

# APPENDIX A

## Arizona Revised Statutes

### ARTICLE 6. RECLAIMED WATER CONVEYANCES

#### R18-9-601. Definitions

In addition to the definitions provided in R18-9-701, the following terms apply to this Article:

1. "Open water conveyance" means any constructed open waterway, including canals and laterals that transports reclaimed water from a sewage treatment facility to a reclaimed water blending facility or from a sewage treatment facility or reclaimed water blending facility to the point of land application or end use. An open water conveyance does not include waters of the United States.
2. "Pipeline conveyance" means any system of pipelines that transports reclaimed water from a sewage treatment facility to a reclaimed water blending facility or from a sewage treatment facility or reclaimed water blending facility to the point of land application or end use.

#### Historical Note

New Section adopted by final rulemaking at 7 A.A.R. 758, effective January 16, 2001 (Supp. 01-1).

#### R18-9-602. Pipeline Conveyances of Reclaimed Water

##### A. Applicability.

1. Any person constructing a pipeline conveyance on or after January 1, 2001, whether new or a replacement of an existing pipeline shall meet the requirements of this Article.
2. Any person who has constructed a pipeline conveyance before January 1, 2001, is considered to be in compliance with this Article.

B. A person shall design and construct a pipeline conveyance system using good engineering judgement following standards of practice.

##### C. A person shall construct a pipeline conveyance so that:

1. Reclaimed water does not find its way into, or otherwise contaminate, a potable water system;
2. System structural integrity is maintained; and
3. The capability for inspection, maintenance, and testing is maintained.

D. A person shall construct a pipeline conveyance and all appurtenances conducting reclaimed water to withstand a static pressure of at least 50 pounds per square inch greater than the design working pressure without leakage as determined in A.A.C. R18-9-E301(D)(2)(j).

E. A person shall provide a pipeline conveyance with thrust blocks or restrained joints where needed to prevent excessive movement of the pipeline.

##### F. The following requirements for minimum separation distance apply. A person shall:

1. Locate a pipeline conveyance no closer than 50 feet from a drinking water well unless the pipeline conveyance is constructed as specified under subsection (F)(3);
2. Locate a pipeline conveyance no closer than two feet vertically nor six feet horizontally from a potable water pipeline unless the pipeline conveyance is constructed as specified under subsection (F)(3);
3. Construct a pipeline conveyance that does not meet the minimum separation distances specified in subsections (F)(1) and (F)(2) by encasing the pipeline conveyance in at least six inches of concrete or using mechanical joint ductile iron pipe or other materials of equivalent or greater tensile and compressive strength at least 10 feet beyond any point on the pipeline conveyance within the specified minimum separation distance; and
4. If a reclaimed water system is supplemented with water from a potable water system, separate the potable water system from the pipeline conveyance by an air gap.

##### G. A person shall:

1. For a pipeline conveyance, eight inches in diameter or less, use pipe marked on opposite sides in English: "CAUTION: RECLAIMED WATER, DO NOT DRINK" in intervals of three feet or less and colored purple or wrapped with durable purple tape.
2. For a mechanical appurtenance to a pipeline conveyance, ensure that the mechanical appurtenance is colored purple or legibly marked to identify it as part of the reclaimed water distribution system and distinguish it from systems for potable water distribution and sewage collection.

#### Historical Note

New Section adopted by final rulemaking at 7 A.A.R. 758, effective January 16, 2001 (Supp. 01-1).

#### R18-9-603. Open Water Conveyances of Reclaimed Water

A. This Article applies to an open water conveyance, regardless of the date of construction.

B. A person shall maintain an open water conveyance to prevent release of reclaimed water except as allowed under federal and state regulations. The maintenance program shall include periodic inspections and follow-up corrective measures to ensure the integrity of conveyance banks and capacity of the conveyance to safely carry operational flows.

##### C. Signage for Class B+, B, and C Reclaimed Water. A person shall:

1. Ensure that signs state: "CAUTION: RECLAIMED WATER, DO NOT DRINK," and display the international "do not drink" symbol;
2. Place signs at all points of ingress and, if the open water conveyance is operated with open access, at least every 1/4-mile along the length of the open water conveyance; and
3. Ensure that signs are visible and legible from both sides of the open water conveyance.

### Historical Note

New Section adopted by final rulemaking at 7 A.A.R. 758, effective January 16, 2001 (Supp. 01-1).

## ARTICLE 7. DIRECT REUSE OF RECLAIMED WATER

### R18-9-701. Definitions

Unless provided otherwise, the definitions provided in A.R.S. § 49-201, A.A.C. R18-9-101, R18-9-601, R18-11-301, and the following terms apply to this Article:

1. "Direct reuse" means the beneficial use of reclaimed water for a purpose allowed by this Article. The following is not a direct reuse of reclaimed water:
  - a. The use of water subsequent to its discharge under the conditions of a National Pollutant Discharge Elimination System permit;
  - b. The use of water subsequent to discharge under the conditions of an Aquifer Protection Permit issued under 18 A.A.C. 9, Articles 1 through 3; or
  - c. The use of industrial wastewater or reclaimed water, or both, in a workplace subject to a federal program that protects workers from workplace exposures.
2. "Direct reuse site" means an area permitted for the application or impoundment of reclaimed water. An impoundment operated for disposal under an Aquifer Protection Permit is not a direct reuse site.
3. "End user" means a person who directly reuses reclaimed water meeting the standards for Classes A+, A, B+, B, and C, established under 18 A.A.C. 11, Article 3.
4. "Gray water" means wastewater collected separately from a sewage flow that originates from a clothes washer, bathtub, shower, and sink, but does not include wastewater from a kitchen sink, dishwasher, or toilet.
5. "Industrial wastewater" means wastewater generated from an industrial process.
6. "Irrigation" means the beneficial use of water or reclaimed water, or both, for growing crops, turf, or silviculture, or for landscaping.
7. "Open access" means that access to reclaimed water by the general public is uncontrolled.
8. "Reclaimed water" means water that has been treated or processed by a wastewater treatment plant or an on-site wastewater treatment facility. A.R.S. § 49-201(31).
9. "Reclaimed water agent" means a person who holds a permit to distribute reclaimed water to more than one end user.
10. "Reclaimed water blending facility" means an installation or method of operation that receives reclaimed water from a sewage treatment facility or other reclaimed water blending facility classified to produce Class C or better reclaimed water and blends it with other water so that the produced water may be used for a higher-class purpose listed in 18 A.A.C. 11, Article 3, Appendix A.
11. "Restricted access" means that access to reclaimed water by the general public is controlled.

### Historical Note

Former Section R9-20-401 repealed, new Section R9-20-401 adopted effective May 24, 1985 (Supp. 85-3). Former Section R9-20-401 renumbered without change as Section R18-9-701 (Supp. 87-3). Amended by final rulemaking at 7 A.A.R. 758, effective January 16, 2001 (Supp. 01-1).

### R18-9-702. Applicability and Standards for Reclaimed Water Classes

A. This Article applies to:

1. An owner or operator of a sewage treatment facility that generates reclaimed water for direct reuse,
2. An owner or operator of a reclaimed water blending facility,
3. A reclaimed water agent,
4. An end user,
5. A person who uses gray water,
6. A person who directly reuses reclaimed water from a sewage treatment facility combined with industrial wastewater or combined with reclaimed water from an industrial wastewater treatment facility, and
7. A person who directly reuses reclaimed water from an industrial wastewater treatment facility in the production or processing of a crop or substance that may be used as human or animal food.

B. Reclaimed water classes A+, A, B+, B, and C specified in this Article shall meet the standards established in 18 A.A.C. 11, Article 3.

C. Nothing in this Article exempts the disposal of reclaimed water from the Aquifer Protection Permit requirements under A.R.S. Title 49, Chapter 2, Articles 1, 2, and 3.

### Historical Note

Former Section R9-20-402 repealed, new Section R9-20-402 adopted effective May 24, 1985 (Supp. 85-3). Former Section R9-20-402 renumbered without change as Section R18-9-702 (Supp. 87-3). Section repealed; new Section adopted by final rulemaking at 7 A.A.R. 758, effective January 16, 2001 (Supp. 01-1).

### R18-9-703. Transition of Permits

A. A person may directly reuse reclaimed water under an individual Aquifer Protection Permit or a Permit for the Reuse of Reclaimed Wastewater issued by the Department before January 1, 2001 if the person meets the conditions of the permit and the permit does not expire.

B. A person meeting the requirements of subsection (A) may apply for a new reclaimed water permit under this Article.

1. To obtain a reclaimed water permit, a person shall submit a Reclaimed Water Individual Permit application, required under R18-9-705(B), a Notice of Intent for Direct Reuse of Reclaimed Water, required under R18-9-708(B)(2), or a Notice of Intent to Operate, required under R18-9-708(C)(1) to the Department at least 120 days before the current permit expires.
2. The Department shall continue the terms of the individual Aquifer Protection Permit or the Permit for the Reuse of Reclaimed Wastewater beyond the stated date of expiration if:

- a. The permitted direct reuse is of a continuing nature; and
  - b. The permittee submits a timely and complete application for a new permit.
- C. Sewage treatment facility generating reclaimed water.
- 1. At the request of a permittee, the Department shall amend an individual Aquifer Protection Permit issued before January 1, 2001 if the permittee adequately demonstrates that the applicable quality of reclaimed water produced for direct reuse is achieved. The Department shall review:
    - a. The information in the individual Aquifer Protection Permit application and the water quality test results from the previous two years to determine the classification of reclaimed water generated by the sewage treatment facility; and
    - b. The available water quality data if the sewage treatment facility has operated for less than two years.
  - 2. The Department shall ensure that an amended individual Aquifer Protection Permit contains:
    - a. Identification of the class of reclaimed water generated by the facility;
    - b. Requirements for monitoring reclaimed water quality and flow at a frequency appropriate to demonstrate compliance with this Article and 18 A.A.C. 11, Article 3;
    - c. Requirements for quarterly reporting of the following data to the Department, any reclaimed water agent who has contracted for delivery of reclaimed water from the facility, and any end user who has not waived interest in receiving this information:
      - i. Water quality test results demonstrating that reclaimed water produced by the facility meets the applicable standards for the class of water identified in subsection (C)(2)(a), and
      - ii. The total volume of reclaimed water generated for direct reuse.
    - d. Provision for cessation of delivery, if necessary, and storage or disposal if reclaimed water cannot be delivered for direct reuse.

#### **Historical Note**

Former Section R9-20-403 repealed, new Section R9-20-403 adopted effective May 24, 1985 (Supp. 85-3). Former Section R9-20-403 renumbered without change as Section R18-9-703 (Supp. 87-3). Editorial change to labels in subsection (c)(8) (Supp. 89-4). Section repealed; new Section adopted by final rulemaking at 7 A.A.R. 758, effective January 16, 2001 (Supp. 01-1).

#### **R18-9-704. General Requirements**

- A. Sewage treatment facility. Except for permits continued under R18-9-703(A), a sewage treatment facility owner or operator shall provide reclaimed water for direct reuse only under an individual Aquifer Protection Permit amended under R18-9-703(C)(2).
- B. Additional treatment. If an owner or operator of a facility accepts reclaimed water and provides additional treatment for a higher quality direct reuse, the facility is considered a sewage treatment facility and shall operate under the requirements of an individual Aquifer Protection Permit amended under R18-9-703(C)(2).
- C. Reclaimed water blending facility. An owner or operator of a reclaimed water blending facility shall not conduct blending operations without obtaining a Reclaimed Water Individual Permit or Reclaimed Water General Permit.
- D. Reclaimed water agent. A person shall not operate as a reclaimed water agent without obtaining a Reclaimed Water Individual Permit or a Reclaimed Water General Permit.
- E. End user. A person shall not directly reuse reclaimed water unless permitted under this Article.
- F. Irrigating with reclaimed water. A permittee irrigating with reclaimed water shall:
  - 1. Use application methods that reasonably preclude human contact with reclaimed water;
  - 2. Prevent reclaimed water from standing on open access areas during normal periods of use;
  - 3. Prevent reclaimed water from coming into contact with drinking fountains, water coolers, or eating areas; and
  - 4. Secure hose bibbs discharging reclaimed water to prevent use by the public.
- G. Prohibited activities.
  - 1. Irrigating with untreated sewage;
  - 2. Providing or using reclaimed water for any of the following activities:
    - a. Direct reuse for human consumption;
    - b. Direct reuse for swimming, wind surfing, water skiing, or other full-immersion water activity with a potential of ingestion; or
    - c. Direct reuse for evaporative cooling or misting.
  - 3. Misapplying reclaimed water for any of the following reasons:
    - a. Application of a stated class of reclaimed water that is of lesser quality than allowed by this Article for the type of direct reuse application;
    - b. Application of reclaimed water to any area other than a direct reuse site; or
    - c. Allowing runoff of reclaimed water or reclaimed water mixed with stormwater from a direct reuse site, except for agricultural return flow that is directed onto an adjacent field or returned to an open water conveyance.
- H. A permittee shall place and maintain signage at locations specified in Table 1 so the public is informed that reclaimed water is in use and that no one should drink from the system.

**Table 1. Signage Requirements for Direct Reuse Sites**

Reclaimed Water Class	Hose Bibbs	Residential Irrigation	Schoolground Irrigation	Other Open Access Irrigation	Restricted Irrigation	Access	Mobile Reclaimed Water Dispersal
A+	Each bibb	Front yard, or all entrances to a subdivision if the signage is supplemented by written yearly notification to individual homeowners by the homeowner's association.	On premises visible to staff and students	None	None		Back of truck or on tank
A	Each bibb	Front yard, or all entrances to a subdivision if the signage is supplemented by written yearly notification to individual homeowners by the homeowner's association.	On premises visible to staff and students	None	None		Back of truck or on tank
B+	Each bibb	Direct Reuse Not Allowed	Direct Reuse Not Allowed	Direct Reuse Not Allowed	1. Ingress points on premises or at reasonably spaced intervals not more than 1/4 mile, as applicable to the use 3. Notice on golf score cards, if applicable		Back of truck or on tank
B	Each bibb	Direct Reuse Not Allowed	Direct Reuse Not Allowed	Direct Reuse Not Allowed	1. Ingress points on premises or at reasonably spaced intervals not more than 1/4 mile, as applicable to the use 3. Notice on golf score cards, if applicable		Back of truck or on tank
C	Each bibb	Direct Reuse Not Allowed	Direct Reuse Not Allowed	Direct Reuse Not Allowed	1. Ingress points on premises or at reasonably spaced intervals not more than 1/4 mile, as applicable to the use		Back of truck or on tank

Note: All impoundments with open access including lakes, ponds, ornamental fountains, waterfalls, and other water features shall be posted with signs regardless of the class of reclaimed water.

**Historical Note**

Former Section R9-20-404 repealed, new Section R9-20-404 adopted effective May 24, 1985 (Supp. 85-3). Former Section R9-20-404 renumbered without change as Section R18-9-704 (Supp. 87-3). Section repealed; new Section adopted by final rulemaking at 7 A.A.R. 758, effective January 16, 2001 (Supp. 01-1).

**R18-9-705. Reclaimed Water Individual Permit Application**

- A. Pre-application conference. Upon request of an applicant, the Department shall schedule and hold a pre-application conference with the applicant to discuss any requirements in this Article.
- B. To apply for a Reclaimed Water Individual Permit, a person shall provide the Department with:
  - 1. The following information on a form provided by the Department:
    - a. The name and mailing address of the owner or operator of the facility or the reclaimed water agent;
    - b. The social security number of the applicant, if the applicant is an individual;
    - c. The legal description of the direct reuse site, including latitude and longitude coordinates;
    - d. Any other federal or state environmental permits issued to the applicant;
    - e. Source of reclaimed water to be directly reused;
    - f. Volume of reclaimed water to be directly reused on an annual basis;
    - g. Class of reclaimed water to be directly reused;
    - h. Description of the direct reuse activity; and
    - i. The applicant's signature certifying that the information submitted in the application is true and accurate to the best of the applicant's knowledge.
  - 2. A copy of the certificate of disclosure of violations required under A.R.S. § 49-109; and
  - 3. The applicable permit fee specified under 18 A.A.C. 14.

- C. Administrative completeness review. Upon receipt, the Department shall review the Reclaimed Water Individual Permit application to determine its administrative completeness under A.R.S. § 41-1074 and A.A.C. R18-1-503.
- D. Substantive review. Upon receipt of a complete Reclaimed Water Individual Permit application, the Department shall review the application to determine its substantive adequacy under A.R.S. § 41-1075 and A.A.C. R18-1-504.
- E. Draft permit. The Department shall provide the applicant a copy of a draft of the Reclaimed Water Individual Permit before the notice specified in subsection (F) is published.
- F. Public participation.
  - 1. Notice of Preliminary Decision.
    - a. The Department shall publish a Notice of Preliminary Decision to issue or deny a Reclaimed Water Individual Permit within a period of time that allows the Department to meet the licensing time-frame requirements under 18 A.A.C. 5.
    - b. The Department shall publish the Notice of Preliminary Decision regarding the issuance or denial of a final permit determination in one or more newspapers of general circulation where the facility is located.
    - c. The Department shall accept written comments from the public before a Reclaimed Water Individual Permit is issued or denied.
    - d. The written public comment period begins on the publication date of the Notice of Preliminary Decision and extends for 30 calendar days.
  - 2. After publishing the notice specified in subsection (F)(1)(a), the Department shall hold a public hearing to address the Notice of Preliminary Decision if the Department determines that:
    - a. Public interest in a public hearing exists, or
    - b. Issues or information have been brought to the attention of the Department that are relevant to the permitting decision and have not been considered previously in the permitting process.
  - 3. If the Department determines that a public hearing is necessary and a public hearing has not already been noticed under subsection (F)(1)(a), the Department shall schedule a public hearing and republish the Notice of Preliminary Decision as a legal notice at least once, in one or more newspapers of general circulation where the facility is located.
  - 4. The Department shall accept written public comment until the close of the hearing record as specified by the person presiding at the public hearing.
- G. Final permit issuance or denial.
  - 1. The Department shall give the applicant written notification of its final decision to issue or deny the permit application within the overall licensing time-frame requirements in 18 A.A.C. 5.
  - 2. The Department may deny a Reclaimed Water Individual Permit if the Department determines upon completion of the application process that the applicant has:
    - a. Failed or refused to correct a deficiency in the permit application;
    - b. Failed to demonstrate that the facility and the operation will protect public health and water quality. This determination shall be based on:
      - i. The information submitted in the permit application,
      - ii. Any information submitted to the Department as written public comment or following a public hearing; or
      - iii. Any information relevant to the demonstration that is developed or acquired by the Department, or
    - c. Provided false or misleading information.
  - 3. If the Department denies a Reclaimed Water Individual Permit the Department shall provide the applicant with written notification that explains the following:
    - a. The reasons for the denial with references to the statutes or rules on which the denial is based.
    - b. The applicant's right to appeal the denial, including the number of days the applicant has to file a notice of appeal, and the name and telephone number of the Department contact person who can answer questions regarding the appeals process.
    - c. The applicant's right to request an informal settlement conference under A.R.S. §§ 41-1092.03(A) and 41-1092.06.

#### **Historical Note**

Former Section R9-20-405 repealed, new Section R9-20-405 adopted effective May 24, 1985 (Supp. 85-3). Former Section R9-20-405 renumbered without change as Section R18-9-705 (Supp. 87-3). Section repealed; new Section adopted by final rulemaking at 7 A.A.R. 758, effective January 16, 2001 (Supp. 01-1).

#### **R18-9-706. Reclaimed Water Individual Permit General Provisions**

- A. A Reclaimed Water Individual Permit obtained under R18-9-705:
  - 1. Is valid for five years;
  - 2. May be amended, transferred, reissued, or revoked by the Director based on whether the permittee meets the terms of the individual permit and the requirements of this Article; and
  - 3. Continues, pending the issuance of a new permit, with the same terms following its expiration if the following are met:
    - a. The permittee submits an application for a new permit at least 120 days before the expiration of the existing permit; and
    - b. The permitted activity is of a continuing nature.
- B. A Reclaimed Water Individual Permit shall contain, if applicable:
  - 1. The class of reclaimed water to be applied for direct reuse;
  - 2. Specific reuse applications or limitations on reuse;
  - 3. Requirements for monitoring reclaimed water quality and flow to demonstrate compliance with this Article and 18 A.A.C. 11, Article 3;
  - 4. Requirements for reporting the following data to demonstrate compliance with this Article and 18 A.A.C. 11, Article 3:
    - a. Water quality test results demonstrating that the reclaimed water meets the applicable standards for the class of water identified in subsection (B)(1), and
    - b. The total volume of reclaimed water generated for direct reuse.

5. Requirements for maintaining records of all monitoring information and monitoring activities that include:
    - a. The date, description of sampling location, and time of sampling or measurement;
    - b. The name of the person who performed the sampling or measurement;
    - c. The date the analyses were performed;
    - d. The name of the person who performed the analyses;
    - e. The analytical techniques or methods used;
    - f. The results of the analyses; and
    - g. Documentation of sampling technique, sample preservation, and transportation, including chain-of-custody forms.
  6. Requirements to retain all monitoring activity records and results, including all original strip chart recordings for continuous monitoring instrumentation, and calibration and maintenance records for five years from the date of sampling or analysis. The Director shall extend the five-year retention period:
    - a. During the course of an unresolved litigation regarding compliance with the permit conditions, or
    - b. For any other justifiable cause.
  7. A requirement to allow all end users access to the records of physical, chemical, and biological quality of the reclaimed water.
- C. Permit transfer. A permittee may transfer a Reclaimed Water Individual Permit to another person if the following conditions are met:
1. The permittee notifies the Director of the proposed transfer.
  2. The permittee submits a written agreement containing a specific date for the transfer of permit responsibility and coverage between the current permittee and the proposed new permittee, including an acknowledgment that the existing permittee is liable for violations up to the date of transfer and that the proposed new permittee will be liable for violations from that date forward.
  3. The notice specified in subsection (C)(1) contains any information for the proposed new permittee that is changed from the information submitted under R18-9-705(B).
  4. The Director, within 30 days of receiving a transfer notice from the permittee, does not notify both the current permittee and proposed new permittee of the intent to amend, revoke, or reissue the permit or require the proposed new permittee to file an application for a new permit rather than agreeing to transfer the current permit.

#### **Historical Note**

Former Section R9-20-406 repealed, new Section R9-20-406 adopted effective May 24, 1985 (Supp. 85-3). Former Section R9-20-406 renumbered without change as Section R18-9-706 (Supp. 87-3). Amended effective December 1, 1988 (Supp. 88-4). Section repealed; new Section adopted by final rulemaking at 7 A.A.R. 758, effective January 16, 2001 (Supp. 01-1).

#### **R18-9-707. Reclaimed Water Individual Permit Where Industrial Wastewater Influences the Characteristics of Reclaimed Water**

- A. The following activities are prohibited unless a Reclaimed Water Individual Permit is obtained under R18-9-705:
1. Direct reuse of reclaimed water from a sewage treatment facility that is combined with industrial wastewater or that is combined with reclaimed water from an industrial wastewater treatment facility.
  2. Direct reuse of reclaimed water from an industrial wastewater treatment facility for production or processing of a crop or substance that may be used as human or animal food.
- B. In addition to the requirements in R18-9-705(B), an application for a Reclaimed Water Individual Permit shall include:
1. Each source of the industrial wastewater with Standard Industrial Code, and the projected rates and volumes from each source;
  2. The chemical, biological, and physical characteristics of the industrial wastewater from each source; and
  3. If reclaimed water will be used in the processing of any crop or substance that may be used as human or animal food, the information regarding food safety and any potential adverse health effects of this direct reuse.

#### **Historical Note**

Former Section R9-20-407 repealed, new Section R9-30-407 adopted effective May 24, 1985 (Supp. 85-3). Former Section R9-20-407 renumbered without change as Section R18-9-707 (Supp. 87-3). Section repealed; new Section adopted by final rulemaking at 7 A.A.R. 758, effective January 16, 2001 (Supp. 01-1).

#### **R18-9-708. Reusing Reclaimed Water Under a General Permit**

- A. Type 1 Reclaimed Water General Permit. A person may directly reuse reclaimed water without notice to the Department if:
1. The direct reuse is specifically authorized by and meets the requirements of this Article, and
  2. Complies with the requirements of the Type 1 Reclaimed Water General Permit under R18-9-711.
- B. Type 2 Reclaimed Water General Permit.
1. A person may directly reuse reclaimed water under a Type 2 Reclaimed Water General Permit if:
    - a. The direct reuse is authorized by and meets the requirements of this Article;
    - b. The direct reuse meets all the conditions of the applicable Type 2 Reclaimed Water General Permit under R18-9-712 through R18-9-716;
    - c. The person files a Notice of Intent for Direct Reuse of Reclaimed Water under subsection (B)(2); and
    - d. The person submits the applicable fee established in 18 A.A.C. 14.
  2. Notice of Intent for Direct Reuse of Reclaimed Water.
    - a. A person shall submit, by certified mail, in person, or by another method approved by the Department, the Notice of Intent for Direct Reuse of Reclaimed Water on a form provided by the Department.
    - b. The Notice of Intent for Direct Reuse of Reclaimed Water shall include:
      - i. The name, address, and telephone number of the applicant;
      - ii. The social security number of the applicant, if the applicant is an individual;
      - iii. The name, address, and telephone number of the contact person;

- iv. The source, volume, and class of reclaimed water to be directly reused;
  - v. A legal description of the direct reuse site, including latitude and longitude coordinates;
  - vi. The description of the direct reuse activity, including a description of acreage and the type of vegetation to be irrigated, if applicable to the type of direct reuse activity; and
  - vii. The permittee's signature certifying that the permittee agrees to comply with all requirements of this Article, including specific terms of the applicable Reclaimed Water General Permit.
- C. **Type 3 Reclaimed Water General Permit.** A person may operate under a Type 3 Reclaimed Water General Permit after filing an applicable Notice of Intent to Operate with the Department and receiving a written Verification of General Permit Conformance for the operation.
1. **Application submittal.** The applicant shall submit, either by certified mail, in person at the Department, or by another method approved by the Department:
    - a. The Notice of Intent to Operate on a form provided by the Department containing the information specified in the applicable Type 3 Reclaimed Water General Permit under R18-9-717(B), R18-9-718(C), or R18-9-719(B), and
    - b. The applicable fee established in 18 A.A.C. 14.
  2. **Verification issuance.** If, after reviewing the Notice of Intent to Operate, the Department determines that the direct reuse conforms with the conditions of a Type 3 Reclaimed Water General Permit and all other applicable requirements of this Article, the Department shall issue the Verification of General Permit Conformance.
  3. **Verification denial.**
    - a. If the Department determines on the basis of its review or an inspection that the direct reuse does not conform to the conditions of the applicable Type 3 Reclaimed Water General Permit or other applicable requirements of this Article, the Department shall notify the applicant of its decision not to issue the Verification of General Permit Conformance.
    - b. If an application is denied, the applicant shall not operate under a Type 3 Reclaimed Water General Permit.
    - c. The applicant may appeal the decision not to issue a Verification of General Permit Conformance under A.R.S. §§ 41-1092 through 41-1092.12.
  4. **Automatic issuance.** If the Department does not issue the Verification of General Permit Conformance within the time-frame specified under 18 A.A.C. 1, Article 5, and does not notify the applicant that it will not issue the verification, the verification automatically becomes effective upon expiration of the overall time-frame.

#### **Historical Note**

New Section adopted by final rulemaking at 7 A.A.R. 758, effective January 16, 2001 (Supp. 01-1).

#### **R18-9-709. Reclaimed Water General Permit Renewal and Transfer**

- A. **General permit renewal.** A permittee shall renew a Reclaimed Water General Permit at least 90 days before the permit expires by following the procedure described in either R18-9-708(B) or (C) and include the applicable fee established in 18 A.A.C. 14.
1. A Type 1 Reclaimed Water General Permit is valid as long as the conditions of the general permit and the requirements of this Article are met. No renewal is required;
  2. A Type 2 Reclaimed Water General Permit is valid for five years from the date the Department receives the Notice of Intent for Direct Reuse of Reclaimed Water;
  3. A Type 3 Reclaimed Water General Permit is valid for five years from the date the Verification of General Permit Conformance becomes effective.
- B. **General permit transfer.** A permittee shall provide notice to the Department by certified mail within 15 days following the transfer of a Type 2 or Type 3 Reclaimed Water General Permit. The Notice of Transfer shall:
1. Contain any information that has changed from the original Notice of Intent for Direct Reuse of Reclaimed Water or the Notice of Intent to Operate, including all information on the proposed new permittee, and
  2. Include the applicable fee established in 18 A.A.C. 14.

#### **Historical Note**

New Section adopted by final rulemaking at 7 A.A.R. 758, effective January 16, 2001 (Supp. 01-1).

#### **R18-9-710. Reclaimed Water General Permit Revocation**

- A. The Director may revoke a Reclaimed Water General Permit if the permittee fails to comply with any requirement in this Article, including a condition specified in the applicable Reclaimed Water General Permit. The Director shall make the determination based on the risk to public health and safety or a threat to waters of the state.
1. Before revoking a general permit, the Department shall provide notice to the permittee by certified mail of the Department's intent to revoke the Reclaimed Water General Permit. The notice of intent to revoke the general permit shall provide the permittee a reasonable opportunity to correct any noncompliance and specify a time-frame within which the permittee shall achieve compliance.
  2. If the permittee fails to correct the noncompliance within the specified time-frame, the Department shall notify the permittee, by certified mail, of the Director's decision to revoke the Reclaimed Water General Permit.
- B. The Director shall revoke a Reclaimed Water General Permit for any or all facilities located within a specific geographic area, if, due to a geologic or hydrologic condition, the cumulative effect of the facilities subject to the Reclaimed Water General Permit has violated or will violate a Water Quality Standard established under A.R.S. §§ 49-221 and 49-223.

#### **Historical Note**

New Section adopted by final rulemaking at 7 A.A.R. 758, effective January 16, 2001 (Supp. 01-1).

#### **R18-9-711. Type 1 Reclaimed Water General Permit for Gray Water**

- A. A Type 1 Reclaimed Water General Permit allows private residential direct reuse of gray water for a flow of less than 400 gallons per day if all the following conditions are met:
1. Human contact with gray water and soil irrigated by gray water is avoided;

2. Gray water originating from the residence is used and contained within the property boundary for household gardening, composting, lawn watering, or landscape irrigation;
  3. Surface application of gray water is not used for irrigation of food plants, except for citrus and nut trees;
  4. The gray water does not contain hazardous chemicals derived from activities such as cleaning car parts, washing greasy or oily rags, or disposing of waste solutions from home photo labs or similar hobbyist or home occupational activities;
  5. The application of gray water is managed to minimize standing water on the surface;
  6. The gray water system is constructed so that if blockage, plugging, or backup of the system occurs, gray water can be directed into the sewage collection system or on-site wastewater treatment and disposal system, as applicable. The gray water system may include a means of filtration to reduce plugging and extend system lifetime;
  7. Any gray water storage tank is covered to restrict access and to eliminate habitat for mosquitoes or other vectors;
  8. The gray water system is sited outside of a floodway;
  9. The gray water system is operated to maintain a minimum vertical separation distance of at least five feet from the point of gray water application to the top of the seasonally high groundwater table;
  10. For residences using an on-site wastewater treatment facility for black water treatment and disposal, the use of a gray water system does not change the design, capacity, or reserve area requirements for the on-site wastewater treatment facility at the residence, and ensures that the facility can handle the combined black water and gray water flow if the gray water system fails or is not fully used;
  11. Any pressure piping used in a gray water system that may be susceptible to cross connection with a potable water system clearly indicates that the piping does not carry potable water;
  12. Gray water applied by surface irrigation does not contain water used to wash diapers or similarly soiled or infectious garments unless the gray water is disinfected before irrigation; and
  13. Surface irrigation by gray water is only by flood or drip irrigation.
- B. Prohibitions. The following are prohibited:
1. Gray water use for purposes other than irrigation, and
  2. Spray irrigation.
- C. Towns, cities, or counties may further limit the use of gray water described in this Section by rule or ordinance.

**Historical Note**

New Section adopted by final rulemaking at 7 A.A.R. 758, effective January 16, 2001 (Supp. 01-1).

**R18-9-712. Type 2 Reclaimed Water General Permit for Direct Reuse of Class A+ Reclaimed Water**

- A. A Type 2 Reclaimed Water General Permit for Direct Reuse of Class A+ Reclaimed Water allows any direct reuse application of reclaimed water listed in 18 A.A.C. 11, Article 3, Appendix A, if the conditions in this Article are met.
- B. Record maintenance. A permittee shall maintain records for five years that describe the direct reuse site and the total amount of reclaimed water used annually for the permitted direct reuse activity. The records shall be made available to the Department upon request.
- C. A permittee shall post signs as specified in R18-9-704(H).
- D. No lining is required for an impoundment storing Class A+ reclaimed water.

**Historical Note**

New Section adopted by final rulemaking at 7 A.A.R. 758, effective January 16, 2001 (Supp. 01-1).

**R18-9-713. Type 2 Reclaimed Water General Permit for Direct Reuse of Class A Reclaimed Water**

- A. A Type 2 Reclaimed Water General Permit for the Direct Reuse of Class A Reclaimed Water allows any direct reuse application of reclaimed water listed in 18 A.A.C. 11, Article 3, Appendix A, if the conditions in this Article are met.
- B. Records and reporting. A permittee shall:
  1. Maintain records containing the following information for five years, and make them available to the Department upon request:
    - a. The direct reuse site,
    - b. The volume of reclaimed water applied monthly for each category of direct reuse activity listed in 18 A.A.C. 11, Article 3, Appendix A,
    - c. The total nitrogen concentration of the reclaimed water applied, and
    - d. The acreage and type of vegetation to which the reclaimed water is applied.
  2. Report annually to the Department on or before the anniversary date of the Notice of Intent:
    - a. The volume of reclaimed water received,
    - b. The type of reclaimed water application, and
    - c. If used for irrigation, the vegetation and acreage irrigated.
- C. Nitrogen management. A permittee shall ensure that:
  1. Impoundments storing reclaimed water allowed by the general permit are lined using a low-hydraulic conductivity artificial or site-specific liner material achieving a calculated discharge rate less than 550 gallons per acre per day; and
  2. The application rates of the reclaimed water are based on one of the following:
    - a. The water allotment assigned by the Arizona Department of Water Resources;
    - b. A water balance that considers consumptive use of water by the crop, turf, or landscape vegetation; or
    - c. An alternative method approved by the Department.
- D. In addition to the Notice of Intent for Direct Reuse of Reclaimed Water specified in R18-9-708(B)(2), the applicant shall provide a list of impoundments and the liner characteristics and the method chosen from the list in subsection (C)(2).
- E. The permittee shall post signs as specified in R18-9-704(H).

**Historical Note**

New Section adopted by final rulemaking at 7 A.A.R. 758, effective January 16, 2001 (Supp. 01-1).

**R18-9-714. Type 2 Reclaimed Water General Permit for Direct Reuse of Class B+ Reclaimed Water**

- A. A Type 2 Reclaimed Water General Permit for Direct Reuse of Class B+ Reclaimed Water allows any direct reuse application of Class B and Class C reclaimed water listed in 18 A.A.C. 11, Article 3, Appendix A, if the conditions in this Article are met.
- B. A permittee shall comply with the record maintenance and posting requirements established under R18-9-712 and make records available to the Department upon request.
- C. No lining is required for an impoundment storing Class B+ reclaimed water.

**Historical Note**

New Section adopted by final rulemaking at 7 A.A.R. 758, effective January 16, 2001 (Supp. 01-1).

**R18-9-715. Type 2 Reclaimed Water General Permit for Direct Reuse of Class B Reclaimed Water**

- A. A Type 2 Reclaimed Water General Permit for the Direct Reuse of Class B Reclaimed Water allows the direct reuse application of Class B and Class C reclaimed water listed in 18 A.A.C. 11, Article 3, Appendix A, if conditions in this Article are met.
- B. A permittee shall comply with the requirements established under R18-9-713(B), (C), (D), and (E).

**Historical Note**

New Section adopted by final rulemaking at 7 A.A.R. 758, effective January 16, 2001 (Supp. 01-1).

**R18-9-716. Type 2 Reclaimed Water General Permit for Direct Reuse of Class C Reclaimed Water**

- A. A Type 2 Reclaimed Water General Permit for the Direct Reuse of Class C Reclaimed Water allows the direct reuse application of Class C reclaimed water listed in 18 A.A.C. 11, Article 3, Appendix A, if conditions in this Article are met.
- B. A permittee shall comply with the requirements established under R18-9-713(B), (C), (D), and (E).

**Historical Note**

New Section adopted by final rulemaking at 7 A.A.R. 758, effective January 16, 2001 (Supp. 01-1).

**R18-9-717. Type 3 Reclaimed Water General Permit for a Reclaimed Water Blending Facility**

- A. Permit conditions.
  - 1. A Type 3 Reclaimed Water General Permit for a Reclaimed Water Blending Facility allows the blending of reclaimed water with other water, if the conditions in this Article are met.
  - 2. Blending reclaimed water with industrial wastewater or with reclaimed water from an industrial wastewater treatment plant is not authorized by this general permit.
- B. A person shall file with the Department a Notice of Intent to Operate a reclaimed water blending facility at least 90 days before the date the proposed activity will start. The Notice of Intent to Operate shall include:
  - 1. The name, address, and telephone number of the applicant;
  - 2. The social security number of the applicant, if the applicant is an individual;
  - 3. The name, address, and telephone number of a contact person;
  - 4. The source and volume of reclaimed water to be blended;
  - 5. The class of reclaimed water to be blended;
  - 6. The source, volume, and quality of other water to be blended;
  - 7. A legal description of the reclaimed water blending facility, including latitude and longitude coordinates;
  - 8. A description of the reclaimed water blending facility, including a demonstration that the proposed blending methodology will meet the standards established in 18 A.A.C. 11, Article 3 for the class of reclaimed water the facility will produce;
  - 9. A signature on the notice of intent certifying that the applicant agrees to comply with the requirements of this Article, 18 A.A.C. 11, Article 3, and the terms of this reclaimed water general permit; and
  - 10. The applicable permit fee specified under 18 A.A.C. 14.
- C. A person shall not operate a reclaimed water blending facility until the Department issues a written Verification of General Permit Conformance under R18-9-708(C).
- D. A permittee shall monitor:
  - 1. The blended water quality for total nitrogen and fecal coliform at frequencies specified by the class of reclaimed water in 18 A.A.C. 11, Article 3.
    - a. If the concentration of either total nitrogen or fecal coliform, as applicable, exceeds the limits for the reclaimed water class established in 18 A.A.C. 11, Article 3, the permittee shall submit a report to the Department within 30 days with a proposal to change the blending process. The permittee shall also double the monitoring frequency for the next two months.
    - b. If another exceedance occurs within the interval of increased monitoring, the permittee shall submit an application within 45 days for a Reclaimed Water Individual Permit.
  - 2. The volume of reclaimed water, the volume of the other water, and the total volume of blended water delivered for direct reuse on a monthly basis.
- E. The permittee shall report the results of the monitoring under subsection (D) to the Department on or before the anniversary date of the verification approval and shall make this information available to the end users.

**Historical Note**

New Section adopted by final rulemaking at 7 A.A.R. 758, effective January 16, 2001 (Supp. 01-1).

**R18-9-718. Type 3 Reclaimed Water General Permit for a Reclaimed Water Agent**

- A. A Type 3 Reclaimed Water General Permit allows a person to operate as a Reclaimed Water Agent if that the conditions of this Article are met, and the following conditions are met for the class of reclaimed water delivered by the Reclaimed Water Agent:
  - 1. Signage requirements specified under R18-9-704(H), as applicable;
  - 2. Impoundment liner requirements specified under R18-9-712(D), R18-9-713(C), R18-9-714(C), R18-9-715(B), or R18-9-716(B), as applicable; and

3. Nitrogen management requirements specified under R18-9-713(C), R18-9-715(B), and R18-9-716(B), as applicable.
- B. A person holding a Type 3 Reclaimed Water Permit for a Reclaimed Water Agent:
  1. Is responsible for the direct reuse of reclaimed water by more than one end user instead of direct reuse by the end users under separate Type 2 Reclaimed Water General Permits, and
  2. Shall maintain a contractual agreement with each end user stipulating any end user responsibilities for the requirements specified under subsection (A).
- C. A person shall file with the Department a Notice of Intent to Operate as a reclaimed water agent at least 90 days before the date the proposed activity will start. The Notice of Intent to Operate shall include:
  1. The name, address, and telephone number of the applicant;
  2. The social security number of the applicant, if the applicant is an individual;
  3. The name, address, and telephone number of a contact person;
  4. The following information for each end user to be supplied reclaimed water by the applicant:
    - a. The name, address and telephone number of the end user;
    - b. A legal description of each direct reuse site, including latitude and longitude coordinates; and
    - c. A description of each direct reuse activity, including the type of vegetation, acreage, and annual volume of reclaimed water to be used, unless Class A+ or Class B+ reclaimed water is delivered.
  5. The source, class, and annual volume of reclaimed water to be delivered by the applicant;
  6. A description of the contractual arrangement between the applicant and each end user, including any end user responsibilities for the requirements specified under subsection (A); and
  7. The applicable permit fee specified under 18 A.A.C. 14.
- D. A proposed reclaimed water agent shall not distribute reclaimed water to end users until the Department issues a written Verification of General Permit Conformance issued under R18-9-708(C).
- E. A reclaimed water agent shall record and annually report the following information to the Department, on or before each anniversary date of the verification approval:
  1. The total volume of reclaimed water delivered by the reclaimed water agent;
  2. The volume of reclaimed water delivered to each end user for Class A, Class B, and Class C reclaimed water; and
  3. Any change in the information submitted under subsection (C).
- F. The reclaimed water agent shall notify the Department before the end of each calendar year of any changes in the information submitted under subsection (C).

#### **Historical Note**

New Section adopted by final rulemaking at 7 A.A.R. 758, effective January 16, 2001 (Supp. 01-1).

#### **R18-9-719. Type 3 Reclaimed Water General Permit for Gray Water**

- A. A Type 3 Reclaimed Water General Permit allows a gray water irrigation system if:
  1. The general permit described in R18-9-711 does not apply,
  2. The flow is not more than 3000 gallons per day, and
  3. The gray water system satisfies the notification, design, and installation requirements specified in subsection (C).
- B. A person shall file a Notice of Intent to Operate a Gray Water Irrigation System with the Department at least 90 days before the date the proposed activity will start. The Notice of Intent to Operate shall include:
  1. The name, address and telephone number of the applicant;
  2. The social security number of the applicant, if the applicant is an individual;
  3. A legal description of the direct reuse site, including latitude and longitude coordinates;
  4. The design plans for the gray water irrigation system;
  5. A signature on the Notice of Intent to Operate certifying that the applicant agrees to comply with the requirements of this Article and the terms of this Reclaimed Water General Permit; and
  6. The applicable permit fee specified under 18 A.A.C. 14.
- C. The following technical requirements apply to the design and installation of a gray water irrigation system allowed under this Reclaimed Water General Permit:
  1. Design of the gray water irrigation system shall meet the on-site wastewater treatment facility requirements under R18-9-A312(C), (D)(1), (D)(2), (E)(1), (G), and R18-9-E302(C)(1), except the septic tank specified in R18-9-E302(C)(1) is not required if pretreatment of gray water is not necessary for the intended application;
  2. Design of the dispersal trenches for the gray water irrigation system shall meet the on-site wastewater treatment facility requirements for shallow trenches specified in R18-9-E302(C)(2);
  3. The depth of the gray water dispersal trenches shall be appropriate for the intended irrigation use but not more than 5 feet below the finished grade of the native soil; and
  4. The void space volume of the aggregate fill in the gray water dispersal trench below the bottom of the distribution pipe shall have enough capacity to contain two days of gray water at the design flow.
- D. The Department may review design plans and details and accept a gray water irrigation system that differs from the requirements specified in subsection (C) if the system provides equivalent performance and protection of human health and water quality.

#### **Historical Note**

New Section adopted by final rulemaking at 7 A.A.R. 758, effective January 16, 2001 (Supp. 01-1).

#### **R18-9-720. Enforcement and Penalties**

Any person who violates a condition specified in a permit issued under this Article, falsifies data or information submitted to the Department as required under Articles 6 or 7 of this Chapter, or violates a provision of Article 6 or 7 of this Chapter, is subject to the enforcement actions prescribed under A.R.S. §§ 49-261 and 49-262.

#### **Historical Note**

New Section adopted by final rulemaking at 7 A.A.R. 758, effective January 16, 2001 (Supp. 01-1).

## ARTICLE 3. RECLAIMED WATER QUALITY STANDARDS

### R18-11-301. Definitions

The terms in this Article have the following meanings:

"Direct reuse" has the meaning prescribed in R18-9-701(1).

"Disinfection" means a treatment process that uses oxidants, ultraviolet light, or other agents to kill or inactivate pathogenic organisms in wastewater.

"Filtration" means a treatment process that removes particulate matter from wastewater by passage through porous media.

"Gray water" means wastewater, collected separately from a sewage flow, that originates from a clothes washer, bathtub, shower, or sink, but it does not include wastewater from a kitchen sink, dishwasher, or a toilet.

"Industrial wastewater" means wastewater generated from an industrial process.

"Landscape impoundment" means a manmade lake, pond, or impoundment of reclaimed water where swimming, wading, boating, fishing, and other water-based recreational activities are prohibited. A landscape impoundment is created for storage, landscaping, or for aesthetic purposes only.

"NTU" means nephelometric turbidity unit.

"On-site wastewater treatment facility" has the meaning prescribed in A.R.S. § 49-201(24).

"Open access" means that access to reclaimed water by the general public is uncontrolled.

"Reclaimed water" has the meaning prescribed in A.R.S. § 49-201(31).

"Recreational impoundment" means a manmade lake, pond, or impoundment of reclaimed water where boating or fishing is an intended use of the impoundment. Swimming and other full-body recreation activities (for example, water-skiing) are prohibited in a recreational impoundment.

"Restricted access" means that access to reclaimed water by the general public is controlled.

"Secondary treatment" means a biological treatment process that achieves the minimum level of effluent quality defined by the federal secondary treatment regulation at 40 CFR § 133.102.

"Sewage" means untreated wastes from toilets, baths, sinks, lavatories, laundries, and other plumbing fixtures in places of human habitation, employment, or recreation.

#### Historical Note

Adopted effective July 9, 1981 (Supp. 81-4). Former Section R9-21-301 renumbered without change as Section R18-11-301 (Supp. 87-3). Section repealed effective February 18, 1992 (Supp. 92-1). New Section adopted by final rulemaking at 7 A.A.R. 870, effective January 22, 2001 (Supp. 01-1).

### R18-11-302. Applicability

This Article applies to the direct reuse of reclaimed water, except for:

1. The direct reuse of gray water, or
2. The direct reuse of reclaimed water from an onsite wastewater treatment facility regulated by a general Aquifer Protection Permit under 18 A.A.C. 9, Article 3.

#### Historical Note

Adopted effective June 8, 1981 (Supp. 81-3). Amended effective January 7, 1985 (Supp. 85-1). Former Section R9-21-302 renumbered without change as Section R18-11-302 (Supp. 87-3). Section repealed effective February 18, 1992 (Supp. 92-1). New Section adopted by final rulemaking at 7 A.A.R. 870, effective January 22, 2001 (Supp. 01-1).

### R18-11-303. Class A+ Reclaimed Water

A. Class A+ reclaimed water is wastewater that has undergone secondary treatment, filtration, nitrogen removal treatment, and disinfection. Chemical feed facilities to add coagulants or polymers are required to ensure that filtered effluent before disinfection complies with the 24-hour average turbidity criterion prescribed in subsection (B)(1). Chemical feed facilities may remain idle if the 24-hour average turbidity criterion in (B)(1) is achieved without chemical addition.

B. An owner of a facility shall ensure that:

1. The turbidity of Class A+ reclaimed water at a point in the wastewater treatment process after filtration and immediately before disinfection complies with the following:
  - a. The 24-hour average turbidity of filtered effluent is two NTUs or less, and
  - b. The turbidity of filtered effluent does not exceed five NTUs at any time.
2. Class A+ reclaimed water meets the following criteria after disinfection treatment and before discharge to a reclaimed water distribution system:
  - a. There are no detectable fecal coliform organisms in four of the last seven daily reclaimed water samples taken, and
  - b. The single sample maximum concentration of fecal coliform organisms in a reclaimed water sample is less than 23 / 100 ml.
  - c. If alternative treatment processes or alternative turbidity criteria are used, or reclaimed water is blended with other water to produce Class A+ reclaimed water under subsection (C), there are no detectable enteric virus in four of the last seven monthly reclaimed water samples taken.
3. The 5-sample geometric mean concentration of total nitrogen in a reclaimed water sample is less than 10 mg / L.

C. An owner of a facility may use alternative treatment methods other than those required by subsection (A), or comply with alternative turbidity criteria other than those required by subsection (B)(1), or blend reclaimed water with other water to produce Class A+ reclaimed water provided the owner demonstrates through pilot plant testing, existing water quality data, or other means that the alternative treatment methods, alternative turbidity criteria, or blending reliably produces a reclaimed water that meets the disinfection criteria in subsection (B)(2) and the total nitrogen criteria in subsection (B)(3) before discharge to a reclaimed water distribution system.

D. Class A+ reclaimed water is not required for any type of direct reuse. A person may use Class A+ reclaimed water for any type of direct reuse listed in Table A.

#### **Historical Note**

Adopted effective January 7, 1985 (Supp. 85-1). Amended effective August 12, 1986 (Supp. 86-4). Former Section R9-21-303 renumbered without change as Section R18-11-303 (Supp. 87-3). Section repealed effective February 18, 1992 (Supp. 92-1). New Section adopted by final rulemaking at 7 A.A.R. 870, effective January 22, 2001 (Supp. 01-1).

#### **R18-11-304. Class A Reclaimed Water**

- A. Class A reclaimed water is wastewater that has undergone secondary treatment, filtration, and disinfection. Chemical feed facilities to add coagulants or polymers are required to ensure that filtered effluent before disinfection complies with the 24-hour average turbidity criterion prescribed in subsection (B)(1). Chemical feed facilities may remain idle if the 24-hour average turbidity criterion in subsection (B)(1) is achieved without chemical addition.
- B. An owner of a facility shall ensure that:
1. The turbidity of Class A reclaimed water at a point in the wastewater treatment process after filtration and immediately before disinfection complies with the following:
    - a. The 24-hour average turbidity of filtered effluent is two NTUs or less, and
    - b. The turbidity of filtered effluent does not exceed five NTUs at any time.
  2. Class A reclaimed water meets the following criteria after disinfection treatment and before discharge to a reclaimed water distribution system:
    - a. There are no detectable fecal coliform organisms in four of the last seven daily reclaimed water samples taken, and
    - b. The single sample maximum concentration of fecal coliform organisms in a reclaimed water sample is less than 23 / 100 ml.
    - c. If alternative treatment processes or alternative turbidity criteria are used, or reclaimed water is blended with other water to produce Class A reclaimed water under subsection (C), there are no detectable enteric virus in four of the last seven monthly reclaimed water samples taken.
- C. An owner of a facility may use alternative treatment methods other than those required by subsection (A), or comply with alternative turbidity criteria other than those required by subsection (B)(1), or blend reclaimed water with other water to produce Class A reclaimed water provided the owner demonstrates through pilot plant testing, existing water quality data, or other means that the alternative treatment methods, alternative turbidity criteria, or blending reliably produces a reclaimed water that meets the disinfection criteria in subsection (B)(2) before discharge to a reclaimed water distribution system.
- D. A person shall use Class A reclaimed water for a type of direct reuse listed as Class A in Table A. A person may use Class A reclaimed water for a type of direct reuse listed as Class B or Class C in Table A.

#### **Historical Note**

Adopted effective January 7, 1985 (Supp. 85-1). Amended effective August 12, 1986 (Supp. 86-4). Former Section R9-21-304 renumbered without change as Section R18-11-304 (Supp. 87-3). Section repealed effective February 18, 1992 (Supp. 92-1). New Section adopted by final rulemaking at 7 A.A.R. 870, effective January 22, 2001 (Supp. 01-1).

#### **R18-11-305. Class B+ Reclaimed Water**

- A. Class B+ reclaimed water is wastewater that has undergone secondary treatment, nitrogen removal treatment, and disinfection.
- B. An owner of a facility shall ensure that:
1. Class B+ reclaimed water meets the following criteria after disinfection treatment and before discharge to a reclaimed water distribution system:
    - a. The concentration of fecal coliform organisms in four of the last seven daily reclaimed water samples is less than 200 / 100 ml.
    - b. The single sample maximum concentration of fecal coliform organisms in a reclaimed water sample is less than 800 / 100 ml.
  2. The 5-sample geometric mean concentration of total nitrogen in a reclaimed water sample is less than 10 mg / L.
- C. Class B+ reclaimed water is not required for a type of direct reuse. A person may use Class B+ reclaimed water for a type of direct reuse listed as Class B or Class C in Table A. A person shall not use Class B+ reclaimed water for a type of direct reuse listed as Class A in Table A.

#### **Historical Note**

New Section adopted by final rulemaking at 7 A.A.R. 870, effective January 22, 2001 (Supp. 01-1).

#### **R18-11-306. Class B Reclaimed Water**

- A. Class B reclaimed water is wastewater that has undergone secondary treatment and disinfection.
- B. An owner of a facility shall ensure that Class B reclaimed water meets the following criteria after disinfection treatment and before discharge to a reclaimed water distribution system:
1. The concentration of fecal coliform organisms in four of the last seven daily reclaimed water samples is less than 200 / 100 ml.
  2. The single sample maximum concentration of fecal coliform organisms in a reclaimed water sample is less than 800 / 100 ml.
- C. A person shall use a minimum of Class B reclaimed water for a type of direct reuse listed as Class B in Table A. A person may use Class B reclaimed water for a type of direct reuse listed as Class C in Table A. A person shall not use Class B reclaimed water for a type of direct reuse listed as Class A in Table A.

#### **Historical Note**

New Section adopted by final rulemaking at 7 A.A.R. 870, effective January 22, 2001 (Supp. 01-1).

#### **R18-11-307. Class C Reclaimed Water**

- A. Class C reclaimed water is wastewater that has undergone secondary treatment in a series of wastewater stabilization ponds, including aeration, with or without disinfection.
- B. The owner of a facility shall ensure that:
  - 1. The total retention time of Class C reclaimed water in wastewater stabilization ponds is at least 20 days.
  - 2. Class C reclaimed water meets the following criteria after treatment and before discharge to a reclaimed water distribution system:
    - a. The concentration of fecal coliform organisms in four of the last seven reclaimed water samples taken is less than 1000 / 100 ml.
    - b. The single sample maximum concentration of fecal coliform organisms in a reclaimed water sample is less than 4000 / 100 ml.
- C. A person shall use a minimum of Class C reclaimed water for a type of direct reuse listed as Class C in Table A. A person shall not use Class C reclaimed water for a type of direct reuse listed as Class A or Class B in Table A.

**Historical Note**

New Section adopted by final rulemaking at 7 A.A.R. 870, effective January 22, 2001 (Supp. 01-1).

**R18-11-308. Industrial Reuse**

- A. The reclaimed water quality requirements for the following direct reuse applications are industry-specific and shall be determined by the Department on a case-by-case basis in a reclaimed water permit issued by the Department under 18 A.A.C. 9, Article 7:
  - 1. Direct reuse of industrial wastewater containing sewage.
  - 2. Direct reuse of industrial wastewater for the production or processing of any crop used as human or animal food.
- B. The Department shall use best professional judgment to determine the reclaimed water quality requirements needed to protect public health and the environment for a type of direct reuse specified in subsection (A).

**Historical Note**

New Section adopted by final rulemaking at 7 A.A.R. 870, effective January 22, 2001 (Supp. 01-1).

**R18-11-309. Reclaimed Water Quality Standards for an Unlisted Type of Direct Reuse**

- A. The Department may prescribe in an individual reclaimed water permit issued under 18 A.A.C. 9, Article 7, reclaimed water quality requirements for a type of direct reuse not listed in Table A. Before permitting a direct reuse of reclaimed water not listed in Table A, the Department shall, using its best professional judgment, determine and require compliance with reclaimed water quality requirements needed to protect public health and the environment.
- B. Department may determine that Class A+, A, B+, B, or C reclaimed water is appropriate for a new type of direct reuse.
- C. The Department shall consider the following factors when prescribing reclaimed water quality requirements for a new type of direct reuse:
  - 1. The risk to public health;
  - 2. The degree of public access to the site where the reclaimed water is reused and human exposure to the reclaimed water;
  - 3. The level of treatment necessary to ensure that the reclaimed water is aesthetically acceptable;
  - 4. The level of treatment necessary to prevent nuisance conditions;
  - 5. Specific water quality requirements for the intended type of direct reuse;
  - 6. The means of application of the reclaimed water;
  - 7. The degree of treatment necessary to avoid a violation of surface water quality standards or aquifer water quality standards;
  - 8. The potential for improper or unintended use of the reclaimed water;
  - 9. The reuse guidelines, criteria, or standards adopted or recommended by the U.S. Environmental Protection Agency or other federal or state agencies that apply to the new type of direct reuse; and
  - 10. Similar wastewater reclamation experience of reclaimed water providers in the United States.

**Historical Note**

New Section adopted by final rulemaking at 7 A.A.R. 870, effective January 22, 2001 (Supp. 01-1).

**Table A. Minimum Reclaimed Water Quality Requirements for Direct Reuse**

Type of Direct Reuse	Minimum Class of Reclaimed Water Required
Irrigation of food crops	A
Recreational impoundments	A
Residential landscape irrigation	A
Schoolground landscape irrigation	A
Open access landscape irrigation	A
Toilet and urinal flushing	A
Fire protection systems	A
Spray irrigation of an orchard or vineyard	A
Commercial closed loop air conditioning systems	A
Vehicle and equipment washing (does not include self-service vehicle washes)	A
Snowmaking	A
Surface irrigation of an orchard or vineyard	B
Golf course irrigation	B
Restricted access landscape irrigation	B
Landscape impoundment	B
Dust control	B
Soil compaction and similar construction activities	B
Pasture for milking animals	B
Livestock watering (dairy animals)	B
Concrete and cement mixing	B
Materials washing and sieving	B
Street cleaning	B
Pasture for non-dairy animals	C
Livestock watering (non-dairy animals)	C
Irrigation of sod farms	C
Irrigation of fiber, seed, forage, and similar crops	C
Silviculture	C

Note: Nothing in this Article prevents a wastewater treatment plant from using a higher quality reclaimed water for a type of direct reuse than the minimum class of reclaimed water listed in Table A. For example, a wastewater treatment plant may provide Class A reclaimed water for a type of direct reuse where Class B or Class C reclaimed water is acceptable.

**Historical Note**

New Table adopted by final rulemaking at 7 A.A.R. 870, effective January 22, 2001 (Supp. 01-1).

# APPENDIX B

## Arizona Revised Statutes - R18-4-215

### R18-4-115. Renumbered

#### Historical Note

Former Section R9-20-520 repealed, new Section R9-20-520 adopted effective November 1, 1979 (Supp. 79-6). Former Section R9-20-520 amended, renumbered as Section R9-20-515, then renumbered as Section R18-4-115 effective October 23, 1987 (Supp. 87-4). R18-4-115 recodified to R18-5-115 (Supp. 95-2). New Section adopted effective April 28, 1995 (Supp. 95-2). Amended by final rulemaking at 8 A.A.R. 973, effective February 19, 2002 (Supp. 02-1). Section R18-4-115 renumbered to R18-4-215 by final rulemaking at 14 A.A.R. 2978, effective August 30, 2008 (Supp. 08-3).

### R18-4-215. Backflow Prevention

- A. A public water system shall protect its system from contamination caused by backflow through unprotected cross-connections by requiring the installation and periodic testing of backflow-prevention assemblies. Required backflow-prevention assemblies shall be installed as close as practicable to the service connection.
- B. A public water system shall ensure that a backflow-prevention assembly is installed whenever any of the following occur:
  1. A substance harmful to human health is handled in a manner that could permit its entry into the public water system. These substances include chemicals, chemical or biological process waters, water from public water supplies that has deteriorated in sanitary quality, and water that has entered a fire sprinkler system. A Class 1 or Class 2 fire sprinkler system is exempt from the requirements of this Section;
  2. A source of water supply exists on the user's premises that is not accepted as an additional source by the public water system or is not approved by the Department;
  3. An unprotected cross-connection exists or a cross-connection problem has previously occurred within a user's premises; or
  4. There is a significant possibility that a cross-connection problem will occur and entry to the premises is restricted to the extent that cross-connection inspections cannot be made with sufficient frequency or on sufficiently short notice to *ensure* that unprotected cross-connections do not exist.
- C. Unless a cross-connection problem is specifically identified, or as otherwise provided in this Section, the requirements of this Section shall not apply to single - family residences used solely for residential purposes.
- D. A backflow-prevention assembly required by this Section shall comply with the following:
  1. If equipped with test cocks, it shall have been issued a certificate of approval by:
    - a. The University of Southern California Foundation for Cross-Connection Control and Hydraulic Research (USC-FCCCHR), or
    - b. A third-party certifying entity that is unrelated to the product's manufacturer or vendor, and is approved by the Department.
  2. If not equipped with test cocks, it shall be approved by a third-party certifying entity that is unrelated to the product's manufacturer or vendor and is approved by the Department.

- E. The minimum level of backflow protection that is provided to protect a public water system shall be the level recommended in Section 7.2 of the Manual of Cross-Connection Control, Ninth Edition, USC-FCCCHR, KAP-200 University Park MC-2531, Los Angeles, CA , 90089-2531, December 1993, (and no future editions or amendments), incorporated by reference and on file with the Department. The types of backflow prevention that may be required, listed in decreasing order according to the level of protection they provide, include: an air-gap separation (AG), a reduced pressure principle backflow prevention (RP) assembly, a pressure vacuum breaker (PVB) assembly, and a double check valve (DC) assembly. Nothing contained in this Section shall prevent *a* public water system from requiring the use of a higher level of protection than *the level* required by this subsection.
1. A public water system may make installation of a required backflow-prevention assembly a condition of service. A user's failure to comply with this requirement shall be sufficient cause for the public water system to terminate water service.
  2. Specific installation requirements for backflow prevention include the following:
    - a. Any backflow prevention required by this Section shall be installed in accordance with the manufacturer's specifications.
    - b. For an AG installation, all piping between the user's connection and the receiving tank shall be entirely visible unless otherwise approved in writing by the public water system.
    - c. An RP assembly shall not be installed in a meter box, pit, or vault unless adequate drainage is provided.
    - d. A PVB assembly may be installed for use on a landscape water irrigation system if the irrigation system conforms to all of the criteria listed below. An RP assembly is required whenever any of the criteria are not met.
      - i. The water use beyond the assembly is for irrigation purposes only;
      - ii. The PVB is installed in accordance with the manufacturer's specifications;
      - iii. The irrigation system is designed and constructed to be incapable of inducing backpressure; and
      - iv. *The* injection of chemical pesticides and fertilizers, *chemigation*, is not used or provided in the irrigation system.
- F. Each backflow-prevention assembly required by this Section shall be tested at least annually, or more frequently if directed by the public water system or the Department. Each assembly shall also be tested after installation, relocation, or repair. An assembly shall not be placed in service unless it has been tested and is functioning as designed. The following provisions shall apply to the testing of backflow-prevention assemblies:
1. Testing shall be in accordance with procedures described in Section 9 of the Manual of Cross-Connection Control. The public water system shall notify the water user when testing of backflow-prevention assemblies is needed. The notice shall specify the date by which the testing must be completed and the results forwarded to the public water system.
  2. Testing shall be performed by a person who is currently certified as a "general" tester by the California-Nevada Section of the American Water Works Association (CA-NV Section, AWWA), the Arizona State Environmental Technical Training (ASETT) Center, or other certifying authority approved by the Department.
  3. When a backflow-prevention assembly is tested and found to be defective, it shall be repaired or replaced in accordance with the provisions of this Section.

- G. A public water system shall maintain records of backflow-prevention assembly installations and tests performed on backflow-prevention assemblies in its service area. Records shall be retained by the public water system for at least three years and shall be made available for review by the Department upon request. These records shall include an inventory of backflow-prevention assemblies required by this Section and, for each assembly, all of the following information:
1. Assembly identification number and description,
  2. Location,
  3. Date of tests,
  4. Description of repairs and recommendations for repairs made by the tester, and
  5. The tester's name and certificate number.
- H. A public water system shall submit a written cross-connection incident report to the Department and the local health authority within five business days after a cross-connection problem occurs that results in contamination of the public water system. The report shall address all of the following:
1. Date and time of discovery of the unprotected cross-connection,
  2. Nature of the cross-connection problem,
  3. Affected area,
  4. Cause of the cross-connection problem,
  5. Public health impact,
  6. Date and text of any public health advisory issued,
  7. Each corrective action taken, and
  8. Date of completion of each corrective action.
- I. An individual with direct responsibility for implementing a backflow prevention program for a water system serving more than 50,000 persons, or ***an individual with direct responsibility for implementing a backflow prevention program for a for a water system serving 50,000 or fewer persons*** if the Department has determined that such a need exists, shall be licensed as a "cross-connection control program specialist" by the CA-NV Section, AWWA, the ASETT Center, or ***another*** certifying authority approved by the Department.

### **Historical Note**

Adopted effective August 8, 1991 (Supp. 91-3). Section repealed, new Section adopted effective April 28, 1995 (Supp. 95-2). Amended effective June 3, 1998 (Supp. 98-3). Section R18-4-215 repealed; new Section renumbered from R18-4-115 and amended by final rulemaking at 14 A.A.R. 2978, effective August 30, 2008 (Supp. 08-3).

## Part II

### 1613.0 Reclaimed Water Systems – General.

- (A) The provisions of Part II of this chapter shall apply to the installation, construction, alteration, and repair of reclaimed water systems intended to supply uses such as water closets, urinals, trap primers for floor drains, floor sinks, irrigation, industrial processes, water features and other uses approved by the Authority Having Jurisdiction. Potable water supplied as makeup water in these systems shall be protected against back-pressure and back-siphonage in accordance with Sections 602.0 and 603.0
- (B) No permit for any reclaimed water system shall be issued until complete plumbing plans, with appropriate data satisfactory to the Authority Having Jurisdiction, have been submitted and approved. No changes or connections shall be made to either the reclaimed water system or the potable water system within any site containing a reclaimed water system without approval by the Authority Having Jurisdiction.
- (C) Before the building is occupied, 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.
- (D) A reclaimed water system shall be designed by a person registered or licensed to perform plumbing design work.

### 1614.0 Definitions.

Reclaimed Water - Nonpotable water that meets or as a result of treatment, meets federal requirements for its intended uses. The level of treatment and quality of the reclaimed water shall be approved by the Authority Having Jurisdiction.

### 1615.0 Permit.

It shall be unlawful for any person to construct, install, alter, or cause to be constructed, installed, or altered any reclaimed water system within a building or on a premises without first obtaining a permit to do such work from the Authority Having Jurisdiction.

### 1616.0 Drawings and Specifications.

The Authority Having Jurisdiction shall be permitted to require any or all of the following information to be included with or in the plot plan before a permit is issued for a reclaimed water system.

- (A) A plot plan drawn to scale and completely dimensioned, showing lot lines and structures, location of present and proposed potable water supplies and meters, water wells, streams, auxiliary water supply and systems, reclaimed water supply and meters, drain lines, locations of private sewage disposal systems and 100 percent expansion areas or building sewer connected to the public sewer.
- (B) Details of construction including riser diagrams or isometrics and a full description of the complete installation, including installation methods, construction, and materials as required by the Authority Having Jurisdiction. To the extent permitted by structural conditions, reclaimed water risers within the toilet room, including appurtenances such as air/vacuum relief valves, pressure reducing valves, etc., shall be installed in the opposite end of the room containing the served fixtures from the potable water risers or opposite walls, as applicable. To the extent permitted by structural conditions, reclaimed water headers and branches off risers shall not be run in the same wall or ceiling cavity of the toilet room where potable water piping is run.
- (C) Detailed initial and annual testing requirements as outlined elsewhere in this chapter.

### 1617.0 Pipe Material/Pipe Identification.

Reclaimed water systems shall comply with Sections 1617.1 and 1617.2.

**1617.1 Pipe Materials.** Reclaimed water pipe, valves and fittings shall conform to the requirements of Sections 604.0, 605.0 and 606.0.

**1617.2 Color and Information.** Reclaimed water systems shall have a purple background with black uppercase lettering with the words "CAUTION: NONPOTABLE RECLAIMED WATER, DO NOT DRINK."

The minimum size of the letters and length of the color field shall conform to Table 6-1. Where used, a colored identification band shall be indicated every twenty (20) feet (6,096 mm) not less than once per room, and shall be visible from the floor level. Marking is not required for pipe manufactured with purple color integral to the pipe and marked with black uppercase lettering to read "CAUTION: NONPOTABLE RECLAIMED WATER, DO NOT DRINK" in intervals not to exceed five (5) feet (1,524 mm). All valves, except fixture supply control valves shall be equipped with a locking feature. All mechanical equipment that is appurtenant to the reclaimed water system shall be painted purple.

**1618.0 Installation.**

- (A) Hose bibbs shall not be allowed on reclaimed water piping systems.
- (B) The reclaimed water system and the potable water system within the building shall be provided with the required appurtenances (valves, air/vacuum relief valves, etc.) to allow for deactivation or drainage as required for cross connection test in Section 1620.0.
- (C) Reclaimed water pipes shall not be run or laid in the same trench as potable water pipes. A ten (10) foot (3,048 mm) horizontal separation shall be maintained between pressurized, buried reclaimed and potable water piping. Buried potable water pipes crossing pressurized reclaimed water pipes shall be laid not less than twelve (12) inches (305 mm) above the reclaimed water pipes. Reclaimed water pipes laid in the same trench or crossing building sewer or drainage piping shall be installed in compliance with Sections 609.0 and 720.0 of this code. Reclaimed water pipes shall be protected similar to potable water pipes.

**1619.0 Signs.**

- (A) **Commercial, Industrial and institutional Room Entrance Signs.** All rooms in commercial, industrial, and institutional occupancies using reclaimed water for water closets and/or urinals shall be identified with signs. Each sign shall contain one-half (1/2) inch (12.7 mm) letters of a highly visible color on a contrasting background. The location of the sign(s) shall be such that the sign(s) shall be visible to all users. The number and location of the signs shall be approved by the Authority Having Jurisdiction and shall contain the following text:

**TO CONSERVE WATER,  
THIS BUILDING USES RECLAIMED  
WATER TO FLUSH TOILETS AND URINALS.**

- (B) **Room Signs.** Each room containing reclaimed water equipment shall have a sign posted with the following wording in one (1) inch (25.4 mm) letters on a purple background:

**CAUTION  
NONPOTABLE RECLAIMED WATER,  
DO NOT DRINK.  
DO NOT CONNECT TO DRINKING  
WATER SYSTEM.**

**NOTICE**

**CONTACT BUILDING MANAGEMENT  
BEFORE PERFORMING ANY WORK ON  
THIS WATER SYSTEM.**

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

- (C) Where tank-type water closets are flushed with reclaimed water, the tank shall be labeled:

**NONPOTABLE RECLAIMED WATER,  
DO NOT DRINK**

- (D) **Valve Access Door Signs.** Each reclaimed water valve within a wall shall have its access door into the wall equipped with a warning sign approximately six (6) inches by six (6) inches (152 mm x 152 mm) with wording in one-half (1/2) inch (12.7 mm) letters on a purple background. The size, shape, and format of the sign shall be substantially the same as that specified in subsection (B) above. The signs shall be attached inside the access door frame and shall hang in the center of the access door frame. This sign requirement shall be applicable to any and all access doors, hatches, etc., leading to reclaimed water piping and appurtenances.

**1620.0 Inspection and Testing.**

- (A) Reclaimed water piping shall be inspected and tested as outlined in this code for testing of potable water piping.
- (B) An initial and subsequent annual inspection and test shall be performed on both the potable and reclaimed water systems. The potable and reclaimed water system shall be isolated from each other and independently inspected and tested to ensure there is no cross-connection as follows:

- (1) **Visual Dual System Inspection.** Prior to commencing the cross-connection testing, a dual system inspection shall be conducted by the Authority Having Jurisdiction and other authorities having jurisdiction.
  - (i) Meter locations of the reclaimed water and potable water lines shall be checked to verify that no modifications were made, and that no cross-connections are visible.
  - (ii) Pumps and equipment, equipment room signs, and exposed piping in the equipment room shall be checked.

- (iii) Valves shall be checked to ensure that valve lock seals are still in place and intact. Valve control door signs shall be checked to verify that no signs have been removed.

**(2) Cross-Connection Test.** The following procedure shall be followed by the applicant in the presence of the Authority Having Jurisdiction and other authorities having jurisdiction to determine whether a cross-connection occurred.

- (i) The potable water system shall be activated and pressurized. The reclaimed water system shall be shut down and completely drained.
- (ii) The potable water system shall remain pressurized for a minimum period of time specified by the Authority Having Jurisdiction while the reclaimed water system is empty. The minimum period the reclaimed water system is to remain depressurized shall be determined on a case-by-case basis, taking into account the size and complexity of the potable and reclaimed water distribution systems, but in no case shall that period be less than one (1) hour.
- (iii) Fixtures, potable and reclaimed, shall be tested and inspected for flow. Flow from any reclaimed water system outlet shall indicate a cross-connection. No flow from a potable water outlet would indicate that it is connected to the reclaimed water system.
- (iv) The drain on the reclaimed water system shall be checked for flow during the test and at the end of the period.
- (v) The potable water system shall then be completely drained.
- (vi) The reclaimed water system shall then be activated and pressurized.
- (vii) The reclaimed water system shall remain pressurized for a minimum period of time specified by the Authority Having Jurisdiction while the potable water system is empty. The minimum period the potable water system is to remain depressurized shall be determined on a case-by-case basis, but in no case shall that period be less than one (1) hour.
- (viii) Fixtures, potable and reclaimed, shall be tested and inspected for flow. Flow from any potable water system outlet shall indicate a cross-connection. No flow from a reclaimed water outlet

would indicate that it is connected to the potable water system.

- (ix) The drain on the potable water system shall be checked for flow during the test and at the end of the period.
- (x) If there is no flow detected in any of the fixtures that would have indicated a cross-connection, the potable water system shall be repressurized.

**(3) Cross-Connection Discovered.** In the event that a cross-connection is discovered, the following procedure, in the presence of the Authority Having Jurisdiction, shall be activated immediately:

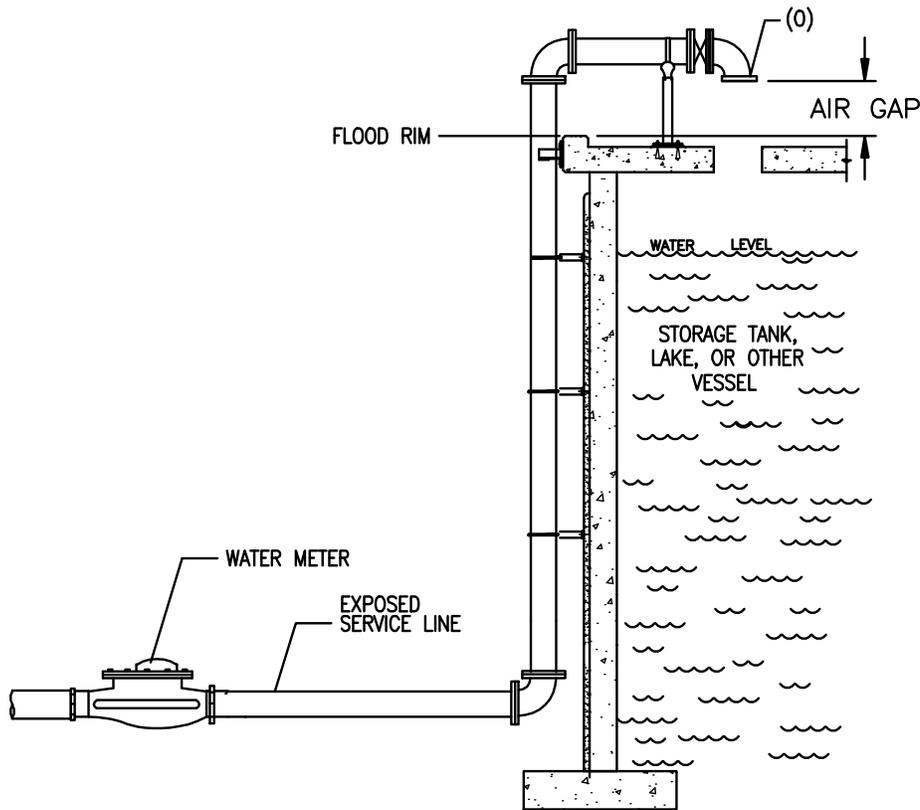
- (i) Reclaimed water piping to the building shall be shut down at the meter, and the reclaimed water riser shall be drained.
- (ii) Potable water piping to the building shall be shut down at the meter.
- (iii) The cross-connection shall be uncovered and disconnected.
- (iv) The building shall be retested following procedures listed in subsections (B)(1) and (B)(2) above.
- (v) The potable water system shall be chlorinated with fifty (50) ppm chlorine for twenty-four (24) hours.
- (vi) The potable water system shall be flushed after twenty-four (24) hours, and a standard bacteriological test shall be performed. If test results are acceptable, the potable water system shall be permitted to be recharged.

**(C)** An annual inspection of the reclaimed water system, following the procedures listed in subsection 1620.0 (B)(1), shall be required. Annual cross-connection testing, following the procedures listed in subsection 1620.0 (B)(2), shall be required by the Authority Having Jurisdiction, unless site conditions do not require it. In no event shall the test occur less often than once in four (4) years.

Alternate testing requirements shall be permitted by the Authority Having Jurisdiction.

### 1621.0 Sizing.

Reclaimed water piping shall be sized as outlined in this code for sizing potable water piping.



The prevention of backflow in a potable water supply system is necessary to prevent contamination or pollution of the water supply. Prevention is accomplished by the use of air-gap separations or by mechanical backflow prevention assemblies. Air-gap separations and backflow prevention assemblies shall be installed according to current Tucson Water Standard Details to assure protection of the public water supply system.

An air gap is not generally utilized for water service line protection since all supply pressure is lost. A water service line to a lake, tank or other vessel is generally where an air gap is used. However, for service protection, another deterrent is that all piping to the air gap must remain exposed.

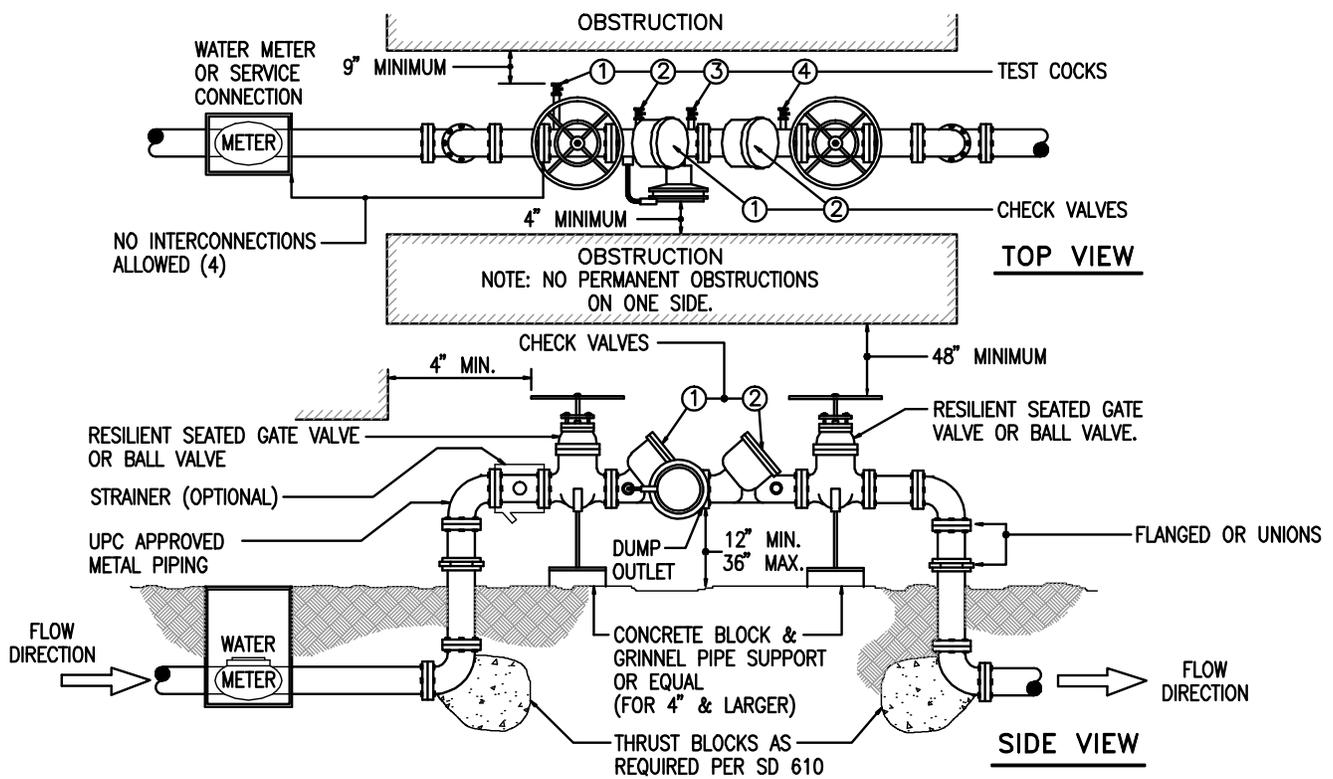
The minimum required air-gap separation shall be measured vertically from the lowest end of the potable water outlet to the flood rim of the receptacle into which the potable water discharges. This air-gap distance shall be a minimum of twice the effective opening (0) of the potable water outlet. If the water outlet is located at a distance less than three times the effective opening (0) away from a wall or similar vertical surface, the minimum air-gap shall be three times the effective opening (0) of the outlet. In no case may the minimum required air-gap be less than one inch.

There shall not be any provisions for extending the fixture below the flood level rim. If the end of the potable water pipe or fixture outlet is threaded or allows for any type of extension by any means, a properly installed and approved backflow preventer shall be installed.

Note: the air gap may be screened or shielded with a perforated material for protection.

For additional information contact the Backflow Prevention Section at (520) 791-2650.

<b>ISSUED:</b>		<b>STANDARD DETAIL</b>		<b>DETAIL NO.</b>
6/97		<b>BACKFLOW PREVENTION</b>		<b>SD-1800</b>
<b>REVISED:</b>		<b>AIR GAP SEPARATION</b>		<b>SHEET 1 OF 1</b>
9/08		<b>INSTALLATION</b>		

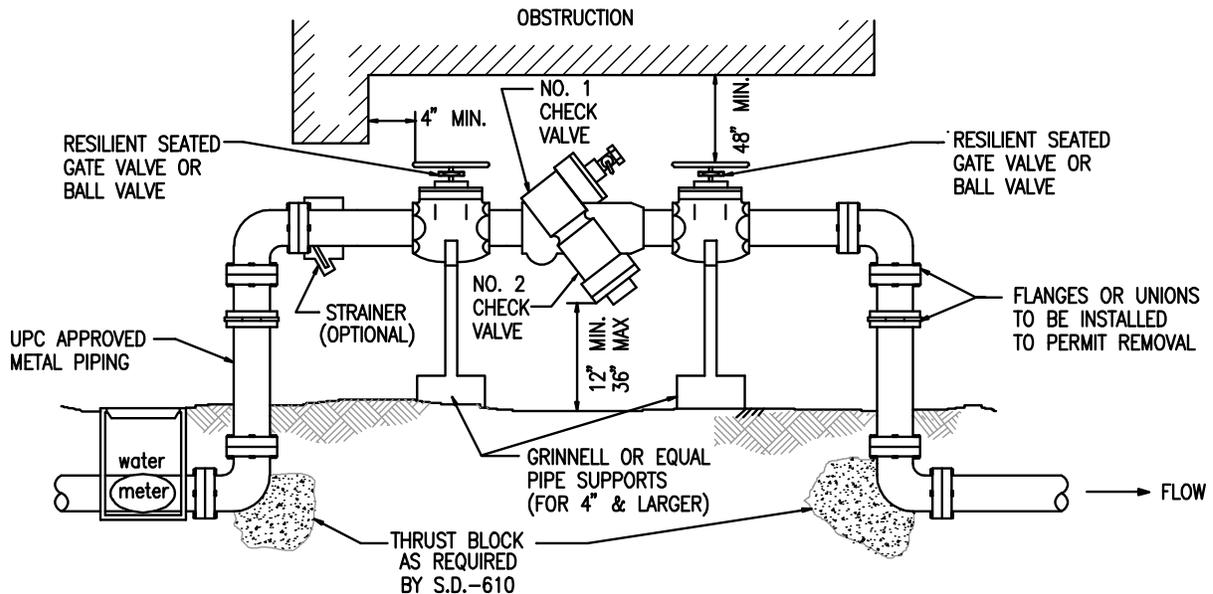
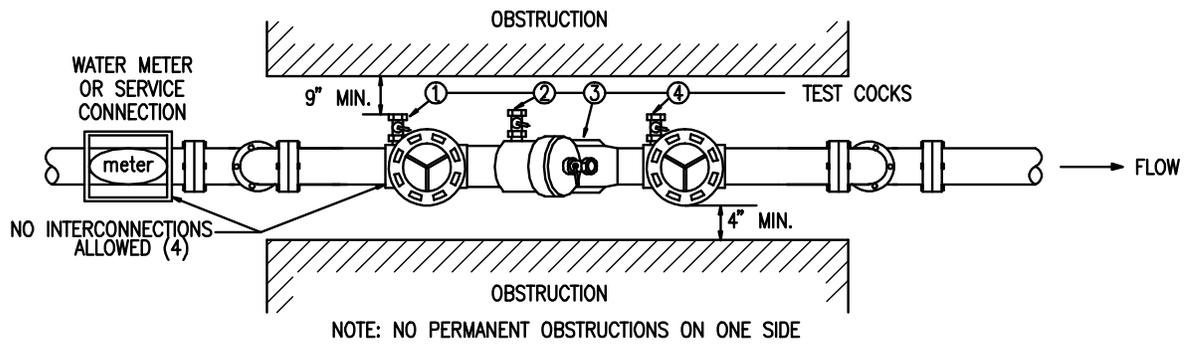


### SD-1802 – REDUCED PRESSURE ASSEMBLY (RPA) INSTALLATION

These specifications are to be followed for all water service protection installations utilizing a RPA.

1. A permit is required before installing or replacing a backflow assembly. Permits shall be obtained at Tucson Water, 310 W. Alameda.
2. The RPA shall be installed outside, above ground, as close to the water meter as possible and on private property unless otherwise authorized. (Right-of-ways are not private property.)
3. There shall be no other piping connected to the piping between the meter and the backflow assembly except for parallel assembly installations.
4. Installations shall meet current uniform plumbing codes in addition to Tucson Water's Standard Details.
5. Installations shall be left exposed until inspected and approved by Tucson Water.
6. Protective cages are optional, and will meet clearance, access and drainage requirements.
7. It is recommended that backflow assemblies be protected from the elements. Care shall be taken to ensure that the protection does not hinder operation of the assembly.
8. Before installing a backflow assembly on any fire system, consult with the fire authority for additional requirements.
9. The installation of a backflow assembly may create a closed system. Consult local plumbing codes for pressure relief valve and thermal expansion requirements.
10. For additional information contact the Backflow Prevention Section at (520) 791-2650.

<b>ISSUED:</b>		<b>STANDARD DETAIL</b>		<b>DETAIL NO.</b>	
12/97		<b>BACKFLOW PREVENTION</b>		<b>SD-1802</b>	
<b>REVISED:</b>		<b>REDUCED PRESSURE</b>		<b>ASSEMBLY (RPA)</b>	<b>SHEET 1 OF 1</b>
9/08		<b>INSTALLATION</b>			



**DOUBLE CHECK VALVE ASSEMBLY (DCVA) INSTALLATION**

These specifications are to be followed for all water service protection installations utilizing a DCVA.

1. A permit is required before installing or replacing a backflow assembly. Permits shall be obtained at Tucson Water, 310 W. Alameda.
2. The DCVA shall be installed outside, above ground, as close to the water meter as possible and on private property unless otherwise authorized. (Right-of-ways are not private property.)
3. There shall be no other piping connected to the piping between the meter and the backflow assembly except for parallel assembly installations.
4. Installations shall meet current uniform plumbing codes in addition to Tucson Water's Standard Details.
5. Installations shall be left exposed until inspected and approved by Tucson Water.
6. Protective cages are optional, and will meet clearance, access and drainage requirements.
7. It is recommended that backflow assemblies be protected from the elements. Care shall be taken to ensure that the protection does not hinder operation of the assembly.
8. Before installing a backflow assembly on any fire system, consult with the fire authority for additional requirements.
9. The installation of a backflow assembly may create a closed system. Consult local plumbing codes for pressure relief valve and thermal expansion requirements.
10. For additional information contact the Backflow Prevention Section at (520) 791-2650.

<b>ISSUED:</b>		<b>STANDARD DETAIL BACKFLOW PREVENTION DOUBLE CHECK VALVE ASSEMBLY (DCVA) INSTALLATION</b>		<b>DETAIL NO.</b>
6/97				<b>SD-1805</b>
<b>REVISED:</b>				<b>SHEET 1 OF 1</b>
9/08				

# APPENDIX E



## Tucson Water Application for Use of Reclaimed Water

Loc. ID \_\_\_\_\_ Site ID No. : \_\_\_\_\_  
(OFFICIAL USE ONLY)

Date: \_\_\_\_\_

**Service Address:** \_\_\_\_\_

**I** Customer: \_\_\_\_\_ Phone: \_\_\_\_\_  
Address: \_\_\_\_\_  
City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

**II** Authorized Agent: \_\_\_\_\_ Phone: \_\_\_\_\_  
Address: \_\_\_\_\_  
City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

**III** Architect/ Engineer: \_\_\_\_\_ Phone: \_\_\_\_\_  
Address: \_\_\_\_\_  
City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

### Proposed Reclaimed Water Site Information (complete questions A, B and C)

- A. Date Reclaimed Water Service is Required: \_\_\_\_\_
- B. Type of Reclaimed Water System:      Conversion of Existing Piping System      New System
- C. Site Use:                      Golf Course                      School Grounds                      Park                      Cemetery                      Residential
- Specify Other: \_\_\_\_\_

### Proposed Reclaimed Water Use (choose one and complete the associated questions)

Irrigation	Toilet Flushing	Construction/Dust Control	Cooling Tower
Annual Use _____	Annual Use _____	Annual Use _____	Annual Use _____
Acres Irrigated _____		Estimated Daily Use _____	Estimated Peak Day Use (GPM) _____
*Peak Day (MGD) _____ <small>*Not required for residential customers</small>			

Tucson Water Approval of Reclaimed Water Use Application

Date Approved: \_\_\_\_\_

Comments/additional requirements: \_\_\_\_\_

Tucson Water \_\_\_\_\_

# APPENDIX F

Check one: Initial   
Existing

Location ID:   
Site Number:

## TUCSON WATER RECLAIMED WATER USER AGREEMENT

Tucson Water's reclaimed water is a valuable renewable water resource that originates as treated wastewater from the Tucson metropolitan area's wastewater treatment plants. The treated wastewater is then filtered and chlorinated before it is delivered as reclaimed water. It is subject to a variety of federal, state, and local regulations that protect the safety of the public and the integrity of the potable water supply system. This Reclaimed Water User Agreement establishes terms and conditions that apply to the ultimate user of Tucson's reclaimed water, or Customer, and the City Of Tucson.

1. **Place of Use.** Tucson Water will deliver to a meter reclaimed water in accordance with the open access reuse standards established in Tucson Water's ADEQ Reuse Permit. Reclaimed water delivered under this agreement can be stored and used only at the following location:

, Tucson, AZ

2. **Resale of Reclaimed Water.** Customer may not resell reclaimed water to any other person or legal entity. Customer is also prohibited from conveying reclaimed water delivered under this Agreement to any other premises or location.

3. **Commodity Rate.** Customer will pay for reclaimed water delivered under this Agreement according to the rate schedule established in the Tucson City Code during the term of this Agreement. If the City establishes rate classifications applicable to reclaimed water, Customer will pay the rate established by the Code that applies to Customer's particular circumstances. If the rate to be paid by Customer is specified by other Agreement(s), such agreements shall be noted in Section 18 below. Nothing herein shall excuse Customer from payment of service or other charges as are applicable to the time, place, or manner of the Customer's reclaimed water service and delivery.

4. **Costs of Customer.** The City's reclaimed water distribution system commonly terminates after the meter. Customer is solely responsible for any private delivery system costs, including the initial construction cost of valve stations for automated control of storage facilities by Tucson Water arising out of Customer's use of reclaimed water and from the construction, maintenance or operations of the private reclaimed water delivery system on Customer's property.

5. **Compliance with Regulations.** Customer agrees to obey any state, federal, and local laws, regulations, and

standards that may apply to Customer's use of reclaimed water during the term of this Agreement. Such laws, regulations, and standards may include:

- requirements and restrictions governing use of reclaimed water
- application methods that reasonably preclude certain kinds of human contact with reclaimed water
- control of access to the reclaimed water, its delivery system, and the area of storage and use
- requirements to prevent reclaimed water from standing on open areas during normal periods of use
- requirements to prevent reclaimed water from coming into contact with drinking fountains, water coolers, or eating areas

- requirements to identify certain components on the reclaimed water delivery system, including the installation of purple pipe, and to provide public notices that reclaimed water is used on Customer's premises
  - reporting any off-site discharges of reclaimed water to Tucson Water and ADEQ
6. **Hose Bibs.** Unless Customer has a recorded User Agreement for this site dated prior to 1/1/97, Customer agrees to remove any existing hose bibs and agrees not to install hose bibs on any component of the private reclaimed water delivery system.
  7. **Signs.** Upon the commencement of reclaimed water service, the City will provide Customer with an appropriate number of signs to inform the public that reclaimed water is used on Customer's premises. Customer shall post such signs at all entrances to the premises where reclaimed water is used. Customer may also be responsible for posting other signs that may be required under the State of Arizona's Administrative Code or that may be established by City of Tucson regulation. Customer will be responsible for the maintenance and replacement of reclaimed water signs.
  8. **Backflow Prevention.** Customer will install a reduced pressure backflow assembly on all potable water services at the site, as required by City Ordinance, before receiving reclaimed water service from the City. Customer is responsible for the maintenance and testing of all backflow protection.
  9. **Thermal Expansion Control.** Customer agrees to install and maintain any thermal expansion control, as may be required by the adopted Uniform Plumbing Code.
  10. **Toilets.** Customer acknowledges that reclaimed water can be used for toilet flushing only in non-residential buildings. Customer also acknowledges that variations in reclaimed water system pressure may affect the operation of toilets and that reclaimed water may not be odorless and may discolor fixtures. In addition to all other conditions of reclaimed water use, Customer agrees to comply with the requirements listed in the Uniform Plumbing Code as adopted by the City of Tucson, including annually conducting the cross-connection test described therein in the presence of a Tucson Water Cross-connection Control Specialist.
  11. **Inspection.** Customer agrees that the City of Tucson or any other public agency with the authority to verify compliance with reclaimed water use regulations may inspect Customer's premises to verify compliance with the applicable reclaimed water use regulations. Customer further acknowledges the responsibility to inform, notify, and request inspection and approvals from various agencies, including Tucson Water, City of Tucson Development Services, and Pima County permitting agencies, for certain activities relating to the construction, maintenance, and operation of its private reclaimed water delivery system, including, but not necessarily limited to, materials, construction, facility testing, violations, and emergency situations.
  12. **Plans.** Customer acknowledges that it has the responsibility to maintain a copy of the conceptual plans of the on-site reclaimed water system at the premises on which reclaimed water is being used. These plans will show the locations of the property lines, all structures on the site, reclaimed water lines, and turn-off valves.
  13. **Potential Disruption of Service.** Customer accepts the possibility that the City may be required to disrupt reclaimed water services to Customer's premises due to emergency conditions, peak demands, or planned system maintenance. Customer shall be responsible for any damage that may be caused to Customer-owned facilities by such disruptions.
    - When there is an unforeseen emergency relating to the City's Reclaimed Water delivery system, The City may terminate deliveries of reclaimed water without notice. When notice of an emergency is given, Customer agrees to reduce or cease usage of reclaimed water service upon the City's request.

- In order to accommodate peak demand periods or planned maintenance of its reclaimed water system, the City shall provide Customer with twenty-four (24) hour notice of the need to cease reclaimed water usage altogether, or to reduce the volume of reclaimed water used. Upon being provided such notice, customer will alter its reclaimed water usage according to the City's request.
14. **Site Testing Requirement.** Customer understands that all reclaimed water sites, except residential sites, must be inspected and tested annually by a certified Reclaimed Water Site Tester registered with Tucson Water. Residential sites must be inspected and tested every five (5) years.
  15. **Lease (Rental) of Property.** Customer agrees that all leases of the premises described herein shall be in writing, and must be made expressly subject to this Agreement.
  16. **Transfer of Property.** Should Customer sell the premises described herein or otherwise transfer the financial responsibility for the premise's reclaimed water bills, Tucson Water shall not be obligated to provide reclaimed water to any subsequent owner or user of the premises unless any successors sign a new Reclaimed Water User Agreement and meet all other conditions of reclaimed water use. Customer will close its account with Tucson Water and pay fees or charges incurred by Customer before the disposition of Customer's property is effective.
  17. **Termination of Service.** Customer acknowledges that reclaimed water may be discontinued for failure to comply with the terms and conditions of this agreement.
  18. **Other Agreements.** Unless expressly listed below, this Agreement constitutes the complete and entire Agreement between the parties. If applicable, list other Agreements:

**ATTEST:**

\_\_\_\_\_  
Customer/Authorized Agent (Signature)

\_\_\_\_\_  
Date

\_\_\_\_\_  
Customer/Authorized Agent (Printed Name)

\_\_\_\_\_  
Customer email address

**APPROVED AS TO FORM:**

\_\_\_\_\_  
City Attorney

\_\_\_\_\_  
Tucson Water Director/Authorized Signature

\_\_\_\_\_  
Date

# APPENDIX G SITE COMPLIANCE REPORT



## RECLAIMED SITE VIOLATION INSPECTION NOTICE

Reclaimed water service may be discontinued if the required corrective actions are not taken by:



Compliance Due Date: **3/1/2012**  
Customer: **COOK, DANIEL D**  
Customer Service Address: **5160 S RENEWAL LN**  
Water Meter #s:  
Location Ids:

Site No.:

### Site Deficiencies:

**SITE HAS OVER SPRAY ....**

### Required Corrective Actions:

**ADJUST SPRINKLER HEADS TO ELIMINATE OVER SPRAY**

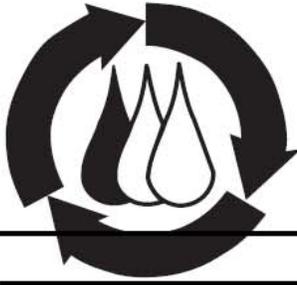
If you have any questions, contact the Tucson Water, Backflow Prevention/Reclaimed Water Inspector

INSPECTION DATE: **10/9/2012**

Inspector: **MARK TITUS**

Phone:

APPENDIX H



# RECLAIMED WATER

Saving Groundwater for Drinking

Winter 2004

## Irrigation System Plan Required

Before reclaimed water service is initiated at a property, the owner and the person paying the water bill sign a Reclaimed Water User Agreement. This User Agreement is a contract between the property owner and Tucson Water. By signing the Agreement, the owner and the person paying the water bill commit to following the rules and regulations that govern the use of reclaimed water.

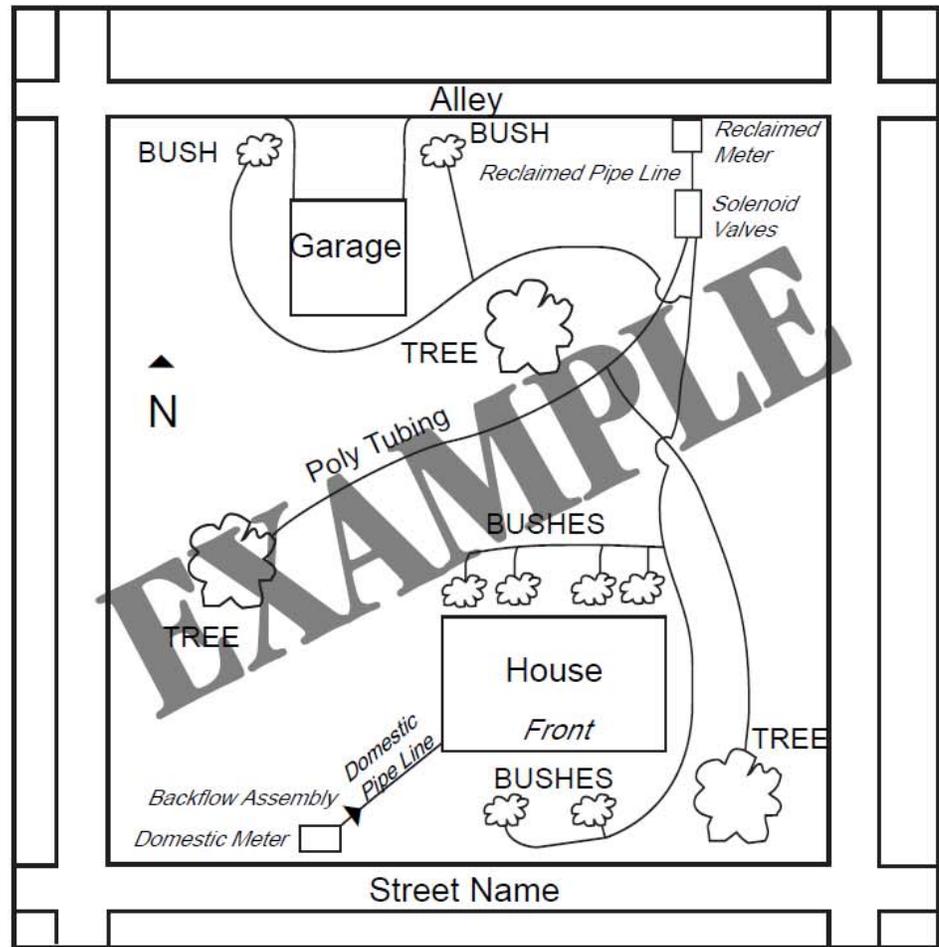
One of the rules is that a copy of the conceptual plans of the on-site reclaimed water system be maintained at the premises on which reclaimed water is being used. These plans must show the locations of the property lines, all structures on the site, reclaimed water lines, and turn off valves.

If you do not have plans, use the format provided on the far right to draw your own. This drawing is important in case there is ever a problem on your property that requires the reclaimed water to be turned off immediately. Use the example on the right to assist you in preparing your plan.

### RECLAIMED WATER IRRIGATION SYSTEM SITE MAP

Customer Name: \_\_\_\_\_

Address: \_\_\_\_\_

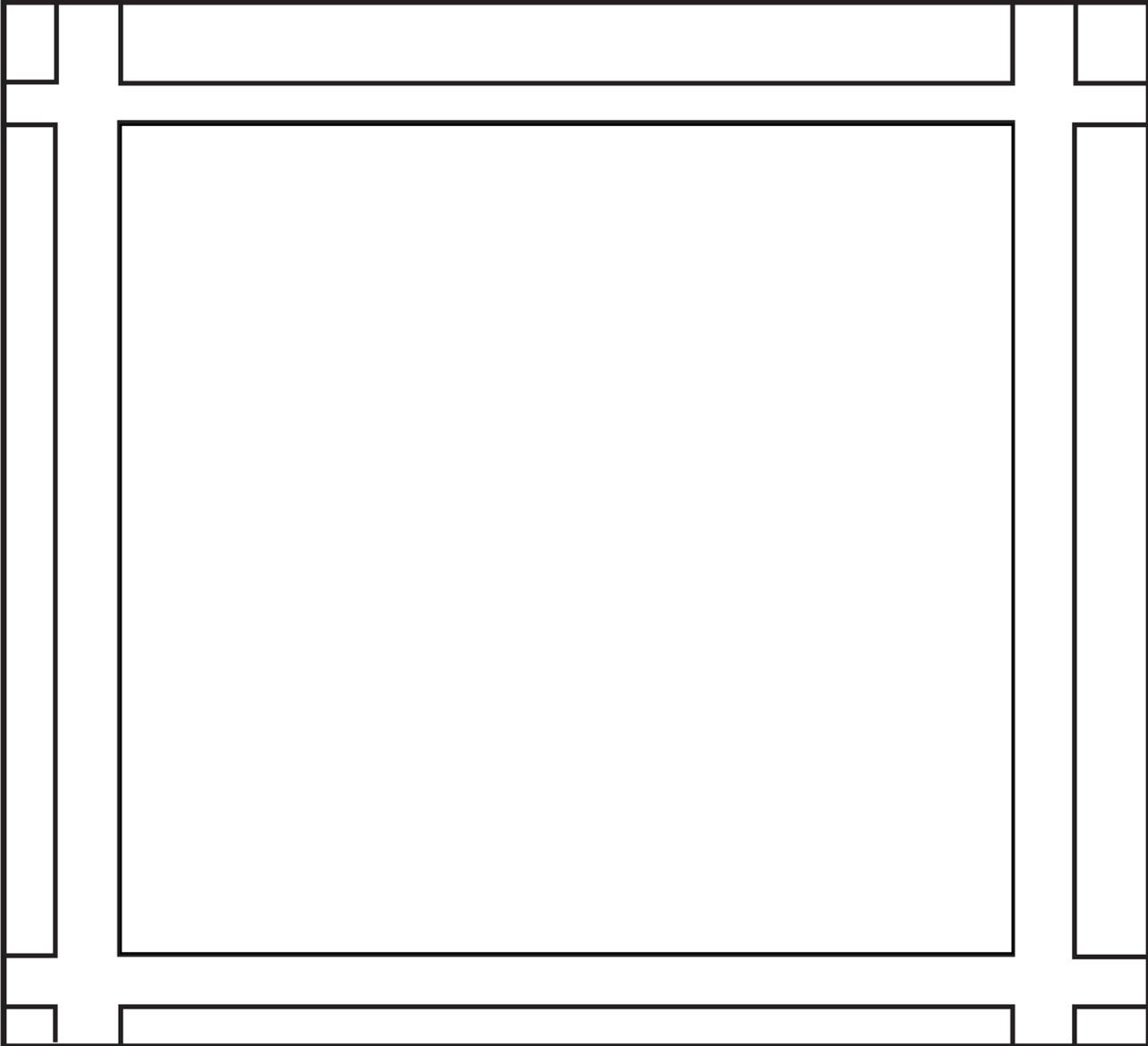


**Draw Your Own Plan:**

**RECLAIMED WATER IRRIGATION  
SYSTEM SITE MAP**

Customer Name: \_\_\_\_\_

Address: \_\_\_\_\_



**State regulations require this plan to be kept at the site  
where reclaimed water is used.**

# APPENDIX I

## REPORTING RECLAIMED WATER DISCHARGES

The Arizona Department of Environmental Quality (ADEQ) Rules state that all discharges of reclaimed water are prohibited. A discharge is defined as any volume of reclaimed water that, for any reason, leaves the site where its use is permitted. For example, if a private irrigation system pipe breaks and reclaimed water runs into the adjacent public street; this is a discharge.

Community-minded citizens are encouraged to report discharges. If you are a reclaimed water customer, failure to report a discharge from your property could result in the termination of your reclaimed water service. To make a report, answer each of the questions below and click on submit when you are finished. This will send a report to Tucson Water and we will notify ADEQ of the discharge.

We may contact you for additional information or a Cross Connection Control Specialist may visit your site to ensure that the problem has been corrected.

### PLEASE PROVIDE THE FOLLOWING INFORMATION

Beginning and ending date and time of discharge:

Location of discharge:

(address, nearest street intersection, or name of facility)

Date and time first responding crew arrived:

How much reclaimed water was discharged?:  (# of gallons discharged)

Did discharge enter a storm drain?:

Yes

No

If "Yes", give location of storm drain:

(nearest street intersection)

Did discharge enter a river, wash, or other waterway?:

Yes

No

If "Yes", location/name of river, wash, or other waterway:

Distance discharge flowed in wash, river, or other waterway:  (in feet)

Explain the cause of the discharge:

Describe repairs, remedial/mitigative/corrective actions taken:

(include volume of discharge required to make repairs, distance to nearest sewer manhole, availability of permitted reclaimed water site for discharge, and volume of reclaimed water discharged to street or waterway during repair)

Form completed by:  (name and date)

How can you be contacted?:  (phone or pager #)

*Thank you for reporting this information!*

NOTE: If you are unable to submit this form, send an e-mail to [TW\\_Reclaimed@tucsonaz.gov](mailto:TW_Reclaimed@tucsonaz.gov). In the email, include the date and location of discharge and a phone number where you can be reached.

# APPENDIX J

## CUSTOMER SELF INSPECTION CHECKLIST

### Reclaimed Water Customer Checklist

An annual inspection of your reclaimed water system will ensure you are in compliance with your signed reclaimed water user agreement and that you are using reclaimed water safely. Use this checklist as a guide to help you inspect your property. In the future, we will be implementing a program requiring periodic inspections of all sites with reclaimed water service. If you have any questions, call your area Cross Connection Control Specialist. See the map on our website [www.tucsonaz.gov/water/reclaimed.htm](http://www.tucsonaz.gov/water/reclaimed.htm) to locate the specialist for your area.

- 1. Review the ADEQ Reuse Rules and Your Reclaimed Water User Agreement** – As a reclaimed water customer, you are responsible for ensuring that your site is in compliance with the ADEQ Reuse rules. The rules are available online at [www.tucsonaz.gov/water/reclaimed.htm](http://www.tucsonaz.gov/water/reclaimed.htm).

- 2. Check the Backflow Prevention Assembly** – All sites having reclaimed water service are required to have a backflow prevention assembly to protect the drinking water supply. You receive a letter annually advising you of the test requirements for this assembly; however, it is a good idea to check it periodically to make sure that it is not leaking or otherwise damaged.

- 3. Identify and Label Irrigation System** – Reclaimed water irrigation systems must be identified with purple pipe or pipe labeled as “reclaimed water” pipe. Control valves and valve boxes must also be identified. Repaint any faded reclaimed meter and control box lids with purple paint. If you have added to or modified your irrigation system, check the rules for system identification at [www.tucsonaz.gov/water/reclaimed.htm](http://www.tucsonaz.gov/water/reclaimed.htm).

- 4. Check Operation of Irrigation System** – Observe your irrigation system while it is running to ensure that there is no ponding, or over-spray onto other properties. Are there leaks in the irrigation system that should be repaired?

- 5. Draw a Conceptual Plan of the Irrigation System** – Plans of your reclaimed water system must be kept on-site and available for inspection. If you don't have a plan of your irrigation system, draw your own (professional plans not required) or use the form at [www.tucsonaz.gov/water/reclaimed.htm](http://www.tucsonaz.gov/water/reclaimed.htm). Laminate the plan to minimize wear.

- 6. Ask about Thermal Expansion Protection** – Ask a qualified plumber about thermal expansion due to the creation of a closed plumbing system when a backflow prevention assembly is installed on the potable water system.

- 7. Check Signs** – Are all of your signs still in their proper place? Do any need to be replaced because of vandalism or wear? If you need new signs, call your Cross Connection Control Specialist.

- 8. Report Reclaimed Water Discharges** – You must report when reclaimed water leaves your property (i.e. an irrigation line breaks or overspray from sprinkler heads). Did you have any discharges in the past year? Did you report them by using the form at [www.tucsonaz.gov/water/report\\_recl.htm](http://www.tucsonaz.gov/water/report_recl.htm)?

# APPENDIX K



## RECLAIMED SITE TESTER INSPECTION CHECK LIST

This check list is to assist you with the compliance of this site. The test form with the information that must be submitted to Tucson Water is on the back of this form.



**YES    NO**

	Is reclaimed signage properly posted and is it legible?
	Are all on site reclaimed water meters tagged?
	Are reclaimed water meter boxes purple in color? (must be painted, or the color is integral to the product)
	Are all control valve boxes purple in color? (must be painted, or the color is integral to the product)
	Are all on site backflow assemblies in compliance?
	Is the reclaimed system in good repair?
	Are any repairs needed before the reclaimed system can be operated?
	While running the reclaimed system has any ponding occurred?
	While running the reclaimed system has any reclaimed water run-off occurred?
	While running the reclaimed system has any overspray of reclaimed water occurred?
	Was the pressure test performed for the separation of systems testing?
	During the pressure test while running the reclaimed system were all potable outlets checked for pressure?
	During the pressure test while running the reclaimed system, was any pressure or flow noticed in the potable system?
	During the pressure test while running the reclaimed system, were all zones on the reclaimed system checked for flow?
	During the pressure test while the potable system is pressurized, were all the reclaimed system outlets checked for pressure and flow?
	During the pressure test while the potable system is pressurized, was any pressure or flow noticed in the reclaimed system outlets?
	Did the pressure test pass?
	If pressure test failed did you notify Tucson Water?
	Are any internal fixtures served with reclaimed water?
	Was there any offsite discharge in the last year?
	If offsite discharge occurred, was it reported?
	Has the reclaimed system been expanded since the last inspection?
	Are there any reclaimed water impoundments on site?
	If reclaimed impoundments are on site, have they been checked for leakage?
	If leakage in impoundment linings is discovered, have they been repaired?
	Is current site plan available?

# APPENDIX L

## GUIDELINES FOR WORKING WITH RECLAIMED WATER

### Information for Contractors, Landscapers and Others Working on Reclaimed Water Systems

The reclaimed water produced and delivered by Tucson Water is classified by the Arizona Department of Environmental Quality as Class A water. Reclaimed water is **not** for drinking or bathing. It is highly treated wastewater that is suitable for irrigation of food crops, turf, ornamental landscaping, and orchards and vineyards. It can be used for dust suppression, livestock watering and cooling towers and for toilet flushing in non-residential buildings.

All persons working on reclaimed water systems should be provided with information about reclaimed water and training in safe practices and the use of personal protective equipment (PPE) for working with reclaimed water. Safe practices include:

1. Provision of information, including reclaimed water quality information, about reclaimed water (available at [www.tucsonaz.gov/water/reclaimed](http://www.tucsonaz.gov/water/reclaimed)).

2. Avoiding direct contact with reclaimed water by:

- Wearing gloves, boots, and eye protection while working with reclaimed water
- Refraining from eating, drinking, or smoking while working with reclaimed water
- Washing with potable water and soap before eating, drinking, or smoking after working with reclaimed water
- Storing materials used to apply or convey reclaimed water securely in locations where they do not come into contact with potable water

3. Wearing appropriate personal protection equipment (PPE), including, but not limited to gloves, boots, and eye protection.

4. Knowing what to do in case of direct contact with or consumption of reclaimed water:

- In the event of direct contact with reclaimed water, immediately wash the affected area thoroughly with potable water and soap and change into clean, dry clothes. If irritation, rash, or other problems develop, be sure to tell your medical provider that the affected area came into contact with reclaimed water. She/he will be able to determine if the problem is related to the water.
- If reclaimed water is accidentally consumed, it is unlikely to cause ill effects. However, watch for signs of illness, most likely, but not limited to gastrointestinal upset, for ten days after the reclaimed water has been consumed. If you get sick, be sure to tell your medical provider that reclaimed water was ingested. She/he will be able to determine if the illness is related to the water.

5. Using tools that are dedicated for use only on reclaimed water systems and appurtenances. Tools that have been used on reclaimed water systems and appurtenances must be disinfected prior to use on the potable water system. Disinfection shall be the same as described in The 2006 Uniform Plumbing Code 609.9, Disinfection for Potable Water Systems.

# APPENDIX M



## CITY OF TUCSON WATER DEPARTMENT

### Private Reclaimed Water System Labeling Requirements

#### **Existing Irrigation Systems**

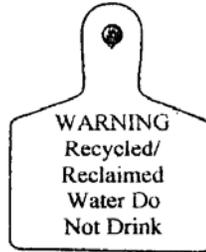
1. Existing systems are not required to replace the existing irrigation system piping with impregnated purple pipe except when an existing irrigation system is expanded, repaired, or modified.
2. All existing reclaimed water irrigation system piping that is not identified and is exposed for any reason, it must be wrapped with identification tape or replaced with impregnated purple pipe.
3. Existing systems are not required to replace control boxes on irrigation systems; however, control boxes must be painted purple and identified with a reclaimed identification tag (available from Tucson Water). Single family residential boxes are not required to have identification tags.
4. All replacement control boxes must be made of impregnated purple material.
5. All existing and replacement control valves must be marked with a reclaimed identification tag (available from Tucson Water).

#### **New Irrigation Systems/Replacement Components**

1. All new reclaimed water irrigation are required to use impregnated purple pipe.
2. All new control boxes must to be made of impregnated purple material.
3. All new control valves must be marked with a reclaimed identification tag (available from Tucson Water).

Effective 1/1/07

## Installation Instructions for Reclaimed Water Control Valve Tags and Control Valve Box Identification Nameplates



### Control Valve Identification Tags

- Install on the irrigation system pipe located in the control valve box
- Use only one tag per box, regardless of the number of valves in the box
- Insert a plastic wire tie through the hole in the tag
- Strap the self-locking tie around the irrigation system pipe



### Control Valve Box Identification Nameplates (not required for single family residences)

- Install on the reclaimed water irrigation valve box cover
- Paint valve box cover purple before attaching identification nameplate
- Use identification nameplate as a template to locate the installation area and hole alignment
- Use a 3/16" drill bit to drill holes (approximately 3/4" deep).
- Press "tamper proof" rivet through the identification nameplate and drive down the expansion nail to secure.

# APPENDIX N

## Reclaimed Water Site Test and Maintenance Report



### RECLAIMED SITE COMPLIANCE INSPECTION REPORT



**Compliance Due Date: 3/1/2012**

Customer: **COOK, DANIEL D**  
 Customer Service Address: **5160 S RENEWAL LN**

COOK, DANIEL D  
 5160 S RENEWAL LN  
 TUCSON, AZ 85747-5833

Site No.:  
 Water Meter #s:

Tucson Water must receive a completed report by the compliance due date. Failure to comply with City Code requirements will result in the assessment of fees and the discontinuance of reclaimed water service. Responsibility for the reclaimed water site compliance test is that of the water service's financially responsible party.

Pass	Fail	
		User Agreement Current
		Reclaimed Signage (posted on all points of entry to site)
		Ponding of reclaimed water on site
		Reclaimed water run-off from site
		Overspray of reclaimed water on site
		Meter boxes are purple in color (old ones must be painted, for new ones the color is integral to the product)
		Control valves are purple in color (old ones must be painted, for new ones the color is integral to the product)
		Reclaimed water meters and irrigation control zone valves tagged
		All required potable water backflow assemblies in compliance
		Separation of systems testing (pressure testing)
		Current Site Plan posted on site
		Systems components in operable condition (no broken or damaged valve boxes or equipment)

Yes	No	
		Any offsite discharge in the last year?
		If offsite discharge occurred, was it reported?
		Are any internal fixtures served with reclaimed water?
		Are there any reclaimed hose bibs?
		Has the reclaimed system been expanded since the last inspection?
		If you have a reclaimed water impoundment have there been any leaks in the liner?
		If you have leaks in your pond lining, have they been repaired?

### COMMENTS:

X \_\_\_\_\_  
 Testers signature                      Testers ID#                      Date

X \_\_\_\_\_  
 Owner or site representative signature indicating all statements are true and correct

\* THIS IS YOUR ONLY NOTICE

**Reclaimed Site Compliance Inspection**

# APPENDIX O

## Questions Frequently Asked by Customers

### **What is reclaimed water?**

Reclaimed water is the product of an advanced treatment process that cleans wastewater. This treatment process produces water that is ideal for plant irrigation and other commercial/industrial uses. The nitrogen and phosphorus in the water provide excellent fertilizers for ornamental plants and turf grass.

### **What if my children or I come into contact with reclaimed water?**

The reclaimed water produced and delivered by **TUCSON WATER** is classified by the Arizona Department of Environmental Quality as Class A water. Incidental contact with water of this quality is not harmful. Practice good hygiene – wash with soap and water from a potable faucet if you come in contact with reclaimed water.

### **Can my dog drink reclaimed water?**

The reclaimed water produced and delivered by **TUCSON WATER** through our reclaimed water system is classified by the Arizona Department of Environmental Quality as Class A water. Class A and lower qualities of reclaimed water may be used for livestock watering, including dairy animals. The Code does not specifically mention dogs or other household pets. Although we know dogs sometimes drink out of puddles and other unsanitary places without apparent ill effects, **TUCSON WATER** recommends providing household pets with drinking water from your potable faucets.

### **What if my children or I have consumed reclaimed water?**

The reclaimed water produced and delivered by **TUCSON WATER** is classified by the Arizona Department of Environmental Quality as Class A water. If you or your child have consumed some of this water, it is unlikely to cause ill effects. However, watch for signs of illness, most likely, but not limited to gastrointestinal upset, for ten days after the reclaimed water has been consumed. If an infant less than six months old has ingested reclaimed water, watch for blue baby syndrome - blue lips or under the fingernails - or trouble breathing. If you or your child do get sick, be sure to tell your medical provider that reclaimed water was ingested. They will be able to determine if the illness is related to the water.

### **Can reclaimed water be used to water fruit trees and vegetable gardens?**

The reclaimed water produced and delivered by **TUCSON WATER** is classified by the Arizona Department of Environmental Quality as Class A water. Class A water may be used for the irrigation of food crops. Be sure to wash all produce prior to eating or cooking.

## **What precautions should I take when working in gardens irrigated with reclaimed water?**

Go to the Tucson Water website and click on this link for detailed information: [Working in Gardens Irrigated with Reclaimed Water \(258 Kb pdf\)](#)

## **Why don't all of the local golf courses use reclaimed water?**

There are 39 golf courses in eastern Pima County. Tucson Water delivers reclaimed water to 18 of these courses and Oro Valley delivers reclaimed water to five golf courses in their service area. Although the City and Pima County have policies and ordinances requiring new golf courses to irrigate with reclaimed water or other renewable supplies, there are several reasons why not all of the existing courses have converted to reclaimed water: 1) there is no reclaimed water service near the golf course and it is not cost-effective for either the City or the golf course to extend the reclaimed water system, or 2) existing courses, not served by a municipal or private water provider, are pumping under rights granted to them by the Arizona Department of Water Resources. The City of Tucson/**TUCSON WATER** has no legal authority to prohibit these right holders from pumping groundwater which they are able to do at a cost that is substantially less than the reclaimed water rate.

## **Why does my reclaimed water system need to be tested?**

Reclaimed water sites are required to be tested to ensure that customers are using the water safely and that there is potential for contamination of the potable water system from the customer's site. This is done by ensuring there are no cross-connections between your on-site reclaimed and potable water systems. The reclaimed water site test for cross-connections must be conducted by a Tucson Water-certified Reclaimed Site Tester.

### **What is backflow?**

**TUCSON WATER's** system is designed to keep the water flowing from our distribution system to you, the customer. When hydraulic conditions within **TUCSON WATER's** system deviate from "normal", the direction of the water flow can be reversed. This creates a backflow condition and the potential for contaminated water entering the distribution system.

### **How can backflow occur?**

Backflow can occur two different ways, by backsiphonage and backpressure.

### **What is backsiphonage?**

When there is a sudden reduction in the water pressure in the distribution system, such as during fire fighting or when a water main breaks, water flow can be reversed. This can create a suction effect, drawing potential contaminants into the potable water distribution system.

### **What is backpressure?**

Backpressure is created when pressure in a nonpotable system, such as in a recirculating system containing soap, acid, or antifreeze, exceeds the pressure in the potable system providing the make-up water. This can force the potable water to reverse its direction of flow through an

unprotected cross-connection between the two systems. Potential contaminants can then enter the potable water system.

### **How can backflow be prevented?**

**TUCSON WATER** recognizes two methods of backflow prevention. The physical method of backflow prevention is the air gap. An air gap is the best way to prevent backflow, but not the most practical. The second method of backflow prevention is the mechanical method which uses a backflow prevention assembly. Tucson Water recognizes four types of backflow prevention assemblies for service protection:

- Reduced Pressure Principal Assembly (RPA)
- Double Check Valve Assembly (DCVA)
- Spill Resistant Pressure Vacuum Breaker Assembly (SVB)
- Pressure Vacuum Breaker Assembly (PVB)

**TUCSON WATER** will determine which type of protection is required based on the degree of hazard that the property represents to the potable water supply.

### **What is a backflow prevention assembly?**

A backflow prevention assembly is an approved, testable assembly which uses internally loaded check valves, relief valves, and air inlet valves in different configurations, to prevent potential contaminants from flowing into the potable water system.

### **Who is required to have a backflow prevention assembly?**

Federal and State law requires that water suppliers protect their water systems from contamination. State regulations exempt single family residences used solely for residential purposes from the requirement to install a backflow prevention assembly. When a determination is made by **TUCSON WATER** that the potable water system may be subject to contamination through a backflow condition. **TUCSON WATER** makes these decisions on a case-by-case basis. Residential, commercial, and industrial customers, which meet the criteria in City Ordinance #9976 and State Administrative Code R18-4-215 must install and maintain backflow prevention assemblies.

### **Why do I need a Backflow Assembly?**

A backflow prevention assembly is required by ADEQ to protect the potable water system from any on site hazards that may exist.

### **My property is served with reclaimed water. Do I need backflow protection?**

Yes. Customers receiving reclaimed water must install a reduced pressure backflow prevention assembly (RPA) on all potable water service connections to the property.

### **Do I need to test my backflow prevention assembly?**

Yes. Your backflow prevention assembly must be tested annually. The date by which your annual test must be submitted to Tucson Water is the same every year. Forty-five days before

the annual test is due, Tucson Water sends a reminder notice to the customer. If the assembly has not been tested by this date, the customer will be given a four-day notice advising that the water service may be discontinued. A fee is charged for the delivery of the four-day notice and if the water service is discontinued, an additional fee is charged.

**Who can install a backflow prevention assembly?**

The installation of the backflow prevention assembly may be done by a property owner/occupant (single family residents only), licensed contractor, or a government agency, subject to the rules and statutes of the Arizona Registrar of Contractors. Permits are required to install or replace these assemblies. Permits are issued by **TUCSON WATER**.

**Where should a backflow prevention assembly be located?**

Generally, the backflow prevention assembly must be located as close as possible to the potable water service connection, but it must remain on private property.

**Who is responsible for the testing and maintenance of the backflow prevention assembly?**

It is the responsibility of the customer to ensure that the backflow prevention assembly is in proper operating condition at all times. Backflow prevention assemblies must be tested annually. **TUCSON WATER** sends notices to customers reminding them when the annual test is due. The customer must contact a **TUCSON WATER** approved certified tester to perform the test. If any repair work or maintenance is performed on the assembly, a certified tester must retest the assembly immediately and submit the test results to **TUCSON WATER**.

**What if my backflow prevention assembly malfunctions before the annual test?**

If your backflow prevention assembly is damaged or leaking, it must be immediately repaired. After your assembly is repaired, it must be tested and the tester must submit a test report to Tucson Water.

**How do I find an approved certified tester?**

**TUCSON WATER** approved certified testers are listed in the telephone book under "Backflow Prevention" or "Plumbers". A list of [Tucson Water-approved certified testers](#) is available here or from the **TUCSON WATER** Backflow Prevention Office at (520) 791-2650.

## APPENDIX P

### TUCSON CITY CODE CHAPTER 27, ARTICLE V. BACKFLOW PREVENTION AND CROSS-CONNECTION CONTROL

#### *Sec. 27-70. Definitions.*

***Auxiliary water supply*** means any water supply available to a premises or another purveyor's water supply system. These auxiliary waters may include additional water services from Tucson Water's public water supply, other water purveyors or any other natural source.

***AWWA*** means the American Water Works Association.

***Backflow Prevention Assembly*** means an assemblance of one (1) or more body components including shutoff valves that has been approved by the Foundation for Cross- Connection Control and Hydraulic Research at the University of Southern California.

***Backflow prevention assembly tester (registered)*** means a person who is currently certified by an authority recognized in the Arizona Department of Environmental Quality regulations and is approved and registered with Tucson Water to test, repair, and maintain backflow prevention assemblies.

***Compliance date*** means the date by which the backflow prevention assembly/reclaimed water site inspection compliance report must be received by Tucson Water or for violations of this article, the specified date by which a violation must be remedied.

***Compliance fee*** means the fee that is charged to recover the administrative costs that are incurred when a customer's water service is discontinued.

***Consecutive systems*** means another public or private water system where Tucson Water is the sole source of water for the other purveyor's water system.

***Contamination*** means any condition, device or practice which, in the judgment of Tucson Water, may create a danger to health and well being. This includes an impairment of the public water supply by the introduction or admission of any foreign substance that degrades the water quality and creates a health hazard.

***Courtesy notice*** means any written notice informing a customer that a backflow method is not operating correctly or does not meet applicable codes or that the reclaimed water site is not in compliance.

***Cross-connection protection*** means the degree of protection against cross-connections existing between the public water supplies and private plumbing systems.

***Customer*** means the person/entity accepting financial responsibility for water service from Tucson Water.

***Four-day notice*** means the written notice that is personally delivered to the site when the customer fails to meet the requirements imposed by this article stating that water service will be discontinued in four days, excluding the day the notice is delivered, if the requirements of this article are not met.

***Gray water system, pressurized*** means any premise where there is a gray water collection and distribution system that is pressurized with any kind of pump.

***Hazard*** means a cross connection or potential cross connection between the public water supply and a private plumbing system involving any substance that could, if introduced into the public water supplies, be aesthetically objectionable or a nuisance, cause severe damage to the physical facilities of the public water supply systems, cause death, illness, or spread disease, or have a high probability of causing such effects.

***Improper*** means not functioning within the manufacturer's or Tucson Water's specifications or the requirements of this article.

***Inspection*** means a visual examination of a reclaimed water site or any backflow protection equipment, materials, workmanship and operational performance. All reclaimed water site inspections also include a cross-connection test.

***Maintenance*** means work performed or repairs made to keep backflow prevention assemblies operable and in compliance.

***Pollution*** means any actual or potential threat to the physical facilities of the public water supply systems or to the public water supplies which, although not dangerous to health, would constitute a nuisance or be aesthetically objectionable, or could cause damage to the system or its appurtenances. This includes any substance that generally would not be a health hazard but would constitute a nuisance, or be aesthetically objectionable, if introduced into the water supply.

***Proper*** means functioning within the parameters of the manufacturer's and Tucson Water's specifications and the requirements of this article.

***Rainwater system, pressurized*** means any premise where there is a rain water harvesting collection and distribution system that is pressurized with any kind of pump.

***Reclaimed water*** means water that is provided through the Tucson Water reclaimed system.

***Reclaimed water site*** means any premise where reclaimed water is used.

***Reclaimed water site tester*** means a certified backflow prevention assembly tester who is certified by and is registered with Tucson Water to perform reclaimed water site inspections in the Tucson Water service area.

***Service connection*** means a piping connection between Tucson Water's meter and a customer's private plumbing system.

***Service protection*** means the acceptable backflow prevention method installed between Tucson Water's meter and a customer's private plumbing system.

***Testing*** means an authorized procedure to determine the operational and functional status of a backflow prevention assembly.

## ***Sec. 27-71. Purpose and application.***

The purpose of this article is:

(1) To protect the public water supplies of Tucson Water from the possibility of contamination or pollution by preventing the backflow of contaminants and pollutants into the public water supply systems.

(2) To promote the elimination or control of cross-connections, actual or potential, between a customer's internal water systems, plumbing fixtures, industrial piping systems, and the public water supply.

(3) To provide for a continuing program of cross-connection control which will prevent the contamination or pollution of the public water supply systems.

(4) To implement the requirements of AAC R18-4-215 requiring public water systems to protect against backflow, and to this end this article shall be construed and applied consistent with the requirements of AAC R18-4-215.

***Sec. 27-72. Backflow prevention required.***

(a) When Tucson Water determines that the water supplied by the public water systems may be subject to contamination or pollution, an approved backflow prevention method shall be required at every service connection to a customer's water system. The customer shall install the required backflow protection within the time specified by Tucson Water. In determining the time in which backflow protection shall be installed, Tucson Water shall consider the degree of hazard potential to the public water supplies.

(b) The backflow prevention method required shall be determined by Tucson Water. The method required by Tucson Water shall be sufficient to protect against the hazard potential, as determined by Tucson Water, to the public water supplies.

***Sec. 27-73. Hazard potential.***

The hazard potential to the public water supply systems from a customer's private plumbing system shall be determined using the following hazard factors as each is defined in section 27-70:

- (1) Contamination.
- (2) Cross-connection protection.
- (3) Pollution.

***Sec. 27-74. Backflow prevention methods; list.***

(a) A backflow prevention method shall be any assembly or other means designed to prevent backflow. The following are the recognized backflow prevention methods which Tucson Water may require under section 27-72 or section 27-75:

(1) *Air gap (AG)*: The unobstructed vertical distance through the free atmosphere between the opening of the pipe or faucet supplying potable water to a tank, plumbing fixture or other device. An approved air gap shall be at least double the effective opening of the supply pipe or faucet and in no case less than one (1) inch above the flood rim.

(2) *Reduced pressure principle assembly (RPA)*: An assembly containing two (2) independently acting approved check valves together with a hydraulically operating, mechanically independent pressure differential relief valve located between the check valves, and at the same time below the first check valve. The assembly shall include properly located test cocks and tightly closing shutoff valves located at each end of the assembly.

(3) *Double check valve assembly (DCVA)*: An assembly composed of two (2) independently acting, approved check valves, including tightly closing shutoff valves located at each end of the assembly and fitted with properly located test cocks.

(4) *Pressure vacuum breaker assembly (PVB)*: An assembly containing an independently operating, loaded check valve and an independently operating, loaded air inlet valve located on the discharge side of the check valve. The assembly shall be equipped with properly located test cocks and tightly closing shutoff valves located at each end of the assembly.

(5) *Spill-resistant pressure vacuum breaker (SVB)*: An assembly containing an independently operating internally loaded check valve and independently operating loaded air inlet valve located on the discharge side of the check valve. The assembly shall be equipped with a properly located resilient seated test cock, properly located bleed/vent valve and tightly closing resilient seated shutoff valves located at each end of the assembly.

(6) *Double check detector assembly (DCDA or DDCVA)*: An assembly composed of a line size approved double check valve assembly with a bypass containing a specific water meter and an approved double check valve assembly.

(7) *Reduced pressure principle detector assembly (RPDA)*: An assembly composed of a line size approved reduced pressure principle assembly with a bypass containing a specific water meter and an approved reduced pressure principle assembly.

(b) A backflow prevention method may be approved by Tucson Water if it is contained in section 7.2 of the Manual of Cross-Connection Control, Ninth Edition, USC- FCCCHR, KAP-200 University Park MC 2531, Los Angeles, California, 90089-2531, December 1993 (cross connection manual). The current list of approved methods shall be available for inspection at Tucson Water to any customer required to install a backflow prevention assembly.

(c) Any backflow prevention assembly equipped with test cocks shall have been issued a certificate of approval by the USC Foundation for Cross-Connection Control and Hydraulic Research or a third-party certifying entity that is unrelated to the product's manufacturer or vendor, and is approved by the Arizona Department of Environmental Quality. Any backflow prevention assembly not equipped with test cocks shall be certified by a third party entity unrelated to the product's manufacturer or vendor and approved by the Arizona Department of Environmental Quality.

### ***Sec. 27-75. Backflow prevention methods required.***

(a) Whenever the following items exist or activities are conducted on premises served by the public water systems, a potential hazard to the public water supplies shall be presumed, and a backflow prevention method of the type specified herein for that item or activity must be utilized or installed at each service connection for that premises. If an activity or item is not on the following list, it shall be evaluated by Tucson Water and a method of backflow prevention will be determined.

- (1) Cooling tower, boiler, condenser, chiller, and other cooling systems: RPA.
- (2) Tank, vessel, receptacle, and all other water connections, including mobile units, except emergency vehicles and private swimming pools: RPA.
- (3) Ice maker (other than a residential service): RPA.
- (4) Water-cooled equipment, boosters, pumps or autoclaves: RPA.
- (5) Water treatment facilities and all water processing equipment (other than residential water softeners): RPA.
- (6) Bottle washer, bedpan washer, garbage can washer: RPA.
- (7) Pesticide, herbicide, fertilizer, and chemical applicators (other than typical in-home use): RPA.
- (8) Aspirator: RPA.
- (9) Commercial dishwashers, food processing and/or preparation equipment, carbonation equipment, or other food service processes: RPA.
- (10) Decorative fountain, baptismal, or any location water is exposed to atmosphere: RPA.
- (11) X-ray equipment, plating equipment, or any other photographic processing equipment: RPA.
- (12) Auxiliary water supply and/or connections to unapproved water supply systems: RPA.
- (13) Reclaimed water sites with potable water connection: RPA.
- (14) Recreational vehicle dump stations (sewer), or any other location where water may be exposed to bacteria, virus or gas: RPA.
- (15) Any premises on which chemicals, oils, solvents, pesticides, disinfectants, cleaning agents, acids or other pollutants and/or contaminants are handled in a manner by which they may come in direct contact with water, or there is evidence of the potential to contact water: RPA.
- (16) Materials and piping systems unapproved by the City Plumbing Code or Environmental Protection Agency for potable water usage: RPA.
- (17) Separately metered or unprotected irrigation systems, and construction water services: RPA or PVB/SVB as allowed.
- (18) Any premises where a cross-connection is maintained or where internal backflow protection is required pursuant to the City Plumbing Code: RPA.
- (19) Multimetered properties with more than one (1) meter connected: RPA.
- (20) Fire systems--AWWA Classes 1 and 2 and all systems constructed of a piping material not approved for potable water pursuant to the City Plumbing Code: DCVA or Double Detector CVA. Furthermore, fire systems, Classes 1 and 2, that are under the

jurisdiction of the fire department or a fire district that requires periodic sprinkler system testing similar to the city's are exempt from this article: DCVA.

- (21) Fire systems--AWWA Class 3, 4, 5, 6: RPA or RPA with detector.
- (22) Fire systems which require backflow protection and where backflow protection is required on the industrial/domestic service connection that is located on the same premises, both service connections will have adequate backflow protection for the highest degree of hazard affecting either system: RPA (Requirement may be waived by Tucson Water).
- (23) Any premises which has a source of water supply that is not accepted by the public water system and or not approved by the Arizona Department of Environmental Quality: As determined by Tucson Water.
- (24) Any premises where an unprotected cross-connection exists or where there has previously occurred a cross connection problem within the premises: As determined by Tucson Water.
- (25) Any premises where there is a significant possibility that a cross-connection problem will occur and entry onto the premises is restricted to the extent that cross-connection inspections can not be made with sufficient frequency or on sufficiently short notice to assure that unprotected cross-connections do not exist: As determined by Tucson Water.
- (26) Multi-use commercial property: RPA.
- (27) Properties with active private wells: RPA.
- (28) Consecutive systems, when required by Tucson Water: RPA.
- (29) Fire hydrant/construction water: RPA.
- (30) Jumper connection to new water mains: RPA.
- (31) Any building three (3) stories or greater than thirty-four (34) feet in height as measured from the service level: RPA.
- (32) Any premise on which there is a pressurized gray water system: RPA.
- (33) Any premise on which there is pressurized rain water harvesting system: RPA.
- (b) When two (2) or more of the activities listed above are conducted on the same premises and served by the same service connection or multiple service connections, the most restrictive backflow prevention method required for any of the activities conducted on the premises shall be required to be installed at each service connection. The order of most restrictive to least restrictive backflow prevention methods shall be as follows:
  - (1) Air gap (AG).
  - (2) Reduced pressure principle assembly (RPA).

- (3) Reduced pressure principal detector assembly (RPDA).
- (4) Double check valve assembly (DCVA).
- (5) Double check detector assembly (DCDA).
- (6) Pressure vacuum breaker assembly (PVB).
- (7) Spill resistant pressure vacuum breaker (SVB).

***Sec. 27-76. Backflow assembly installation requirements.***

(a) Backflow prevention assemblies shall be installed and maintained by the customer, at the customer's expense and in compliance with the standards and specifications adopted by the city, at each service connection. The customer is responsible for notifying Tucson Water of any installation, repair, relocation or replacement. A backflow prevention assembly shall be installed as close as practicable to the service connection. Any backflow prevention method shall be installed in accordance with the manufacturer's specifications and Tucson Water's standard details for installation.

(b) The assembly shall have a diameter at least equal to the diameter of the service connection or service line at point of connection. Each service connection will require its own backflow prevention assembly.

(c) The assembly shall be in an accessible location approved by Tucson Water. The RPA, RPDA, DCVA, DCDA, PVB, and SVB shall be installed above ground and per Tucson Water standard details.

(d) When a customer desires a continuous water supply, two (2) backflow prevention assemblies shall be installed parallel to one another at the service connection to allow a continuous water supply during testing and maintenance of the backflow prevention assemblies. When backflow prevention assemblies are installed parallel to one another, the sum of the cross-sectional areas of the assemblies shall be at least equal to the cross-sectional area of the service connection or service line piping at the point of installation, and the assemblies shall be of the same type, size, and manufacturer.

- (e) For an AG installation all piping installed between the user's connection and the receiving tank shall be entirely visible unless otherwise approved in writing by Tucson Water.
- (f) Backflow prevention assemblies shall not be installed in a meter box, pit or vault.
- (g) A PVB or SVB assembly may be installed for use on a landscape water irrigation system if:
  - (1) The water use beyond the assembly is for irrigation purposes only;
  - (2) The PVB/SVB is installed in accordance with manufacturer's specifications;
  - (3) The irrigation system is designed and constructed to be incapable of inducing backpressure;

- (4) Chemigation, the injection of chemical pesticides and fertilizers, is not used or provided for in the irrigation system; and
- (5) No other source of water is available on the premises.

If these five criteria are not met, then an RP assembly is required.

- (h) No person shall alter, modify, bypass or remove a backflow prevention method without the approval of Tucson Water.
- (i) Installation of the backflow prevention assembly must be completed within the time specified in the notice to install or within forty-five (45) days of the water meter installation. A time extension may be granted by Tucson Water.
- (j) If a customer fails to install a backflow prevention assembly pursuant to this article, Tucson Water shall discontinue water service and assess a compliance fee pursuant to this article.

### ***Sec. 27-77. Installation of backflow prevention assemblies for fire systems.***

In addition to the requirements of section 27-75 the following shall also apply.

(a) *Fire systems:*

(1) Fire protection systems may consist of sprinklers, hose connections, and hydrants. Sprinkler systems may be dry or wet, open or closed. Systems consisting of fixed-spray nozzles may be used indoors or outdoors for protection of flammable-liquid and other hazardous processes. It is standard practice, especially in cities, to equip automatic sprinkler systems with fire department pumper connections.

(2) A meter (compound, detector check) should not normally be permitted as part of a backflow prevention assembly. An exception may be made, however, if the meter and backflow prevention assembly are specifically designed for that purpose.

(3) For cross-connection control, fire protection systems shall be classified on the basis of water source and arrangement of supplies as follows:

a. *Class 1:* Direct connections from public water mains only; no pumps, tanks or reservoirs; no physical connection from other water supplies; no antifreeze or other additives of any kind; all sprinkler drains discharging to atmosphere, dry wells or other safe outlets.

b. *Class 2:* Same as class 1, except that booster pumps may be installed in the connections from the street mains. It is necessary to avoid drafting so much water that pressure in the water main is reduced below twenty (20) psi.

c. *Class 3:* Direct connection from public water supply main plus one (1) or more of the following: elevated storage tanks; fire pumps taking suction from above-ground covered reservoirs or tanks; and pressure tanks (all storage facilities are filled or connected to public water only, the water in the tanks to be maintained in a potable condition).

Otherwise, Class 3 systems are the same as class 1. Class 3 systems will generally require minimum protection (approved double check valves) to prevent stagnant waters from backflowing into the public potable water system.

d. *Class 4:* Directly supplied from public mains similar to classes 1 and 2, and with an auxiliary water supply on or available to the premises; or an auxiliary supply may be located within seventeen hundred (1,700) feet of the pumper connection. Class 4 systems will normally require backflow protection at the service connection. The type (air gap or reduced pressure) will generally depend on the quality of the auxiliary supply.

e. *Class 5:* Directly supplied from public mains, and interconnected with auxiliary supplies, such as: pumps taking suction from reservoirs exposed to contamination, or rivers and ponds; driven wells, mills or other industrial water systems; or where antifreeze or other additives are used. Classes 4 and 5 systems normally would need maximum protection (air gap or reduced pressure) to protect the public water system.

f. *Class 6:* Combined industrial and fire protection systems supplied from the public water mains only, with or without gravity storage or pump suction tanks. Class 6 system protection would depend on the requirements of both industry and fire protection, and could only be determined by a survey of the premises.

(b) *Installation of assembly:* When a backflow prevention assembly is required for a water service connection supplying water only to a fire system, the assembly shall be installed on the service line in compliance with standard specifications adopted by the city. (Installation of DCVA's or DDCVA's in a vertical position on the riser may be allowed on fire systems with Tucson Water approval.)

### ***Sec. 27-78. Inspections.***

(a) A customer's water systems shall be available at all times during business operations for premises inspection and backflow prevention assembly testing by Tucson Water. The inspection shall be conducted to determine whether any cross-connection or other hazard potentials exist and to determine compliance with this article and modifications, if any, pursuant to section 27-81.

(b) Tucson Water shall inspect all new sites, assembly installations, assembly relocations and assemblies that have been repaired for compliance.

(c) A waived premise is a property for which Tucson Water has determined there are currently no hazard potentials. All waived premises shall be inspected periodically or when there has been a change in owner/tenant or there has been a use change.

(d) If a customer refuses entry to a premises for inspection during business operations, Tucson Water may discontinue water service, require backflow prevention or take any steps allowed by law to gain entry to the premises.

(e) Tucson Water shall inspect all new reclaimed water sites prior to the delivery of reclaimed water to ensure that no cross-connections with Tucson Water's potable system exist and that the site complies with all applicable state and local regulations.

(f) Beginning on January 1, 2015 all reclaimed water sites, except single family residences, are required to have an annual reclaimed water site inspection and cross-connection test performed by a reclaimed water site tester certified by and registered with Tucson Water. The inspection will ensure that no cross-connections with Tucson Water's potable system exist and that the site complies with all applicable state and local regulations, including regulations pertaining to signage, ponding, overspray, site plan, and discharge off of the site. The reclaimed water site inspection program will be administered as provided in section 27-80.

(g) All single family sites will be inspected once every five years by Tucson Water at no cost to the customer. The inspection will ensure that no cross-connections with Tucson Water's potable system exist and that the site complies with all applicable state and local regulations, including regulations pertaining to signage, ponding, overspray, site plan, and discharge off of the site.

### ***Sec. 27-79. Permit.***

(a) Installation permits for the installation of all backflow prevention assemblies required by Tucson Water shall be obtained from Tucson Water prior to installation. A separate permit shall be obtained for each required backflow prevention assembly to be installed, including replacement or relocation.

(b) It shall be the duty of the person doing the work authorized by the permit to notify Tucson Water, orally or in writing, that the work is ready for inspection. Such notification shall be given not less than twenty-four (24) hours before the work is to be inspected and shall be given only if there is reason to believe that the work done will meet current city codes and regulations.

(c) Whenever any work is being done contrary to the provisions of the City Plumbing Code or this article, Tucson Water or an authorized representative may order the work stopped by notice in writing served on any persons engaged in the doing or causing such work to be done; and any such person shall forthwith stop such work until authorized by Tucson Water to proceed with the work.

(d) Any Tucson Water employee may, in writing, suspend or revoke a permit issued under provisions of this article, whenever the permit is issued in error or on the basis of incorrect information supplied, or in violation of any ordinance or regulation of any provision of the City Plumbing Code or this article.

***Sec. 27-80. Test, inspection, notification, maintenance, records.***

(a) The compliance date shall be set by Tucson Water.

(b) Tucson Water shall notify the customer at least forty-five (45) days before the compliance date for each backflow prevention assembly and/or reclaimed water site inspection.

(c) The customer shall test each backflow prevention assembly at least once a year. Test intervals for any backflow prevention assembly may not exceed twelve (12) months. If an inactive water service is reactivated, the backflow prevention assembly associated with that service shall be tested if more than twelve (12) months have passed since the last test.

(d) For compliance testing or inspection the customer shall not test any backflow prevention assembly or inspect any reclaimed water site more than forty-five (45) days prior to the compliance date.

(e) The customer may request in writing a change of the compliance date for any backflow prevention assembly and/or reclaimed water site. No annual compliance date may be changed to be more than twelve (12) months after the most recent test or inspection. No five (5) year compliance date may be changed to be more than sixty (60) months after the most recent inspection.

(f) If any testing reveals the assembly to be defective or is in improper operating condition, the customer shall perform any necessary repairs, including replacement of the assembly, which will return the assembly to proper operating condition. If an assembly is replaced, relocated or repaired, a new test shall be performed on such assembly and submitted to Tucson Water.

(g) If by the compliance date Tucson Water has not received the required backflow prevention assembly test and/or reclaimed water site inspection results, Tucson Water shall provide a four (4) day notice in writing to the site that Tucson Water will discontinue potable/reclaimed water service if the required backflow prevention assembly test and/or reclaimed water site inspection results are not received by the date specified in the four (4) day notice. Tucson Water shall assess a fee when

the four (4) day notice is delivered. If the test and/or inspection results are not received by Tucson Water by the date specified in the four (4) day notice Tucson Water shall discontinue water service and add a compliance fee to the customer's water bill.

(h) If Tucson Water determines at any time between compliance dates that a backflow method is not operating correctly or does not meet applicable codes or that a reclaimed water site does not comply with regulations, Tucson Water shall provide a courtesy notice in writing to the customer and/or site specifying the date by which the backflow method must meet applicable codes and be operating properly or the reclaimed water site must be in compliance. If by the date specified in the courtesy notice the backflow method or reclaimed water site does not meet applicable codes and regulations, Tucson Water will provide a four (4) day notice to the site specifying the date by which the backflow method or reclaimed water site must meet applicable codes/regulations. Tucson Water shall add a fee to the customer's water bill when the four (4) day notice is delivered. If by the date specified in the four (4) day notice the backflow method or reclaimed water site does not meet applicable codes/regulations, Tucson Water shall discontinue water service and add a compliance fee to the customer's water bill.

(i) If Tucson Water or a customer learns or discovers during any interim period between tests/inspections that an assembly is defective or is in improper operating condition or that the reclaimed water site is noncompliant, the customer shall perform any necessary repairs including replacement of the assembly, which will return the assembly or reclaimed water site to proper operating/compliant condition.

(j) The backflow prevention assembly testing shall be performed by an individual certified to conduct such testing by the California-Nevada Section of the AWWA, the Arizona State Environmental Technical Training Center or other certifying authority approved by the Arizona Department of Environmental Quality. A list of certified testers registered with Tucson Water shall be maintained by Tucson Water and shall be available upon request to all persons required to install or maintain a backflow prevention assembly.

(k) Test procedures shall be performed as required by the Arizona Department of Environmental Quality as set forth in chapter nine of the *Manual for Cross-Connection Control*. The tester shall provide test/inspection results to the customer and to Tucson Water, and shall maintain a copy of the results for their records.

(l) The customer shall maintain records, of all test/inspection results and of all servicing, repairs, and replacements of the backflow prevention assembly. Test and/or inspection results shall be submitted electronically to Tucson Water within five (5) days after completion of the activity for which the record is made.

(m) Fire systems shall not be out of service for more than eight (8) consecutive hours due to testing, maintenance or repairs. The fire department shall be notified immediately of any changes in fire service status.

(n) Tucson Water may test any backflow prevention assembly or inspect any reclaimed water site at any time.

(o) Test equipment shall be maintained and calibrated annually by an agency approved by Tucson Water as required by the cross connection manual. A copy of the annual equipment calibration certificates shall be submitted to Tucson Water to maintain equipment registration and certification. Test equipment for testing backflow prevention assemblies in Tucson Water's service area shall be registered with and approved by Tucson Water. Test equipment used on anything other

than potable water backflow prevention assemblies shall not be used to test such assemblies and shall be identified as non-potable test equipment.

(p) Backflow prevention assembly/reclaimed water site testers shall register with Tucson Water if they are conducting backflow prevention assembly testing/reclaimed water site inspections in Tucson Water's service area. Testers shall submit a current copy of their certification or recertification upon registration. A Tucson Water registration issued to a backflow prevention assembly/reclaimed water site tester may be revoked or suspended upon certification expiration or for improper testing, maintenance, inspections, reporting or other improper practices.

***Sec. 27-81. Determination, modification or waiver of backflow prevention requirements.***

If Tucson Water determines, after inspection of the customer's system, that a backflow prevention method less restrictive than that required in section 27-75 will provide adequate protection of the public water supply, Tucson Water may, at its sole discretion, modify or waive the requirements of section 27-75 accordingly. In determining, waiving, or modifying backflow requirements, Tucson Water shall consider the hazard potential to the public water system based on the design of the customer's water system.

***Sec. 27-82. Discontinuance of water service.***

(a) If Tucson Water discovers that a customer has not installed a required backflow prevention method, or that a backflow prevention method has been improperly tested or maintained, bypassed or removed, or that an unprotected cross-connection exists in the customer's water system or any other violation of this article has occurred, the water service to that service connection shall be discontinued. If the condition is not remedied subsections 27-80(g) and (h) shall apply. The service shall not be restored until the condition is remedied or Tucson Water authorizes a turn on for assembly testing and continuance of service.

(b) Water service to a fire sprinkler system shall not be subject to discontinuance under this section. If a condition, which would otherwise result in discontinuance of fire service is not remedied, discontinuance of the potable water service shall result. See subsections 27-80 (g) and (h).

(c) Tucson Water may discontinue, without notice, water service to any customer when Tucson Water discovers any potential for contamination of the public water systems by the customer's private plumbing system.

***Sec. 27-83. Administrative appeal.***

An administrative appeal may be taken whenever a question arises over any of the requirements of this article, and the applicant wishes to appeal the decision of Tucson Water or seek a variance from the requirements of this article. The appeal may be made to the backflow prevention hearing committee as follows:

(1) The applicant shall file a written appeal on the forms provided by the Tucson Water Backflow Prevention Office within ten (10) working days from the date of the decision by Tucson Water that the applicant wishes to appeal. The applicant shall set forth, in detail, and on the form provided, the basis for their request, and may attach additional documentation to the form.

(2) The appeal will be heard by the hearing committee within seven (7) working days, after receipt of the written appeal, at a regular specified time. Formal Arizona Rules of Evidence will not apply, but any testimony or evidence offered must be relevant to the issue in question.

(3) The hearing committee shall consist of three (3) members each of whom shall be knowledgeable or experienced in backflow prevention, plumbing, or water system hydraulics. One (1) member shall be appointed by the director of Tucson Water. One (1) member shall be appointed by the director of the department of development services. One (1) member shall be appointed from the full membership of the City of Tucson Small Business Commission. Additional inspectors or other technical persons may be present for a particular appeal.

(4) The applicant shall provide adequate information at the hearing to fully describe the conditions in question and to establish the justification and basis for the applicant's request.

(5) The applicant may, but is not required to, personally attend the hearing.

#### ***Sec. 27-84. Violation a civil infraction.***

It shall be a civil infraction for any person to violate any of the requirements of this article.

#### ***Sec. 27-85. Reserved.***

#### ***Sec. 27-86. Fees.***

(a) The fee for issuing a permit to install a backflow prevention assembly and inspecting the installation shall be eighty-two dollars (\$82.00).

(b) A four (4) day notice fee of eighty-two dollars (\$82.00) will be assessed when the customer fails to meet the requirements imposed by this article and a Tucson Water inspector personally delivers a notice to the site stating that water service will be discontinued in four days if the requirements are not met.

(c) A compliance fee of eighty-two dollars (\$82.00) will be assessed when the customer fails to meet the requirements imposed by this article and Tucson Water discontinues potable or reclaimed water service.

(d) A fee of eighteen dollars (\$18.00) will be assessed to backflow prevention assembly testers:

(1) whenever registering or reregistering their backflow test equipment with Tucson Water, as required in Sec. 27-80(o); and

(2) whenever registering or reregistering their certification to perform backflow prevention assembly testing with Tucson Water, as required in Sec. 27-80(p).

#### ***Secs. 27-87--27-89. Reserved.***

# APPENDIX Q

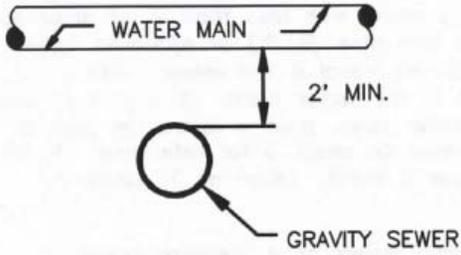
## SD-106

**NOTES:**

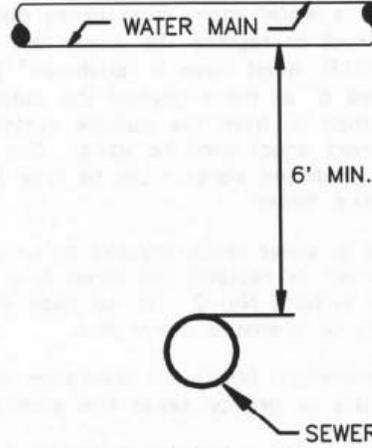
1. Where a water main crosses above a gravity sewer with a 2' or greater vertical clearance (outside surface to outside surface), no extra protection is required. Where a water main crosses above a pressure sewer with 6' or greater vertical clearance, no extra protection is required.
2. Where a water main must cross above a gravity sewer with less than 2' of clearance, construct or replace the sewer line with ductile iron pipe (D.I.P.) or approved equal. The D.I.P. must have a "push-on" joint or approved equal if the sewer joints are located 6' or more beyond the outside surface of the water main. If a joint is located less than 6' from the outside surface of the water main, then a restrained joint or approved equal shall be used. See the plan views on sheet 3 for reference. In no case shall the water main be less than 1' above a gravity sewer or 2' above a pressure sewer.
3. Where a water main crosses below either a gravity sewer or a pressure sewer, construct or replace the sewer line with D.I.P. or approved equal following the guidelines given in Note No. 2. In no case shall the water main be less than 2' below either a gravity or pressure sewer line.
4. The minimum horizontal clearance without extra protection between a water main and a pressure or gravity sewer line shall be 6' outside surface to outside surface.
5. The minimum horizontal clearance between a water main and a sewer manhole shall be 6' from the outside surface of the water main to the centerline of the manhole.
6. Where a 6' horizontal clearance cannot be maintained with a gravity sewer, construct or replace the sewer line with D.I.P. or approved equal following the guidelines given in Note No. 2. In no case shall a gravity sewer line be located less than 2' horizontally from a water main.
7. In no case shall a pressure sewer line be located less than 6' horizontally from a water main.
8. The American National Standard for the thickness design of Ductile Iron Pipe (ANSI/AWWA C150/A21.50) shall be used to determine the required class of D.I.P. except that for D.I.P. with a diameter of 3" through 24", a minimum of Class 350 is required and for D.I.P. with a diameter greater than 24", a minimum of Class 200 is required.
9. Where the sewer line is a gravity sewer, the D.I.P. installation of replacement pipe shall extend a minimum of 6' beyond each side of the water main, measured horizontally from and perpendicular to the water main.
10. Where the sewer line is a pressure sewer, the D.I.P. installation of replacement pipe shall extend a minimum of 10' beyond each side of the water main, measured horizontally from and perpendicular to the water main.
11. In general, when unusual conditions such as, but not limited to, highway or bridge crossings prevent the water and sewer line separations required by this detail from being met, the Pima County Regional Wastewater Reclamation Department will review and may approve (subject to Arizona Department of Environmental Quality's approval), requests for authorization to use alternate construction techniques and joints on a case-by-case basis.
12. All Ductile Iron Pipe shall be internally lined to meet the most recent Pima County Regional Wastewater Reclamation Department specifications.

<b>ISSUED:</b>		<b>STANDARD DETAIL</b>		<b>DETAIL NO.</b>
6/97		<b>SEWER/WATER CROSSING DETAILS</b>		<b>SD-106</b>
<b>REVISED:</b>				
8/09				<b>SHEET 1 OF 4</b>

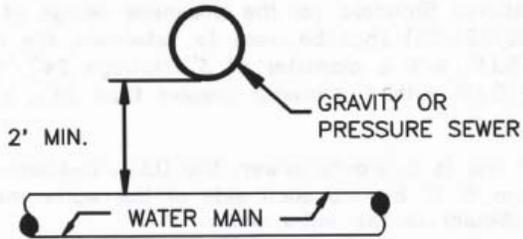
## VERTICAL SEPARATION



GRAVITY SEWER CROSSING  
(SEWER UNDER WATER MAIN)



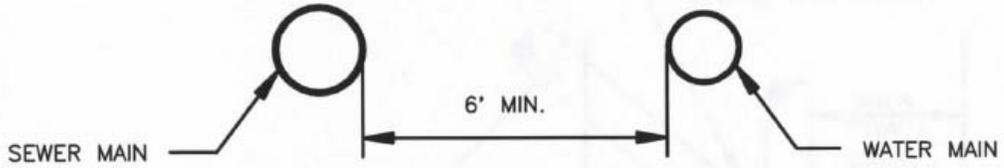
PRESSURE SEWER CROSSING  
(SEWER UNDER WATER MAIN)



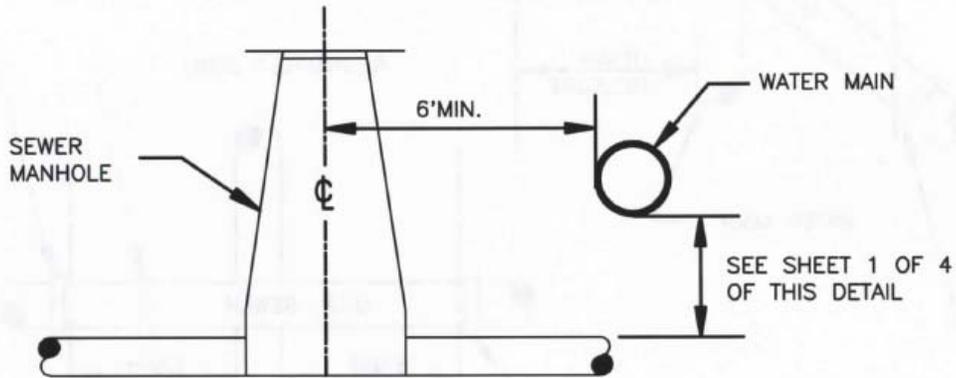
GRAVITY OR PRESSURE SEWER CROSSING  
(SEWER ABOVE WATER MAIN)

<b>ISSUED:</b>		<b>STANDARD DETAIL</b>		<b>DETAIL NO.</b>
		SHEET INDEX		SD-106
<b>REVISED:</b>				
8/09				SHEET 2 OF 4

### HORIZONTAL SEPARATION

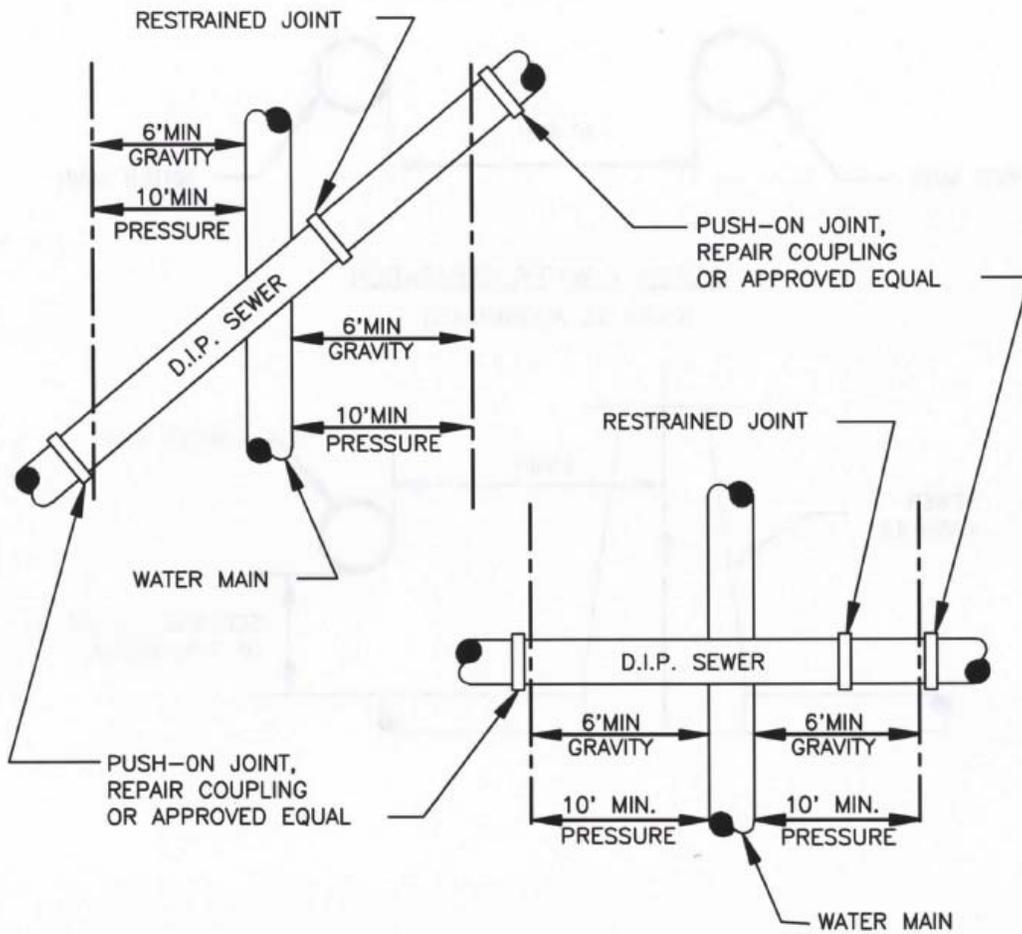


### SEWER / WATER SEPARATION (PARALELL ALIGNMENTS)



ISSUED:		STANDARD DETAIL		DETAIL NO.
REVISIONS:		SEWER/WATER CROSSING DETAIL		SD-106
8/09				SHEET 3 OF 4

### PLAN VIEWS



ISSUED:		STANDARD DETAIL		DETAIL NO.
REVISED:		SEWER/WATER CROSSING DETAIL		SD-106
8/09				SHEET 4 OF 4

# APPENDIX R

## SD-108

### NOTES:

**JOINT USE TRENCH MUST BE PRE-APPROVED AND THE JOINT USE TRENCH DETAIL (SD-108) MUST APPEAR ON THE PLANS.**

1. Telephone, cable television, electrical and gas shall be backfilled in strict accordance with the respective company specifications.
2. Sleeves shall be required for telephone and electrical cables beneath all thrust blocks and at mainline crossings with water.
3. Thrust blocks where approved by the engineer shall extend to undisturbed soil and outside the trench width.
4. The compacted bedding, to a minimum of 6" above the top of the gas and telephone mainlines, shall be in accordance with Section 0209.
5. The backfill, from 6" above the gas and telephone mainlines to the top of the trench shall comply with all requirements of the agency that has jurisdiction over the right-of-way. Backfill material is defined as any imported or excavated trench material that is less than 6 inches in size and does not include any foreign items such as broken concrete, asphalt pavement, broken pipe pieces, timber, cardboard or other debris and which will compact to the required density.
6. After the trench has been backfilled to within 18" of the finished grade. The contractor shall install a detectable identifying tape. The backfill shall be sufficiently leveled so that the tape will be installed on a flat surface. The tape is to be centered over the new watermain with the printed side up. Caution shall be exercised to avoid displacement of the tape and ensure its integrity. The tape shall be blue for potable water and purple for reclaimed water.
7. If the installation of a reclaimed water line is to be included in a joint trench a special detail must be submitted and approved by Tucson Water prior to construction.

<b>ISSUED:</b> 6/97		<b>STANDARD DETAIL</b>		<b>DETAIL NO.</b>
<b>REVISED:</b> 8/09		<b>JOINT USE TRENCH</b>		<b>SD-108</b>
				<b>SHEET 1 OF 2</b>

