 500' along the perimeter of recycled water use areas.

## Recycled Water Irrigation Design Requirements

- ii. Signs shall be placed to inform the public, maintenance staff, and others that recycled water is being used
- iii. The recycled water warning sign and decals shall be of a size to meet current EMWD compliance and read "CAUTION: RECYCLED WATER, DO NOT DRINK", with letters at least 1 inch high on a purple background and with the international "DO NOT DRINK" symbol sign
- c. The irrigation controller, booster pump, and associated equipment shall be identified by color, recycled water warning signs, and decals. Refer to the Toolbox for the Recycled Water Irrigation Advisory Signage detail

## H. Irrigation Mainline and Lateral Pipe

1. All recycled irrigation pipe shall be purple in color. Recycled irrigation mainline and lateral pipe shall meet the following conditions at a minimum but not limited to:
  - a. Continuous 3" wide recycled water ID tape be installed parallel with and 6" above recycled water irrigation mainline. Recycled water ID tape shall be detectable and purple with the words "CAUTION: RECYCLED WATER" imprinted in minimum 1-inch high black letters. Imprinting shall be continuous and permanent
  - b. On grade purple piping shall meet UVR resistance and recycled water identification requirements

## I. Cross Connection Test Isolation/Bypass Tee Assembly

1. This assembly shall be installed where the potable water supply pipeline enters the building/structure. (Refer to the Toolbox for the Building Cross Connection Bypass detail)
2. The two (2) configurations that are commonly used are:
  - a. Double ball valve with a tee and keyed hose spigot between the ball valves
  - b. Double ball valve with a tee and keyed hose spigot between the ball valves including a second tee and ball valve downstream of the first set to allow for a second supply of water to the building

**Section 4. Development of the RWUP****A. RWUP General Information/Setup**

1. Each RWUP shall include Summary Tables that summarize the demand and parcel data about each Study Area (Refer to Toolbox for examples and tables)
2. The Legend shall provide a list of the data symbols and descriptions shown on the RWUP
3. Each RWUP shall include:
  - a. Legend
  - b. Notes
  - c. Details
  - d. Vicinity Map
  - e. Key Map
4. Each Plan shall include the Vicinity Map on the first sheet
5. Each Plan shall include the Study Area Phasing Map on each sheet

**B. RWUP Drawing Standards**

1. At a minimum, the RWUP shall have the following items labeled/called out (Refer to the Toolbox for an example):
  - a. The Study Area
    - i. Street Names
    - ii. Study Area Boundary
  - b. Study Areas (TM, PM, APN, TTM)
    - i. Phasing Number; i.e. Project Study Area 1
    - ii. Parcel Number; i.e. Parcel 1
    - iii. Legal Parcel Map Number (PM#)
    - iv. Parcel, Property or Project Name
    - v. Tract Map Number (TM#) or Property Description
    - vi. Project Study Area Boundary
    - vii. Public Facilities: Existing or Proposed, Size, Recycled or Potable



- viii. All other project characteristics pertinent to the most current land use plan and recycled water landscape use areas
- Commercial, Industrial, Manufacturing, Park, School, Residential, Streetscape, Medians, Open Space, Basin, Mitigation, etc.

**Section 5. Development of the RWUE**

## A. RWUE General Information/Setup

1. Each RWUE shall include:
  - a. Summary Table
  - b. Legend
  - c. Notes
  - d. Details
  - e. Maps
  - f. Labels

## B. RWUE Drawing Standards

At a minimum, the RWUE shall show and identify the following elements:

1. Descriptions: Parcels, Tracts, Property Boundaries, Lot Lines, APN, etc.
2. Street Improvements: Streets, Street Names, Centerlines, Curbs, Sidewalks, and Right of Way Lines
3. Land Use Types: Commercial, Industrial, Manufacturing, Park, School, Residential, Streetscape, Medians, Open Space, Basin, Mitigation, etc.
4. Structures/Sensitive Use Areas: Buildings, Wells, Fencing, Walls, Parking Lots, Fields, Basins, Pools, Playground Equipment, etc.
5. Project Phasing Lines and Descriptions: i.e. Project Phase I
6. Off-site Public and On-site Private Facilities
  - a. Existing and proposed potable and recycled pipelines, alignments, sizes, station numbers (if available), mainline isolation valves, blow offs, air release/vacuum valves, detector checks (RPDA/DCDA), backflow devices (RP/DC), fire lines, fire hydrants, and temporary EMWD facility intertie through an RP device
  - i. Each facility and appurtenance has a designated color, line type, and symbol, which shall be identified within the Legend (Refer to the Toolbox)
  - b. All projects requiring a DDW submittal shall include onsite plumbing plans with internal building plumbing as part of the RWUE and CAD base files
7. Recycled and Potable Water Meters
  - a. Existing and proposed potable and recycled water meters, locations, sizes, station numbers (if available), and service line alignment from the facility

- i. Each water meter type has a designated color and shall be identified on the RWUE with Standard Drawing Symbols (Refer to the Toolbox for the RWUE “Legend”)
  - ii. The landscape architect shall coordinate with developer/owner engineer and/or architect to obtain all required civil base file and plumbing plans
  - iii. Any existing water service lateral that is not proposed to be used shall be identified with the Standard Drawing Symbol and station number noting the service line to be removed back to the EMWD mainline
8. Recycled and Potable Water Use Areas
  - a. The land use type for all properties and parcels on the RWUE shall be identified and labeled. Each type of water use area shall be designated with a separate color on the RWUE (Refer to the Toolbox for example)
  - b. The boundaries of each recycled and potable water use area shall be defined with the Standard AutoCAD Drawing closed polygon, meter, and layer name
9. At a minimum, the RWUE shall have the following items labeled (Refer to the Toolbox for an example):
  - a. Study Area Limit
  - b. Street Names
  - c. Station Numbers (If available)
  - d. Land Use Type and/or Project Site Area(s); i.e. Streetscape, Park, Basin, Commercial, School, Residential
  - e. Legal Parcel Map Number (PM#) or Tract Map Number (TM#)
  - f. Project Phasing Number; i.e. Project Phase 1
  - g. Facilities; i.e. Offsite, onsite, existing, proposed, recycled, potable, and raw. The labels for these facilities shall also include sizing, EMWD D-sheet (if available), and Work Order Number (WO, if available)
  - h. Fire Lines and Private Onsite Domestic Water Facilities
  - i. Connections between Offsite EMWD Facilities (RW & PW)-Temporary Intertie
  - j. Drinking Fountains
  - k. All Irrigation Sleeving Sizes, Locations, and Quantities
  - l. Required Descriptions for Site Characteristics/elements; i.e. Buildings, building pads, restrooms, parking, sports fields, bio swales, wells, separation, etc.
  - m. Reference Areas Sensitive to Recycled Water Use; i.e. mitigation, potable wells, blue line streams, swimming pools, ponds, basins, decorative fountains, play

grounds, outdoor eating, and sitting areas. Refer to the Toolbox for the Conditions & Mitigation Measures Table in the CAD Standard Guideline

10. For example RWUE drawings, refer to the "RWUE" folder in the Toolbox

**Section 6. Development of the RWIP**

## A. RWIP General Information/Setup

1. All project site areas submitted as an RWIP shall be consistent with the irrigated Study Areas, meter size, meter location, the irrigation maximum, and peak demands set on the accepted RWUE
2. Each RWIP shall include but is not limited to:
  - a. Title Sheet
    - i. Vicinity Map
  - b. Sheet Index Map
    - i. Meter Data Table
  - c. Irrigation Plan
    - i. Detailed Construction Documents
    - ii. Key Map
    - iii. Detail drawings
    - iv. Valve Demand Data Table
    - v. Equipment Legend Specifications

## B. RWIP Drawing Standards

1. The equipment and sequence of the equipment shall accommodate the system's ultimate operation condition and meet all testing requirements. See Section 4 (Recycled Water Irrigation Design Requirements) of this document for further information
2. The following makes up the POC sequence:
  - a. EMWD Meter
  - b. Quick Coupler Valve
  - c. Isolation Valve
  - d. Backflow Device (DC/RP) (If required)
    - i. (Refer to EMWD's Engineering Standards and Specifications for Developer Projects Section 2 and Section 8 for the detailed EMWD Standard Drawings)
  - e. Strainer
  - f. Booster Pump

- g. Pressure Regulator
      - h. Master Valve
      - i. Flow Sensor
      - j. Automatic Irrigation Controllers
        - System weather sensors
3. The following are irrigation system components:
  - a. Remote Control Valves
  - b. Isolation Valves
  - c. Quick Coupler Valves
  - d. Irrigation Lateral Line Filters/Strainers
  - e. Drip, Bubbler, Spray and/or Rotor Irrigation
  - f. Irrigation Pipeline
  - g. Irrigation Sleeves
  - h. Recycled Water Identification Decals/Stickers, ID Tape, Signage, and ID Tags
4. At a minimum, the RWIP shall have the following items labeled (Refer to the Toolbox for an example):
  - a. Study Area Limit
  - b. Street Names
  - c. Station Numbers
  - d. Land Use Type and/or Project Site Area(s): Streetscape, Park, Basin, Commercial, School, or Residential
  - e. Legal Parcel Map Number (PM#) or Tract Map Number (TM#)
  - f. Project Phasing Number; i.e. Project Phase 1
  - g. Water Facility Callouts: offsite, onsite, existing, proposed, recycled, potable, and raw. The labels for these facilities shall also include sizing, EMWD D-sheet (if available), and Work Order Number (WO, if available)
  - h. Fire Lines and Private Onsite Domestic Water Facilities
  - i. Connections between Offsite EMWD Facilities (RW & PW) Temporary Intertie
  - j. Drinking Fountains

- k. Required Descriptions for Site Characteristics/Elements; i.e. Buildings, building pads, restrooms, fencing/walls, mow curbs, parking, sports fields, bio swales, wells, separation, etc.
  - l. Reference Areas Sensitive to Recycled Water Use; i.e. Mitigation, potable wells, blue line streams, swimming pools, ponds, basins, decorative fountains, play grounds, outdoor eating, and sitting areas. Refer to the Toolbox for Conditions & Mitigation Measures Table
5. RWIP Examples (Refer to the Toolbox for example)

**Section 7. Irrigation Water Budget Calculations****A. RWUP**

The formulas for the irrigation demands are summarized in the tables shown on the RWUP. Refer to the Toolbox.

1. The calculations shall be based on the most current land use plan for the projects/parcels within each Study Area and the RWUP Study Area
2. An RWUP is a development study used to determine infrastructure requirements when specific project landscape area information is not yet determined
3. EMWD may require more focused studies to calculate the water budget demands depending on the specific project conditions

**B. RWUE**

The calculations shall be based on the most current land use plan for the projects/parcels within the Study Area. Refer to the Toolbox

1. The water budget calculated at the RWUE level sets the Maximum Irrigation Demand and the Maximum Peak Demand for each meter. As a result, EMWD shall confirm the demands are not exceeded for each meter on the future submittals of the RWIP(s)
2. In cases where an RWUE or a portion of an RWUE lacks specific project landscape area information that can be used to determine specific areas that will be irrigated, refer to the planning criteria formulas used for the RWUP to develop the irrigation demand data
3. EMWD may require more focused studies to calculate the water budget demands depending on the specific project conditions

**C. RWIP**

**Maximum Irrigation Peak Demand Allowed:** For the RWIP, the Maximum Peak Demand shall be based on the design demand (max combination of valves) not the maximum gpm allowed. The max design demand should be identified based on the actual design of the irrigation system and simply "cross-checked" against the maximum peak demand allowed that is referenced on the RWUE/RWUP



1. As of 2015, EMWD requirements state that calculations shall be based on 50% of July Eton at the nearest CIMIS Station
  - a. The water budget calculated at the RWIP level sets the Maximum Irrigation Demand and the Maximum Peak Demand for each meter. As a result, EMWD shall confirm the demands for each meter do not exceed the demands as conditioned by the RWUE. Final RWIP irrigation system demands shall be based on valve data table combinations
  - b. A Valve Demand Data Table identifying meter designation, valve ID, valve area served in square feet (sf), valve demand in gpm, irrigation type (drip, bubbler, rotor, etc.), cycle duration (run time), order of operation (series), total quantity of water used (AF/y), and run time totals per valve/controller per day, is required for each RWIP
  - c. EMWD may require more focused studies to calculate the water demands depending on the specific project conditions

**Section 8. EMWD Recycled Water Landscape Guideline Toolbox/CAD Standards**

## A. EMWD Recycled Water Landscape Guideline Toolbox

1. The Recycled Water Landscape Guideline Toolbox has numerous resources in the format of PDF, word documents, excel spreadsheets, and AutoCAD templates developed by EMWD to assist in the development of the documents needed for recycled water landscape use sites
  - a. 01\_RW Landscape Irrigation Guideline V1.2
    - i. Recycled Water Landscape Irrigation Guideline Version 1.2 (This document)
    - ii. CAD Standard Guideline (Most current design requirements and AutoCAD standards)
  - b. 02\_Standard CAD Layer and Block Standards
  - c. 03\_Title Block Drawing
  - d. 04\_Maps
    - i. Vicinity Map
    - ii. Key Map
    - iii. Base Example
    - iv. Project Study Area Map
  - e. 05\_RWUP
    - i. Legends
    - ii. Notes
    - iii. RWUP Example
    - iv. Tables
  - f. 06\_RWUE
    - i. Legends
    - ii. Notes
    - iii. RWUE Examples
    - iv. Tables
  - g. 07\_RWIP and RWAB
    - i. Legends
    - ii. Notes
    - iii. RWIP Example

## iv. Tables

## h. 08\_Details

- i. Temporary Potable Water Construction T-Meter Detail
- ii. Point of Connection (POC) Sequence Detail
- iii. Recycled Pipe/Potable Water Pipe Crossing Detail
- iv. Trench for Recycled Water Irrigation Mainline and Laterals Detail
- v. Strainer Detail
- vi. Recycled Water POC Stub Out Detail
- vii. Recycled Water Quick Coupling Valve Detail
- viii. Recycled Water Irrigation Advisory Sign Detail
- ix. Manual Flush Valve Detail
- x. Temporary Inter-tie Schematic Diagram
- xi. Cross Connection Building Bypass Detail

## B. CAD Standards

1. Created in AutoCAD version 2007 or as approved by EMWD
2. Tied to the Horizontal Datum of the California State Plane Coordinate System Zone 6 (NAD 83) and to the North American Vertical Datum (NAVD 88) or as approved by Eastern Municipal Water District
3. Units of measure shall be English units unless otherwise directed
4. CAD files are required with each plan check submittal. Refer to the CAD Standard Guideline for required submittal documents
5. Detailed CAD Standards are provided in the CAD Standard Guideline. All RWUP, RWUE, and RWIP drawings shall follow the standards stated in this document and in the CAD Standard Guideline

**Section 9. Glossary of Terms**

## A. Terms and Definitions

1. AFS:  
Application for Service; the EMWD process for site connections to existing facilities, provided capacity is available
2. Approved Backflow Prevention Assembly:  
A device approved by the State of California, the USC Foundation for Cross Connection Control and the District, which is installed to protect any water supply (recycled, potable, public, private, or on-site) from contamination through backflow of a substance containing a potential hazard
3. Approved Use Area:  
A site, with well-defined boundaries, as designated in the approved RWUP/RWUE and RWIP plans, to receive recycled water for an approved use as recognized by the applicable regulatory agencies
4. AWWA Cross-Connection Control Specialist:  
An individual who has a current Cross-Connection Control Specialist Certificate on file with AWWA and EMWD
5. Backflow:  
A flow condition, caused by a differential pressure, that causes the flow of water or other liquids, gases, mixtures or substances into the distributing pipes of a water supply from any source or sources other than an approved water supply source
6. CC&R's:  
Covenants, Conditions, and Restrictions issued by a Property Owners Association
7. DDW:  
California Department of Health Services, Division of Drinking Water and Environmental Management
8. CIMIS:  
California Irrigation Management Information System ([www.cimis.water.ca.gov](http://www.cimis.water.ca.gov))
9. CIP:  
EMWD's Capital Improvement Program
10. COA:  
Conditions of Approval; project conditions set by the governing agency

11. Controller Charts:  
RWIP drawings that graphically identify in color the area served by each remote control valve in the As-built condition
12. Cross-Connection:  
Any unprotected actual or potential connection, or structural arrangement between a public or a consumer's potable water system and any other source or system, through which it is possible to introduce into any part of the potable system, any used water, recycled water, industrial fluid, gas, or substances other than the intended potable water, with which the system is supplied. By-pass arrangements, jumper connections, removable sections, swivel, or changeover devices and other temporary or permanent devices through which, or because of, backflow can occur, are considered cross-connections, and are prohibited
13. Cross-Connection Test:  
Any test conducted by an American Water Works Association (AWWA) Cross-Connection Control Specialist to determine whether an interconnection between a potable and non-potable system exists. It may be in the form of a differential pressure shutdown test, a dye test or by visual inspection (above grade only)
14. Double Check Assembly(DC):  
Backflow prevention device using two gate valves assembled to block the backflow of water
15. ERC:  
EMWD's Environmental Regulatory Compliance Department
16. ETo:  
ETo or Annual Reference Evapotranspiration Rate is the amount of water dispersal from the soil service (evaporation) and the amount of water used by plants (transpiration) within a designated climate zone and calculated in inches
17. Send Safely:  
The application given to EMWD's internet based network used to transfer files from the Applicant/Applicants Agent to EMWD
18. GPM:  
Gallons per minute
19. Hardscape:  
Concrete and/or asphalt type paving areas including streets, parking lots, sidewalks, driveways, patios, decks, etc.
20. HGL:  
Hydraulic Grade Line

21. H.O.A.:  
Homeowners Association
22. Inspector:  
Any person authorized by EMWD to perform inspections on or off the customer's site before, during, or after construction
23. Landscape Architect:  
A registered landscape architect licensed within the State of California and remains in good standing with the licensing board of the State Department of Consumer Affairs and the California Architects Board
24. LMD:  
Landscape Maintenance District
25. Mainline:  
The Irrigation constant or intermittent pressure pipeline that carries water from the water meter to the irrigation control valve
26. Non-Potable Water:  
Non-potable water is not acceptable for human consumption in conformance with Federal, State, and Local drinking water standards
27. On-grade Piping:  
On-grade piping is any piping, whether permanent or temporary, conveying water and placed on the soil surface
28. On-site:  
All potable and/or recycled water facilities located on the downstream side of the meter. These are facilities that shall be owned, operated, and maintained by the customer
29. Overspray:  
Dispersed, airborne particles of recycled water that can be transmitted through the air to locations other than those approved for the direct application of recycled water
30. POC:  
Point of Connection; the point where the customer's system ties into the District's system. This is the water meter at the service connection
31. Ponding:  
Retention of water on the surface of the ground or other natural or manmade surface, for a period following the cessation of a water use activity or irrigation system cycle

32. POS:  
Plan of Service; EMWD's process for sites with new facilities required to accommodate the development of the site
33. Potable Water:  
Water approved for human consumption that conforms to the latest Federal, State, and local drinking water standards
34. Pre-Construction Conference:  
A meeting held at EMWD's office that includes the developer, the landscape architect, the developer's contractor, and landscape contractor. The conference is required prior to any construction activities
35. Project Study Area:  
The Project Study Area is the RWUE, which is comprised of multiple Project Site Areas (RWIP's) within a boundary defined by property ownership
36. Project Site Area  
The Project Site Area is comprised of an individual tract, parcel, or lot within a boundary delineated by property ownership, maintenance entity, and land use type; i.e., commercial, industrial, manufacturing, park, school, residential, streetscape, medians, open space, basin, mitigation, etc.
37. PSI:  
Pounds per square inch
38. Public Facilities:  
Any and all recycled water facilities located on the upstream side of the meter, including the meter. These facilities are, or shall be, owned, operated, and maintained by the District
39. Record Drawings:  
All drawings (RWUP, RWUE, RWIP, and RWAB) as described within these Guidelines, and as required by EMWD and/or DDW that depict the proposed, installed, or As-built project site condition
40. Recycled Water:  
Tertiary-treated water produced from the treatment of municipal wastewater, as defined in Title 22, Division 4, Chapter 3 of the Environmental Health of the California Code of Regulations (Code)
41. Reduced Pressure Principal Backflow Prevention Device (RP):  
A type of backflow prevention device used to protect the public system against non-health or health hazards. The assembly shall include two independently acting approved check valves together with a hydraulically operating, mechanically independent pressure relief valve located between the check valves and at the same

- time below the first check valve. To allow annual testing, the unit shall also include four resilient seated test cocks and two shutoff valves at each end of the assembly
42. Regulatory Agencies:  
Public agencies legally constituted to protect the public health and water quality, such as Division of Drinking Water (DDW) California Regional Water Quality Control Board, County of Riverside Department of Environmental Health, and EMWD
43. RFI:  
Request For Information; Information requested by the developer, contractor, or inspector in a written format in response to a variance from the approved irrigation plans
44. Runoff:  
When recycled water drains away from or outside the approved use area
45. RWQCBs  
Regional Water Quality Control Boards
46. Site Supervisor:  
The on-site recycled water supervisor is a qualified person designated by the recycled water user and approved by the District. This person has attended a site supervisor training class, is knowledgeable in the construction and operation of the recycled water and irrigation systems, and in the application of the Federal, State, and local guidelines, criteria, standards, rules, and regulations governing the use of recycled water
47. Supply Line: Mainline  
Any and all recycled, potable, or fire line water facilities located on the upstream side of the meter, including the meter. These facilities are, or shall be, owned, operated, and maintained by the District
48. SWRCB  
State Water Resource Control Board
49. USC Foundation:  
University of Southern California Foundation for Cross-Connection Control and Hydraulic Research (USCFCCC&HR)
50. Violation:  
Non-compliance with any condition of the Recycled Water Agreement, the Guidelines, DDW, and EMWD regulations or BMP's by any person, action, or occurrence, whether willfully or by accident