



Graywater Overview

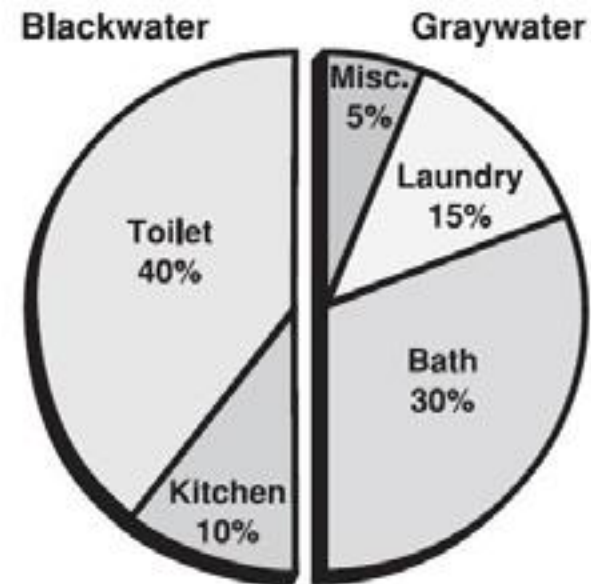
Grow Green Landscape Professional Training Series

July 21, 2015

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Austin Water

What is Graywater?

- Untreated wastewater from bathtubs, showers, lavatories and laundry
- Benefits:
 - Potential savings of 40-90 gpd
 - Sustainable onsite water reuse
 - Reduces pressure on wastewater infrastructure
 - Reliable source for irrigation during drought




Regulatory requirements

- TCEQ Regulations (TAC Chapter 210, Subchapter F)
 - Connected to public wastewater system
 - Approval not required for domestic use under 400 gal/day
 - Originates from a private residence
 - Diversion to wastewater system
 - Tanks labeled, access restricted, pest habitat eliminated, cleanable
 - Does not create a nuisance or damage water quality
- City of Austin Regulations (2012 UPC Chapter 16 & City Code §25-12-153)
 - Level, sturdy, durable tank
 - Connections to drain or sewer
 - Non-potable labeling & coloring
 - Subsurface, subsoil and mulch basin irrigation
 - Backflow protection required for pressurized systems

Permit requirements

- Required for all graywater systems
- Homestead permit available for Lawn to Laundry Systems
- New Auxiliary Water Permit sub-work type available



Auxiliary Water System Permit Application
Special Services Division 3907 South Industrial Drive, Suite 100, Austin, TX 78744
 (512) 972-1060 www.austintexas.gov/department/special-services-division
AWUCrossConnection@austintexas.gov

Property Address: _____		Zip Code: _____
Contact Name: _____		Phone Number: (____) _____
Mailing Address: _____		
City: _____	State: _____	Zip Code: _____
Email: _____		

Type of Auxiliary Water on site (check all that apply):		
<input type="checkbox"/> Condensate	<input type="checkbox"/> Gray Water	<input type="checkbox"/> Ground Water
<input type="checkbox"/> Lake/River	<input type="checkbox"/> Reclaimed	<input type="checkbox"/> Rainwater
<input type="checkbox"/> Re-Irrigation	<input type="checkbox"/> Spray Aerobic (OSSF)	<input type="checkbox"/> Well
<input type="checkbox"/> Other (please describe): _____		

Distribution Method (check one):		<input type="checkbox"/> Gravity	<input type="checkbox"/> Pumped
Does the Auxiliary Water enter the building?		<input type="checkbox"/> Yes	<input type="checkbox"/> No
Is potable water used for makeup?		<input type="checkbox"/> Yes	<input type="checkbox"/> No

Usage (check all that apply):			
<input type="checkbox"/> Car Wash	<input type="checkbox"/> Cooling Tower	<input type="checkbox"/> Irrigation	<input type="checkbox"/> Toilet/Urinal Flushing
<input type="checkbox"/> Trap Primer	<input type="checkbox"/> Process Water	<input type="checkbox"/> Water Feature	
<input type="checkbox"/> Other (please describe): _____			

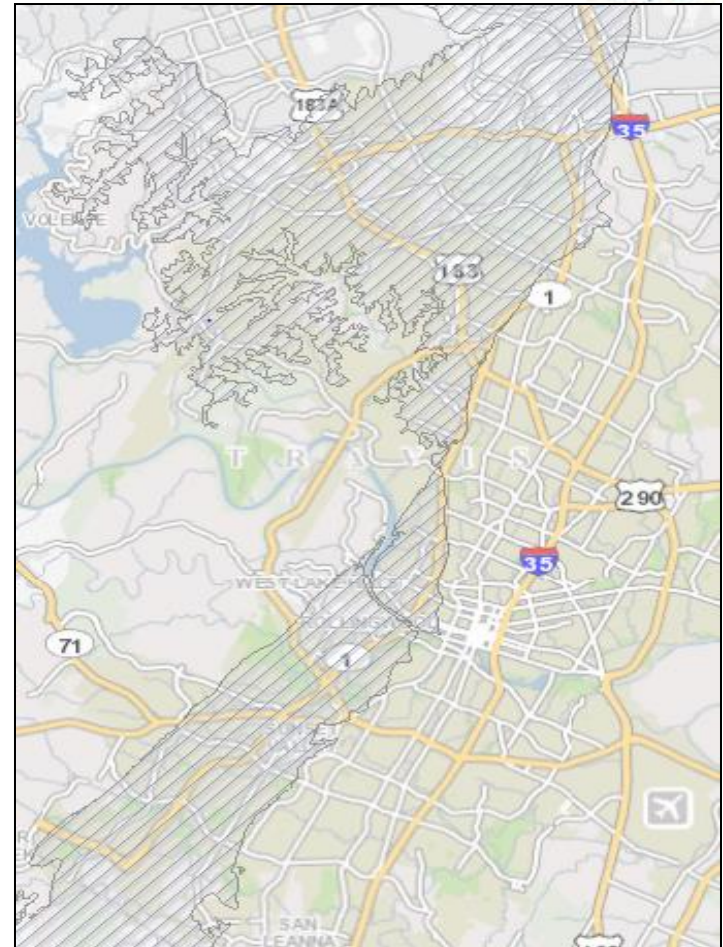
Print Name: _____ Date: _____

Signature: _____

FOR OFFICE USE ONLY			
Received by: _____			Date: _____
Entered by: _____			Date: _____
Status: <input type="checkbox"/> Approved	<input type="checkbox"/> Rejected	<input type="checkbox"/> Withdrawn	
Notes: _____			

Prohibited Locations

- 1602.6 Prohibited Location:
 - Where there is insufficient lot area or inappropriate soil conditions for adequate absorption to prevent the ponding, surfacing, or runoff of the gray water.
 - A gray water system is not permitted in the Edwards Aquifer Recharge Zone or in any other geologically sensitive area.



Setback requirements

- Main concerns related to structures, adjoining property, septic tanks, and potable water lines
- Measured from system to structure
- Could be greater due to special hazards and circumstances

TABLE 1602.4
LOCATION OF GRAY WATER SYSTEM⁷

MINIMUM HORIZONTAL DISTANCE IN CLEAR REQUIRED FROM	SURGE TANK (feet)	SUBSURFACE AND SUBSOIL IRRIGATION FIELD AND MULCH BED (feet)
Building structures ¹	5 ^{2,9}	2 ^{3,8}
Property line adjoining private property	5	5 ⁸
Water supply wells ⁴	50	100
Sewage pits or cesspools	5	5
Sewage disposal field ¹⁰	5	4 ⁵
Septic tank	0	5
On-site domestic water service line	5	5
Pressurized public water main	10	10

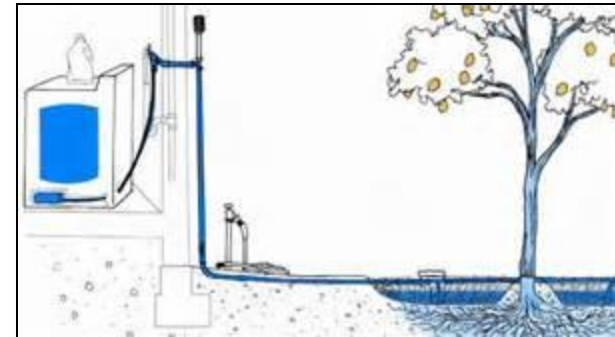
System types

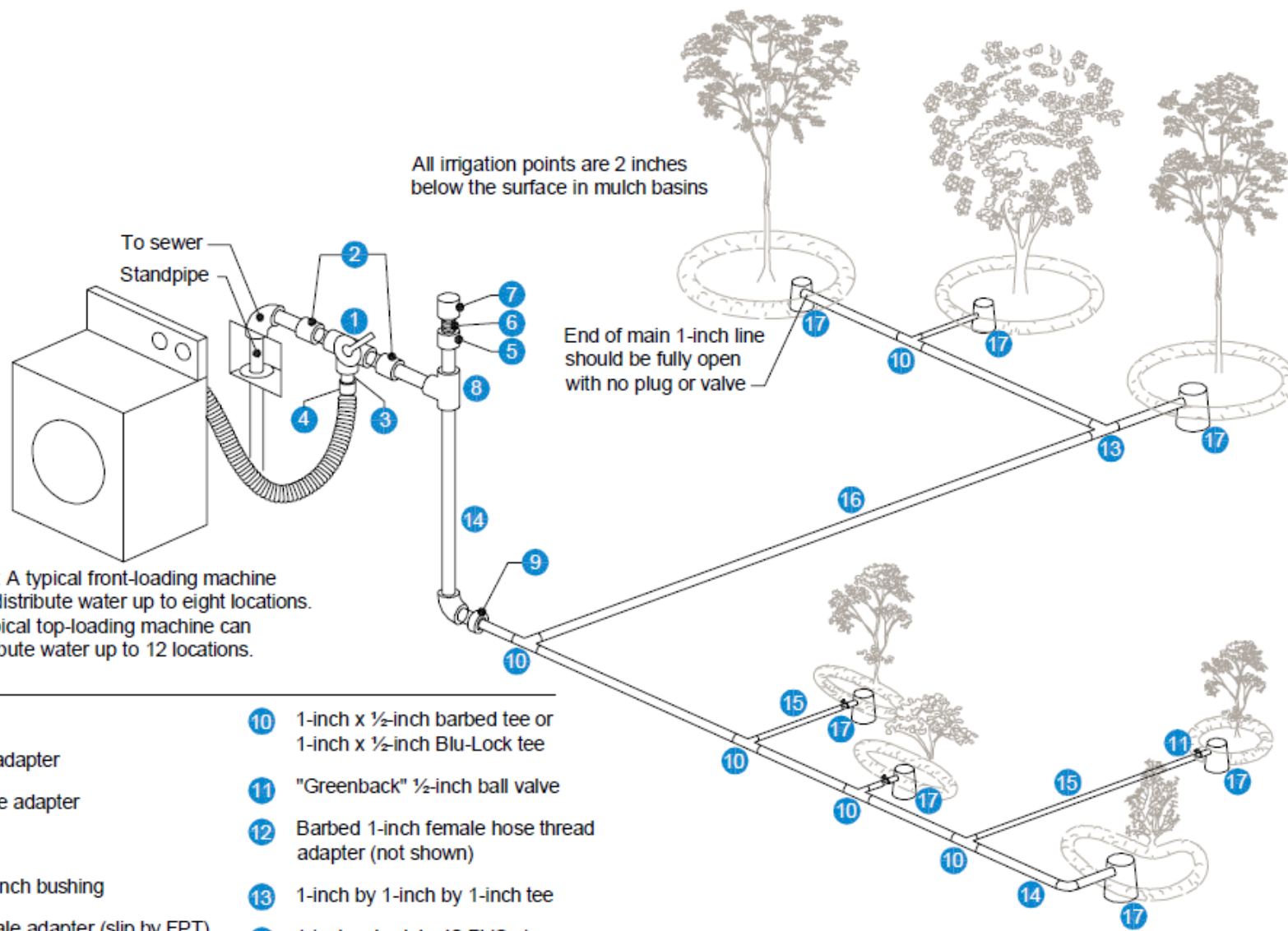
- Laundry to Landscape
- Branched drain
- Gravity fed
- Pressurized



Laundry to Landscape

- Simple design
- Single Source (Washing Machine)
- Low cost
- Tankless
- Homestead permit available
- Only available for private one and two family dwellings





All irrigation points are 2 inches below the surface in mulch basins

End of main 1-inch line should be fully open with no plug or valve

Note: A typical front-loading machine can distribute water up to eight locations. A typical top-loading machine can distribute water up to 12 locations.

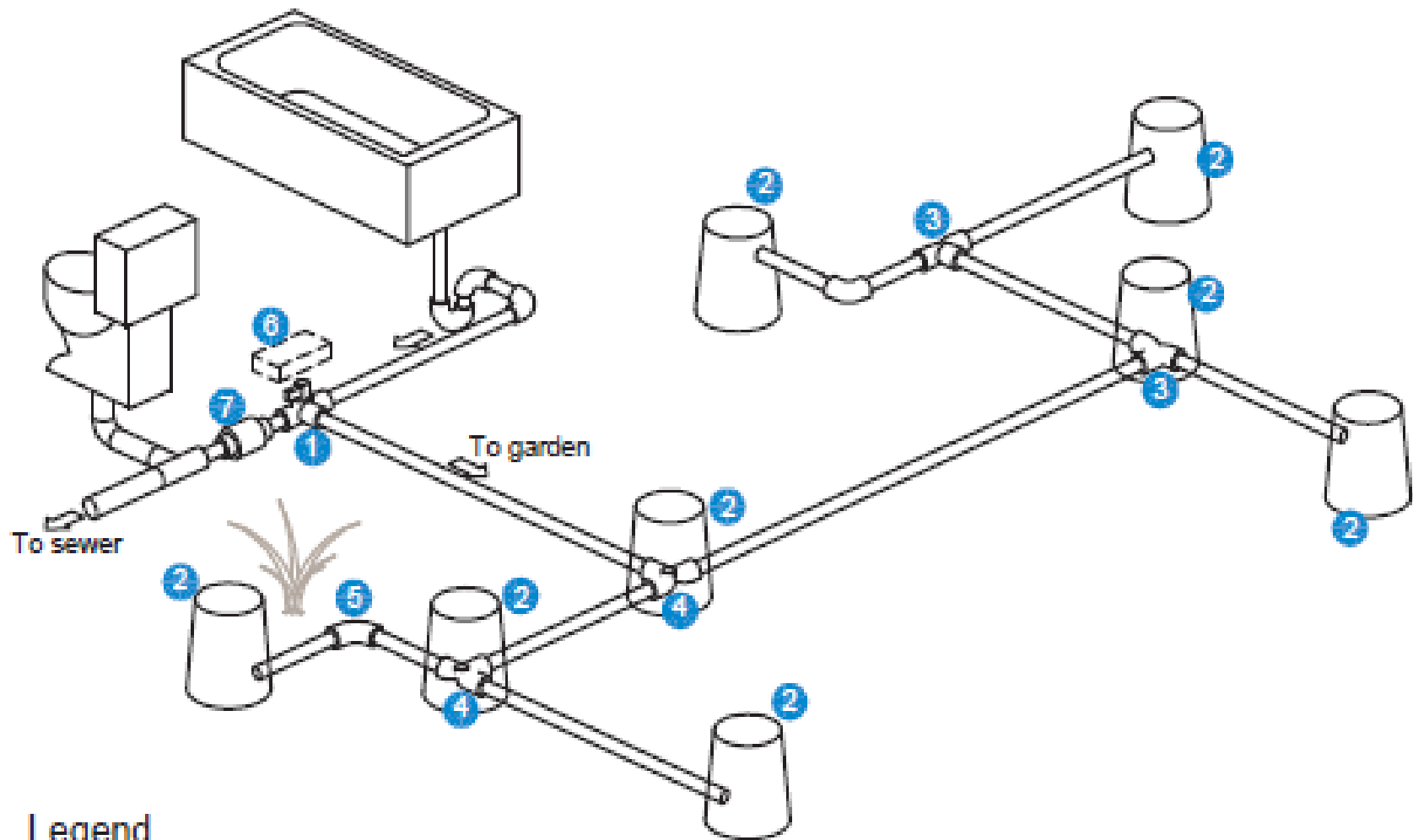
Legend

- | | |
|---|---|
| 1 3-way valve | 10 1-inch x 1/2-inch barbed tee or 1-inch x 1/2-inch Blu-Lock tee |
| 2 PVC 1-inch male adapter | 11 "Greenback" 1/2-inch ball valve |
| 3 1-inch barbed male adapter | 12 Barbed 1-inch female hose thread adapter (not shown) |
| 4 Hose clamp | 13 1-inch by 1-inch by 1-inch tee |
| 5 PVC 1-inch x 1 1/2-inch bushing | 14 1-inch schedule 40 PVC pipe |
| 6 PVC 1 1/2-inch female adapter (slip by FPT) | 15 1/2-inch poly tubing |
| 7 Auto vent (or air admittance valve) | 16 1-inch HDPE tubing |
| 8 1-inch PVC tee | 17 Mulch shield or valve box |
| 9 1-inch barbed x slip adapter | |

Branched

- Complex design
- Multiple sources
- Higher cost
- Requires a tank
- Requires professional design and installation
- Available for all dwellings and sectors
- Larger yield





Legend

- | | | | |
|---|--|---|--------------------------------|
| 1 | 3-way diverter valve | 5 | 1.5" or 2" long sweep 90° bend |
| 2 | Small valve box or rigid plastic pot | 6 | Optional 3-way valve actuator |
| 3 | ABS 1.5" or 2" double ell (aka twin 90) | 7 | Backwater valve |
| 4 | ABS 1.5" or 2" double ell (aka twin 90) with inspection/clean-out port | | |

Distribution methods

- End-use is an important consideration
- Graywater should not be allowed to pool or pond
- Three distribution methods available
 - Subsoil
 - Subsurface
 - Mulch Basin



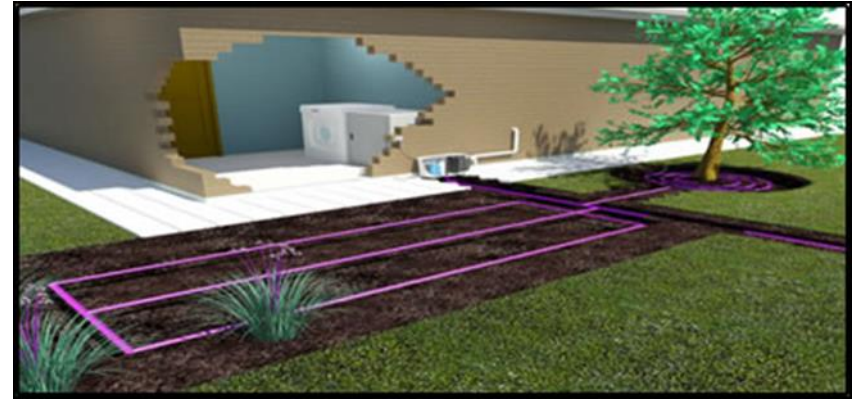
Subsoil

- Distribution piping not less than 3" in diameter
- Good choice for established shrubs
- 10" minimum distribution depth
- Single zone allowed
- Irrigation field requires sizing per soil type and distribution
- Available for all dwellings and sectors



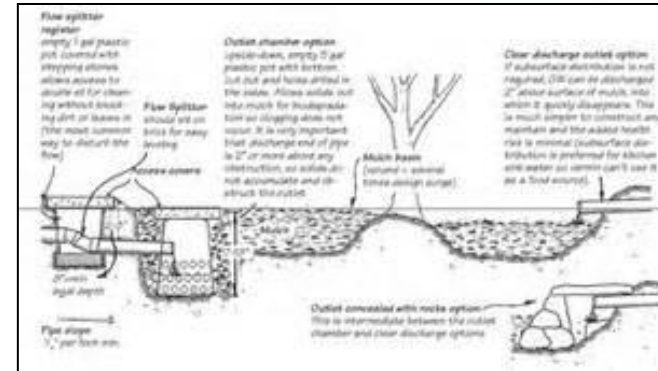
Subsurface

- 2" minimum distribution and supply line depth
- Best for planting beds or turf irrigation
- Single zone allowed
- Irrigation field requires sizing per soil type and distribution
- Available for all dwellings and sectors



Mulch Basin

- Only available for single family and multi-family dwellings
- Depth of basin not less than 10"
- Supply piping no less than 2" in diameter
- Good choice for larger established trees and shrubs
- Basin sizing dependent on soil type and distribution volume



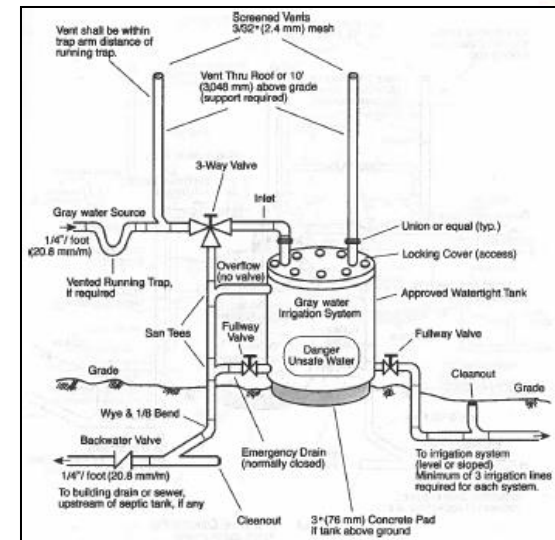
Commercial Graywater Uses

- Commercial process use
- Cooling tower make up supply
- Toilet flushing
- Trap Primers
- Alternate uses can be approved by Plumbing Officials
- Treatment required for most non-irrigation uses



Surge Tanks

- Required for most systems
- Must have overflow connected to Sanitary Sewer System
- Constructed of a durable material
- Should not be stored for more than 24 hours
- Sized to accommodate peak flow



Graywater Looking Forward

- New State Legislation
- Austin specific guidance under development
- Potential Plumbing Code adjustments



Graywater Resources

- Austin Water Conservation Division – (512) 974-2199
- Austin Water Special Services Division (512) 972-1260
- City of Austin Permit Center – (512) 978-4000
- Austin Water’s Graywater homepage –
(austintexas.org/department/water-conservation)
- Oasis Designs* (oasisdesign.net)
- Greywater Action* (greywateraction.org)
- San Francisco Graywater Design Manual* (sfwater.org)

***Check with local regulations when referring to guidance not specific to Austin**



Questions?

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