Agenda item 5e

MEMORANDUM

To: Mayor and Council Members

From: Greg Meszaros, Director, Austin Water

CC: Marc A. Ott, City Manager
Robert D. Goode, P.E., Assistant City Manager
Sue Edwards, Assistant City Manager
Daryl Slusher, Assistant Director, Austin Water
Drema Gross, Division Manager, Austin Water, Water Conservation
Greg Guernsey, Director, Planning and Development Review
Leon Barba, Assistant Director, Planning and Development Review

Date: July 2, 2012

Subject: Response to Resolution 20120126-047 relating to Residential Graywater

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Executive Summary

Resolution Number 20120126-047 directs the City Manager to work with the Graywater Working Group and other stakeholders to identify impediments to single-family residential graywater system implementation and tasks the City Manager with making recommendations on alleviating impediments related to the following four charges:

1. the exploration of the feasibility of code amendments and make recommendations, inclusive of both retrofitting and new construction;
2. a permitting and approval process for graywater systems;
3. a technical guidance document, with recommendations for the Environmental Criteria Manual; and
4. a program for staff support of graywater systems, potentially housed in the Austin Green Building Program, including recommendations on trainings, resources, and incentives and/or rebates for participation.

City staff from various departments, coordinated through Austin Water's Conservation Division, held a series of discussions with the Graywater Working Group to fulfill these charges. The appendix contains a list of impediments to residential graywater identified through those discussions, along with staff recommendations for code amendments and process changes. Staff continues to work with stakeholders on the remaining charges in the resolution. Consistent with the Council resolution and the number of departments which the issue involves, recommendations for technical guidance

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documents and a staff support program are scheduled to be presented to Council by next spring.

Citizens and staff identified thirteen impediments to residential graywater systems and recommend an approach to relieve those concerns. The majority of these concerns can be addressed by:

- Adoption of certain applicable provisions of the 2012 Uniform Plumbing Code (UPC),
- Establishing a permit and permit process for auxiliary water systems, and
- Coordinating information about graywater through one City department.

It is staff's recommendation to proceed with adoption of those sections of the 2012 UPC that appear to ease the permitting of graywater systems through the typical code review and adoption process, with consideration of any local amendments deemed necessary to ensure protection of the public water supply or address other local concerns. Many of the regulations that are considered impediments are in place to ensure against contamination of the drinking water system from cross connections. Consequently, it is critical to maintain safeguards while seeking to make the gray water regulation process less cumbersome and more easily understood. Considering regulatory changes as part of the traditional UPC process will allow a variety of stakeholders and staff to participate in a deliberative public process, which includes board and commission review.

Additionally, Austin Water has issued a request for proposals seeking a consultant to assess risks and regulations related to all auxiliary water sources, and compare Austin regulations to those of other cities, states and countries. It is expected that this will generate specific recommendations for changes in regulations, including local amendments to the UPC. Proposals are in and staff is in the evaluation stage of the process.

Recommendations for a permit process are included in the following document, and staff has already begun working on the necessary programming changes to develop an auxiliary water permit through the One Stop Shop. It is further recommended that the Water Conservation Division of Austin Water be the primary source for information about graywater systems, and that other departments link to an information clearinghouse for graywater systems on the Austin Water website to ensure consistency.

Should you have any questions or comments, please do not hesitate to contact me.

APPENDIX

Definitions

For purposes of this document, **residential** is intended to mean one and two-family dwellings. It does not include multi-family properties.

Graywater is defined as water captured from laundry, lavatory and bath uses, and does not include water from kitchen sinks, toilets, or clothes washers used to clean soiled diapers.

Auxiliary water is a general term for non-potable water sources that may include well water, raw water, rainwater, graywater, air conditioner condensate and reclaimed water.

Reclaimed water is the term used to describe the highly treated (Type I) wastewater effluent supplied by Austin Water for irrigation and limited indoor uses.

Identified Graywater Impediments and Recommendations

City staff representing Austin Water Utility, Planning and Development Review, Watershed Protection, Health and Human Services and the Office of Sustainability met with stakeholders in the Graywater Working Group to identify impediments to residential graywater implementation within the City of Austin. Following is the list of impediments identified by the group that are potentially within the City's control, as well as staff recommendations for next steps in alleviating those impediments.

In many cases, requirements that are perceived to be impediments are in place for a specific reason, such as protecting public health or environmental features. In some cases, further review or clarification from regulatory agencies will be necessary to determine whether changes to current requirements may be allowed or desirable.

1. **More than one City office for guidance and information**

   Under current processes, individuals seeking a plumbing permit that involves an auxiliary water system of any type must first go to the One Stop Shop (OSS) in the Planning and Development Review Department. There is currently no formal submittal and review process for graywater systems installed in one and two family residences. A citizen may be issued a permit, install a system that does not meet City regulations, and face costly redesign work to come into compliance with code. To help alleviate this, the Planning and Development Review Department started an interim procedure of referring citizens who wish to install auxiliary water systems, including graywater, to staff in the Building Inspection Division. The Building Inspection staff will consult with the applicant prior to permit issuance and notify Austin Water Utility's Special Services Division (SSD). Staff from SSD are located in a different building and request that applicants meet with them for an informal plan review and discussion of the proposed system and requirements. Development Review staff based out of OSS conduct field inspections during construction and final inspections.

Recommendation #1: Coordinate all permit processes through OSS so that the applicant has one point of contact, and coordinate all information about design requirements, helpful tips and cost/benefit of residential graywater through Austin Water's Conservation Division. Other departments should link to, rather than copy or reprint, information from Water Conservation to ensure one single, up-to-date message to the public.

2. **Required depth of leach field distribution piping**

Currently, the minimum required depth to the top of the leach field distribution piping is 12 inches per the chart referenced in the 2009 Uniform Plumbing Code (UPC), Chapter 16, Part 1, Section 1611.0. The Batchelder permitted system (the first permitted graywater system in the City of Austin) reduced the depth to the top of the leach field distribution piping to 4 inches, which allowed for graywater distribution closer to the effective root zone of the landscaping while still containing the maximum calculated discharge under the soil surface. This system leach field design was permitted by the Planning and Development Review Department as allowed by Section 1612.0(A) of the 2009 UPC as locally adopted. However, because there is no guidance as to which alternate methods of compliance may be acceptable to inspectors, many citizens feel the requirement stated in the code is an impediment to less costly designs. There is no state requirement related to any minimum depth for graywater leach field distribution piping. The 2012 UPC, although not currently adopted, has a minimum requirement of 2 inches to the top of the leach field distribution piping for subsurface irrigation fields per Chapter 16, Section 1602.11.1.1 and mulch basins per Chapter 16, Section 1602.11.2.3. The 10-inch trench depth is retained in the 2012 UPC as it relates to subsoil systems per Chapter 16, Table 1602.11.3.

Recommendation #2: Adopt applicable sections of the 2012 UPC with no additional local amendments relating to leach field depth. Post information on how to calculate leach field requirements on Graywater Information section of Water Conservation website (with links from other departments as appropriate).

3. **Type of material required in trenches**

The 2009 UPC allows clean stone, gravel, slag, or "similar filter material acceptable to (the City)" as the fill material for the leach field trenches per Chapter 16, Part 1, Section 1611.0(B). Gravel and other similar material are a typical drainage fill materials because they are easy to compact, provide drainage without absorption and possess structural longevity. The Batchelder permitted system uses a mulch basin instead of a subsoil irrigation field comprised of filter material in an effort to facilitate line replacement when clogged and to allow for the distributed graywater to remain closer to the effective root zone of the landscaping due to the absorptive capacity of the mulch. This mulch basin system was permitted by the Planning and Development Review Department as allowed by Section 1612.0(A) of the 2009 UPC as locally adopted. However, because there is no guidance as to which alternate methods of compliance may be acceptable to inspectors, many citizens feel the requirement stated in the code is an impediment to less costly designs. There is no state requirement related to trench fill material. The 2012 UPC allows for mulch basin

and mulch-covered subsurface irrigation field designs per Chapter 16, Section 1602.11.

Recommendation #3: Adopt applicable sections of the 2012 UPC with no additional local amendments limiting trench materials. Post information on benefits/concerns about various trench materials on Graywater Information section of Water Conservation website (with links from other departments as appropriate).

4. **Requirement of multiple zones for the system**

Current City of Austin plumbing code requirements state that you must have at least three zones on any permitted gray water system per the 2009 UPC, Chapter 16, Part 1, Section 1607.0. A single zone would simplify the design and reduce the cost associated with the current system. There is no state requirement related to multiple zones for graywater systems. The 2012 UPC requires a minimum of one drain line per valved zone according to Chapter 16, Table 1602.11.3.

Recommendation #4: Adopt applicable sections of the 2012 UPC with no additional local amendments relating to required number of zones.

5. **Container requirement**

There are multiple regulations related to holding tank configuration under current City of Austin plumbing code requirements per the 2009 UPC, Chapter 16, Part 1, Section 1609.0, Subsections A-I. Tables 16-1 through 16-4 provide design schematics for 4 types of systems; a gravity based system, a pumped system, a multiple tank system and an underground pumped system; all provided examples incorporate tanks into the system. Additionally, Texas Administrative Code, Chapter 210.83, Section A, Subsection 3, Lines A-E prescribe container requirements, as does Texas Administrative Code, Chapter 210.25, Sections A-I. The current container requirement adds to the additional cost of the system, contributes to the septic like build of the system and becomes a barrier to certain biological filtration designs. The 2012 UPC does not require a holding tank (surge tank) for systems that are able discharge the total estimated amount of graywater on a daily basis per Chapter 16, Section 1602.2.2; however, systems that are unable to fully discharge the daily estimated graywater amount must install a surge tank in accordance with Chapter 16, Section 1602.9.1.

In response to questions from the stakeholder group, Austin Water sought clarification of the container requirement from TCEQ. TCEQ clarified that a tank is required even in cases where the graywater system is designed to discharge completely on a daily basis. This is to ensure that the graywater is properly stored even when the soil in the discharge area is saturated. Additionally, TCEQ confirmed that the volume within a graywater system's piping may not be used to fulfill the container requirement.

Recommendation #5: Proceed with adoption of applicable sections of the 2012 UPC, incorporating local amendments to address TCEQ container requirements; consider whether to seek amendments to TCEQ rules relating to containers.

6. **Cost issues related to septic-type build of 2009 UPC Chapter 16 design requirements**

In many aspects the currently required graywater systems design mimics many of the design requirements for On-Site Sewage Facilities (OSSF). OSSFs are commonly referred to as Septic Tanks. Examples of similarities between the two systems include holding tanks, leach fields, perforated piping and multiple zone requirements. Some of the similarities are a result of both current state and local regulations related to graywater (holding tank) while other similarities are a result of local requirements only (leach fields, multiple zones, perforated piping). While some of these requirements are in place to address potential environmental, public health and public safety concerns, the similarities between the two system requirements do increase the overall cost of the graywater system. Chapter 16 of the 2012 UPC does provide some potential relief from a few of the similarities relaxing the requirements for the holding tank and multiple zones.

Recommendation #6: Adopt applicable sections of the 2012 UPC with local amendments relating to specific build types where required to ensure systems comply with State regulations.

7. **Cross connection and backflow requirements**

Currently, the City of Austin requires a reduced pressure zone backflow prevention assembly (RPZ) at the meter for any service connection with auxiliary water, including graywayer, on the property. This is intended to protect the public water supply from any contamination by non-potable sources. Depending on system design, additional protections may be required by the City at possible connection points on the system itself and elsewhere on the property or its physical structures to protect the on-site potable water supply. These requirements add to the initial project cost, and require annual testing and inspections at an additional cost. State code requires additional protection at the meter in the form of an air gap or backflow prevention assembly only when an actual or potential hazard exists *and* the utility does not have an adequate internal cross-connection program.

Recommendation #7: As part of the regular process to adopt the City's plumbing code, adopt applicable sections of the 2012 UPC with consideration of local amendments to address concerns about potential hazards. Backflow protection requirements are not limited to residential graywater use. Since amendments could potentially apply to other types of auxiliary water use at both commercial and residential properties, it is important to consider backflow protection requirements in a broader context. Austin Water has issued an RFP for a consultant who will be tasked with assessing risk and proposing revisions to the City's auxiliary water regulations. The analysis conducted as part of that effort should be considered when developing any local amendments.

8. **Customer Service Inspection (CSI) requirements**

Customer Service Inspections (CSI) are independent of the annual backflow inspection and intended to identify potential cross connections between the potable and non-potable water systems. TCEQ rules require CSIs for new construction, major plumbing work, and when a contamination hazard is believed

to exist. City regulations require cross connection inspection and testing upon installation of a pressurized auxiliary water source, including graywater, used to supply a private pressurized water system inside or outside a building on a site served by City potable water. City regulations also provide that a periodic (other than annual) inspection of auxillary water systems, including graywater, may be approved by the City, with the frequency based on system complexity, exposure for modifications, hidden or visible piping, hazardous materials used or stored, history of compliance, etc. In practice, the City generally requires auxiliary systems to undergo annual inspection. This additional inspection contributes to the overall cost of the system as well as reoccurring fees for the life of the system.

Recommendation #8: As part of the regular process to adopt the City's plumbing code, adopt applicable sections of the 2012 UPC with consideration of local amendments to address concerns about potential cross-connections. Austin Water has issued an RFP for a consultant who will be tasked with assessing risk and proposing revisions to the City's auxiliary water regulations. The analysis conducted as part of that effort should be considered when developing any local amendments, and should include recommendations relating to the frequency of required CSIs.

9. **Lack of access to, communication about, and clarity of design requirements and definitions**

In general, citizens feel that there is unclear information about what is required of a graywater system both in terms of code requirements and City communication about those requirements. For homeowners interested in using graywater, the lack of clarity about minimum system requirements, alternative methods of compliance, and what is or is not allowable creates a significant barrier. Additionally, there are a number of technical terms that may be unclear to the general public or used in different ways by different City departments, adding to confusion.

Recommendation #9: Coordinate all information about design requirements, links to relevant codes and definitions of terms relating to residential graywater through Austin Water's Conservation Division. Other departments should link to, rather than copy or reprint, information from Water Conservation to ensure one single, up-to-date message to the public. The City's practice and requirement is to provide a current copy of the adopted Austin Plumbing Code at the City Clerk's Office. Provide citizens a general summary about City requirements for graywater systems, which should include information on any requirements for professional design, leachfields, backflow and cross-connection prevention, and specific Code and regulatory references for plumbers or other design professionals.

10. **Requirement for engineered design**

Currently, the 2009 UPC, Chapter 16, Part 1, Section 1601.0, Subsection A, requires that all graywater systems be designed by a person registered or licensed to perform plumbing design work. The City adopted this requirement to ensure that persons with professional liability and familiar with current plumbing regulations design the graywater systems in order to minimize the potential for incorrectly or poorly designed systems from being installed. Currently, the City's building official

requires that graywater systems be designed by a Professional Engineer licensed in the State of Texas to ensure that design criteria are met. There is no state requirement related to a professional graywater design. The 2012 UPC does not require a person registered or licensed to perform plumbing design work for systems having a maximum discharge of 250 gallons per day according to Chapter 16, Section 1601.2, Exception 3.

Recommendation #10: Adopt applicable sections of the 2012 UPC, and establish procedures that require additional information to be submitted with a permit application in the form of an auxiliary water addendum. No plan review would be required for residential one and two family dwellings systems designed by a master plumber licensed with the state of Texas. A master plumber licensed with the state of Texas would be required to permit and install the system, therefore, depending on the scope of work, a plan review may not be required.

11. **Lack of a clearly defined permit process specific to graywater**

Under current City regulations, no permit process exists specific to graywater or any auxiliary water system. A citizen or the installer must obtain a plumbing permit to modify plumbing on the property and install the required reduced pressure zone device (RPZ). As a stop-gap measure, staff have developed the informal review process described in item #1. As this process is evolving and crosses departments, there is a lack of clear information for applicants who enter the OSS and ask specifically about graywater. This results in applicant frustration, the potential for confusion or misinformation, and the potential that an owner may circumvent City processes.

Recommendation #11: Establish permit process for auxiliary water systems that is additional to any plumbing or building permits required, and which ensures moderate fees for residential graywater applications. Ensure that additional information is submitted with a permit application in the form of an auxiliary water addendum and reviewed by OSS staff prior to permit issuance. Applicants indicating that they meet one or more of the critical conditions as identified by City staff (distance from critical environmental features, intent to connect to a potable water supply, etc.) would receive plan review by affected departments prior to permit issuance.

12. **Lack of technical plan review prior to permit issuance**

Residential building and plumbing permits do not currently have a process for technical review of plans prior to installation. While an interim process to offer a review has been developed by PDR and SSD, the lack of a formal review can mean that an applicant installs a system that does not meet City requirements. Modifying the system to pass inspection can add significant costs to a project, and increases the staff time spent on multiple visits and corrective action.

Recommendation #12: Offer courtesy plan review upon request; require plan review when a submitted auxiliary water addendum indicates a critical condition as defined by City staff, and/or for Homeowner/Homestead permits.

13. Limited access to technical guides and codes

Specifications and design guidelines for graywater systems are outlined across several different codes, including Texas Administrative Code, the Utility Criteria Manual, local amendments to the plumbing code, and the 2009 Uniform Plumbing Code (UPC). While the first three items are available online, the UPC is available only by purchase through the publisher, and (in limited quantities) for checkout or review at public libraries. There is currently no document or guidance listing all sections of these codes which may be applicable or useful to those designing graywater systems.

Recommendation #13: Coordinate all information about design requirements, links to relevant codes and definitions of terms relating to residential graywater through Austin Water's Conservation Division. Other departments should link to, rather than copy or reprint, information from Water Conservation to ensure one single, up-to-date message to the public. The City's practice and requirement is to provide a current copy of the adopted Austin Plumbing Code at the City Clerk's Office. Provide citizens a general summary about City requirements for graywater systems, which should include information on any requirements for professional design, leachfields, backflow and cross-connection prevention, and specific Code and regulatory references for plumbers or other design professionals.

Graywater Permit Process

The adopted 2009 Uniform Plumbing Code (UPC) Chapter 16, Part 1, Section 1603.0 requires a permit for all residential graywater systems installed in one-and-two family dwellings regulated by the currently adopted 2006 International Residential Code. This requirement is currently satisfied with the issuance of a plumbing permit; however, the lack of a separate auxiliary water plumbing permit has led to confusion by city staff and citizens regarding the need for a permit during the installation of certain auxiliary water systems, including graywater.

A plan review process and a plumbing permitting process currently exist and are enforced for all auxiliary water systems that are regulated under the 2009 International Building Code. This includes all structures other than a one-and-two family dwelling.

The installation of auxiliary water systems in a one-and-two family dwelling is voluntary under the 2009 Uniform Plumbing Code. There is currently no anticipated change of this requirement under the adoption of the 2012 Uniform Plumbing Code.

Staff has been working on development of an auxiliary water plumbing permit process for several months, and expects to complete modifications to the AMANDA system that would enable implementation by the end of calendar year 2012.

The intent of the proposed auxiliary water plumbing permit is to ensure that citizens are aware of regulations on the front-end of the process and to make clear to citizens that certain auxiliary water systems, including residential graywater systems, do require a permit. The proposed permit would further allow a single point of contact for the applicant and coordinate the interests of multiple City departments charged with

protection of areas that may be affected by auxiliary water systems, including the public water system, critical environmental features, and public health and safety.

Staff from Austin Water, Planning and Development Review, and Watershed Protection have been involved with the development of the proposed permit, which follows the traditional permitting process. An applicant would apply for an auxiliary water plumbing permit at the One Stop Shop, and provide additional information in the form of an "auxillary water addendum." Staff would then review the information in the application to determine if a permit is necessary, and whether the auxiliary water plumbing permit may be issued immediately or require further review. Further review will likely be required when the application:

- Does not include plans stamped by a licensed professional engineer or is not designed and installed by a state of Texas Master Plumber, whose license has been registered with the City of Austin.
- Exceeds specified capacities (likely 250 gallons per day);
- Indicates a location in proximity to a critical environmental feature (such as in the Barton Springs/Edwards Aquifer zone);
- Indicates an intent to connect to the potable water system; or
- Includes non-standard design elements.

While no residential plan review processes exist for other permits, a review could help citizens avoid costly reworking of systems that are found to be non-compliant during the inspection process including a final plumbing inspection. The "critical conditions" identified will trigger review by the specific department charged with oversight of that area. The presence of multiple conditions may trigger reviews by multiple departments before the application is returned to the applicant as approved or denied. In cases of permit denial, the applicant will be provided the reason for denial along with a contact in the affected department for further information. All information during the review process will be coordinated by One Stop Shop through the AMANDA system.

Memorandum to Austin City Council
External Stakeholders' Working Group
Gray Water Recommendations

September 20, 2012

To: Mayor Leffingwell

Council Member Riley

Council Member Martinez

Council Member Tovo

Council Member Morrison

Council Member Spelman

Council Member Cole

From: External Stakeholders of the Gray Water Working Group:

Gayle Borst, LEED AP BD+C, Architect and President/CEO of Stewardship, Inc.; Executive Director of Design~Build~Live

Kirby Fry, Owner, Southern Exposure

Paige Hill - Executive Director, Urban Patchwork Neighborhood Farms + Designer, Landscape and Alternative Systems at Ground Swell

Chris Maxwell-Gaines, P. E., Owner, Innovative Water Solutions

Lauren Ross, Ph. D., P. E. Environmental Engineer and President of Glenrose Engineering, Inc.

Amanda Van Epps, PhD Candidate in Civil Engineering, The University of Texas at Austin

Introduction

Every day each Austin resident generates about 70 gallons of wastewater. Even though more than half of this wastewater is relatively clean and safely reusable, all of it gets pumped to Austin's treatment plants, processed with oxygen and chemicals and discharged to the Colorado River. As External Stakeholders we have been working with the City to develop policies, ordinances, and educational information to allow and encourage Austin residents to reuse this gray water. Gray water reuse can nourish our gardens, reduce fire and foundation cracking risks, and sustain irreplaceable urban forests. Gray water reuse can preserve lake levels and river flows. Its reuse also

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reduces electricity used to pump and treat both water and wastewater; and the associated carbon footprint and greenhouse gases.

Domestic gray water use in the landscape can be an important part of a water conservation strategy, now and into the future. Gray water diversion into single-family and duplex landscapes can provide a safe, significant source of water, as demonstrated by a long nationwide history without a single case of health threat documented by the Centers for Disease Control. Toward that end, the External Stakeholders of the Gray Water Working Group offer this memorandum to document our recommendations based on our discussions of the last few months; and the collective wisdom of more than half a century of water engineering and design experience.

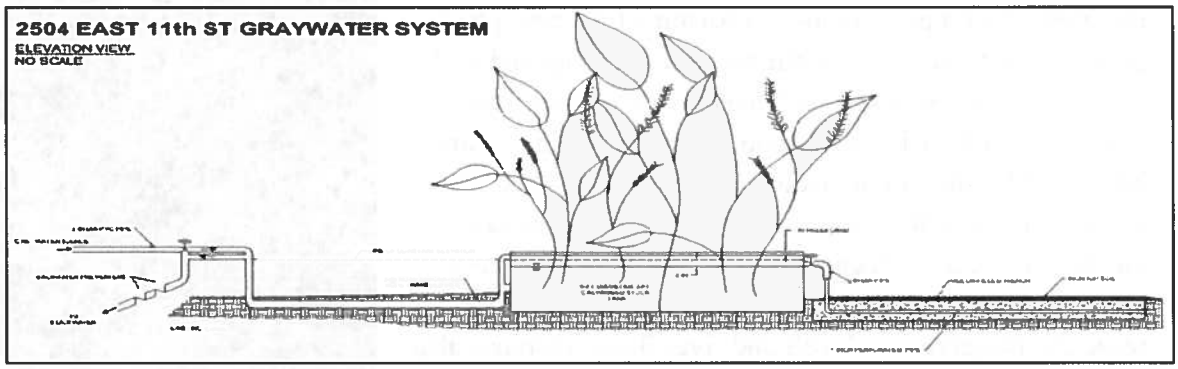
This memorandum includes

- Our Goals;
- Recommended Amendments to the Gray Water Portions of the 2012 Uniform Plumbing Code;
- Comments on Staff Recommendations; and
- Additional Recommendations.

Our Goals

Wide-scale residential gray water reuse in Austin requires a simple permit process for single family or residential duplex systems meeting these criteria:

- The amount of gray water is not more than 250 gallons per day;
- Gray water is reused on property where it is generated;
- The gray water system is designed and installed without the use of a pump (all flow conveyance is by gravity flow);
- The gray water system meets all relevant requirements of Chapter 16 of the 2012 Uniform



Plumbing Code, as amended by the sections below; and

- The gray water user provides on-going management for the system.

We propose that a gray water system meeting the requirements described above would be legal in the City of Austin without Reduced Pressure Zone (RPZ) or annual cross connection inspection.

A reasonable process to allow these systems, combined with education and incentives, will support safe, water-conserving systems rather than illegal "maverick" systems that may fail.

Recommended Local Amendments to the Gray Water Portions of Chapter 16, Alternate Water Sources for Nonpotable Applications, of the 2012 Uniform Plumbing Code (Uniform Plumbing Code)

The City of Austin has begun the process of adopting the 2012 Uniform Plumbing Code (UPC) to replace the current 2009 code. The Mechanical, Plumbing and Solar Board of the City of Austin is expected to begin to accept public input on the new code at their next meeting.

The 2012 Uniform Plumbing Code is substantially improved in the area of gray water requirements over the 2009 code. Nevertheless, changes to the 2012 UPC are necessary to allow simple, safe, and environmentally-protective gravity-flow gray water systems in Austin.

1. Table 1601.5 Minimum Alternate Water Source testing, Inspection and Maintenance Frequency. Eliminate the requirement for an annual cross-connection inspection (also known as a Customer Service Inspection) and test for gravity flow systems installed with an air gap. Cross-connection inspection for these systems would be required only: 1) as part of initial installation; 2) when a plumbing permit for alteration of the water supply system is authorized at a gray water residence; or 3) when a new utility customer applies for a water or wastewater permit at a gray water residence.
2. Section 1602.4 Location. Distribution of gray water would be allowed across property lines where both properties are owned or under the control of the same person or entity.
3. Section 1602.6 Prohibited Locations. Gray water distribution would be prohibited over outcrop areas of the Edwards or Georgetown limestone unless a minimum of three soil test pits demonstrate a minimum of 2 feet soil depth in all three pits. Gray water distribution would be prohibited within 50 feet of the edge of any stream bank, bedrock outcrop, recharge features,

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or Critical Environmental Features, as defined by City of Austin LDC.

4. Section 1602.7 (4) Exception –Table 1602.10 could be used in lieu of percolation tests. We believe the reference to Table 1602.4 is an error.
5. Table 1602.10. Because of the limited water treatment afforded by coarse sand or gravel, soils meeting these descriptions could not be used for gray water irrigation. Change "Sandy clay" in the table to "Sandy clay or Clay loam".
6. Table 1602.11.2.3. Gray water may be released above the ground surface provided at least two inches of mulch, rock, or soil, or a solid shield covers the release point. Other methods which provide equivalent separation are also acceptable.

Comments on Staff Recommendations

On July 2, 2012, Greg Meszaros submitted a memorandum of thirteen impediments in the City of Austin to residential gray water systems; and staff's recommendations. While the External Stakeholders commend the Staff's work, however, and generally agree with the majority of their recommendations, we offer the following additional comments:

1. **More than one facility for guidance and information**

   External Stakeholders concur with Staff recommendation to centralize the permitting process from the perspective of the permit applicant.

2. **Required depth of leach field distribution piping**

   External Stakeholders concur with Staff recommendation *and recommend the following local amendment to the 2012 Uniform Plumbing Code:*

   "Section 1602.11.2.3. *Gray water may be released above the ground surface provided at least two inches of mulch, rock, or soil, or a solid shield covers the release point. Other methods which provide equivalent separation are also acceptable."*

   Note that material in trenches is covered in #3 below.]

3. **Type of material required in trenches**

   External Stakeholders concur with Staff recommendations.

4. **Requirement of multiple zones for the system**

   External Stakeholders concur with Staff recommendations.

5. **Container requirement**

   External Stakeholders concur with Staff recommendations,

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with the following addition:

The 2012 Uniform Plumbing Code requires a surge tank only when systems are unable to accommodate peak flow rates by gravity drainage. The 2012 Uniform Plumbing Code also requires an accessible valve that allows the gray water flow to be switched from the landscape distribution system to the sanitary drainage system (sewer or septic tank) at any time.

With a requirement for this ability to redirect gray water, the sanitary sewer or septic system, in effect, replaces the need for a surge tank to prevent soil saturation. We recommend that the City present this option to TCEQ as alternate compliance. The sewer/septic as "backup" is far preferable to storing gray water – Best practices preclude holding gray water, where it can become fetid.

6. **Cost issues related to septic-type build of 2009 Uniform Plumbing Code Chapter 16 design requirements**

   External Stakeholders concur with Staff recommendations. We request that the City quickly adopt the 2012 Uniform Plumbing Code as a basis for permitting affordable and cost-effective gray water systems in Austin.

7. **Cross connection and backflow requirements**

   While the External Stakeholders generally agree with Staff recommendations, we recommend a simple permit process based on 2012 Uniform Plumbing Code compliant gray water systems. External Stakeholders request that the City authorize permits for simple, gravity-flow gray water systems without requirements for a reduced pressure zone (RPZ) backflow prevention assembly and annual cross-connection inspection. These requirements may be appropriate auxiliary water systems that use a pump to pressurize water. They are unnecessary and inappropriate, however, for gravity-flow water supply systems with virtually no mechanism for contaminating the public supply.

   The cost and inconvenience of the RPZ requirements vastly outweigh any public health benefits. These factors will discourage almost all Austin residents from participating in a City permitting process. Some of these residents will proceed with unpermitted gray water systems, which is certainly more risky than a licensed gray water system without RPZ.

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8. **Customer Service Inspection (CSI) requirements**

   External Stakeholders support a consultant review of appropriate regulations for pressurized gray water and other auxiliary water supply systems. Gray water systems that use gravity flow for conveyance, however, represent no threat to the City's potable water supply. External Stakeholders request that the City eliminate the annual Customer Service Inspection requirement for gravity flow gray water systems, as expressed in the following proposed local amendment to the 2012 Uniform Plumbing Code:

   Table 1601.5 Minimum Alternate Water Source testing, Inspection and Maintenance Frequency. Eliminate the requirement for an annual cross-connection inspection (also known as a Customer Service Inspection) and test for small, gravity-flow gray water systems as described in "Proposed Near-term Strategy" of this document. Cross-connection inspection will be required only as part of initial installation; when a plumbing permit for alteration of the water supply system is authorized at a gray water residence; and when a new utility customer applies for a water or wastewater permit at a gray water residence.

9. **Lack of access to, communication about, and clarity of design requirements and definitions**

   External Stakeholders Comment – The general summary for citizens noted in the Staff recommendation should be of sufficient detail so as to include all requirements of the 2012 Uniform Plumbing Code and local amendments (and interim policy, as applicable) without the need to reference the actual documents.

10. **Requirement for engineered design**

    External Stakeholders concur with Staff recommendations.

11. **Lack of a clearly defined permit process specific to graywater**

    External Stakeholders concur with Staff recommendations.

12. **Lack of technical plan review prior to permit issuance**

    External Stakeholders concur with Staff recommendations.

13. **Limited access to technical guides and codes**

    Copies of the current plumbing code and local amendments should be supplied to area libraries and other public access locations.

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Additional Recommendations

In addition to staff recommendations external stakeholders offer the following additional recommendations to the City of Austin for gray water management and reuse:

- All new residential construction should be required to install separate gray water plumbing to allow the option for gray water diversion from the black wastewater system. Homeowners and developers should be made aware of gray water options and incentives.
- The aerobic mulch basin gray water system in the 2012 Uniform Plumbing Code should be identified as the preferred system over the anaerobic gravel disposal system.
- The City should establish numerical goals for gray water reuse during drought; and programs and incentives to achieve those goals. These goals should be commensurate with the potential benefits of gray water reuse to improve soil hydrology, maintain and improve urban forests, and reduce carbon dioxide and greenhouse gas emissions. An example of a quantifiable goal would be 1,000 permitted gray water systems in the City of Austin by 2017; and 10,000 permitted systems by 2022.