



Town of Pittsboro, North Carolina

Department of Engineering

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TO: Town Planning Board

FROM: Fred Royal, PE, CFM, Town Engineer

DATE: May 2, 2016

SUBJ: FYI: Status on Water Efficiency and Reclaimed Water Ordinance and Policies

Background and Introduction

Note: The following memorandum has been presented to the Town Board of Commissioners on two occasions. The last meeting was a Public Information Session. This is being presented to the Planning Board as informational only. Staff will be present to answer any questions you may have.

The Town of Pittsboro is under rapid development pressure and has two significant tracks to travel down when it comes to water and sewer utility planning and capital improvements. One track is to up-grade and expand (where necessary) the water and sewer treatment and distribution infrastructure and the other track is to ensure that all new infrastructure is designed and constructed in accordance to our new specifications and details.

The development we are experiencing requires the Town to plan for and provide sufficient potable water to meet this demand. Potable water is both a commodity and a limited natural resource. In order to meet the growth projection water demands, the Town is planning to enact water efficiency ordinances and policies designed to limit potable water demand to the extent practicable.

This public information session is intended to provide information and obtain feedback from the public concerning all existing water policies and ordinances and to provide areas where we believe new water efficiency ordinances and policies would be prudent and economically feasible for the citizens.

Discussion

We are intending to include "all things water" ranging from drought response protocol to non-revenue water loss reduction measures to water efficiency practices. The overarching intent is to reduce the per capita potable water consumption to a regionally acceptable figure of 60-70 gallons per day per capita. We currently exceed 100 gallons per day per capita.

Water losses are estimated to be twenty (25) percent in Pittsboro. This is an estimate and it needs to be verified with more accurate metering equipment at the Water Treatment Facility in combination with more

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review of water bills and flush water monitoring. “Acceptable” water losses for a municipality are more like ten (10) percent. Therefore, we have a lot of work to do to better understand the accuracy of our water losses and to develop water loss reduction approaches that are the most efficient and cost-effective. These approaches could include, but are not limited to annually programmed CIP for old water pipe replacement, water fixture program incentives and public education.

Reclaimed water use and demand has to increase with the growth in order to for the Town to continue to provide the needed services but also to maintain state permits and allocation requests. We believe that expanding our reclaimed water system and market can occur with a combination of policies and incentives, such as low cost bulk sales, new development requirements and by identifying the best and highest potential users of reclaimed water in Town and delivering it to them with CIP programming.

A final example is gaining the best and most cost-efficient approaches to potable water expansion. This can include the Jordan Lake western shore stakeholder group, interconnections with Chatham County water system and up-grades to our existing water treatment facility and distribution system. A recent example of this is with the proposed elevated water tank, where the Town will gain an important automated control valve at the million gallon tank for advanced control and management of the water distribution system throughout Town. This will help with improved water efficiency, water management during emergencies and improved water quality.

Below is a list of the key areas that are planned for tonight’s public information discussion. They are based on a review of all existing Town of Pittsboro policies and ordinances though new or recommended policies and ordinances.

Review of Draft Ordinances and Policy Options

Goal: To propose recommendations for ordinances, programs and policies regarding existing and new development water uses, including but not limited to drought and water shortage, public education, efficient plumbing fixtures, reclaimed water use for irrigation, and loss in the water distribution system.

Existing Ordinances

Emergency Water Conservation Provisions Chapter 25, Article 5, adopted 7/14/86 (see Attachment 1)

Fold in Town’s Water Shortage Response Plan submitted to the State in 2011 (see Attachment 2) and Update/clarify:

Declaration/Authorization process

Notification procedures

Response levels in tanks and Haw River gage triggers

Triggers – change trigger naming conventions and edit actions required for each trigger

Enforcement activity/legal and fines

Utility Standard Operation Procedures (SOP):

- De-chlorination Procedure for Water Distribution System Flushing and Main Break or Reclaimed Water System Main Break
- Water Main and Service Line Breaks
- Water Transmission Main Shut Down
- Water Main Break by Contractor

- Fecal Coliform-E.coli/Contamination Response

Possible Additional procedures:

Drought contingency for non-residential customers
 Variance protocols (e.g. for commercial or institutional uses)
 Ongoing staff training plan
 Other

Town Non-Revenue Water Loss Program Policy/Procedures

The water loss reduction program requires goal setting in combination with public official education, CIP planning and budget approvals, public education, data collection and studies, and long-term planning and CIP programming.

Update/Clarify:

Leaks detection processes
 Continued meter replacement and testing
 Water supply distribution replacement program
 Metering flushers
 Water plant metering improvements
 Tampering with water or sewer systems

Town of Pittsboro Voluntary Water Conservation Measures, approved 8/27/07 (see Attachment 3)

1. Update this list of voluntary indoor and outdoor measures and include additional components

New Ordinances and Policies

Landscape Water Efficiency Ordinance/Policies

Under consideration is a comprehensive ordinance to address efficient water use in landscapes, with options ranging from soil amendments to irrigation system design.

- Irrigation (applies to both potable and reclaimed water) –
 - Irrigation systems must be designed to use high efficiency sprinklers (This precludes the installation of standard spray heads which are often the cause of water waste and run off.)
 - Require use of sensors on irrigation systems to prevent watering during rainfall
 - Flow sensors that detect and report high flow conditions due to broken pipes and/or popped sprinkler heads.
 - An increase in the minimum width of turf from 8 feet to 10 feet that can be irrigated with overhead irrigation (sprinkler). Areas of turf below this threshold would have to be irrigated with subsurface drip or other technology that produces no over spray or runoff.
 - Pressure regulators and master shut-off valves.
 - Require separate meters (update of existing policy)
 - Cross connection control, backflow prevention assemblies required, program (update existing)

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- Landscaping Requirements/Planting Plans
 - Organic matter and other amendments and tillage to increase ability of soil to capture and hold Stormwater and improve soil health, eg: the application and incorporation of four yards of compost per 1000 sq. ft. of area. The addition of organic matter and tillage increases the ability of soil to capture and retain water.
 - May encourage or provide incentives for friable soil in landscape areas to maximize water retention and infiltration
- Turf Requirements
 - Limit the portion of landscapes that can be covered in turf vs. undisturbed or landscaped areas
- Water Waste
 - prohibit wasting of water such that water runs across impervious surfaces into gutters and storm drains; manage waste through leaks or malfunctions beyond reasonable timeline to repair or correct

Reclaimed Water Ordinance

- Purpose and Background:
 - To meet long-term water demand requirements.
 - To prevent peak potable water demand
 - Town's reclaimed water system for secondary plumbing usage, including irrigation, cooling towers, and other potential uses ("secondary water use facilities") as determined by the Town Manager or designee (hereafter "Manager"). The Town would designate reclaimed water service areas where reclaimed water service would be provided according to the Reclaimed Water Master Plan. For development within those designated reclaimed water service areas, the developer shall install, and shall be responsible for the full cost of, reclaimed water facilities within their own properties. Town specifications already exist.
- Customers in designated service districts are required to tap in if they have an irrigation system
- Bulk Reclaimed Water Program – Design and build a Town operated facility for bulk purchase.

Rebate Programs

Rebates for water efficient products would provide another key component to the Town's incentive-oriented programs. Because about 35% of the Town's water customers live in older, less efficient housing stock, significant savings (20-40%) could be achieved by replacing indoor water fixtures. A program that will offer rebates for water efficient fixtures as funding allows could be proposed.

Automated Meter Reading System

The use of automated meter reading (AMR) technology holds one of the strongest opportunities for a water efficient community. As with electric utilities, AMR in a water utility allows staff to monitor usage and alert customers when excessive or unusual usage occurs. The AMR system also allows a utility to spread out demand to manage fluctuations in the system. This feature will be especially useful as new development causes usage spikes and staff learns to manage a rapidly growing system. The Town of Pittsboro began converting to AMR meters in 2010. Over 90% of the Town's meters now use AMR technology.

Status up-date to the Planning Board

Since the Public Information Session, staff has been working with its consultant, Jennifer Platt, to make revisions to the ordinances and policies based on feedback from the BOC, Chatham County Inspections Department, the Town Manager and the Town Attorney.

We plan to finalize the ordinances and policies in the coming months and make a recommendation to the BOC to formally adopt via a resolution.

Attached are the draft Water Efficiency Ordinance and the Reclaimed Water Ordinance. Other elements described above are currently being carried out by the Town or are being developed such as the Emergency Water Conservation Provisions and the Non-revenue Water Loss Program.

ARTICLE XX – TOWN OF PITTSBORO RECLAIMED WATER ORDINANCE

Section 1. Intent.

- (a) It is the town's purpose and intent to establish a reclaimed water system and to extend such system to certain areas of the town where the town board of commissioners determines that the extension of such a system is practical and economical. Once such reclaimed water is made available to a property, use of reclaimed water will be required for landscape and grounds irrigation systems and will be permitted for other authorized uses. The reclaimed water distribution system will be constructed in sections and phases to provide separately metered reclaimed water service to designated areas as determined by the town board of commissioners and pursuant to the terms and conditions set forth herein.

Section 2. General Requirements

- (a) Once reclaimed water is available to a property, the property owner may connect to the reclaimed water upon submission of a fully executed application as required by the director, and upon compliance with all other local requirements. It is unlawful to use potable water for irrigation systems 90 days after a property owner or water customer has been notified by the director that reclaimed water is available to a particular property or site. Reclaimed water may be used for irrigation purposes and for other nonpotable water purposes in accordance with federal, state and local ordinances, rules, and regulations. If reclaimed water is to be used for any purpose other than land irrigation, the customer shall obtain prior approval of such use from the director.

Section 3. Connection to reclaimed water system.

- (a) *Customers with existing irrigation systems.* When reclaimed water becomes available to a property, the director shall provide written notice to the town water customer located on that property of such availability. Customers with existing irrigation systems using potable water who desire to continue to maintain such systems using town water, must apply for reclaimed water in accordance with the application procedures specified in this article and must disconnect said systems from the town potable water system and connect to the reclaimed water system within 90 days of such written notice of availability. The director shall have the authority to grant temporary exemptions from this section in the event of reclaimed water shortages or for other good cause, in which case the temporary exemption shall not exceed 180 days.
- (b) *Customers with new irrigation systems.* All new irrigation systems designed to use town water constructed after the effective date of this article must connect to the reclaimed water system at time of construction, if reclaimed water is available to the property. Such connection must be made prior to, or contemporaneously with connection of other

improvements on the property to the town's potable water system. If reclaimed water is not available to a property at the time of construction of an irrigation system, connection to the reclaimed water system must be made within 90 days of notice of availability from the director.

Section 4. Reclaimed water service application requirements.

- (a) Applications for reclaimed service shall be made and will be accepted in the same manner as applications for water and sewer service, subject to the provisions of this article.

Section 5. Permits.

- (a) All applicants for reclaimed water at the applicant's own cost and expense, shall apply for, obtain and meet all requirements of all necessary permits, licenses, conditions, and approvals for the initial construction and the operation of the onsite reclaimed water facilities and the use of reclaimed water.

Section 6. Authority to adopt rules and regulations.

- (a) The town board of commissioners may by resolution establish reasonable rules and regulations concerning the reclaimed water system and the use of reclaimed water. Additional standard policies and procedures may be adopted concerning the reclaimed water system. Insofar as there is not conflict with the provisions of this article, town policies and procedures pertaining to potable water service shall apply.

Section 7. Priorities for extending reclaimed water service.

- (a) The town board of commissioners will establish new service areas based on feasibility studies for extension of the reclaimed water system, as it does for water and sewer system extensions. The town board of commissioners may establish priorities for extension of service outside the utility service boundaries. Provision of reclaimed water service outside the town limits will be considered on a case-by-case basis.

Section 8. Conditions of reclaimed water service use.

- (a) General. The town may terminate, discontinue, or suspend reclaimed water service in accordance with this chapter and town policies and procedures in the event of (i) a violation of this article or town regulations, policies or procedures, (ii) failure to pay bills by the due date, (iii) tampering with any utility service, (iv) the existence of a plumbing cross-connections with another water source, or (v) any customer condition or action that may be detrimental to the town's potable water system, its reclaimed water system, or its wastewater collection and treatment system. The town may, at its option, suspend service until the condition is corrected and all costs due the town are paid. These costs may include delinquent billings, connection charges, and payment for any damages

caused to the potable water, reclaimed water, or wastewater collection or water distribution system. The details of the town's procedures for discontinuing service are found in this chapter and in appropriate town policies and finance department procedures.

- (b) *Cross-connection* control. There shall be no cross connections between the reclaimed water system on a customer's property and the town potable water system. In all premises where reclaimed water service is provided, the public or private potable water supply shall be protected by an approved cross-connection control plan. The plan for cross-connection control must be submitted with the application for reclaimed water service and must receive the prior approval of the director. In the event a cross-connection is found, the cross-connection shall be immediately disconnected, and reclaimed water service will be suspended. Before reconnection of the reclaimed water service, the public potable water system shall be protected against the possibility of future cross-connection to the director's satisfaction. Additional protection against cross-connection may be required as specified by the director at the customer's expense before reclaimed water service is resumed.
- (c) *Right of entry*. In addition to the authority to enter property contained in Chatham County ordinances, the director or his/her designee may enter any premises to determine the presence of any cross-connection or other potential hazards to the town potable water system. Each customer of reclaimed water service shall, by completing the reclaimed water application, give written consent to such entry upon the customer's premises.

Section 9. Enforcement.

[insert standard text]

Section 10. Interruption of service.

- (a) The town reserves the right to temporarily discontinue service to any portion of, or the entire reclaimed water system, as deemed necessary by the town's wastewater or water director or engineer in order to preserve public health or for necessary maintenance. Notwithstanding the foregoing, the town shall have the right, at all times, to refuse to provide, or to discontinue the provision of, reclaimed water service should such service be contrary to the health and safety of the public.

Section 11. Emergency.

- (a) The town manager or his/her designee may declare a reclaimed water emergency and order restrictions regarding the use of reclaimed water during such emergency.

ARTICLE XX. TOWN OF PITTSBORO YEAR-ROUND WATER EFFICIENCY MEASURES

Section 1. Purpose and intent.

It is the purpose and intent of this Ordinance to:

- (a) Assure that town water resources are put to reasonable beneficial uses and maximize the efficient use of the town's water supply so as to potentially avoid unnecessary water supply expansion and associated maintenance costs;
- (b) Help maintain compliance with State wastewater discharge permit requirements by using water more efficiently and subsequently reducing wastewater discharges;
- (c) Reduce damage to publicly-owned streets and sidewalks caused by landscape runoff and overspray;
- (d) Increase safety on streets and sidewalks by reducing the potential for pooling and frozen water on such areas; and
- (e) Prevent pollution of streams, lakes, and other surface waters by reducing water runoff from landscaped areas.

The following water efficiency measures are encouraged or required of residential and non-residential properties as described:

Section 2. New Construction—Residential Indoor Uses: All interior plumbing in new residential construction, replacements, renovations, and additions should meet the following requirements:

- (a) Toilets – All toilets should be WaterSense labeled tank-type toilets.
- (b) Flushing urinals – All flushing urinals, if installed, should be WaterSense labeled flushing urinals.
- (c) Bathroom sink faucets – All bathroom sink faucets should be WaterSense labeled bathroom sink faucets or faucet accessories (e.g., aerators)
- (d) Kitchen sink faucets – All kitchen sink faucets should comply with federal standards for a maximum flow rate of 2.2 gallons per minute (gpm) (8.3 liters per minute [lpm]).
- (e) Showerheads – All showerheads should be WaterSense labeled showerheads. This includes fixed showerheads that direct water onto a user for bathing purposes and hand-held showers. In cases where more than one showerhead or hand-held shower is provided in combination with others in a single device intended to be connected to a single shower outlet, the entire device must meet the maximum flow requirement in all possible operating modes.
- (f) Shower compartments – The total allowable flow rate of water from all showerheads flowing at any given time, including rain systems, waterfalls, body sprays, and jets, should be limited to 2.0 gpm per shower compartment, where the floor area of the shower compartment is less than or equal to 2,160 square inches (in²) (1.4 meters² [m²]). For each increment of 2,160 in² (1.4 m²) of floor area thereafter or part thereof, additional showerheads should not exceed a total flow rate of water equal to or less than 2.0 gpm per shower compartment; the additional showerheads should be operated by controls that are separate from the other showerheads in the compartment.

(g) Hot water on demand: In new construction, a hot water system should be installed to provide hot water on demand at the point of use in sinks and baths/showers. All hot water fixtures should be WaterSense labeled.

(h) Appliances – If the following types of appliances are financed, installed, or sold as upgrades through the homebuilder, they should meet these criteria:

Dishwashers – Dishwashers should be ENERGY STAR® qualified.

Clothes washers – Clothes washers, including those in common-use laundry rooms of multi-family buildings, should be ENERGY STAR qualified with a water factor (WF) of less than or equal to 6.0 gallons of water per cycle per cubic foot of capacity.

(i) The installation of a pressure-reducing valve (PRV) on the house side of the water meter, in an easily accessible location, is required for all new single-family residences served by the Town's utility system.

(j) Drinking water treatment systems should be certified to meet applicable NSF/ANSI standards, which are:

- NSF/ANSI 42 Drinking Water Treatment Units – Aesthetic Effects
- NSF/ANSI 53 Drinking Water Treatment Units – Health Effects
- NSF/ANSI 55 Ultraviolet Microbiological Water Treatment Systems
- NSF/ANSI 58 Reverse Osmosis Drinking Water Treatment Systems
- NSF/ANSI 62 Drinking Water Distillation Systems

Such systems should yield at least 85 gallons of treated water for each 100 gallons of water processed.

(k) Operating Manual (for single-family homes) – The builder is strongly encouraged to develop and provide to the single-family homeowner a file of information for all water-using equipment or controls installed in the house and yard, including all relevant WaterSense materials on indoor and outdoor water use. This may be a chapter or folder in an existing manual. If clothes washers or dishwashers are not provided, general information about water-efficient appliances provided from the town should be included.

1. Irrigation system – If an irrigation system is installed, the builder should provide the single-family homebuyer with a record drawing (e.g., schematic) of the system, an itemized list of irrigation components, copies of the irrigation schedules, and information about reprogramming the schedule after establishment of the landscape. This information should be included in the operating manual.

Section 3. New Construction—Commercial, Industrial, Institutional, and Multi-Family Development:

(a) Flushing urinals – All flushing urinals, if installed, should be WaterSense labeled flushing urinals. .

(b) All new commercial car wash facilities, including automobile dealerships, should use water recycling systems which recycle a minimum of 75-percent of the water used.

(c) Kitchens in which dishwashers are installed should use Energy Star® rated dishwashers.

(d) Commercial Laundry Facilities: All laundry facilities intended for public use such as laundromats, hotel guest laundries, or multi-family housing laundry rooms should be equipped with Energy Star® qualified commercial clothes washers.

(e) Drinking water treatment systems, if installed, should meet NSF/ANSI requirements (such systems shall yield at least 85-gallons of treated water per 100-gallons processed).

(f) All new multi-family development **exceeding four units** should provide independent-unit metering (water meter for each dwelling unit)

(g) Water Features (A) Recirculating water systems should be used for water features. (B) Where available, recycled water shall be used as a source for decorative water features.

(C) Pool and spa covers are highly recommended.

Section 4. Outdoor Water Use

(a) *System design.* All irrigation systems shall be designed, maintained, and operated to prevent, to the extent practicable, water from flowing onto paved or other impervious surfaces.

(b) *Sensor requirement for new and existing irrigation systems.* Users and installers shall not install automatic irrigation systems of any type without a rain or soil moisture sensor that will prevent irrigation during periods of rainfall and when there is sufficient moisture in the ground for plant health and survival. Existing irrigation systems are strongly encouraged to also install a rain or soil moisture sensor.

(c) *Sensor settings.* All rain sensors shall be adjusted and set so that they automatically shut off the irrigation system after not more than one-fourth (1/4) inch of rainfall has occurred or an equivalent moisture parameter is reached. All rain sensors shall be installed according to manufacturer's instructions in a location that will provide full exposure to rainfall or appropriate moisture parameter such that accuracy of operation is assured. All rain sensors shall be maintained in good working condition. No person shall adjust either the rain sensor or irrigation system so that the sensor is not able to override and turn off the irrigation system after one-fourth inch of rain has fallen or an equivalent moisture parameter is reached.

(d) *Hand operated equipment.* All hoses used for hand watering, vehicle washing, or other allowable outdoor uses shall be equipped with shutoff nozzles.

Section 5. Prohibition of Water Waste

No User shall:

(a) Cause or allow runoff of town supplied water from landscape areas into adjoining impervious areas, adjacent property, or streets, sidewalks, gutters, stormwater drains, or other paved surfaces as a result of incorrectly directed or maintained sprinklers, irrigation systems, or other application devices, or excessive watering.

(b) Cause or allow irrigation while precipitation is falling.

(c) Knowingly allow water to escape through leaks, breaks or malfunction within the water user's plumbing or distribution system for any period of time beyond which such a leak or break should reasonably have been repaired or corrected. All leaks, breaks or malfunctions shall be corrected within 30 days of identification of the source of the leak.

(d) Use or allow the use of water or flushing from any public or private fire hydrant for any purpose other than fire suppression, necessary fire hydrant or water distribution system maintenance, public emergency, or with prior approved written exception from the town.

(e) Willfully or negligently waste water in a manner not otherwise prohibited above.

Section 6. Enforcement and Variances

[insert standard town language here]

Section 7. Relationship to Water Shortage Stages

(a) The requirements of this Ordinance may be superseded by a declaration of a Water Supply Shortage or Emergency, or by mandatory water restrictions as set forth in the town's Water Shortage Response Ordinance.