

TABLE OF CONTENTS

	<u>PAGE</u>
PART IV DESIGN CRITERIA FOR ON-SITE RECYCLED WATER FACILITIES	
<i>Section A General Design Criteria for On-Site Recycled Water Facilities</i>	IV-1
A-1 GENERAL	IV-1
A-2 RECYCLED WATER	IV-1
A-3 REGULATORY AUTHORITY	IV-2
A-4 AUTHORIZED USES AND APPROVED USE AREAS	IV-2
A-5 SYSTEM RESPONSIBILITY	IV-4
A-6 OBTAINING RECYCLED WATER	IV-4
A-6.1 Recycled Water Service Application	IV-5
A-6.2 Regulatory Approval	IV-6
A-6.3 Construction	IV-7
A-6.4 Approved User Site	IV-8
A-7 PROTECTION OF GROUNDWATER	IV-8
<i>Section B Design Criteria for On-Site Recycled Water Facilities</i>	IV-9
B-1 GENERAL ON-SITE RECYCLED WATER SYSTEM CRITERIA	IV-9
B-1.1 Standard Requirements	IV-9
B-1.2 Design System Demands	IV-9
B-1.3 Design On-Site System Pressures	IV-9
B-1.4 Separation On-Site Between Potable and Recycled Water Lines	IV-9
B-1.4.1 General	IV-9
B-1.4.2 Parallel Construction	IV-10
B-1.4.3 Vertical Separation	IV-10
B-1.4.4 Separation from Unused or Abandoned or Exist. On-site Piping	IV-10
B-1.5 On-Site Improvement Plans	IV-10
B-1.6 On-Site Recycled Water System Design Requirements	IV-11
B-1.7 Requirements for On-Site Recycled Water Use Site Plans	IV-12
<i>Section C Operation of On-Site Recycled Water Facilities</i>	IV-16
C-1 OPERATIONAL REQUIREMENTS	IV-16
C-1.1 Delivery of Recycled Water	IV-16
C-1.2 Off-Site Recycled Water Facilities	IV-16
C-1.3 Recycled Water Meter	IV-17
C-1.4 On-Site Recycled Water Facilities	IV-17
C-1.5 Backflow Prevention Methods, Assemblies or Devices on On-Site Recycled Water Systems	IV-17
C-1.6 Recycled Water System Color and Marking Information	IV-18

TABLE OF CONTENTS

	<u>PAGE</u>	
C-1.7	Valves and Hose Bibs	IV-18
C-1.8	Mainline Piping in Dual Plumbed Buildings	IV-18
C-1.9	Signage in Dual Plumbed Buildings	IV-19
C-1.10	Recycled Water Site Supervisor	IV-19
C-1.11	On-Site System Changes and Connections	IV-22
C-1.12	On-Site Supervisor Do's and Don'ts	IV-22
Section D Maintenance Requirements		IV-24
D-1	MAINTENANCE REQUIREMENTS	IV-24
D-1.1	General	IV-24
D-1.2	Periodic Site Inspections	IV-24
D-1.3	Modifications and Violations	IV-25
Section E Standard Cross Connection Test Protocol		IV-25
E-1	CROSS-CONNECTION TEST OF ON-SITE RECYCLED WATER SITES	IV-25
E-1.1	General	IV-25
E-1.2	Steps of the Cross-Connection Test	IV-26
E-2	CROSS-CONNECTION TEST OF DUAL PLUMBED SITES	IV-27

PART IV
DESIGN CRITERIA
FOR
ON-SITE RECYCLED WATER FACILITIES

SECTION A **GENERAL DESIGN CRITERIA FOR ON-SITE RECYCLED WATER FACILITIES**

A-1 GENERAL

West Basin Municipal Water District (“West Basin” or “District” or “WBMWD”) owns and operates several treatment facilities and a recycled water distribution system that provides disinfected tertiary recycled water to sites for irrigation, industrial, and other non-potable applications. As the Recycled Water Producer Permit/General Permit holder, West Basin is responsible for ensuring the safe use of recycled water at all Recycled Water Use Sites (“Use Sites” or “Customer Sites”) utilizing recycled water. The following sections are focusing on the “On-Site” Recycled Water Facilities. On-site facilities relate to the recycled water facilities downstream of the recycled water meters. All on-site recycled water facilities will be owned, operated, and maintained by the site owner.

A-2 RECYCLED WATER

Recycled water, as used in this section and defined in the Water Recycling Criteria of Title 22, Division 4, Chapter 3 of the California Code of Regulations, (Title 22) refers to tertiary-treated water produced from the three-stage treatment of municipal wastewater (primary, secondary and tertiary treatment). The facilities that produce recycled water are known as Water Recycling Plants that are owned and operated by “Recycled Water Producers”. The recycled water produced by these plants is delivered to users through distribution systems owned and operated by “Recycled Water Agencies”. West Basin is a Recycled Water Producer and Recycled Water Agency.

Recycled water is virtually colorless and odorless and is allowed for full-body human contact but **not** for direct human consumption. Properly managed, recycled water is safe to use.

Regulations make the use of recycled water possible by ensuring consistent, reliable water quality while at the same time being fully protective of the public health. California Code of Regulations Titles 22 and 17 are the two sets of State Department of Health regulations that accomplish this. Title 22 establishes the requirements for recycled water treatment, quality and allowable use, while Title 17 establishes the requirements for backflow protection of the potable water supply.

A-3 REGULATORY AUTHORITY

Rules and regulations for the end use of recycled water within West Basin's service area are established and/or enforced by the California Regional Water Quality Control Board (Regional Board), the State Division of Drinking Water and the Los Angeles County Department of Public Health. These rules and regulations are contained within West Basin's Recycled Water Producer Permit from the Regional Board. All facilities using recycled water must be designed and operated to meet the standards of this permit and Los Angeles County Department of Public Health codes, rules and regulations.

A-4 AUTHORIZED USES AND APPROVED USE AREAS

Unlike potable water, recycled water can only be used for approved uses at approved locations, and under the provisions of established regulations, guidelines, agreements and/or permits. Because of its origins and level of treatment provided, recycled water is not suitable for direct human consumption.

Tertiary-treated (Title 22) recycled water is approved for use in the following non-potable applications:

Urban Landscape: Parks and playgrounds, schoolyards, unrestricted access golf courses, homeowners general landscaping, freeway and roadway landscaping, cemeteries, ornamental nurseries and sod farms.

Agriculture: Food crops for human consumption, orchards, vineyards, fodder, fiber and seed crops, box nurseries, non-fruit bearing trees, pasture for milking animals, and water supply for livestock.

Impoundments: Restricted and unrestricted (full-body contact) recreational impoundments, decorative lakes and fountains, and fish hatcheries.

Industrial: Industrial processes (such as paper manufacturing, carpet and textile dyeing, boiler feed), cooling towers and air conditioning, non-residential toilet, urinal and floor drains, structural and non-structural fire fighting, commercial laundries, commercial car washes, concrete mixing, construction (dust control, soil compaction, backfill consolidation around pipelines, including potable), street and sidewalk cleaning, flushing sanitary sewers and snow making.

Recycled water may only be used in areas approved by West Basin following the User's completion of the Recycled Water Application procedure and meeting all of the requirements established by West Basin.

A user may **never** supply recycled water to another owner's adjoining property or to the property of the same User across a street, alley or other public right-of-way without written approval of West Basin and Los Angeles County Department of Public Health – Environmental Health Division (LACDPH). The User may not give or sell recycled water to another party.

Should the property become sub-divided, the service will be considered as belonging to the parcel it enters directly. If such a subdivision occurs, or property ownership is transferred, West Basin shall be notified. In any case, recycled water lines are not permitted to cross lot lines. All recycled water delivered to any site must pass through a recycled water meter.

Artificial turf in place of real grass is becoming more popular on athletic fields. "Quenching" of an artificial turf typically occurs during daytime hours and when the athletic fields most likely are in use. In order to minimize public exposure, recycled water should not be used for this purpose. As a best management practice, potable water should be used to quench artificial turf.

"Dual source" sites are reuse sites where both potable (domestic or drinking) water and recycled water are present. Dual sources might be necessary of sites where water is normally available for public use. For example, an elementary school may use recycled water for irrigation of its athletic fields, but would still need a separate potable water system to supply drinking water to its school buildings.

Water quality needs at the use site might also call for two water sources. For example, a golf course may elect to use a potable water supply to irrigate the greens and use recycled water on the fairways. The potable water used for this purpose is referred to as "non-potable irrigation water" after it has passed through the irrigation system backflow preventer. These water lines are to be used only for irrigation and must not be connected to restrooms, drinking fountains, food service areas, etc.

At sites with dual sources, the potable water supply must be protected with an approved backflow prevention device at the property boundary and as close to the meter as possible.

Cross-connections between the recycled water system and the potable water system are strictly prohibited.

"Dual plumbed sites" is a separate term which refers specifically to a building that have both recycled and potable water serving (separate) interior plumbing systems (example: recycled water plumbing for flushing toilets and urinals; potable water plumbing serving wash sinks and drinking fountains). The public must not be allowed access to the recycled water system (such as from hose bibbs or valves).

In some cases, the interior plumbing of new buildings has been "dual-plumbed" with the site's recycled water irrigation supply. In such instances, a separate recycled water meter serving the building is required to be installed so that any problems at the site can be isolated and fixed. It also provides the added benefit that should the irrigation need to be shut off at the meter for any reason, it will not interfere with the function of the restrooms.

Retrofits of existing buildings for toilets, urinals, etc. are not permitted.

A-5 SYSTEM RESPONSIBILITY

As the Recycled Water Producer permit holder, West Basin is responsible for ensuring the safe use of recycled water at all Recycled Water Use Sites utilizing recycled water. West Basin is responsible for the operation and maintenance of its recycled water distribution system up to the point of the recycled water meter serving the User. The local water purveyor is responsible for the recycled water meter and billing/payment for the recycled water use.

However, it is the responsibility of the User to maintain its recycled water system downstream of the recycled water meter. The User is responsible for ensuring that the recycled water is used on its site according to all the rules and regulations regarding such use. Specifically, the User is responsible for the following:

- Maintaining the use site's recycled water system;
- Assign a Recycled Water Site Supervisor who is responsible for managing the on-site recycled water system as described in Section C-1.10 of Part IV;
- Ensuring that all materials used during the design, construction and maintenance of the system are approved or recommended for recycled water use by the AWWA California-Nevada Section's Guidelines for the On-site Retrofit of Facilities Using Disinfected Tertiary Recycled Water;
- Obtaining all permits and payment of all fees required for the establishment, operation and maintenance of the User's recycled water system;
- Reporting all violations and emergencies to the required local governing agencies; and
- Obtaining prior authorization from West Basin and any other regulatory agency (Los Angeles County Department of Public Health) before making any modifications to the approved recycled water system or to the potable water system if it is in close proximity to the recycled water system.

A-6 OBTAINING RECYCLED WATER

Before the construction of any new or major modifications of an existing recycled water system, the design must be submitted for approval by West Basin, LACDPH and the local city/county planning and/or building departments. Approval will be contingent upon evidence that all applicable design requirements, rules and regulations for recycled water system are satisfied.

Prior to a new Use Site obtaining access to recycled water, there are several requirements that the Applicant, Customer, or Site Owner ("Applicant") must comply with in order to be approved for recycled water service from West Basin. The following are the standard steps required for sites to be connected to West Basin's recycled water distribution system.

A-6.1 Recycled Water Service Application

New Construction Site: “New Construction Site” is considered a new development that will be designed and constructed with the intent to utilize recycled water.

- a. Applicant shall complete and submit West Basin’s **Recycled Water Service Application**, along with the project’s plans to West Basin for review, including the following project plan sheets in PDF:

- Overall Site Plans
- Civil / Utility Plans
- Landscape Irrigation Plans
- On-site Plumbing Plans
- Design Details
- Cross-Connection Testing Plan
- Engineering Report for “Dual Plumbed” sites

Additional plan requirements are summarized in Subsection B-1.5, B-1.6 and B-1.7 of this Section. A copy of the Recycled Water Service Application is included within the Appendix.

- b. Supplemental Title 22 Recycled Water Engineering Report shall be prepared, submitted, and approved in accordance with California State Department of Health Services, Drinking Water Division, Recycled Water Unit’s “GUIDELINES FOR THE PREPARATION OF AN ENGINEERING REPORT FOR THE PRODUCTION, DISTRIBUTION AND USE OF RECYCLED WATER”, March 2001, for sites using / proposing to use recycled water for indoor applications, such as cooling towers, toilet flushing, trap primers, or other industrial uses where recycled water will be utilized inside a building containing both potable and recycled water systems (“Dual Plumbed” Recycled Water Sites).
- c. West Basin will: review the application and plans; contact the applicant to discuss project details; and provide initial plan check review comments. The review of the application and project plan submittal can take up to six weeks.
- d. West Basin will notify the applicant whether the application has been approved or denied. If necessary, the applicant shall update the plans to address any deficiencies identified by West Basin and re-submit the plans to West Basin for additional review.

Retrofits: A site that was originally constructed to use potable water but will be converted to use recycled water is considered a “Retrofit”. This site will need to undergo modifications to use recycled water.

- e. Applicant shall complete and submit West Basin’s **Recycled Water Service Application**, along with the project’s plans to West Basin for review, including the following project plan sheets in PDF::

- Overall Site Plans
- Civil / Utility Plans
- Landscape Irrigation Plans
- On-site Plumbing Plans
- Design Details
- Cross-Connection Testing Plan
- Engineering Report for “Dual Plumbed” sites

Additional plan requirements are summarized in Subsection B-1.5, B-1.6 and B-1.7 of this Section. A copy of the Recycled Water Service Application is included within the Appendix.

- f. West Basin will work: with the site owner to develop a Supplemental Title 22 Recycled Water Engineering Report which shall be prepared, submitted, and approved in accordance with California State Department of Health Services, Drinking Water Division, Recycled Water Unit’s “GUIDELINES FOR THE PREPARATION OF AN ENGINEERING REPORT FOR THE PRODUCTION, DISTRIBUTION AND USE OF RECYCLED WATER”, March 2001, for sites using / proposing to use recycled water for indoor applications, such as cooling towers, toilet flushing, trap primers, or other industrial uses where recycled water will be utilized inside a building containing both potable and recycled water systems (“Dual Plumbed” Recycled Water Sites).
- g. West Basin will: review the application and plans; contact the applicant to discuss project details; and provide initial plan check review comments. The review of the application and project plan submittal can take up to six weeks.
- h. West Basin will: work with the site owner to develop a set of retrofit plans that the site owner will use for submittal to the Department of Public Health.
- i. West Basin will: notify the applicant whether the application has been approved or denied. If necessary, the applicant will work with West Basin to update the plans to address any deficiencies identified and re-submit the plans.

A-6.2 Regulatory Approval

- a. Applicant shall submit “Alternate Water System Plan Application” (see Appendix) along with required plans and required fees to Los Angeles County Department of Public Health – Cross Connection & Water Pollution Control Program (LACDPH) for local health department review and approval.
- b. LACDPH will review the plans and issue plan check approval or denial notice to the Applicant, West Basin and the local water purveyor.

Applicant shall make necessary changes and resubmit the plans to LACDPH for review.

- c. Once approved by LACDPH, the Applicant shall schedule a pre-construction meeting with West Basin, LACDPH, and the local water purveyor to discuss project schedule, communication protocol, pipe identification requirements, inspection scheduling and final cross-connection testing format.

A-6.3 Construction

- a. All recycled water systems on-site shall be constructed in compliance with applicable potable water system construction standards as well as those specified in **“THE PURPLE BOOK”**, California Health Laws related to recycled water, (California Health and Safety Code, Water Code, Titles 22 and 17 of the California Code of Regulations) and the Los Angeles County Code (LACC), Title 28 – Plumbing, Appendix J.
- b. Prior to commencing construction, the Contractor shall contact West Basin and LACDPH to schedule an inspection for the proposed on-site recycled water and potable water facilities to be constructed. No piping for potable or recycled water in conjunction with the project shall be installed prior to plan check approval and preliminary inspection.
- c. Applicant will be responsible for construction/modification of on-site facilities. Applicant will be responsible for scheduling LACDPH inspections of **all** sub-surface, pressurized utilities constructed, removed or modified on the project site, including: potable (domestic) water; fire service mains; pressurized irrigation mains; recycled mains; and other non-potable water facilities. No excavation or open trench may be backfilled without first securing West Basin and LACDPH approval. Any areas without prior approval will be required to be exposed and corrected as necessary.
- d. West Basin and/or LACDPH shall have the opportunity to make periodic inspections of the User’s site during the construction phase, if applicable, to ensure both materials and installations are done according to the approved plans.
- e. Only a LACDPH approved temporary water connection, to a potable water supply via a dedicated, approved, reduced-pressure-principle backflow prevention device shall be permitted to be utilized for the purpose of flushing, pressure testing, construction, landscape use or the final cross-connection testing.
- f. Applicant shall contact the local water purveyor and submit new meter request form or application, indicating that the meter will be used for recycled water service and summary of the end use (i.e., irrigation, cooling towers, dual plumbed building, etc.).
- g. Upon completion of construction, the Applicant shall contact West Basin to schedule the site inspection and final cross-connection test with

participation from LACDPH, West Basin and the local water purveyor.

- h. LACDPH will issue Cross-Connection Test Report to the Applicant, West Basin and the local water purveyor indicating whether the site is **APPROVED** or **NOT APPROVED** for recycled water use. If the Test Report indicates the site is **NOT APPROVED** recycled water use, the Applicant is responsible for addressing all deficiencies identified in the Cross-Connection Test Report and shall re-schedule the cross-connection test with all agencies.

A-6.4 Approved User Site

- a. If LACDPH Test Report indicates the site is **APPROVED** for recycled water use, West Basin will schedule and conduct the “Recycled Water Site Supervisor Training” with the designated Recycled Water Site Supervisor, who is responsible for ensuring the safe use of recycled water on the site. In addition, West Basin will provide the Site Supervisor with a copy of the Recycled Water Urban Irrigation User Manual developed by WaterReuse.
- b. The Applicant shall sign West Basin’s “Recycled Water Use Agreement” acknowledging West Basin’s Recycled Water Use Standards and agreeing to all terms and conditions of use for recycled water.

The Site Supervisor shall have a thorough understanding of the Recycled Water Urban Irrigation User Manual.

- c. The Applicant will request the local water purveyor to install the recycled water meter. Based on the local water purveyor, the Applicant may be responsible to install the meter upon approval and direction of the local water purveyor.
- d. The Applicant shall schedule the final switch-over from temporary potable water supply to recycled water supply with West Basin, local water purveyor, and LACDPH present. Temporary potable water supply shall be completely disconnected from the on-site system prior to the system’s final connection to the recycled water meter.
- e. West Basin will contact the Recycled Water Site Supervisor annually to schedule and perform the annual site inspection of the on-site facilities.

A-7 PROTECTION OF GROUNDWATER

Irrigation with recycled water within 50 feet or impoundment of recycled water within 100 feet of any drinking water reservoir or well is prohibited.

SECTION B *DESIGN CRITERIA FOR ON-SITE RECYCLED WATER FACILITIES*

B-1 GENERAL ON-SITE RECYCLED WATER SYSTEM CRITERIA

B-1.1 Standard Requirements

The design and construction of all on-site recycled water system facilities shall be in compliance with applicable potable water system construction standards as well as those specified in "THE PURPLE BOOK", California Health Laws related to recycled water, (California Health and Safety Code, Water Code, Titles 22 and 17 of the California Code of Regulations) and the Los Angeles County Code (LACC), Title 28 – Plumbing, Appendix J. The primary agency responsible for the approval of the on-site facilities is LACDPH.

B-1.2 Design System Demands

In general, the design of the on-site recycled water system facilities shall be based on the water demands, pressures, and system elements as outlined in these Design Criteria and Standards. The off-site recycled water system facilities shall be designed to deliver peak flows to the new recycled water customer to be irrigated by the on-site recycled irrigation systems, which they will supply. All demand estimations shall be submitted to West Basin for approval.

Unless otherwise approved by the Engineer, the recycled water demand shall be estimated by using 3.0 acre-feet per year per acre for turf irrigation and 1.0 acre-feet per year per acre for shrub irrigation with a peak hour demand factor of 7 due to restricted hours of irrigation with recycled water and seasonal peaking.

B-1.3 Design On-Site System Pressures

The on-site irrigation system shall be designed assuming a minimum supply pressure of 55 psi at the meter.

B-1.4 Separation On-Site Between Potable and Recycled Water Lines

B-1.4.1 General

The maximum attainable separation of recycled waterlines and potable water lines shall be enforced in order to minimize potential risks associated with pipeline breaks resulting in infiltration of recycled water from and saturation of the ground around the potable water lines, or accidental cross-connections between recycled water and potable water systems in close proximity.

B-1.4.2 Parallel Construction

A horizontal separation of at least ten (10) feet shall be required between pressurized, buried, recycled and potable water piping (all distance to be measured from pipeline outside diameter).

If a ten (10) foot horizontal separation is not possible, special construction requirements shall be considered and approved by West Basin and LACDPH. Common trench construction is prohibited.

B-1.4.3 Vertical Separation

Buried potable water pipes crossing over pressurized recycled water pipes shall be laid not less than twelve (12) inches above the recycled water pipes. Recycled water pipes laid in same trench or crossing-over building sewer or drainage piping shall be installed in compliance with the LACC – Title 29, Plumbing, Sections 609.0 and 720.0.

The minimum vertical separation shall be between the top and bottom surfaces of the pipes. If a one foot vertical separation is not possible, special construction requirements shall be considered and approved by West Basin and LACDPH.

B-1.4.4 Separation from Unused or Abandoned or Existing On-site Piping

Unused or abandoned potable water lines are to be severed as close to water mains as practical, capped, and a ten (10) foot section of abandoned line removed and cemented under direct supervision of West Basin and LACDPH.

Maximum separation of recycled water lines and potable water lines shall be maintained upon system additions or modifications.

B-1.5 On-Site Improvement Plans

Recycled water site plans and construction specifications for the construction or modification of on-site recycled water systems shall be submitted to West Basin for review and approval. This includes the following types of projects:

1. New construction of on-site recycled water system(s).
2. Retrofit/conversion of existing on-site water system(s) to recycled water use(s).
3. Modifications of pressurized pipelines of existing recycled water system(s). This includes modifications of either recycled or potable water lines.

Plans and specifications shall be prepared by a qualified design engineer or landscape architect and shall conform to all requirements described herein. The irrigation plans shall be stamped by a registered landscape architect or a registered civil engineer.

Plans and specifications shall be submitted to West Basin prior to commencing construction. If plans are denied by West Basin, West Basin shall notify the applicant of plan deficiencies and/or revisions that must be addressed. If plans are approved by

West Basin, West Basin shall notify the applicant of approval, and the applicant shall submit the necessary plans to Los Angeles County Department of Public Health Cross-Connection and Water Pollution Control Program (LACDPH) for local health department review and approval.

All on-site recycled water facilities shall be provided or constructed by the applicant, owner, or customer at their sole expense. All on-site recycled water facilities shall conform to local codes, rules, and regulations. The jurisdictional agency (city or County) shall have authority over materials, equipment, design, and construction methods used for on-site water facilities within their jurisdiction, provided that when West Basin requires a higher quality material, equipment, design or construction method than that required by local codes or regulations, the Recycled Water On-Site Use Standards shall be controlling.

The plans should include, but not be limited to, the following:

- A detailed description of the intended use of recycled water, including identification of the area of use;
- Details showing the complete potable and recycled water systems. For existing facilities converting to recycled water use, details must include the exact location of all existing water piping systems; and
- Details of the intended installation procedures, including as a minimum: backflow preventer locations, color and type of pipe and additional signage to be used.

B-1.6 On-Site Recycled Water System Design Requirements

The following is a summary of the on-site recycled water system design requirements:

1. The recycled water system shall be separated from all potable water system(s) per separation requirements described in the section above and as summarized below.
2. All potable water meter services shall have Reduced Pressure Principle Device (RPPD) Type Backflow devices installed.
3. Recycled water systems shall have a strainer and pressure reducing valve installed as close to the recycled water meter as possible.
4. Cross-connections between potable water systems and recycled water systems are prohibited.
5. Recycled water shall not be served across parcel or lot boundaries to adjacent sites.
6. Hose bibs on recycled water facilities are prohibited.
7. Drinking fountains shall be protected from the mist and/or spray of recycled water.
8. Overspray and runoff of recycled water shall be limited or prevented.
9. Recycled water shall not be used during extreme rainfall.

10. Potable water and recycled water pressurized mainlines shall not be installed in the same trench.
11. Seating and eating areas shall be protected from recycled water overspray.
12. A recycled water use site shall have a physical boundary all around its parcel boundary; such as a sidewalk, mow strip, fence-line with concrete base, etc. The use of mow strips to delineate between a recycled water use area and a potable water use area is required if there is no other physical barrier between the two irrigation systems. The mow strip should be a minimum of 4-inches wide and the depth of the mow strip should limit any inadvertent cross-connections (typically 12-inches minimum depth).
13. Indoor recycled water uses (cooling towers, toilet flushing, trap primers, etc.; "Dual Plumbed" Sites) shall require a Title-22 Supplemental Engineering Report to be developed, submitted to, and approved by the State Water Resources Control Board.

B-1.7 Requirements for On-Site Recycled Water Use Site Plans

The following is a summary of the general requirements for on-site recycled water use site plans:

1. **Recycled Water Meter(s):** The location of each recycled water meter serving or proposed to serve the site shall be shown on the plans. Recycled water meter(s) shall be clearly distinguished from the potable (domestic) water meter(s) and shall maintain the separation requirements specified in Subsection B-1.4. The following information shall be provided on the plans for each recycled water meter: meter size (inches); peak flow rate (gpm); estimated annual demand (AFY); and proposed recycled water use (i.e., irrigation, cooling tower, etc.).
2. **Potable Water Meter(s):** The location of each potable water meter serving or proposed to serve the site shall be shown on the plans. Potable water meter(s) shall be clearly distinguished from the recycled water meter(s). The following information shall be provided on the plans for each potable water meter: meter size (inches).
3. **Backflow Prevention Assemblies or Methods:** An approved reduced pressure principle backflow prevention device ("RP") shall be shown on the plans, installed immediately downstream of each potable water meter serving the recycled water site. An approved reduced pressure principal (RP) or approved alternative backflow prevention device shall be shown on the plans for all fire lines serving the recycled water site. All backflows proposed must be approved by the USC Foundation for Cross Connection Control and Hydraulic Research. The following information shall be shown on the plans for each Backflow Prevention Assembly on the project site: backflow size (inches); and manufacturer and model number.

West Basin may require backflow prevention assemblies to be installed on the recycled water system for the project site. This requirement is necessary to protect the District's recycled water quality from impacts related to on-site pumping, chemical, or other system components. All backflows proposed shall

be approved by the University of Southern California (USC) Foundation for Cross Connection Control and Hydraulic Research.

4. **Pressurized Pipelines:** The recycled water site plans shall clearly show the alignment of all existing and proposed pressurized water system(s) within the recycled water site. Existing and proposed pipelines shall be clearly distinguished on the plan using different color, line weight, or line style as required by LACDPH. Pressurized pipelines required to be shown include:
 - a. Potable water pipelines from the meter point of connection to the building or fixture/outlet;
 - b. Fire suppression systems;
 - c. Irrigation mainlines (“constant pressure” lines), from the point of connection to control valves;
 - d. Recycled water mains on the project site; and
 - e. Pressurized water mains for different water qualities shall be clearly distinguished from one another using colors (potable/domestic – blue; fire – red; recycled – purple; non-potable – yellow) and/or differing line style/weights.

5. **On-site Recycled Water Notes:** The following on-site recycled water notes shall be included on all recycled water site plans:
 - a. **Horizontal Separation:** A 10-foot horizontal separation shall be required between potable water and recycled water mains. In situations where there is no alternative but to install the mains with less than the required 10-foot horizontal separation, special construction methods will be required by West Basin and LACDPH on a case-by-case basis.
 - b. **Vertical Separation:** Whenever a crossing must occur where a recycled water main vertically crosses a potable water main, the recycled water main shall be located a minimum of 1-foot below the potable water main. If a recycled water main must cross above a potable water main, the recycled water main shall be constructed in a sleeve extending at least 8-feet from the outside edge of the water main on both sides of the crossing (for a total of a minimum of a 20-foot sleeve).
 - c. **Pipe Identification Requirements:** All subsurface, pressurized piping installed, constructed, or exposed on recycled water sites shall be clearly identified by their water quality, using special pipeline materials or identification tape, as described below:
 - i. **Recycled Water Pipelines:** Shall be colored purple and embossed or be integrally stamped/marked "CAUTION - RECYCLED WATER, DO NOT DRINK" in white or black letters, or shall be installed with a purple identification tape “CAUTION – RECYCLED WATER, DO NOT DRINK” in white or black letters, applied directly along the full length of mainline, and taped to the pipeline every 5-10 linear feet.

- ii. **Potable Water Pipelines:** Shall be colored blue and embossed or be integrally stamped/marked "POTABLE WATER" in white or black letters, or shall be installed with a blue identification tape "POTABLE WATER" in white or black letters, applied directly along the full length of mainline, and taped to the pipeline every 5-10 linear feet.
 - iii. **Fire Suppression System Pipelines:** Shall be colored red and embossed or be integrally stamped/marked "FIRE WATER" in white or black letters, or shall be installed with a red identification tape "FIRE WATER" in white or black letters, applied directly along the full length of mainline, and taped to the pipeline every 5-10 linear feet.
 - iv. **Non-potable Water Pipelines:** Shall be colored yellow and embossed or be integrally stamped/marked "CAUTION – NON-POTABLE WATER, DO NOT DRINK" in white or black letters, or shall be installed with a yellow identification tape "CAUTION – NON-POTABLE WATER, DO NOT DRINK" in white or black letters, applied directly along the full length of mainline, and taped to the pipeline every 5-10 linear feet.
6. **Drinking Fountains:** All outdoor drinking fountains shall be shown and called out on the recycled water site plans. Drinking fountains shall be protected from the spray and/or mist of recycled water. Lack of protection of drinking fountains from contact with recycled water spray, whether by design, construction practice or system operation, is strictly prohibited.
7. **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, materials of construction, and a listing of all valve types including quick-coupling valves. See below for additional requirements for recycled water irrigation equipment:
- a. **Quick Coupler Valves:** Recycled water quick coupler valves must be purple and installed below grade in a valve box. Recycled water system quick couplers shall be ACME-threaded (non-lug type) and shall not be compatible with other quick coupler valves on-site for alternate irrigation systems (non-potable, cistern, etc.), if applicable.
 - b. **Strainers:** Recycled water 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 West Basin that the backwash water will not cause runoff and is disposed of in a manner approved by West Basin and the corresponding regulatory agency. The strainer drain valve shall operate with a recessed key slot.
 - c. **Pressure Reducing Valves:** A pressure-reducing valve (PRV) is required downstream of each recycled water service. The PRV shall be installed down-stream of the strainer for each system using recycled water, as close to the recycled water meter as possible, unless otherwise directed

by West Basin. The PRV shall be owned and maintained by the site owner.

- d. **Boxes:** 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 recycled water system boxes shall be purple in color, and must have a recycled water warning label or text permanently molded into or affixed onto the lid with rivets, bolts, etc.
- e. **Valves/Identification Tags:** All recycled water sprinkler control valves, strainers, pressure regulators, quick couplers, and isolation valves shall be tagged with identification tags.

Tags shall be weatherproof plastic, 3-inch x 4-inch, purple in color with the language "WARNING - RECYCLED WATER - DO NOT DRINK" imprinted on one side, and "AVISO - AGUA IMPURA - NO TOMAR" on the other side.

- f. **Valves/Identification Tags (non-potable and/or potable):** All non-potable or potable water sprinkler control valves, strainers, pressure regulators, quick couplers, and isolation valves shall be tagged with identification tags. Tags shall be weatherproof plastic, 3-inch x 4-inch, appropriate color with the required language.
8. **Signage:** All recycled water use areas accessible to the public shall have their entrances/access points posted with signs that are visible to the public, at least 8 inches high and 12 inches wide, and include the following language: "RECYCLED WATER – DO NOT DRINK" in both English and Spanish. Each sign shall be purple in color and shall also display the international "do not drink" symbol.

Locations of signs must include, but are not limited to, driveways, pedestrian entrances to the site, entrances to buildings, and sitting areas. Signs should be placed at every corner of property adjacent to streets.

All rooms in commercial, industrial, and institutional structures using recycled water for water closets, urinals, or other approved indoor uses shall be identified with clear signage notifying the public.

- 9. **Equipment Cleaning:** Any device, hose, pipe, meter, valve, tank, pump, truck, etc. which has been used with recycled water may not be used to convey potable water nor attached to the potable water system unless it is cleaned and disinfected.
- 10. **Example On-Site Recycled Water Site Plan:** An example of the on-site recycled water site plan is included as On-Site Irrigation Detail IRR-20.
- 11. **LACDPH Guidelines:** All on-site recycled water site plans shall include the Recycled Water Notes: Guidelines for Pipeline Construction and Installation for Safe Use of Recycled Water prepared by LACDPH.

12. ***Use Site Converted to Recycled Water:*** A use site that is converting to recycled water will not be required to dig up and replace its existing irrigation system with new “purple” recycled water piping. However, any and all new piping must be installed according to the approved plans and marked as required. All new recycled and potable water lines (pressure/non-pressure), new and existing valve boxes and appurtenances must be identified to clearly distinguish between recycled water and potable water systems.

SECTION C **OPERATION OF ON-SITE RECYCLED WATER FACILITIES**

C-1 OPERATIONAL REQUIREMENTS

C-1.1 Delivery of Recycled Water

West Basin Municipal Water District (“West Basin” or “District” or “WBMWD”) reserves the right to control and schedule the use and availability of recycled water to Recycled Water Use Sites (“Use Sites”, “Users”, or “Customers”). The District is fully committed to ensuring the availability of recycled water to all approved Use Sites, but may be required to temporarily halt recycled water delivery in order to maintain acceptable working conditions within West Basin’s treatment facilities and/or recycled water distribution system.

If the available recycled water service pressure is higher than the User can accept, the User will be responsible for providing a pressure-reducing valve downstream of the service meter (required for all on-site recycled water user sites). If available pressure is lower than what the User needs, the recycled water site user is responsible for adding any required booster pumping downstream of the meter.

If the available recycled water flow rate from West Basin’s distribution system is not sufficient for the on-site recycled water demands, the User is responsible for providing the additional storage or booster pumps required to meet the recycled water site demands.

C-1.2 Off-Site Recycled Water Facilities

The operation and surveillance of all of West Basin’s off-site recycled water system facilities, including, but not limited to, recycled water pipelines, reservoirs, pump stations, manholes, valves, connections, treatment facilities, and other appurtenances and property up to the customer’s recycled water meter, shall be under the management and control of West Basin. No other persons except authorized employees and/or representatives of West Basin shall have any right to enter upon, inspect, operate, adjust, change, alter, move, or relocate any portion of the foregoing or any of West Basin’s property.

In the event that such should occur, all charges and penalties shall be applicable and collected. Such action shall also be in violation of any and all applicable federal, state, and local statutes, ordinances, regulations, and other requirements.

C-1.3 Recycled Water Meter

The local water purveyor shall be responsible for maintaining the recycled water meter. The local water purveyor will read the meter and bill the site owner for recycled water use.

C-1.4 On-Site Recycled Water Facilities

The operation and surveillance of onsite recycled water facilities are the responsibility of the owner or customer. The User must comply with the following conditions:

- **Runoff Conditions:** The irrigation system must be designed, constructed and operated to minimize runoff outside of the approved use area to the fullest extent practical. A small amount of irrigation return water leaving the site is not considered to be a violation.
- **Ponding Conditions:** The irrigation systems must be designed, constructed and operated to minimize ponding within or outside of the approved use area to the fullest extent practical. This does not apply to approved landscape or recreational impoundments such as golf course water hazards or decorative lakes.
- **Windblown and Overspray Conditions:** The irrigation systems must be designed, constructed and operated to minimize windblown spray and irrigation overspray from leaving the approved use area to the fullest extent practical.
- **Supply to Separated Parcels:** If a reuse site is separated into two or more distinct parcels by a public right-of-way, then each parcel must be supplied recycled water through its own individual meter. The exception to this rule is when the parcels are connected under the public right-of-way via a pedestrian or vehicular tunnel.

C-1.5 Backflow Prevention Methods, Assemblies or Devices on On-Site Recycled Water Systems

West Basin must ensure that the quality of the recycled water in the distribution system is not compromised by any User. Therefore, West Basin may require Backflow Protection on the User's recycled water system. This backflow protection must be in close proximity to and downstream of the recycled water meter at the parcel boundary or at specific, onsite location(s) where an activity of the User (such as fertilizer injection) could degrade the quality of the recycled water in the distribution system. This backflow prevention device(s) to be installed on the customer's on-site recycled water system is to protect the District's recycled water distribution system against backflow occurrences. Backflow prevention devices must be approved by West Basin and Division of Drinking Water and LACDPH.

Devices must be properly maintained, inspected quarterly and tested at least annually. Backflow prevention assemblies, when required on recycled water systems, must be conspicuously labeled.

On-site recycled water system components that may require installation of backflow prevention devices include, but are not limited to: booster pumps; irrigation pumps; chemical injection systems; and other site hazards as determined by West Basin. The final determination of backflow prevention device(s) required shall be made solely by West Basin.

If required by West Basin, the backflow prevention device shall be installed immediately downstream of the recycled water meter, shall be approved by West Basin, and shall be installed by, and at the expense of, the customer. The customer shall have the device tested at least once a year by a tester certified by the Los Angeles County Department of Public Health and shall service such devices to maintain them in satisfactory operating condition and shall overhaul or replace such devices if they are found defective. Records of annual tests, repairs, and overhauling shall be kept by the customer and copies forwarded to West Basin.

C-1.6 Recycled Water System Color and Marking Information

Recycled water systems shall have a colored background and marking information in accordance with these Standard On-Site Specifications and the following: LACDPH's Guidelines for Pipeline Construction and Installation for Safe Use of Recycled Water; the Recycled Water Urban Irrigation User Manual developed by Los Angeles WaterReuse; and Section 601.3 of the *California Plumbing Code*. The 2019 California Plumbing Code (iapmo.org) can be found at the CPC website.

C-1.7 Valves and Hose Bibbs

Valves, except fixture supply control valves, shall be equipped with a locking feature.

Hose bibbs or other appurtenances that might allow public access to the recycled water system for possible consumption shall not be allowed on recycled water piping systems located in areas accessible to the public.

Access to recycled water at points in the system accessible to the public shall be through a quick-disconnect device, like quick couplers, that differs from those installed on the potable water system.

Where approved by West Basin and LACDPH (in areas that do not allow any public access such as commercial nursery), hose bibbs supplying recycled water shall be marked with the words: "CAUTION: RECYCLED WATER, DO NOT DRINK" in both English and Spanish along with the "Do Not Drink" symbol specified within Standard On-Site Irrigation Drawing IRR-10. Workers in these areas must be instructed not to drink from these hose bibbs and be provided a safe source of drinking water.

C-1.8 Mainline Piping in Dual Plumbed Buildings

Recycled water pipes shall be permitted to be run or laid in the utility trench as potable water pipes with 1-foot minimum vertical and horizontal separation where both pipe materials are approved for use within a dual plumbed building.

Both potable water and recycled water piping within a dual plumbed building shall be wrapped, “barber-pole” style, with the appropriate identification tape.

Where piping materials do not meet this requirement, the minimum horizontal separation shall be increased to 48 inches. The potable water piping shall be installed at an elevation above the recycled water piping. Recycled water pipes laid in the same trench or crossing building sewer or drainage piping shall be installed in accordance with this code for potable water piping.

C-1.9 Signage in Dual Plumbed Buildings

Signs in rooms and water closet tanks in buildings using recycled water shall be in accordance with Section 1509.10 of the California Plumbing Code.

C-1.10 Recycled Water Site Supervisor

The operation and surveillance of all on-site recycled water system facilities shall be under the management of an “Recycled Water Site Supervisor” designated by the Applicant, Owner, or Customer and approved by West Basin.

The Recycled Water Site Supervisor is responsible to operate and control the recycled water facilities in a manner to protect the health and welfare of the personnel involved with its use, as well as that of the general public.

For sites with a recycled water service connection, the property owner shall be considered the designated “Recycled Water Site Supervisor” unless otherwise indicated on the Recycled Water Service Application. In the event that someone other than the owner is designated as the “Recycled Water Site Supervisor” and this person is no longer associated with the property, the owner shall again be considered the “Recycled Water Site Supervisor” until written notification is made to West Basin. West Basin shall furnish the name of the Recycled Water Supervisor to the Regional Water Quality Control Board, State Division of Drinking Water and LACDPH at least 30 days prior to commencing service. It is the responsibility of the owner to notify West Basin of any change in the Recycled Water Site supervisor.

West Basin may 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 Recycled Water Site Supervisor shall be responsible for the operation, and maintenance of the on-site recycled water system, enforcing applicable requirements of West Basin’s permits, preventing potential hazards related to such system, maintenance of the system plans in “as-built” form, and distribution of recycled water in accordance with applicable laws and permits held by West Basin.

In particular, but not by way of limitation, the Recycled Water Site Supervisor shall have the following responsibilities in relation to operation of on-site facilities:

1. To make sure that all operations personnel are trained and familiarized with the use of recycled water.
2. To furnish their operations personnel with maintenance instructions, irrigation controller charts, and record drawings to ensure proper operation in accordance with the on-site facilities design and these On-site Standards.
3. To prepare and submit to West Basin one (1) set of record drawings.
4. To notify West Basin prior to any and all updates or proposed changes, modifications, or additions to the on-site facilities, which changes shall require approval by West Basin and LACDPH and shall be designed and constructed according to the requirements, conditions, and standards set forth in the District's On-Site Standards. In accordance, the above proposed changes must be submitted to the West Basin and LACDPH for plan check and approval prior to construction. The construction shall be inspected by West Basin and LACDPH, and revised record drawings and controller charts shall be approved by West Basin.
5. To ensure that the recycled water facilities remain in accordance with these On-Site Standards as well as the District's Standard Specifications and Standard Drawings for Recycled Water Facilities, the following for example, but not by way of limitation, shall be followed:
 - a. Cross-connections between potable water facilities and on-site recycled water facilities are forbidden.
 - b. Hose bibbs on the recycled water facilities are forbidden.
 - c. Drinking fountains shall be protected from spray of recycled water.
 - d. To operate and control the recycled water system in order to prevent direct human consumption of recycled water and to control and limit runoff.
 - e. The applicant, owner or customer shall be responsible for any and all subsequent uses of the recycled water.
 - f. Operation and control measures to be utilized in the usage of recycled water shall include, where appropriate, but not be limited to the following:
 - On-site recycled water facilities shall be operated to prevent or minimize discharge onto areas not under control of the customer. Full circle sprinklers shall not be used adjacent to sidewalks, roadways, and property lines and sprinkler types shall be selected so as to confine the discharge from sprinklers to the design area.

- The operation of the on-site recycled water facilities shall be during the periods of minimal use of the service area between 10:00pm to 6:00am, unless the use is being supervised.

Consideration shall be given to allowing a maximum dry-out time before the design area will be used by the public.

- 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.
- 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.
- To orally report any failure in the on-site recycled water system that causes an unauthorized discharge of recycled water, or other noncompliance with applicable laws and West Basin's permits, to West Basin, the Regional Water Quality Control Board, State Division of Drinking Water and LACDPH, within 24 hours from the time the Recycled Water Site Supervisor becomes aware of the circumstances.

The Recycled Water Site Supervisor shall also make a written submission to West Basin, with a copy to the Regional Water Quality Control Board, the State Division of Drinking Water and LACDPH, within five days of the time the Recycled Water Site Supervisor becomes aware of the circumstances, which shall contain (a) a description of the non-compliance and its cause; (b) the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and (c) steps taken or planned to reduce, eliminate and prevent recurrence of the non-compliance.

- To comply with any and all applicable Federal, State, and local statutes, ordinances, regulations, contracts, West Basin Permit requirements, the service application and agreement, and all requirements prescribed in these On-Site Standards. In the event of violation, all charges and penalties shall be applied and collected by West Basin.
6. West Basin may, from time to time, require that an “Recycled Water Site Supervisor” obtain additional instruction in the use of recycled water, such instruction being provided by or approved by West Basin.
 7. All new employees of the User must be trained in the proper use of recycled water. Supervisory personnel and the Site Supervisor shall ensure that employees are not using recycled water carelessly or improperly. It is the responsibility of the User to train all operations personnel so they are familiar with the use of recycled water.

C-1.11 On-Site System Changes and Connections

No changes or connections shall be made to either the on-site recycled water system or the potable water system within a site containing a recycled water system without prior notification and approval from West Basin and LACDPH.

Modifications to the water or recycled water systems made without approval **may result in temporary disconnection** from the recycled water until the plan approval process has been completed.

Recycled water systems shall have no connection to a potable water supply or alternate water source system. Potable water is permitted to be used as makeup water for a recycled water storage tank provided the water supply inlet is protected by an air gap as defined per State Title 17 requirements.

C-1.12 On-Site Supervisor Do's and Don'ts

The following are some Do's and Don'ts for On-Site Supervisors:

Do's

1. Install and maintain signs at all points of entry (both pedestrian and vehicular).
2. Install and maintain labels and tags on recycled, non-potable and potable water systems.
3. Operate irrigation system: between 10 p.m. to 6 a.m. or when site is unoccupied, if automatically controlled (unless other restrictions apply); at other times if manually controlled and supervised (that is, trained use site staff is present) to ensure recycled water does not come in contact with the public; and at any time if use site has restricted public access.
4. Use quick couplers instead of hose bibbs on recycled water systems.

5. Contact West Basin and the water purveyor if any water system (non-potable, potable or recycled) modifications are anticipated.
6. Immediately contact West Basin, water purveyor and LACDPH if any of the following has occurred: a recycled water line break, spill or off-site discharge of recycled water; a violation of water recycling requirements; or a cross-connection between the recycled and potable water systems.
7. Educate/train site workers on the safe use and restrictions of recycled water.
8. Keep site records and as-built drawings up-to-date and accessible.
9. Assist and cooperate during Periodic Visual site inspections.
10. Assist and cooperate during periodic Cross-Connection Testing.

Don'ts

1. Do not drink recycled water.
2. Do not use recycled water to wash hands or any other parts of the body.
3. Do not remove recycled water identification signs, tags or labels.
4. Do not cross-connect two dissimilar water systems (recycled to potable).
5. Do not allow recycled water to contact drinking fountains, eating areas, or any area in which food may contact the recycled water.
6. Do not allow recycled water to pond or puddle.
7. Do not allow excessive amounts of recycled water to runoff the use site property by either overspray or overwatering.
8. Do not use recycled water on an unapproved site or area of the property.
9. Do not put hose bibs on recycled water systems (unless public access is restricted).
10. Do not use the same equipment on both recycled water and domestic water systems (for example: quick couplers, tools, hoses, etc.).
11. Do not modify any water system without prior approval of West Basin, water purveyor and LACDPH.

SECTION D **MAINTENANCE REQUIREMENTS**

D-1 MAINTENANCE REQUIREMENTS

D-1.1 General

The User must implement a preventive maintenance program that will ensure that the recycled water system always remains in compliance. A preventive maintenance program should include but not be limited to the following:

1. Regular inspections should be conducted by the User of the entire recycled water system including sprinkler heads, spray patterns, piping and valves, pumps, storage facilities, lakes, controllers, signage, etc. Immediately correct any problems.
2. All notification signs, labels and/or tags should be checked for their proper placement and readability. Replace damaged or unreadable signs, labels or tags.
3. Pay special attention to spray patterns to eliminate ponding, runoff and wind-blown spray conditions.
4. Establish and maintain an accurate records-keeping system of all inspections, modifications and repairs.
5. Broken sprinkler heads, faulty spray patterns, leaking pipes or valves, etc. must be repaired as soon as the malfunction becomes apparent.
6. A maintenance program for backflow prevention assemblies that includes at least annual testing by a tester certified by the American Backflow Prevention Association or AWWA must be carried out. Records of annual tests, repairs and overhauls must be kept by the User with copies forwarded to West Basin and LACDPH.

D-1.2 Periodic Site Inspections

Following conversion to recycled water use, each site is expected to maintain the requirements put in place to assure safety and avoid cross-connections. The inspection of recycled water sites was established by the State Division of Drinking Water in order to provide a process to reduce the potential for potable water systems to become cross-connected with recycled water (California Water Code Section 13523.1(b)(5)).

Inspections are to be performed by West Basin and/or LACDPH. The requirement is for “periodic” inspections. This can be done annually in the case of sites with more complex potable and recycled water systems. Some sites present a lesser risk and may be inspected less frequently.

Most sites will require the Site Supervisor to be present during the inspections. However, some sites, like medians, may be inspected by West Basin without the participation of the on-site supervisor.

The inspector will check for signs posted at the designated locations, that valves and control boxes are correctly labeled and inspect the site for water system modifications compared to the site drawings on file. Should the inspection indicate a water system modification has taken place that may pose a cross-connection risk, the recycled water system will be a shut off until a cross-connection test can be performed and the modifications are approved by West Basin and LACDPH.

To document the inspection and reinforce the Conditions of Use, the Site Supervisor should sign off on the inspection or other official documentation.

D-1.3 Modifications and Violations

Repairs can be made by the User to the recycled water system without the prior approval of West Basin. However, modifications to recycled water and potable water mainlines require approval by West Basin and LACDPH per Section C-1.11.

In addition, violations may include non-compliance of any of the following prohibitions: runoff conditions; ponding conditions; windblown spray conditions; leaks or spills resulting from broken or damaged pipelines or appurtenances; unapproved uses; disposal in unapproved areas; cross-connections; unprotected drinking fountains; and unauthorized or prohibited use of hose bibs, whether willful or by accident.

It is the responsibility of the Site Supervisor to immediately notify West Basin of any failure or cross-connection in the recycled or potable water system, whether or not it believes a violation has occurred.

SECTION E STANDARD CROSS CONNECTION TEST PROTOCOL

E-1 CROSS-CONNECTION TEST OF ON-SITE RECYCLED WATER SITES

E-1.1 General

On “dual source” sites where both potable water and recycled water are present, the potable water supply must be protected against accidental cross-connections.

Prior to any site connecting to the West Basin’s Recycled Water (RW) Distribution System, a Cross-Connection Test must be completed under supervision of LACDPH and participation from West Basin and the local water purveyor. **Existing West Basin Recycled Water sites that plan to install, construct, modify, or remove any on-site, subsurface pressurized water lines (Recycled Water, Potable/Domestic Water, or others) must also successfully complete a Cross-Connection Test prior to the Recycled Water service being restored.** The test performed shall be a two-way shutdown test (“Pressure Test”) to prove the hydraulic separation of the Recycled Water system from the Potable Water system, and any other water systems present onsite.

E-1.2 Steps of the Cross-Connection Test

Prior to any cross-connection testing, a cross-connection plan shall be prepared and approved in advance by West Basin and LACDPH.

- 1. Establish Baseline System Conditions** - Operate domestic uses and irrigation uses to verify functionality and pressure / flow conditions:
 - a. Irrigation System shall be served from a temporary, potable water supply (protective measure, in case of a cross-connection discovered during the test) that shall be protected at the Point of Connection (POC) by an approved RP Type backflow prevention assembly;
 - b. Check and Operate Irrigation Control Valves and Quick Coupler Valves; and
 - c. Check and Operate Domestic Fixtures and Outlets (Drinking Fountains, Sinks, Restrooms, Hose Bibs, etc.). Testers shall note any fixtures found with no flow / no pressure during baseline.

- 2. Irrigation Supply: OFF** - The irrigation system shall be turned OFF, completely drained, and remain deactivated for an adequate period of time based on site-specific characteristics:
 - a. Shut OFF the irrigation system supply at the temporary backflow prevention assembly.
 - b. Check and Operate Domestic Fixtures and Outlets. Potable water fixtures throughout site should stay pressurized while irrigation is shut OFF.
 - c. Check and Operate Irrigation System to verify NO PRESSURE/NO FLOW conditions at all valves.
 - d. Turn Irrigation Supply back ON.

- 3. Domestic Supply: OFF**
 - a. Shut OFF the domestic water system supply at the POC (Water Meter or Domestic Backflow Assembly).
 - b. Check and Operate Irrigation System to verify that pressure and flow have resumed by testing Irrigation Control Valves and Quick Coupler Valves.
 - c. Check and Operate Domestic Fixtures and Outlets throughout the site to verify NO PRESSURE/NO FLOW conditions.
 - d. Turn Domestic Supply back ON.

4. Test Approval and Final Recycled Water Connection

- a. LACDPH is the agency responsible for issuing the final cross-connection test approval notices; test approval is required prior to final Recycled Water connection for the site.
- b. Upon receipt of test approval notice, site representative shall schedule LACDPH and West Basin to witness the temporary potable supply disconnected, and final connection (or reconnection) of the system to the recycled water meter.

E-2 CROSS-CONNECTION TEST OF DUAL PLUMBED SITES

“Dual-Plumbed” Recycled Water Sites (indoor recycled water applications) shall also be required to submit an approved Engineering Report to West Basin and LACDPH. Dual-Plumbed sites approved for indoor recycled water use(s) shall perform a Cross-Connection Test at least once every four (4) years.

A cross-connection test for a Dual Plumbed Site is required in accordance with Section 1501.11.2 of the California Plumbing Code. Before the building is occupied or the system is activated, the installer shall perform the initial cross-connection test in the presence of the Authority Having Jurisdiction and other authorities having jurisdiction. The test shall be ruled successful by the Authority Having Jurisdiction before final approval is granted.

An initial inspection and test shall be performed on both the potable and recycled water source systems. The potable and recycled water source system shall be isolated from each other and independently inspected and tested to ensure there is no cross-connection.

In the event that a cross-connection is discovered, the following procedure, in the presence of the Authority Having Jurisdiction, shall be activated immediately:

1. The recycled water source piping to the building shall be shut down at the meter. and the recycled water source riser shall be drained.
2. Potable water piping to the building shall be shut down at the meter.
3. The cross-connection shall be uncovered and disconnected.
4. The building shall be retested in accordance with Section 1501.11.2.1 and Section 1501.11.2.2 of the California Plumbing Code.
5. The potable water system shall be chlorinated with 50 parts-per-million (ppm) chlorine for 24 hours.
6. The potable water system shall be flushed after 24 hours, and a standard bacteriological test shall be performed. Where test results are acceptable, the potable water system shall be permitted to be recharged.