

# **WATER & WASTEWATER SYSTEM DESIGN**

**Technical Design Manuals 1 & 2**



**February 2012**

Table of Contents

- 1) Introduction .....1
  - A. Policy.....1
    - I. Potable Water:.....1
    - II. Sanitary Sewer: .....2
    - III. Reclaimed Water: .....3
  - B. Definitions.....4
  - C. Standard Specifications and Details.....6
- 2) Potable Water Distribution and Transmission System .....6
  - A. Water Main Requirements .....6
    - I. Jurisdictional Agency Approval.....6
    - II. Easement Requirements .....6
    - III. Acceptable Pipe Materials and Construction Requirements.....7
    - IV. Backflow Prevention.....7
    - V. Construction Plan Requirements.....8
  - B. Water Transmission System – Additional Design Criteria .....8
    - I. General .....8
    - II. Valve Requirements.....8
    - III. Air/Vacuum Valve Assemblies .....9
  - C. Public Water Distribution System – Additional Design Criteria.....9
    - I. System Design Criteria.....9
    - II. General .....9
    - III. Extension of a Main ..... 10
    - IV. Fire Hydrant Requirements ..... 10
    - V. Valve Requirements..... 12
    - VI. Single Family Residential Water Services and Meter Requirements ..... 12
  - D. Commercial Water Distribution System ..... 13
    - I. Multi-family Fire Sprinkler Connections..... 13
    - II. Commercial Meter Requirements ..... 13
    - III. Commercial Fire Sprinkler and Hydrant Mains..... 14
    - IV. Landscape ..... 14

3) Wastewater Collection System .....	15
A. Jurisdictional Agency Approval .....	15
B. Easement Requirements .....	15
C. Construction Plan Requirements .....	15
D. Design Flows .....	16
E. Pipe Materials .....	17
F. Gravity Sewer Lines .....	17
I. General .....	17
II. Public Sewer Lines .....	17
III. Private Sewer Lines .....	18
G. Force Mains .....	19
H. Manholes .....	19
I. Service Connections .....	20
4) Reclaimed Water Distribution System .....	20
A. Jurisdictional Agency Approval .....	20
B. Volume Considerations .....	21
C. Location .....	22
D. Acceptable Pipe Materials and Construction Requirements .....	22
E. Reclaimed Water Lines .....	22
F. Construction Plan Requirements .....	22
G. Reclaimed Water Service Conversion Process .....	23
H. Reclaimed Water Users Manual .....	25

# 1) Introduction

## A. Policy

The City Engineer reserves the right to modify the requirements of this manual when necessary for the public interest.

Please note that City Code Chapter 47-1 Definitions: Off-Site Improvements provides that "...water lines or pipes four or more inches in diameter, sewer lines or pipes eight or more inches in diameter, together with water and sewer services and their appurtenances, shall be deemed off-site improvements as regulated by this chapter of the Code." Please refer to City Code Chapter 47 - Off-Site Construction Improvement Requirements for Property Development for City Code requirements.

Refer to the *Water, Wastewater, Reclaimed Water Master Plan* for additional policy and planning issues.

All pipe trenches shall contain locator wire and identification tape in accordance with Detail C-408. All pipe backfill shall be half-sack CLSM in accordance with MAG Section 728 unless ABC or native material is pre-approved during plan review. Paved surface replacement shall be in accordance with MAG Std Dtl 200, T-Top with a 16" minimum depth of ABC shelf.

### I. Potable Water:

Please refer to City Code Chapter 52 - Water Services for City Code requirements.

Water lines are required adjacent to all public streets. Water lines shall border each development to be served with municipal water. Developers shall install water lines, service lines, valves, fittings, and appurtenances within and adjacent to developments and as determined by the City Engineer. Stub-outs for future services shall be constructed.

A water system infrastructure analysis shall be required for proposed developments determined by the City Engineer to have a large impact on the water system. The developer of the property shall be responsible for the costs associated with the infrastructure analysis.

Under special conditions the City may accept a public water line on private property. All of the following conditions must be met:

- The water line must be fully integrated with the public water system and the water line must be tied into the public system at each end.
- The water line must be in a dedicated easement.
- The water line must meet City construction standards.
- The City Engineer must determine that acceptance of the water line benefits the City.
- Pipe shall be ductile iron pipe per AWWA C151, pressure class 350.

Per City Code, all water lines 4 inches in diameter and larger are subject to all of the requirements listed in this manual and are not governed by the International Plumbing Code. All private water lines less than 4 inches in diameter are governed by the International Plumbing Code.

The requirements given in the International Plumbing Code shall apply to all situations not specifically covered by this manual.

## **II. Sanitary Sewer:**

Please refer to City Code Chapter 51 - Wastewater Services for City Code requirements.

A sewer line shall be constructed adjacent to each development to be provided with sewer service. The developer is required to install all of the sewer lines, service taps, manholes, and appurtenances within and adjacent to his development as determined by the City Engineer. Stub-outs for future services shall be constructed. All sewer line designs shall provide for sufficient capacities and depths to service all of the areas tributary to the development, along with the development itself in accordance with the City *Wastewater Master Plan*.

A sewer system infrastructure analysis shall be required for proposed developments determined by the City Engineer to have a large impact on the sewer system. The developer of the property shall be responsible for all costs associated with the infrastructure analysis.

Per City Code, all sewer lines eight inches in diameter and larger are subject to all of the requirements listed in this manual. Private sewer lines less than eight inches are subject to the provisions of the International Plumbing Code.

Under special conditions the City may accept a public sewer line on private property. The following conditions must be met:

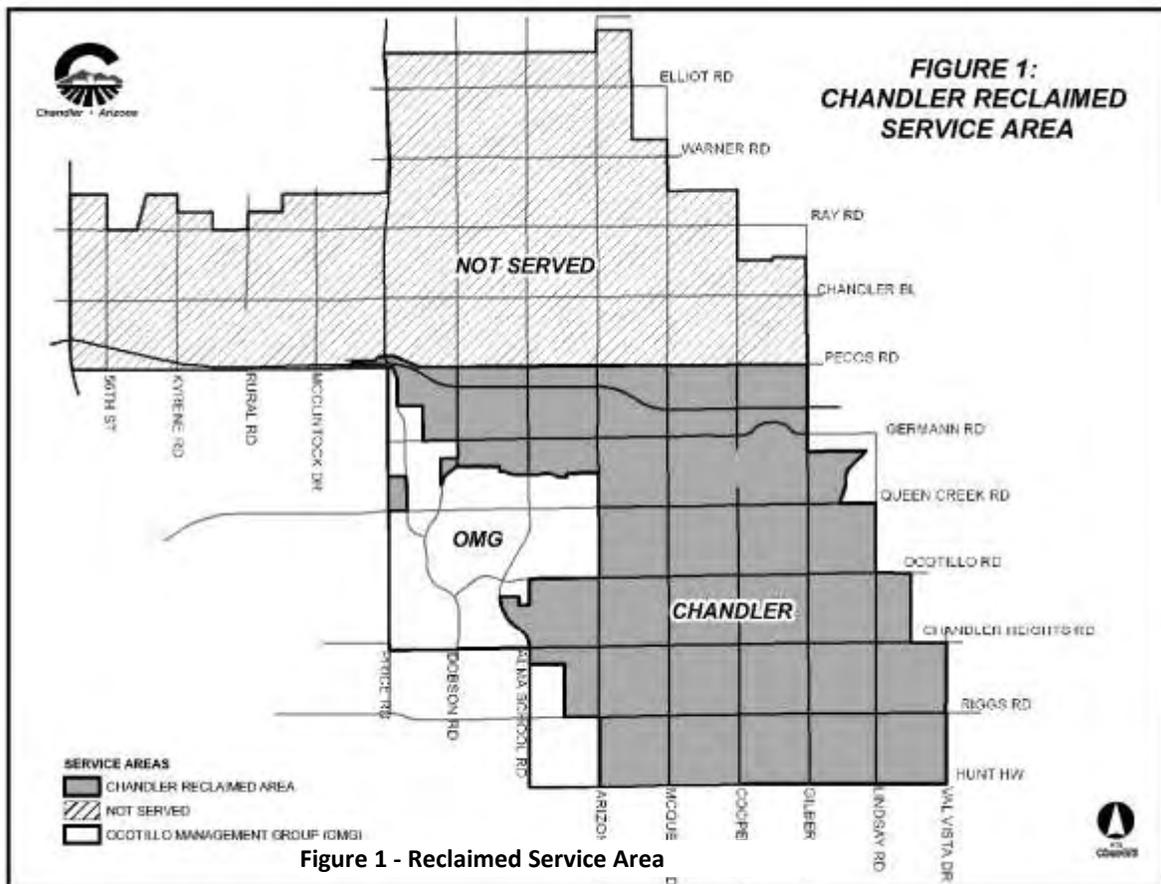
- The sewer line must be in a dedicated easement.
- The sewer line must meet City construction standards.
- The City Engineer must determine that the acceptance of the sewer line benefits the City.

### III. Reclaimed Water:

Please refer to City Code Chapter 53 - Reclaimed Water Services for City Code requirements.

Reclaimed water mains shall be constructed by development along the mile and half-mile streets in that portion of the City which is south of Pecos Road and east of Price Road. Please refer to Figure 1, Reclaimed Service Area. Developments within these limits are required to utilize reclaimed water for irrigation. A *Reclaimed Water Use Agreement* will be executed between the owner and the City containing conditions pertaining to the service, and a set of approved irrigation plans will be required prior to connection. Stub-outs for future services shall be constructed.

Reclaimed water lines eight inches in diameter and larger shall be subject to Engineering Administration



Division approval, lines less than eight inches shall be subject to Current Planning Division approval.

Within that area east of Arizona Avenue and north of Chandler Heights Road exists, the Ocotillo Management Group which independently delivers reclaimed water. Staff will identify projects within that agency's jurisdiction, and provide contact information.

## **B. Definitions**

**Appurtenance:** Item attached to a main structure to enable it to function, but not considered an integral part of it.

**Backflow Prevention Device:** A double-check valve assembly, reduced pressure principal assembly, or an air-gap separation approved by the Building Official of the City.

**Building Drain:** the main sewer system underneath a building.

**Building Sewer:** The part of the sewer system that extends from the end of the building drain and conveys to the service tap.

**Developer:** Any person(s), corporation, partnership, or firm desiring municipal water, sewer, or reclaimed water service.

**Distribution System:** The network of public water lines 16 inches in diameter and smaller which compose the basic grid and distribution system for water service.

**Double Check Valve Assembly:** An assembly composed of two single, independently acting check valves along with tightly closing shut-off valves located at each end of the assembly and including suitable connections for testing the water tightness of each check valve. The device shall operate to prevent backflow through the device by closing of the check valves.

**Effluent:** Wastewater that has completed the stages of treatment at a wastewater treatment plant.

**FDC:** Fire Department Connection – A Siamese-headed swivel connection for fire hoses for the purpose of pressurizing building sprinkler lines.

**Fire Line:** A private water line located on private property which is utilized exclusively for providing water to fixed fire protection systems.

**Interceptor, Trunk, or Main Sewer:** A sewer line 18 inches and larger in diameter and tributary to an outfall sewer. It collects sewage from one or more laterals.

**Lateral or Submain Sewer:** A sewer line equal to or less than 15-inches in diameter and tributary to an interceptor or larger sewer. It collects sewage from two or more service taps.

**Municipal Sewer Service:** Sanitary sewer service provided for domestic, commercial, and industrial purposes.

**Municipal Water Service:** Water service provided for domestic, commercial, recreational, and landscaping purposes.

**Outfall Sewer:** The sewer line that conveys the sewage from interceptors to the final point of discharge or treatment.

PIV: Post Indicator Valve - An above-ground assembly to indicate the position of the gate for an underground water valve.

Private Sewer Line: Any sewer line not owned and maintained by the City.

Private Water Line: Any water line not owned and maintained by the City.

Public Sewer Line: A sewer line owned and maintained by the City.

Public Water Line or Public Water Main: A water line owned and maintained by the City.

Reclaimed Water: Effluent which has been treated to achieve a quality suitable for a subsequent use as prescribed by Federal and State regulations.

Reduced Pressure Principle Backflow Prevention Assembly: An assembly incorporating two independently acting check valves together with an automatic hydraulically operating, mechanically independent pressure differential relief valve located between the two check valves along with tightly closing shut-off valves located at each end of the assembly, and the necessary appurtenances for testing. The device shall operate to prevent backflow through the device by closing of the check valves and maintaining the pressure in the zone between the two check valves less than the pressure on the potable public water supply side of the device.

Service Line: A pipe carrying water from the public water line to a water meter or other point of distribution.

Service Tap: That part of the sewer collection system constructed within the City right-of-way that provides a connection between the building sewer and the lateral sewer. Also known as "Building Sewer Connection" (see MAG Std Dtl 440).

Sewer Service Area: A designated area from which sewage flows originate or contribute to the sewer system.

Transmission Main: A public water line larger than 16 inches in diameter.

### **C. Standard Specifications and Details**

Plans and construction documents shall utilize Maricopa Association of Governments (MAG) *Uniform Standard Specifications and Details for Public Works Construction* and the Chandler Supplements for identifying the work. City Supplements to MAG Details include the Water Series (C-3XX), the Wastewater Series (C-4XX), and the Fire Department Series (XXX) Standard Details. City Supplements to MAG Specifications are various, please refer to the individual Sections, as modified.

The latest version of the construction General Notes, Water Notes, Sewer Notes, and/or Reclaimed Water Notes shall be incorporated into the construction plans as applicable to the type of construction.

'MAG Section' and 'MAG Detail' throughout this manual shall refer to the specifications and details of the MAG Uniform Standards, and 'Specification', 'Detail', and 'Fire Department Detail' shall refer to the City Supplements.

Existing asbestos-concrete pipe to be abandoned may be abandoned in place or removed according to the on a case-by-case determination of the City Engineer. Contact the City's Environmental Management Division for specifications to be included in construction documents and staff for construction requirements.

## **2) Potable Water Distribution and Transmission System**

### **A. Water Main Requirements**

#### **I. Jurisdictional Agency Approval**

Water systems shall be designed and constructed in accordance with Arizona Administrative Code (AAC) Title 18, Chapter 5, Article 5. Plans shall bear the approval signature of the Maricopa County Department of Environmental Resources prior to approval by the City. Requests for letters of Approval to Construct shall be routed to the City Engineer through Civil Plan Review.

Refer to the AAC, MAG Section 610.5, and MAG Detail 404 for separation requirements for protection against possible contamination. Drainage pipe for areas that receive reclaimed water irrigation and reclaimed water lines shall be considered equivalent to a sanitary sewer for determining separation distances next to water lines. Where protection of the waterline is required, ductile iron pipe shall be utilized.

Refer to City Code Chapter 52- Water Services for City requirements regarding water service.

#### **II. Easement Requirements**

All public water lines shall be placed in either the public right-of-way or within a dedicated easement. The minimum easement width is 12 feet, with the entire easement free of property lines, boundary walls, and other obstructions for its entire length and width. Joint water and sewer line easements shall be 24 feet wide, with eight feet of separation between the lines.

Water lines, service lines, and fire lines are not allowed in retention basins.

### **III. Acceptable Pipe Materials and Construction Requirements**

Ductile iron pipe shall be utilized under roadways and throughout the extents of vertical water main re-alignments (dipped sections) plus full pipe lengths on each side of the dipped section. Ductile iron pipe shall be utilized where waterline protection is required in accordance with MAG Detail 404.

Refer to the current *List of Approved Products* for product specifications.

Waterlines shall be constructed in accordance with MAG Section 610. Bedding shall conform to Detail C-308. All pipe trenches shall contain locator wire and identification tape in accordance with Detail C-408.

All pipe fittings shall be ductile iron pipe in accordance with MAG Section 750.

#### **a. Restrained Joints for Pipe:**

Restrained joints shall be push-on for piping or mechanical joint fittings with wedge-type mechanical pipe-grippers. Restrained joint pipe shall be applied the entire length of pipe ( $L_R$ ) as shown within the Construction Drawings.

Refer to the current *List of Approved Products* for products that meet Chandler requirements.

No field cuts of restrained pipe are permitted without prior approval of the Construction Manager.

Joint assembly shall be in strict conformance with AWWA C600 and manufacturer's recommendations.

#### **b. Restrained Joints for Fittings:**

Restrained joints for fittings shall be mechanical joint fittings with wedge-type mechanical pipe-grippers or flange. The wedges shall be ductile iron heat treated to a minimum hardness of 370 BHN. The mechanical joint restraint shall have a working pressure of 350 psi.

Refer to the current *List of Approved Products* for products that meet Chandler requirements.

### **IV. Backflow Prevention**

Backflow prevention assemblies shall conform to the current list issued by the Foundation for Cross Connection Control and Hydraulic Research, University of California and/or the American Society of Safety Engineers and be UL listed or FM approved for fire protection use when used for fire protection systems.

Backflow prevention devices are required on all potable water services except single family residential where there is no access to auxiliary water, i.e., reclaimed, well, etc. Double-check valves may be used for dedicated fire sprinkler services without chemical additives (Details FD102 and FD103). All other uses shall be reduced pressure assemblies (Details C-311 and C-315).

Backflow prevention assemblies shall be located on private property within 6 inches of the meter. Upon request, the City Engineer may permit the service line to be encased in a DIP sleeve if this is not practicable.

## **V. Construction Plan Requirements**

### ***a. Plans (General)***

All plans shall be prepared and signed by a registered professional engineer.

Plans shall be submitted on 24" x 36" sheets. The plans shall be drawn to an engineering scale with 1" = 20' and 1" = 40' being the preferred horizontal scales. The vertical scale, when profile is required, need not differ from the horizontal scale by a precise factor of 10. Water, sewer, and paving plans may all be shown on the same plan sheets if a horizontal scale no smaller than 1" = 20' is used.

All water lines and transmission mains 12 inches or larger in diameter shall be shown in both plan and profile views. Twelve inch diameter water lines shall be shown in both plan and profile views whenever existing utilities are likely to be encountered. All dip sections shall be shown in both plan and profile views regardless of the water line size.

The engineer shall incorporate into the plans the latest copy of the construction *Water Notes*.

Project datum shall be NAVD 88 with equations to legacy City Datum NGVD 29 and any as-built plans that affect the project. The nearest City CMCN benchmark shall be utilized for establishing City Datum.

### ***b. Dipped Sections***

Ductile iron pipe (mechanical joint or restrained) shall be installed through all dipped sections, plus full pipe lengths on each side of the dipped section. All dipped sections must be shown in profile view and must include the following items:

- Minimum vertical clearance of 2 feet from obstructions.
- Encasement per MAG Detail 404, if applicable.
- Thrust blocks or joint restraint with standard detail call-out.
- Vertical and horizontal location of fittings.

## **B. Water Transmission System – Additional Design Criteria**

### **I. General**

Transmission mains are normally installed under the pavement in the center of a traffic lane. This is graphically shown in Details C-200 and C-201.

Water services, fire hydrants, and fire lines may not be installed on transmission mains.

Minimum pipe cover shall be 48 inches.

### **II. Valve Requirements**

Valves on transmission mains are required only at the section line and one-half section line points where a bypass valve assembly is required. Valves shall be spaced at the one-half mile.

Provisions shall be made to tie the transmission main into the distribution system at the section line and the one-half section line points with sufficient valving to completely isolate the transmission main from the

distribution system without obstructing the functional characteristics of either the transmission main or the distribution system. A bypass valve assembly is required wherever a transmission main comes to a dead-end.

Valve box installations shall conform to Detail C-307.

Resilient wedge gate valves shall be used on water lines 18 inches in diameter and smaller per MAG Section 630.3, unless otherwise noted. Double-disc gate valves in the vertical position per MAG Section 630.3 shall be used on water lines 24 inches in diameter and larger. Refer to Detail C-320 for the valve vault detail.

City water valves shall be operated by City personnel only.

### **III. Air/Vacuum Valve Assemblies**

Air and vacuum release assemblies in accordance with Detail C-319 shall be installed at crest changes in pipe grade where there is a possibility of a depth of trapped air greater than one-fifth of the diameter of the line.

## **C. Public Water Distribution System – Additional Design Criteria**

### **I. System Design Criteria**

Distribution systems shall be designed for peak daily flows combined with required fire flows or peak hourly flow. System pressures in all branches of the network shall be a minimum of 25 psi with velocity of less than 10 feet per second for peak daily with fire. System pressures may range from 50 to 100 psi with velocity less than 5 feet per second for peak hour flow.

#### ***a. Domestic Demand***

Refer to the latest City of Chandler *Water System Master Plan* for appropriate demand and peaking factors.

#### ***b. Fire Flow Demand***

Fire flows shall conform to the requirements of the latest adopted *International Fire Code*.

### **II. General**

All lines shall be sized as a minimum in accordance with the current *Water System Master Plan* and the water line size requirements listed below. Lines must generally be looped. Dead-end lines are permitted only with City Engineer's approval.

A 16-inch diameter water line is required along all section line streets. The City Engineer may require the installation of dual parallel 12-inch diameter water lines instead of the single 16-inch water line when special conditions justify it. Dual parallel 12-inch diameter water lines are normally required adjacent to transmission mains, one on each side, or one tier of lots off of the section line street. Depth of cover shall be a minimum of 48 inches. Water services may not be installed on 16-inch water lines.

The standard location for 16-inch and smaller water lines is 1 foot behind the sidewalk, 7 feet behind the back of curb on arterial streets, on the north and east sides of the street. When two water lines are installed adjacent to a street, the standard locations are one on each side of the street with the location determined as above. See Details C-200, C-201, and C-202.

A 12-inch diameter water line is required at all half-mile section line locations. Depth of cover shall be a minimum of 48 inches.

In the case of a phased development, each successive phase must satisfy all of the requirements listed above irrespective of the future phases.

Water lines are required adjacent to half streets when the east or north one-half is being constructed or, when in the opinion of the City Engineer, special conditions justify the construction of the water line.

Water line construction in arterial and collector streets shall include eight-inch stub-outs to the right-of-way for the purpose of servicing existing parcels and future development.

An 8-inch diameter water line is required at all one-quarter mile section line locations. Depth of cover shall be a minimum of 36 inches.

Eight-inch diameter water lines are generally required in all commercial, industrial, and multi-family residential areas and shall be private unless otherwise directed by the City Engineer. Eight-inch dead-end lines may not exceed 650 feet.

All other water lines shall be a minimum of six inches in diameter. Six-inch dead-end lines may not be longer than 300 feet. Looped six-inch lines may not exceed 1200 feet. Depth of cover shall be a minimum of 36 inches.

Wherever possible, dead-end lines will be extended beyond paved surfaces to avoid pavement cutting at time of future connection and be equipped with a curb stop per Detail C-300. No blow-off assembly shall be located in roadway.

The City Engineer may require an engineering analysis for developments.

### **III. Extension of a Main**

For all extensions of water lines over eleven months in age, a new valve of like size shall be installed in the new line at the point of extension. A 3/4-inch saddle and riser shall be installed in the line between the new valve and the first existing valve in the existing system. This line will be flushed and tested by the City and the 3/4-inch nut and riser removed. After the City accepts the new water system, and the new valve and existing valves are turned on, the operating nut shall be removed from one of the valves, leaving only one valve operable.

### **IV. Fire Hydrant Requirements**

All fire hydrants shall be painted according to Fire Department standards after installation. See Fire Department Detail FD121. They shall not be installed on transmission water lines. See the *List of Approved Products* for fire hydrants that meet Chandler requirements.

Fire hydrant installations must comply with the following requirements:

- 450 feet maximum spacing in single family residential areas.
- 300 feet maximum spacing in other developed areas.
- 1,000 feet maximum spacing in undeveloped areas and along arterial streets, staggered 500' opposite sides of arterial street.
- The locations shall be marked in the street with a pavement marker in conformance to MAG Std Dtl 122.
- One fire hydrant must be installed at all subdivision entrances.
- Fire hydrant installations must conform to Detail C-303, C-304, and C-305.
- Fire hydrants must be stationed.
- Fire hydrant installations at intersections shall be per Detail C-305.
- On cluster developments, a fire hydrant must be located no farther than 250 feet from each structure, measured along a hose-laying line to the farthest corner of the structure.
- Fire hydrant stub valves shall be connected by flange to the service 'tee'.

The City Engineer and the Fire Marshal reserve the right to modify the spacing requirements listed above.

Hydrants located in public right-of-way shall be equipped with locking caps per Detail C-304.

Hydrants out of service shall have collars with "out-of-service" signs until the hydrant is put into service. The signs shall comply with Fire Department Detail FD123 and shall remain on the fire hydrants until the water lines are tested, approved, and pressurized. The signs shall be reinstalled at any time any fire hydrants are taken out of service, regardless of reason or the amount of time the fire hydrants are expected to be out of service, and dispatch shall be notified at 480-782-4130. Only off-site personnel shall remove a sign.

Water service that is supplied by only two 6-inch water lines shall have a maximum of six hydrants. One fire hydrant must be installed at each subdivision entrance.

If a model home area is to be part of a development, then a fire hydrant shall be provided at or near the site entrance. The hydrant shall be located within 75 feet of the access roadway and within 300 feet of the property line of the most remote lot to be built upon. The hydrant shall be connected to an approved water source. If the distance to the water source is more than 400 feet, the system must be looped to an additional source.

All cul-de-sac dead-end lines must have a fire hydrant installed at the end of line. The fire hydrant shall be located 6 feet from the back of curb and the valve shall be located in the pavement 1 foot from the lip of the gutter. All lines longer than 650 feet shall be looped.

## **V. Valve Requirements**

Valve installations must comply with the following requirements:

- Spacing no greater than 600 feet for pipe runs greater than 800'.
- Public distribution line, three valves on each tee (other than service tees) and four valves on each cross.
- Valve box installations must conform to Details C-307, and C-317 in areas not subject to wheel loads. These details shall be specified in the construction notes on the plan. MAG Detail 270 frame and covers are not permitted. The grade of a valve box and cover located outside of a paved area shall be 1/2 inches above sidewalk or adjacent grade.
- In subdivisions, valves at intersections must be located at the first lot line away from the intersection and must be stationed. If no lot line exists, valve is to be located minimum of 6 feet from curb return.
- In subdivisions, valves at tee intersections must be located laterally along the top of the tee to the first lot line clear of the intersection to avoid conflict with sidewalk ramps and must be stationed. Valves on the leg of the tee must be located per item 4 above.
- Refer to valve blocking per MAG Detail 301.
- No valve shall be located in sidewalk, curb, or ramp areas. Exceptions require a variance from the City Engineer.
- Valve locations must be stationed on subdivision plans, and otherwise located on all other plans.

City water valves shall be operated by City personnel only.

## **VI. Single Family Residential Water Services and Meter Requirements**

Water services may not be installed on 16-inch water lines or transmission lines unless approved by the City Engineer. Water service lines shall be a minimum of 1 inch in diameter and shall not be located in driveways, sidewalks, washes, or retention/detention areas.

Residential services shall be copper with a minimum diameter of 1 inch in accordance with Detail C-301. Each service shall be individually connected to the main. Backflow prevention will be required for lots where reclaimed waterlines run through, along, and/or utilize reclaimed water. Meter boxes shall be oriented to the perpendicular of the street.

Service lines shall be copper or ductile iron pipe. Existing service lines may be extended, but compression fittings are not allowed. Existing services to be abandoned shall be turned off at the main.

The City provides and installs water meters. Owner/Contractor shall provide all fittings to accept meter. Meter boxes shall be located within the right-of-way or within a dedicated easement. Meter certificates with sizing calculations are required during plan review for all water services except tract subdivision projects.

Residential homes (Group R, Division 3 occupancies) shall have an residential automatic fire sprinkler system as an owner purchase option.

#### **D. Commercial Water Distribution System**

Commercial developments shall be served by a metered potable water system separated from the building fire sprinkler lines. The sprinkler line (generally looped) shall be easily accessed for pressurization by fire department connections located at entrance drives. Because site fire hydrants shall not be pressurized, the hydrant line shall be hydraulically separated from the sprinkler line. The hydrant line may utilize the sprinkler line if it is isolated by a check valve in accordance with Fire Department Detail FD103, or the hydrants may be supplied from the potable system and the meter sized for fire flows. See Section III. Commercial Fire Sprinkler and Hydrant Mains, below.

Systems shall be looped with connections to the public water system at distant drive entrances.

Private water lines are not allowed within the right-of-way or utility easements.

#### **I. Multi-family Fire Sprinkler Connections**

In accordance with Section 28-17 of the City Code, all buildings shall be provided with an approved automatic fire sprinkler system. The Fire Department maintains separate standard drawings, plan notes, and plan review guides. Please refer to these standards and the International Fire Code, as adopted and supplemented by City Code, for the design of site improvements.

Multi-family homes (Group R-1 occupancies) shall have fire department connections (FDCs) located on the building under the audio/visual (horn/strobe) device for the building. The sprinkler line shall be separated from the public water system with a reduced pressure principal assembly in accordance with City Standard Details.

Multi-family installations may combine the fire sprinkler service with the domestic service. Backflow prevention will be required after the meter, as well as between the sprinkler line and the domestic line.

#### **II. Commercial Meter Requirements**

Water services may not be installed on 16-inch water lines unless approved by the City Engineer.

Service lines shall be copper or ductile iron pipe. Existing service lines may be extended, but compression fittings are not allowed. Existing services to be abandoned shall be turned off at the main.

The City provides and installs water meters. Owner/Contractor shall provide all fittings required to receive the meter assembly. Meter boxes shall be located within the right-of-way or within a dedicated easement. Meter certificates with sizing calculations are required during plan review for all water services.

Meter boxes shall not be located in driveways and sidewalks.

Individual meter boxes for each building may be ganged within the right-of-way, or a master meter may be provided. Manifolding of meters may only be permitted with the City Engineer's approval, and each meter shall have its separate backflow preventer.

### **III. Commercial Fire Sprinkler and Hydrant Mains**

In accordance with Section 28-17 of the City Code, all buildings shall be provided with an approved automatic fire sprinkler system. The Fire Department requires the use of internally-developed standard drawings, plan notes, and plan review guides. Please refer to these standards and the International Fire Code, as adopted and supplemented by City Code, for the design of site improvements.

Office/recreation building sprinkler systems shall be designed and installed in accordance with NFPA 13. The sprinkler line shall be installed in accordance with Fire Department Details FD102 or FD103, with a public fire hydrant located within 150' of the FDC, on the same side of the entrance drive, so that fire hoses would not block the drive.

A separate fire hydrant supply line, if required by International Fire Code requirements, shall be looped throughout the site independent of the sprinkler line so that the hydrant line would not be pressurized when a pumper truck is connected to the FDC.

These dedicated water distribution systems shall be separated from the public water system with double check valves per Fire Department standard details unless chemicals are added to the system then a reduced pressure principle valve will be required. See Fire Department Detail FD102 for a dedicated sprinkler system, and Fire Department Detail FD103 for the dual fire hydrant/sprinkler configuration. Fire protection flows are not metered by the City, but for the case of onsite fire hydrants, the double check assemblies shall include flow detection meters to monitor for illicit water use.

All valves on the sprinkler line shall be post-indicating (PIV) per the Fire Department detail in Fire Department Details FD102 and FD103. Each building shall have a valve close to the point of entry to the building, unless the Fire Department is provided access to a riser control valve within the building. See Fire Department Detail FD105. Where the sprinkler line is looped for multiple buildings, the sprinkler line shall have at least one PIV at the midpoint for sectional control. PIVs shall be labeled in accordance with FD104.

Site fire hydrants shall be painted Type 2 color coded black and yellow per Fire Department Detail FD121. Locking caps on the operating nut are not required. Red pavement markers for locating hydrants shall be installed per Fire Department Detail FD131. Fire hydrant tees require only one valve, flanged to the tee, unless the fire hydrant installation is also serving as a stub-out. Additional isolation valves are required at approximately 600-foot intervals or when pipe runs longer than 800 feet are encountered.

### **IV. Landscape**

The City offers tiered water rates for landscape service connections. The designer may elect to provide a separate service.

Landscape tracts must be approved with services of a size as determined by a landscape architect and must be shown on the civil plans.

These water systems shall be separated from the public water system with a reduced pressure principle assembly per standard detail C-311.

Pipe sleeves are required for service lines extending under roadway pavement within the right-of-way. Sleeves shall consist of a ductile iron pipe conduit, 2 nominal diameters larger than the service line.

The City offers reclaimed water for landscaping water for properties south of Pecos Road. Please refer to Section 4 Reclaimed Water Distribution System below, and the Reclaimed Water Use Agreement.

### **3) Wastewater Collection System**

#### **A. Jurisdictional Agency Approval**

All sewer lines shall be designed in accordance with Arizona Administrative Code, Title 18, Chapter 9, Article 3, Part E, Type 4 General Permits: §R18-9-E301.401 Sewage Collection Systems and the current City *Wastewater Master Plan*. Plans shall bear the approval signature of the Maricopa County Department of Environmental Resources prior to approval by the City. Requests for letters of Approval to Construct shall be routed to the City Engineer through Civil Plan Review.

Refer to the AAC, MAG Section 610.5, and MAG Detail 404 for separation requirements for protection against possible contamination.

Refer to City Code Chapter 51 Wastewater Services for City requirements regarding wastewater service.

The *Wastewater Questionnaire* which characterizes the waste flows must be submitted with non-residential building permit applications.

#### **B. Easement Requirements**

All sewer lines shall be placed in either the public right-of-way or within a dedicated easement. The minimum easement width is 16 feet, with the entire easement free of property lines, boundary walls, and other obstructions for its entire length and width. Joint water and sewer line easements shall be 24 feet wide, with eight feet of separation between the lines.

Sewer lines are not allowed in retention basins unless the City Engineer authorizes the use of a concrete cap over the pipe bedding.

#### **C. Construction Plan Requirements**

All plans shall be prepared and signed by a registered professional engineer.

Plans shall be submitted on 24" x 36" sheets. The plans shall be drawn to an engineering scale with 1" = 20' and 1" = 40' as the preferred horizontal scales. The vertical scale need not differ from the horizontal scale by a precise factor of 10. Water, sewer and paving plans may all be shown on the same plan sheets, if a horizontal scale no smaller than 1" = 20' is used.

All sewer lines and utility crossings shall be shown in both plan and profile views.

Project datum shall be NAVD 88 with equations to legacy City Datum NGVD 29 and any as-built plans that affect the project. The nearest City CMCN benchmark shall be utilized for establishing City Datum.

The engineer shall incorporate into the plans the latest copy of the construction *Sewer Notes*.

### D. Design Flows

All sewer lines shall be designed to provide a minimum peak flow velocity of 2.0 feet per second and a maximum velocity of 10.0 feet per second based on full flow and Manning's equation with a minimum roughness coefficient, "n" factor, of 0.013 for all pipe materials.

The minimum slope requirement for eight (8) inch diameter sewers from an upper confluence point to the final terminal reaches shall be 0.52% to maintain a velocity of 2.5 feet per second based on full flow pipe conditions. The length of 8" line at the 0.52% slope shall be from that point of confluence to the uppermost service tap.

When sewage flow approximations are necessary the values given in the following tables shall be used, unless more accurate information is available. Refer to Arizona Administrative Code R18-9-E301.

#### WASTEWATER SERVICE FACTORS:

Type of Service	Average Daily Flow (gallons/person)	Peak Daily Flow (gallons/person)	Peak Factor
Domestic Use	100	300	3.0

Type of Service	Average Daily Flow	Units
Theater	5	gallons/seat/day
Retail	1	gallon/square foot/day
Restaurant	30	gallons/day/seat
Hotel/Motel	130	gallons/room/day
Schools (with lunch & shower facilities)	75	gallons/student/day
Schools (without lunch & shower facilities)	50	gallons/student/day
Other	100	gallons/person/day
Industrial & Commercial	1300	gallons/acre/day

## POPULATION FACTORS

Type	Number of People/Dwellings
Single Family (SF)	3.3
Patio Homes (PH)	3.1
Multi-Family (MF)	2.8
Mobile Homes (MH)	2.4

Note: The maximum number of dwellings in a square mile section is 3,000.

### **E. Pipe Materials**

Refer to the *List of Approved Materials* for acceptable pipe products. Pipe bedding shall conform to Detail C-402. The City Engineer may permit the use of PVC at depths greater than 10' if the maximum trench width provisions of MAG Section 601.2.2 can be certified by a registered professional engineer for the extent of that pipe, considering the soil classification at that depth, the project contract plans and specifications, and utilization of special construction observation.

PVC pipe sized greater than 15" in diameter is not allowed.

All pipe trenches shall contain locator wire and identification tape in accordance with Detail C-408.

### **F. Gravity Sewer Lines**

#### **I. General**

Pipe bedding shall conform to MAG specifications. Pipe installation shall conform to the City of Chandler Standard Detail C-402. Pipe locator wire and ID tape shall be provided in accordance with Detail C-408.

All sewers and 6" sewer services shall be vactored (or approved equal) and inspected for debris and videotaped prior to final acceptance. Pipe deflections greater than one inch shall not be allowed. Video tapes shall be submitted to the City wastewater collections department. Manholes shall be vacuum tested per ASTM C1244-93, Standard Test Method for Concrete Sewer Manhole by the Negative Air Pressure Test Prior to Backfill.

Curved sewer lines are not allowed without specific City Engineer approval.

#### **II. Public Sewer Lines**

Public sewer lines shall be a minimum of 8-inches in diameter with a minimum cover of 5 feet.

Sewer lines are required within half streets when the south or west one-half is being constructed, providing that a tributary area exists. The tributary area can either be the development itself or a separate sewer

service area that is sewerred through the development. To minimize street cuts, every manhole in undeveloped areas shall have stub-outs to the edge of the street right-of-way.

Where public utility easements are platted, sewer service connections shall be extended eight feet beyond street right-of-way lines to clear all facilities to be installed in public utility easements .

Sewers constructed in arterial streets must be sized in accordance with the Wastewater Master plan. The minimum size for stub-outs at the one-half and one-quarter section lines is 12 inches in diameter. All other stub-outs shall be a minimum of 8 inches in diameter and located to serve adjacent properties. On other than arterial streets, minimum size for stub outs shall be four inches for residential, and six inches for commercial uses.

If a model home area is a part of the development project, sewer lines must, as a minimum, be constructed from the point of out fall up to and including the first manhole upstream from the model area.

In the case of phased development, each successive phase shall provide sufficient sewers to service all of the areas tributary to the phase.

All public sewer lines shall be placed in either the public right-of-way in accordance with Details C-200, C-201, and C-202 or in a dedicated easement.

Manholes and sewer pipe alignment shall be located out of the vehicular wheel paths of arterial and collector streets.

The standard location for sewer lines within the public right-of-way is in the center of a driving lane on the south and west side of the street as shown in the Standard Specifications and Details manual. Generally, sewer lines shall only be permitted to cross and re-cross the street centerline for short distances, providing that the sewer line maintains a clear distance of 3 feet or more from the lip of gutter on the south and west side of the street. Encroachment of more than 4 feet past the street centerline will generally not be allowed.

### **III. Private Sewer Lines**

Developers of commercial and industrial projects are required to complete a Wastewater Discharge Questionnaire.

Wastewater meters are installed for commercial or industrial projects that consume large quantities of water, as determined by the City Engineer, thereby reducing monthly sewer charges.

Private sewer lines are not allowed within the right-of-way or public utility easements. All manholes on private sewers shall have covers stamped to read "Private Sanitary Sewer".

In addition, private sewer lines 8 inches in diameter and larger are required to include a plan and profile.

Any construction materials allowed under the International Plumbing Code are permitted except High Density Polyethylene Pipe (HDPE).

Cleanouts installed at intervals not to exceed 100 feet are permitted in lieu of the manhole spacing requirements given in this manual. The cleanout spacing requirements are given in Section 708 of the International Plumbing Code.

Construction of sewer lines is not allowed under retention basins without permission from the City Engineer. Should construction under a retention basin be allowed a concrete cap shall be installed over the sewer.

Sewer lines constructed within flood zones or near or adjacent to flood-irrigated areas or retention basins must have water-tight manhole covers as per MAG Standard Detail 423.

### **G. Force Mains**

Refer to the *List of Approved Products* for acceptable pipe materials.

Sewage pump stations shall conform to the requirements of ADEQ Engineering Bulletin No. 11, Chapter IV, C.2 Design Flows for calculating the peaking factors for low volume flows based on population. All sewage pump station wet wells shall include approved coatings. Pump stations are not allowed without approval of the City Engineer.

### **H. Manholes**

All manholes shall be 5-foot diameter with 30-inch diameter covers. All manholes shall be the precast type as detailed in MAG Standard Detail 420 modified without steps.

All manhole frames and covers shall be adjusted per MAG Standard Detail 422.

All manholes on sewers 18 inches and larger in diameter or in arterial streets shall include corrosion-protective coatings or shall have stand-alone fiberglass-reinforced polyester inserts. Refer to the *List of Approved Products* for corrosion-protective coatings and inserts.

Manholes shall be sprayed with a pesticide coating. Refer to the *List of Approved Products* for manufacturers.

A manhole is required wherever the sewer changes grade, size, alignment, or intersects another sewer. Where sewer lines of differing sizes enter the same manhole, the smaller sewer lines shall not have their crowns lower than the crown of the largest pipe. All manholes shall have sewer intersections between 90° and 180° inclusive. Manholes with sewer lines intersecting at angles between 90° and 120° shall have a minimum 0.10-foot drop across the manhole. In interceptor and larger sewers, inverts at junctions shall be designed to maintain the energy gradient across the junction and to prevent backflow.

The maximum allowable manhole spacing is 400 feet for sewer lines between 8 inches and 15 inches in diameter. Sewers 18 inches in diameter and greater shall have manhole spacing of 600 feet. A cleanout may be installed in lieu of a manhole at the end of a lateral sewer eight inches in diameter, or less, provided that the distance from the cleanout to the nearest manhole does not exceed 150 feet.

## **I. Service Connections**

Service taps may be connected to the manholes on the sewer line. Service tap inverts shall be above the crown of the sewer main. All abandoned sewer service taps shall be capped. Service connections 8 inches and larger shall be made only at a manhole on the main.

All sewer taps shall be the wye type per MAG Standard Detail 440 'A' and sized according to the minimum tap size table, below. All connections to existing sewer mains shall be accomplished by machine tapping, utilizing a PVC saddle, or by construction of a manhole. Taps on mains 15 inches and larger shall be installed directly into a manhole with no more than four taps in a single manhole.

MINIMUM SERVICE TAP SIZES

Type	Pipe Size (inches)
Residential	4
Multi-Family	6
Industrial	6
Commercial	6

Direct service taps may not be installed on sewers 15-inch and larger. However, a manhole may be constructed on an interceptor or larger sewer, and then a lateral sewer line may be installed. The lateral sewer line extension will terminate upstream in a manhole. Direct service taps then may be installed on the upstream lateral.

All sewer taps should be 4 1/2 feet deep at property line. To raise the tap from the mains deeper than 16 feet, refer to Detail C-410.

An inspection manhole shall be installed on any service tap or private sewer line when determined necessary by the City Engineer. Water Quality Department shall determine if a sampling manhole is required.

## **4) Reclaimed Water Distribution System**

### **A. Jurisdictional Agency Approval**

All reclaimed water lines shall be designed in accordance with Arizona Administrative Code, Title 18, Chapter 9, Article 6: §R18-9-602 Pipeline Conveyances of Reclaimed Water and the current City Wastewater Master Plan. Plans shall bear the approval signature of the Maricopa County Department of Environmental Resources prior to approval by the City. Requests for letters of Approval to Construct shall be routed to the City Engineer through Civil Plan Review.

Refer to the AAC, MAG Section 610.5, and MAG Detail 404 for separation requirements for protection against possible contamination.

Refer to City Code Chapter 53 Reclaimed Water Services for City requirements regarding reclaimed water service. Please also refer to the *Reclaimed Water User's Manual*.

### B. Volume Considerations

Large volume users (greater than 250,000 gallons per day) may be required to construct storage lakes and utilize a service connection in accordance with Detail C-405. Refer to the specifics of the *Reclaimed Water Use Agreement* for project conditions. Small volume users shall utilize a service connection in accordance with Detail C-404.

The following figure provides a guide of the estimated maximum pressures of the reclaimed water distribution system. Minimum pressures are estimated in the range of 25 to 30 psi. The design professional is responsible for confirming system pressure criteria with City staff.

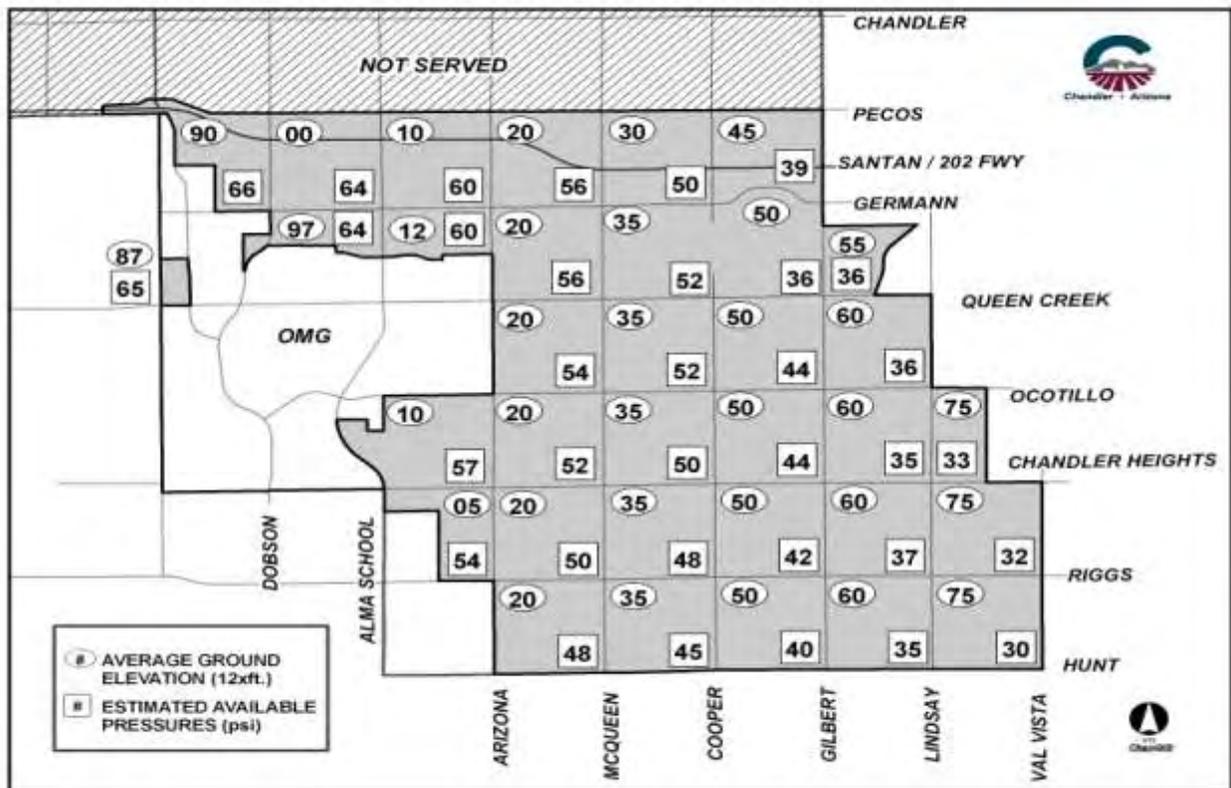


Figure 2 Estimated Maximum Pressure (psi)

### **C. Location**

All public reclaimed water lines shall be installed in locations per City of Chandler Standard Detail C-200, C-201 and C-202 unless otherwise determined by the City Engineer. They shall have a minimum of 7 feet cover.

### **D. Acceptable Pipe Materials and Construction Requirements**

Pipe shall consist of approved types in accordance with the *List of Approved Products* and shall be identified as reclaimed in accordance with MAG Section 616.4. Ductile iron pipe shall be utilized under streets.

Construction shall conform to MAG Section 616.

Service connections shall be isolated from the public distribution system by reduced pressure principle backflow assemblies located at the right-of-way line in accordance with Detail C-404.

All pipe trenches shall contain locator wire and identification tape in accordance with Detail C-408.

### **E. Reclaimed Water Lines**

Public reclaimed water mains shall be 12 inches in diameter on arterial streets, and eight inches otherwise unless otherwise indicated in the City's Reclaimed Water Master Plan.

Tees shall be spaced at a distance no greater than 1/4-mile. Crosses shall be installed at the intersection of arterial streets.

All laterals shall be a minimum of 8 inches in diameter. Laterals shall extend past the edge of existing pavement.

Two valves shall be required on each tee (other than service stubs) and three valves shall be required on each cross.

Valve box installations shall conform to City of Chandler Standard Detail C-406. In areas not subject to wheel loading, the concrete ring installations shall also conform to City of Chandler Standard Detail C-317.

No valves shall be located in sidewalk or ramp areas. All valves must be stationed on the plans. Valve nuts shall have a bar welded so as to require a modified tool to operate.

Existing services shall be abandoned by exposing the tap at the main and closing the corporation stop.

Refer to the *Reclaimed Water Use Agreement* for specific design details regarding backflow prevention and on-site storage requirements.

### **F. Construction Plan Requirements**

Reclaimed lines 4" and larger in diameter shall be shown within the civil plan submittal. All plans shall be prepared and signed by a registered professional engineer.

Plans shall be submitted on 24" x 36" sheets. The plans shall be drawn to an engineering scale with 1" = 20' and 1" = 40' as the preferred horizontal scales. The vertical scale need not differ from the horizontal scale

by a precise factor of 10. Water, sewer and paving plans may all be shown on the same plan sheets, if a horizontal scale no smaller than 1" = 20' is used.

All reclaimed lines and utility crossings shall be shown in both plan and profile views.

Project datum shall be NAVD 88 with equations to legacy City Datum NGVD 29 and any as-built plans that affect the project. The nearest City CMCN benchmark shall be utilized for establishing City Datum.

The engineer shall incorporate into the plans the latest copy of the construction *Reclaimed Water Notes*.

**G. Reclaimed Water Service Conversion Process**

The following is an outline of the process to convert a potable water irrigation service to reclaimed.



## Reclaim Water Service Conversion Process

Applicant	<p><b>Discuss site and plan conversion requirements with City Staff</b></p> <p>Municipal Utilities Department: Jackson Kellso 480 782-3709</p> <p>Transportation &amp; Development: Daryl Racz 480 782-3336</p> <p>Transportation &amp; Development: Jason Richardson 480 782-3141</p>
Applicant	<p>Submit:</p> <p>Encroachment permit application</p> <p>County-approved irrigation plan and approved to construct permit</p> <p>Approved Maricopa County ATC permit</p> <p>Signed City of Chandler Application for the Use of Reclaimed Water</p>
Transportation & Development Staff	Route reclaim agreement to MUD for processing

Municipal Utilities Staff	<p>Approve Reclaim Agreement</p> <p>Send blank ADEQ Type Two Permit with attachments to user with signed agreement</p> <p>Send notice to Transportation &amp; Development to issue encroachment permit</p>
Transportation & Development Staff	<p>Issue encroachment permit. Attach:</p> <p>Street cut approval if applicable</p> <p>Copy of COC Std. Detail No. C-404 Reclaim Turnout and Water Service Detail No.C-301 if applicable</p> <p>Approved County irrigation plans</p>
Applicant	Pay permit fee \$97.00 + service line/tap inspection
Transportation & Development Staff	Possible reclaim buy in assessment for connection to reclaim water mains
Municipal Utilities Staff	Verify possession of Agreement, ATC, and County Type 2 Reclaim Permit
Municipal Utilities Staff	Cross connection test report and acceptance of reclaim system
Applicant	Upon acceptance of reclaim conversion, submit a request in writing to the Transportation & Development Department (Daryl Racz) for refund of applicable water impact fees on converted potable water meter(s)
Transportation & Development Staff	Refund applicable water impact fees to HOA or original permit applicant

## H. Reclaimed Water User's Manual

### INTRODUCTION

The use of reclaimed water for non-potable uses such as irrigating landscaped areas and filling artificial lakes helps conserve Chandler's drinking water supplies. Additionally, reclaim water use provides a renewable source of water, which also conserves Chandler's groundwater supplies.

It is important for the user of reclaimed water to understand that, while the use of reclaimed water is beneficial in many respects, care must be taken to protect public health and the environment when using reclaimed water. This manual provides a guide to information on the requirements related to the use of reclaimed water. It is intended to help ensure each reclaimed water user understands their responsibilities in using this resource.

Additionally, reclaimed water users should read Chandler City Code Sections 35-1903 and 1903.1 relating to City landscaping requirements and Chapter 53, of the Chandler City's Code. These documents identify the City's responsibilities; the reclaimed water user's responsibilities; and the engineering and construction requirements for system operation and maintenance of reclaimed water systems. Users should also familiarize themselves with other applicable regulations regarding the use of reclaimed water. Additional information can be found on the following website locations:

[http://www.azsos.gov/public\\_services/Title\\_18/18-09.htm](http://www.azsos.gov/public_services/Title_18/18-09.htm) Article 7

[http://www.azsos.gov/public\\_services/Title\\_18/18-11.htm](http://www.azsos.gov/public_services/Title_18/18-11.htm) Article 3

While it is hoped that this manual will assist reclaimed water users understand their responsibilities regarding the use of reclaimed water within the City of Chandler, each reclaimed water user is ultimately responsible for complying with all applicable regulations regarding such use.

### CONTENTS

1. Description and map of the reclaimed water service area.
2. Procedures for applying for reclaimed use.

### APPENDICES

- A. Application to Use Reclaimed Water
- B. Reclaimed Water Checklist



## 2. APPLICATION PROCEDURES FOR RECLAIMED USE

Application: Applicants are required to submit an application available from this document that will allow the City to ensure the proposed reclaimed water use is consistent with state and local regulations. The City will also use the information, provided in the application, to determine the availability of reclaimed water to meet the applicant's request and the feasibility of delivering reclaimed water to the applicant's site.

This application must be completed by the applicant requesting reclaimed water service and submitted to the City's Planning Department. See Appendix A.

Agreement: Once the City determines it is feasible to deliver reclaimed water to the applicant, the applicant will be contacted to enter into an Agreement with the City.

Regulations: The Arizona Department of Environmental Quality (ADEQ), Maricopa County, and City Municipal Code regulate reclaimed water use. The user is responsible for compliance with all applicable rules, and regulations.

**APPENDIX A**  
**CITY OF CHANDLER**  
**APPLICATION TO USE RECLAIMED WATER**

**INTRODUCTION**

The purpose of the Reclaimed Water Application is to allow the City to evaluate the reclaimed water supply availability to meet the request for reclaimed water and to evaluate if the reclaimed water use requested is consistent with State and local regulations regarding reclaimed water.

The City will evaluate the application and determine the feasibility of delivering reclaimed water to the site for the use(s) indicated. Within 30 days after receipt of this Application, the City will inform the applicant if providing reclaimed water is feasible and, if it is, direct the applicant to prepare plans and specifications for submittal to the City.

Details regarding the construction plans are addressed in Chapter 53 of the Chandler City Code. The Applicant is urged to review Chapter 53 of the Chandler City Code and to become familiar with applicable State and local requirements prior to the delivery of reclaimed water.

**RECLAIMED WATER USER AGREEMENT**

ADEQ regulations require that the producer of reclaimed water (the City) enter into an enforceable contract with the entity to whom it provides reclaimed water for use. A form agreement will be issued upon approval of the application. It is important for the Reclaimed Water User to understand that, while the use of reclaimed water is beneficial in many respects, care must be taken to protect public health and the environment. To ensure that these requirements are observed, the City, the Arizona Department of Environmental Quality (ADEQ), and Maricopa County Department of Environmental Services (MCDES) are authorized by law and/or contract to inspect the construction and, periodically, the ongoing operation of the onsite reclaimed water system.

The Reclaimed Water User must apply and manage the reclaimed water in accordance with all regulatory and contractual requirements. Failure to comply with all applicable laws and regulations for the reuse of reclaimed water could result in termination of the agreement, fines, and/or damages.

**CITY OF CHANDLER**

**APPLICATION FOR THE USE OF RECLAIMED WATER**

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

Application Submitted by: \_\_\_\_\_

Representing: \_\_\_\_\_

Applicant must be either a principal executive officer or ranking elected official.

Applicant name: \_\_\_\_\_ Title: \_\_\_\_\_

Representing: \_\_\_\_\_

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

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_

Phone Number: \_\_\_\_\_

Site Owner/Operator name: \_\_\_\_\_

Site Name: \_\_\_\_\_

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

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_

Contact Person: \_\_\_\_\_ Phone Number: \_\_\_\_\_

Type of Development: \_\_\_\_\_

Conversion of Existing System (Explain) \_\_\_\_\_

\_\_\_\_\_

Planned uses and estimated sizes of areas where Reclaimed Water will be used.

Check all that apply.

Use Area Size (Acre) Use Area Size (Acres)

Golf Course \_\_\_\_\_

Other, (specify) \_\_\_\_\_

School Ground \_\_\_\_\_

Parks \_\_\_\_\_

**Please provide a list with tree type  
and count and the turf and groundcover  
acreage for this project.**

Lakes \_\_\_\_\_

Cemetery \_\_\_\_\_

Site Location (major crossroads, general legal description, latitude and longitude, size)

**Attach an 8 ½" X 11" site plan and vicinity map:**

---

---

Date that reclaimed water is desired \_\_\_\_\_

Estimated annual reclaimed water requirement at build out (million gallons) \_\_\_\_\_

Estimated monthly reclaimed water requirement at build out (million gallons) \_\_\_\_\_

Estimate peak hourly flow at build out (in gpd) \_\_\_\_\_

If development is phased, estimate of initial annual and monthly reclaimed water demand (million gallons)

and peak hourly flow (gpm). \_\_\_\_\_ (Annual) \_\_\_\_\_ (Monthly) \_\_\_\_\_ (Peak Hourly Flows)

**FOR CITY OF CHANDLER USE ONLY**

Reviewed by: \_\_\_\_\_ Date: \_\_\_\_\_

**Development Services**

Reviewed by: \_\_\_\_\_ Date: \_\_\_\_\_

**Water / Wastewater**

Mailing Address  
Mail Stop 406  
P.O. Box 4008

Transportation & Development Department  
Telephone (480) 782-3128  
TDD (480) 782-2999

Location  
215 E. Buffalo St Suite 106  
Chandler, AZ 85255

**APPLICANT CERTIFICATION**

I hereby certify that the above information is correct and that I am authorized to file an application on said property, being either the owner of record or authorized to file on behalf of the owner.

SIGNATURE: \_\_\_\_\_ DATE: \_\_\_\_\_

PRINT OR TYPE NAME: \_\_\_\_\_

POSITION TITLE: \_\_\_\_\_

## Appendix B

<b><u>CHECKLIST</u></b>	<b>Yes</b>	<b>No</b>	<b>Date</b>
1		Acquired an application for reclaimed water when attending the Transportation & Development Services Pre-Tech Subdivision Review Meeting	
2		Is the following information provided with the application:	
a		Major Crossroads?	
b		General Legal Description?	
c		Latitude & Longitude for the center of the Project?	
d		Shrub and Groundcover Landscape Area in Acres?	
e		Turf Area in Acres?	
f		Tree Type and Count?	
g		Site Plan on an 8 <sup>1</sup> / <sub>2</sub> " X 11" sheet of paper?	
h		Vicinity Map on an 8 <sup>1</sup> / <sub>2</sub> " X 11" sheet of paper?	
i		Point of Contact information to include Phone #, e-mail and mailing address?	
3		Has Maricopa County been contacted to identify the requirements for an Approval TO and OF CONSTRUCT? Contact phone # is (602) 506-6414	
4		Upon approval of the application has an agreement been forwarded, signed and returned? Contact Phone # (480) 782-3701	