



Chapter 3

Responsibilities of the Reclaimed Water Customer

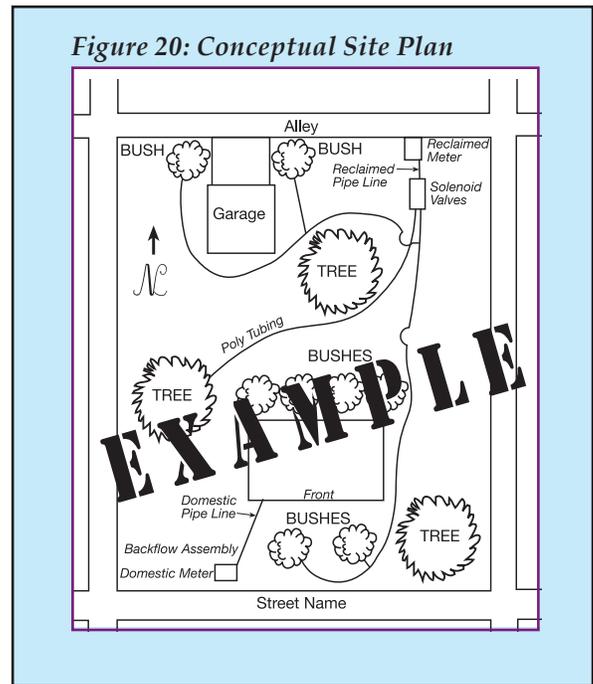
As a partner in ensuring that reclaimed water is used safely and in compliance with all State and local regulations, the customer plays an important role. The customer has many responsibilities related to the use of reclaimed water at their site. The customer’s primary responsibilities include: 1) site design and identification of reclaimed water system and appurtenances, 2) operation of the site, and 3) maintenance of the site.

These responsibilities are described in detail in the Reclaimed Water User Agreement (Appendix F) that every customer is required to sign as part of their application for reclaimed water service. This agreement is a contract between Tucson Water and the customer. If Tucson Water discovers that the reclaimed water customer is in violation of the User Agreement, a Site Compliance Report describing the discrepancies and the corrective action required will be issued to the customer (Appendix G).

Site Design and Identification of Reclaimed Water System

Reclaimed water systems must be designed to comply with all State and local regulations (Chapter 1). All on-site reclaimed water systems must be identified with purple color integral to the pipe and appurtenances, or purple paint, sleeves, or tags. The customer is responsible for maintaining the advisory signs in good condition.

A conceptual site plan (Figure 20 and Appendix H) showing the location of all reclaimed and potable water meters, pipelines and control boxes must be readily available at the reuse site. This plan must be updated if the potable or reclaimed water systems are modified.



Operation of the Reclaimed Water Site

The customer is responsible for the following duties, including, but not limited to:

- Being available to Tucson Water upon request and having the authority to carry out any requirements of Tucson Water
- Being familiar with all State and local reclaimed water use regulations, basic concepts of backflow and cross-connection prevention, system testing, and emergency procedures
- Supervising the installation, operation, maintenance and modification of the on-site reclaimed water system
- Preventing potential hazards on the reclaimed and potable water systems and ensuring the facility is in compliance with all regulations
- Reporting to Tucson Water all failures, violations and emergencies that occur involving the reclaimed or potable water systems
- Training all personnel on procedures for working with reclaimed water
- Coordinating site inspections and submitting reports to Tucson Water
- Maintaining all site records

System Operation

Reclaimed water systems must be operated to reasonably preclude human contact. Irrigation systems should be operated during hours when the public is not present. For schools, parks and other open access facilities, the irrigation window is generally from 10:30 p.m. to sunrise. For golf courses and cemeteries, irrigating should be done when the facilities are closed.

Duration of irrigation must be set to prevent ponding and off-site discharge (Figure 21). Irrigation schedules should be modified in response to weather conditions, i.e. irrigation should be turned off when it is raining.

Reporting Discharges

It is the customer's responsibility to report all off-site discharges to Tucson Water. A report can be made online, at www.tucsonaz.gov/water/report_recl (Appendix I). Failure to report off-site discharges could result in the termination of reclaimed water service.

Maintenance of Reclaimed Water Site

Backflow Prevention and Cross-connection Control

All backflow prevention assemblies should be visually inspected for leaks and other malfunctions. All reduced pressure assemblies (RPA) and double check valve assemblies (DCVA) must be tested annually by a Backflow Tester registered with Tucson Water.

System Modifications

Reclaimed water system modifications must be in compliance with all state and local regulations. Tucson Water encourages customers to discuss potential system modifications with them prior to commencing work. Modification of reclaimed water systems must be reported whenever a site inspection is done.

Self Inspection

A regular preventive maintenance program is essential for ensuring that the reclaimed water site remains in compliance with the regulations. The customer should inspect the site on a regular basis and immediately correct any problems or deficiencies that are identified. To assist customers in doing a comprehensive site inspection, Tucson Water provides a Reclaimed Water Customer Checklist in the annual Reclaimed Water Newsletter at www.tucsonaz.gov/water/docs/rclmnews09.pdf (Appendix J).

Figure 21: Off-site Discharge



At a minimum, the customer should regularly inspect the following site features:

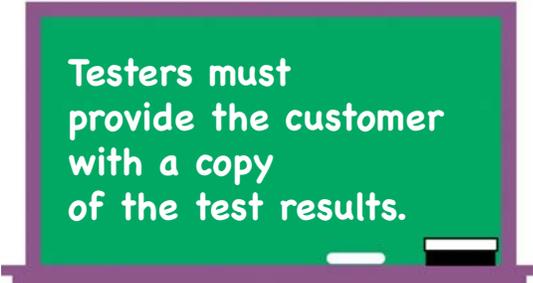
- The on-site reclaimed water system including sprinkler heads, spray patterns, lakes, piping and valves, pumps, storage facilities, controllers, etc.
- Reclaimed water advisory signs for proper placement and legibility
- Situations that could cause ponding, off-site discharges and wind-blown spray

Record Maintenance

Record keeping is an important responsibility of the customer and should include the following:

- Reclaimed Water User Agreement
- Site plan
- Annual backflow assembly test reports
- Site inspection reports
- System maintenance records
- System modification records
- Record of discharges, verifications of reports to Tucson Water, and record of corrective actions
- Names of people with on-site responsibilities who received training

Reclaimed 101:



**Testers must
provide the customer
with a copy
of the test results.**



Chapter 4

Reclaimed Water Site Tester's Responsibilities

Tucson Water requires site inspections to be conducted periodically at various intervals ranging from one to five years depending on the use of the site with reclaimed water service. Sites with public use, e. g. parks and schools, are to be inspected more often than private single family home sites. Some of these periodic inspections will be conducted by private certified Reclaimed Water Site Testers.

Reclaimed Water Site Testers have two primary responsibilities: 1) to conduct a thorough inspection of the reclaimed water site, and 2) to conduct a pressure test at the site to ensure that there are no cross-connections with the potable water system. Site Testers are also asked to report any off-site reclaimed water discharges. Upon completion of these tasks, the Reclaimed Water Site Tester enters the information into Tucson Water's database, iBAK. Appendix K is a checklist for use by Reclaimed Water Site Testers in doing the site inspections and pressure tests.

Working Safely with Reclaimed Water

The reclaimed water Tucson Water delivers to customers is highly treated wastewater classified by the ADEQ as Class A. Reclaimed water is not for drinking or bathing. The Pima County Health Department advises that if you come in contact with reclaimed water, wash with soap and water from a potable (drinking) water faucet. If you 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 you 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.

Additional guidelines for working with reclaimed water are provided in Appendix L and also on the Tucson Water website www.tucsonaz.gov/water/docs/working-on-reclaim.pdf

Notify- Identify- Inspect- Observe- (NIIO) for Reclaimed Water Site Inspections

The NIIO procedures used in the Backflow Testers certification class also apply to reclaimed water site inspection. Remember to always:

- **Notify-** Make an appointment with the customer. Notify the customer when you arrive at the site to conduct the reclaimed water site inspection. The customer or their representative must be present as access to all potable water outlets is required.
- **Identify-** Identify that you are on the correct reclaimed water site. Verify the address, and owner's name. Verify reclaimed water meter numbers are the same as on the reclaimed site annual inspection report.
- **Inspect-** Inspect all components of the site including the potable and reclaimed water systems, fire systems, backflow assemblies, and reclaimed water advisory signs.
- **Observe-** Observe the area throughout the inspection. Look for signs of ponding, overspray, and off-site discharge.

Reclaimed 101:



**Wash with soap
and water after
coming into contact
with reclaimed water.**

Site Inspection

Before you begin the site inspection, review the regulatory requirements and design standards on pages 13-15 of this Manual and make a copy of the Site Tester's Site Inspection Checklist in Appendix K. Then begin the site inspection, following the steps below:

1. Ask Tucson Water to verify that there is a current Reclaimed Water User Agreement on file and to check if any hose bibs found on site have been grandfathered per the User Agreement.
2. Verify that all potable water connections to the property have the required backflow protection (pages 18-19) and that the assemblies are in compliance. If the customer does not have copies of the most recent backflow assembly tests, Tucson Water will provide the information.
3. Verify that the customer has a conceptual plan of the reclaimed water irrigation system readily available on-site. Professional plans are not required. If the customer does not have a conceptual plan, the tester will work with the customer to create one. (Appendix H).
4. Verify that there are no hose bibs on the reclaimed water system. There are a few sites which have hose bibs that were "grandfathered".
5. Verify that reclaimed signs are in good condition and visible from all entrances to the reclaimed site and at other locations.
6. Ensure all above-ground reclaimed water pipes, meters and reclaimed water system appurtenances are colored, tagged, or otherwise marked (pages 20-21) to advise the public that the irrigation water is reclaimed water and is not suitable for drinking. (Appendix M)
7. During the separation testing, look for signs of ponding, over spray, and off-site discharge. If any of these conditions occur, corrective action is required. Corrective actions may include: adjusting the watering duration or frequency, adjusting the spray direction of the sprinklers, and filling in any areas that may pond with dirt.
8. Verify that no off-site discharge has occurred. If off-site discharge has occurred, was it properly reported? See discharge report form in Appendix I.
9. When the inspection has been completed and any discrepancies have been corrected, complete Reclaimed Water Site Test & Maintenance Report and submit it to Tucson Water (Appendix N).

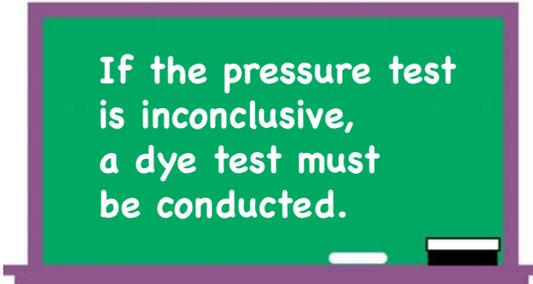
Pressure Testing

Verify separation of the potable and reclaimed water systems by performing the Shutdown Pressure Tests, Part I and II. below:

Pressure Test - Part I – Reclaimed System Shutdown Test

1. Activate and pressurize the potable water system. The Tester will determine the length of time that all on-site potable water systems are to remain pressurized.
2. Shut down the on-site reclaimed water system at its point of connection to the distribution system and depressurize the reclaimed water system by manually bleeding a control valve and/or quick-coupling valve that is located at the lowest point of elevation in the on-site reclaimed water system. Divert or capture the reclaimed water to ensure it does not cause an off-site discharge. The Tester will determine the minimum period of time the on-site reclaimed water system is to remain depressurized on a case-by-case basis, taking into account the size and complexity of the potable water system and the on-site reclaimed water system.
3. Inspect all on-site reclaimed water system control valves and quick-coupling valves, impoundment inlets and all irrigation system outlets and stations for flow. Ensure that all stations of the reclaimed irrigation system were turned on, checked for flow, and then turned off. Continuous flow from any part of the on-site reclaimed water system indicates a cross-connection. If any cross-connections are discovered, follow the cross-connection response procedures on page 37. **DO NOT PROCEED WITH THE PRESSURE TEST.**
4. Inspect all interior and exterior potable water fixtures (faucets, hose bibs, drinking fountains, toilets and urinals, supply lines to decorative fountains, etc.) and test each one for flow. No flow from a potable water outlet indicates that it may be connected to the on-site reclaimed water system and should be treated as a cross-connection. If any cross-connections are discovered, follow the cross-connection response procedures on page 37. **DO NOT PROCEED WITH THE PRESSURE TEST.**
5. If no cross-connections are discovered, proceed with the second part of the test.

Reclaimed 101:



**If the pressure test
is inconclusive,
a dye test must
be conducted.**

Pressure Test- Part II – Potable System Shutdown Test

6. Shut down the potable water system at its point of connection (usually the number one shut-off valve on all potable water backflow assemblies) and depressurize it through the number four test cock on all potable assemblies. For multi-story buildings, the potable water system pressure may be reduced by the amount deemed necessary by the Tester and monitored with a gauge installed at a low point of elevation in the potable water system. The Tester will determine the minimum period of time the potable water system is to remain depressurized or for multi-story buildings, at a reduced pressure.
7. Activate and pressurize the on-site reclaimed water system. The Tester will determine the minimum period of time the on-site reclaimed water system is to remain pressurized.
8. Inspect all interior and exterior potable water fixtures (faucets, hose bibs, drinking fountains, toilets and urinals, supply lines to decorative fountains, etc.) and test for flow. Water breaking loose from an air lock in an overhead water line may cause some flow; however, based on the volume of the flow, the Tester will determine if it is of concern. Continuous flow from any part of the potable water system (in excess of the drainage generated by an air lock breaking free) indicates a cross-connection. If any cross-connections are discovered, follow the cross-connection response procedures on page 37. **DO NOT PROCEED WITH THE PRESSURE TEST.**
9. Potable water systems in multi-story buildings may be tested by individually turning each fixture on and off, and checking for flow, or by using a gauge to monitor the potable water system pressure (refer to Step No.6 above). If the potable water system has been completely shut down at its point of connection, then an increase in potable water system pressure viewed at the gauge over a period of time determined by the Tester indicates that there is a cross-connection with the reclaimed water system. If any cross-connections are discovered, follow the cross-connection response procedures on page 37. **DO NOT PROCEED WITH THE PRESSURE TEST.**
10. Inspect all reclaimed water system outlets and fixtures (hose bibs, all irrigation system stations, toilets and urinals, supply lines to impoundments, etc.) and test each one for flow. Verify that all stations of the reclaimed irrigation system have been turned on. No flow from an on-site reclaimed water system control valve, quick-coupling valve, or any other reclaimed water fixture indicates that it may be connected to the potable water system and should be treated as a cross-connection. If any cross-connections are discovered, follow the cross-connection response procedures on page 37. **DO NOT PROCEED WITH THE PRESSURE TEST.**
11. If no cross-connections are discovered, re-pressurize the potable water system.

Cross-connection Response Procedures

Despite the best and most conscientious efforts of Tucson Water and the reclaimed water customers, there may be occasional cross-connections. In the event that a cross-connection is discovered during the site inspection or the pressure test is inconclusive, the reclaimed water site tester should:

1. Immediately turn off the reclaimed water system
2. Keep the potable system pressurized
3. Confirm all backflow assemblies are properly working by testing each one
4. Call the Tucson Water CCC Specialist for the area in which you are working and the CCC Specialist will immediately contact the Administrators of Tucson Water's Operations and Water Quality Divisions

If a backflow assembly(s) has failed, Tucson Water will perform the tasks below:

1. Collect water samples from the potable system and perform bacteriological analysis
2. Assist in identifying the location(s) of backflow and eliminate the cross connection(s)
3. Conduct a dye test to verify that all cross-connections have been eliminated
4. Flush & disinfect contaminated Tucson Water systems by maintaining a chlorine residual of at least 50 mg/L for 24 hours and retest after 24 hours
5. Work with customer to flush & disinfect contaminated private systems by maintaining a chlorine residual of at least 50 mg/L for 24 hours and retest after 24 hours
6. Report cross-connection to regulatory agencies as required
7. Review causes of incident and develop procedures to avoid similar incidents in the future

Reporting Off-site Discharges of Reclaimed Water

All off-site discharges of reclaimed water must be reported to Tucson Water. This is the customer's responsibility; however, if you observe reclaimed water being discharged from a site that you are inspecting, report it to Tucson Water.

An off-site discharge is defined as any volume of reclaimed water that, for any reason, leaves the site where its use is permitted. For example, an off-site discharge has occurred when a private irrigation system pipe breaks and reclaimed water runs into the adjacent public street.

To make a report, go to www.tucsonaz.gov/water/report_recl and answer each of the questions. Click on "submit" when you are finished. This will send a report to Tucson Water and a report will be made to ADEQ.

Reporting Reclaimed Site Inspection and Pressure Test Results

Reclaimed site inspection results must be entered by the Reclaimed Water Site Tester into Tucson Water's iBAK database prior to the site's compliance date shown on the customer's "Notice of Test Due" and within five days of the completion of the inspection.

Customer Service

As a Reclaimed Water Site Tester, the customer may direct questions about reclaimed and backflow protection to you. Appendix O contains a list of frequently asked questions with responses. If you are asked questions that you are not comfortable answering, suggest to the customer that they contact Tucson Water or refer them to the Tucson Water website at www.tucsonaz.gov/reclaimed. Tucson Water will provide you with contact information cards that you may provide to the customer. In addition, Tucson Water participates in public events where information about reclaimed water is made available to customers (Figure 22).







Chapter 5

Required Training for Reclaimed Water Site Testers

Prerequisites for Reclaimed Water Site Tester Training

Tucson Water needs to have trained personnel to inspect sites where reclaimed water is used. In response to this need, in the absence of State or reclaimed water organization-based training programs, Tucson Water has developed a Reclaimed Water Site Tester's Certification program to meet our needs. Since in-depth knowledge of cross-connection control is an integral part of the site inspection, the pre-requisite to this course is certification as backflow tester by an ADEQ-recognized certification agency.

Classroom and Field Training

The Reclaimed Water Site Tester certification program consists of a minimum of eight hours of classroom and field training conducted by qualified instructors and a written examination. Upon successful completion of the examination, Testers will be issued a certificate allowing them to register with Tucson Water as a Reclaimed Water Site Tester.

Recertification Requirements

A review class and a recertification examination is required every three years.





Chapter 6

Sample Questions for Site Tester Examination

Following the classroom and field portions of the class, there will be a multiple choice examination that will include questions from the list below. In order to receive Tucson Water certification as a Reclaimed Water Site Tester, a minimum of 70% of the test questions must be answered correctly.

Reclaimed Water Site Tester certification is good for three (3) years from the date of issuance. Reclaimed Water Site Tester certification entitles certified backflow testers registered with Tucson Water to conduct inspections of sites with reclaimed water service provided by Tucson Water.

Sample Questions for Site Tester Examination

1. What is reclaimed water?
2. What quality of reclaimed water does Tucson Water deliver to its customers?
3. What are the benefits of nitrogen and phosphorus in reclaimed water?
4. Why is the use of reclaimed water important in Tucson?
5. What is the purpose of reclaimed advisory signs?
6. What responsibilities do reclaimed water customers have?
7. What responsibilities does the reclaimed water site tester have?
8. What practices ensure the safe use of reclaimed water?
9. Which governmental agency in the Tucson area is responsible for treating and delivering reclaimed water?
10. Which governmental agency issues permits to the reclaimed water provider to operate a reclaimed water system?
11. What type of treatment does reclaimed water in Tucson receive?
12. Which customers use the most reclaimed water on an annual basis?
13. What is reclaimed water off-site discharge?
14. How do you remediate reclaimed water discharge?
15. What is ponding?
16. Where are reclaimed water advisory signs posted?
17. How do you eliminate ponding?
18. What is overspray?
19. While inspecting the irrigation system you have found a reclaimed water hose bib. What do you do?
20. How do you eliminate overspray?
21. During the pressure test, the potable water system is pressurized and the reclaimed water system is off. There is water spraying out of the drip system. What do you do?
22. During the pressure test, the potable water system is off and the reclaimed water system is pressurized. There is water bubbling up out of the ground. What do you do?
23. During the pressure test, the potable water system is off and the reclaimed water system is pressurized. While checking the hose bibs, you found pressure on one of the three. What do you do?

24. During the pressure test, the potable water system is off and the reclaimed water system is pressurized. Water is spraying into the pool. What do you do?
25. If your pressure test is inconclusive, what is your next step?
26. While testing the irrigation system, the sprinkler system fails to shut off and water is running down the street. What do you do?
27. Where do you locate a reclaimed water discharge report form?
28. While talking to the customer, you have learned that there was an unauthorized discharge last year. Where do you note this information?
29. During the site inspection you discover that the backflow assembly is dripping from the relief valve. What do you do?
30. If the customer does not have a conceptual site plan, what do you do?
31. Where can you get a sample of a conceptual site plan?
32. Where does a reclaimed water advisory sign need to be posted?
33. How long does your Reclaimed Water Site Tester certification last?
34. The customer says his water has tastes "funny". During the conversation you find that this started after he did a modification to the irrigation system. What do you do?
35. When you arrive at the site, the sprinklers are on and water is running down the street and water is going into a drainage ditch. What do you do?
36. During your site inspection, the customer has you test the backflow assembly and it fails. What do you do?
37. If a customer tells you that they no longer want reclaimed water, what do you do?
38. During the site inspection you cannot find a reclaimed water advisory sign, what do you do?
39. Adjusting the watering time is a method to prevent what?
40. During the site inspection, the customer has authorized you to expose some irrigation piping to do repairs. Before you bury the piping what do you do?
41. During the site inspection, you find that one of the control valve boxes is damaged and needs to be replaced. What type of box should the customer use?
42. When you have finished the pressure test and the inspection is complete, what is your last step?
43. How many reclaimed water advisory signs are required on each site?

44. Where should a reclaimed water customer keep their conceptual site plan?
45. What do you do if the customer does not have a current passing backflow assembly test report?
46. What should you do if the reclaimed water advisory sign is badly damaged or faded?
47. Who is required to be onsite for the reclaimed water site inspection?
48. When doing repairs on any reclaimed water system, what is the minimum personal protective equipment that must be used?
49. When you check the reclaimed water meter and there is no tag on the meter, what do you do?
50. What is tracer tape and what is it used for?
51. When checking inside the home, with reclaimed water on and the potable water off, you find water coming out of the shower. What do you do?
52. What should you do if the reclaimed water meter box is not colored purple?
53. What do you do when the potable water is off and there is reclaimed water flowing from an outside hose bib?
54. What is a dual plumbed site?
55. What do you do if you come in contact with reclaimed water?
56. Do hot water heaters on sites with reclaimed water service require thermal expansion protection?
57. Can reclaimed water be used for residential toilet flushing?
58. How does Class A reclaimed water differ from Class A+ reclaimed water?
59. Do impoundments containing Class A reclaimed water need to be lined?
60. What is the ratio of filtered to recovered reclaimed water in Tucson Water's reclaimed water distribution system?
61. What are the three ways reclaimed water is produced in Tucson?
62. ADEQ regulations require backflow prevention protection on sites that utilize what?
63. An underground recharge facility stores reclaimed water in an aquifer. What mechanism is used to recharge the water?
64. What does the reclaimed water site NIIO stand for?
65. If a reclaimed water customer expands their reclaimed irrigation system, who is responsible to check for cross-connections?

66. If a reclaimed water customer wants a hose bib next to their barbeque grill and the only water source is reclaimed water, what do you do?
67. What should you do if a customer asks you a question you can't answer?
68. If you are on a residential reclaimed water site and you come across a grandfathered reclaimed water hose bib, what should you do?
69. While you are inspecting a reclaimed water site, you see water flowing out of the ground. What should you do?
70. How often does a reclaimed water user agreement need to be signed?
71. You notice a reclaimed water hose bib on the system and the customer says they have had it for years. What do you do?
72. You have found a cross-connection during your test and are not able to immediately contact anyone from Tucson Water. How do you proceed?
73. After being used to work on a reclaimed water system, what should be done with the tools?
74. Twenty feet of pipe in the reclaimed water system needs to be replaced. What type of pipe should the person doing the repair use?
75. You are testing a reclaimed water system on a parkway. What is the minimum distance between the reclaimed signs?
76. What three conditions are not allowed on reclaimed water sites?
77. What are you looking for when inspecting a reclaimed water site?
78. While testing the reclaimed water site you think there may be a cross-connection. What do you do?
79. While inspecting a reclaimed water site you come across a lush vegetable garden. Is this an allowable use of reclaimed water?
80. You found a cross-connection and have contacted Tucson Water. What is the next step?
81. After you have finished testing the reclaimed water site, you notice that the customer pulls up the reclaimed sign and puts it into their garage. What do you do?
82. How can you tell the difference between reclaimed water and potable water?
83. What type of odor does reclaimed water have?
84. Is reclaimed water safe to drink?

85. If you come in contact with reclaimed water, what should you do?
86. What is the pantone color for reclaimed appurtenances?
87. When you arrive at a reclaimed site you notice that the homeowner has a reclaimed water hose bib and is filling up a water bowl for his dog. What should you do?
88. While testing a reclaimed water site, you notice that the lawn sprinklers are spraying through a chain link fence and going into the neighbor's yard. What should you do?
89. While testing a reclaimed site, you notice that the cover on the reclaimed meter box is faded to a chalky whitish color. What should you do?
90. While testing a reclaimed water site, you notice that the customer has plumbed a decorative fountain with reclaimed water. What do you do?
91. While at a reclaimed water site, you notice a reclaimed water hose bib and you know that this is not the original customer, what do you do?
92. When you arrive at a reclaimed water site the customer greets you with a check, tells you that the site is in compliance and to pass it. What should you do?
93. If a customer tells you that they no longer want reclaimed water, what should you do?
94. If your backflow tester certification has expired, but you still have six months left on your reclaimed site tester certification, do you meet Tucson Water's requirements to test reclaimed water sites?
95. While testing a reclaimed water site, the customer tells you that they want a new reclaimed sign. What should you tell them?
96. Who needs to be present while you are testing a reclaimed water site?
97. When you arrive on a reclaimed water site you notice that the customer has removed all of their reclaimed irrigation system piping and they tell you that they want the backflow assembly removed. What should you do?
98. You noticed that a customer has recently extended the reclaimed irrigation system from only the front yard into the back yard. What should you do?
99. Reclaimed water hose bibs are not allowed on any reclaimed system after the grandfathered date. What is this date?
100. Should a fire sprinkler system on a reclaimed water site be checked during a reclaimed site test?