Water and Sewer Replacement/Relocation Community Meeting

## Takoma Park

Takoma Park Community Center Saturday, March 14, 2015 11:00 – 12:30 pm

# Introductions



The Wilson T. Ballard Company





- Crystal Wheaden Project Manager
- Hala Flores, P.E. Unit Coordinator
- Paul Gray Right of Way Manager
- Ayoka Blandford Public Affairs
- Donny Barrett Customer Advocate
- Jeff Ziegenfuss, P.E. Project Manager
- Jon Martin, P.E. Assistant Project Manager
- Matt Dewese Design Engineer
- Mark Wehland Manufacturer's Representative
- Daryl Braithwaite, City Public Works Director



- Project Overview
- North Section, 6601-6713 Eastern Ave 11:00AM-12:30AM
  - Existing Conditions
  - Explored Alternatives
  - Recommended Solution
- Moving Forward and Next Steps
- Questions and Answers

## **OVERVIEW**



The purpose of this project is to find a method to restore the water/sewer infrastructure in Takoma Park with minimum environmental impact.

## North Section – Existing Conditions

From Walnut Avenue to Second Avenue





## **Explored Alternative**

**Replace Mains at Current Position and Reconnect Services** 



# Feasibility Issues



#### Trenchless

- Requires large launch and receiving pits
- Lateral Connections Require Excavation
  - 25 x 25 x 20 ft trench for each home
- Required Heavy Machinery and Access
- Extensive removal of trees, obstructions and impact to root zones



# **Feasibility Issues**

#### **Continuous Sewer Line**

- Requires acquisition of property from owners that are not serviced by the line.
- Owners denied WSSC easement and permission



#### Separation of Sewer Line

- Two existing sewer feeds
- Sewer block from 6617-6713 fed from 1<sup>st</sup> Avenue
- Sewer block from 6601-6613 fed from 2<sup>nd</sup> Avenue



## **Recommended Solution**



- Feasibility of separating the sewer line allows us to avoid backyard structures at 6613 and 6617 properties. No relocation of structures required.
- WSSC requires 20-foot easement. Tree removals and impacts to tree roots are anticipated.

## **Typical House Connection Plan View**



## Easements



- Minimum required 20-foot easement is needed for 8" sanitary sewer
- Homeowner will be compensated Fair Market Value based on Property Appraisal
- Typical width of each property is 42', resulting in 840sqft of permanent easement.
- Fences will be reinstalled with a gate (by the contactor) to provide WSSC with maintenance access.
- Grass will be planted (by the contractor) after construction has finished.
- All affected residents must agree by April 3, 2015 to have appraisal assessments completed.

## **Recommended Solution**



- Front alignment for water and sewer
- 2" low pressure sewer and grinder pumps

# **Typical Grinder Pump House Connection**



# **Typical Grinder Pump House Connection**



# **E/One Grinder Pumps**





#### Q: Who are you?

1



to where we can go.

#### Q: What is a Low Pressure Sewer System?



A: It's a sewage collection system designed to solve difficult sewer applications and has a proven and reliable history.

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### **3** Q: When would you use a LPS System?



A: Any time it's difficult to install gravity sewers, such as existing communities with established landscapes and hardscapes, undulating terrain, rocky conditions, or high ground water locations.

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#### Q: How does LPS compare to gravity sewer systems?

#### **LPS Installation**

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### **Gravity Installation**

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### 5 Q: Is this a new technology?

A: In 1965 General Electric was Sub-contracted to develop a "New Household appliance". The original design team engineers in 1970 formed the company "Environment|One". We now have over 30 years of successful operating experience.



## 6 Q: What does it look like today?









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### Q: What does it look like after it's installed?



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### 8 Q: What's going on under the ground?



#### Q: What kind of maintenance is required

A: Like any other Household "Appliance" periodic maintenance is <u>not required</u>. All pump components used are designed to provide years of trouble free service without maintenance.

Unlike your "Septic System" the storage tank is designed to be self-scouring eliminating the need to clean the tank periodically

# 10 Q: OK but how long will the pump last before it needs repair or replacement?

A: The E|One unit has been sewering single family homes since 1970. Excellent service records have been kept by some of the owners like Greenfield Twp. and E|One corp. The mean time between service calls has proven to be 8 to 10 years. The need for a major rebuild has been proven to be 15 to 20 years.

#### Q: Can that be proven to be true?

Bruce Evans Greenfield Township Sewer Authority Carbondale, Pa 570-222-4888

Greenfield Township is one of the largest and oldest grinder pump low pressure sewer systems in Pennsylvania. The system started installation in 1983 with approximately 280 grinder pump stations. Today, there are approximately 500 grinder pump stations in service. There are an average of 10 to 15 new homes added to the system each year.

We have the dollar figures for the parts that were purchased by Greenfield Twp. Lake for the years 1988 through 1997. They are as follows:

<b>1988</b> \$12,775.08	<b>1992</b> \$20,931.58	1 <b>996</b> \$19,500.00
<b>1989</b> \$10,449.17	<b>1993</b> \$14,175.10	<b>1997</b> \$19,800.00
<b>1990</b> \$7,003.93	<b>1994</b> \$17,989.00	
<b>1991</b> \$10,588.79	<b>1995</b> \$16.806.91	

According to Bruce, an average of 300 man-hours per year, or 25 hours per month, is spent on the pressure sewer system. The labor cost for this time is \$3,156.00 annually.

Parts	\$19,800.00
Labor	\$3,156.00
TOTAL	\$22956.00

Approx \$46.00 per pump per year

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# **12** Q: What is the average yearly cost of electricity to operate a Grinder Pump in the typical family home.

A: A typical single family home will use 200 gpd. The E|One 1hp pump will consume about 16 kwh of electric per month.

At \$0.11/kwh x 16kwh = \$1.80 per month

Appliance	Typical Annual Usage
Air Conditioner	2000
Clothes Dryer	1200
Refrigerator	750
Television	500
E/One Grinder Pump	200
Coffee Maker	100
Vacuum Cleaner	45
Clock	17

### **13** Q: What happens if there is a power outage?

A: The pump does require electricity to operate. During a power outage water usage in a home drops significantly because the appliances, which account for much of the water we use, are also not working.

The Elone pump is design is optimized with storage capacity for such events.

### **14** Q: Does the grinder pump emit any unpleasant odors?



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### **15** Q: What about Third Party Agency Testing?

✓ Under Writers Laboratory (UL)
✓ NSF (National Sanitary Foundation)
✓ CSA (Canadian Standards Association)
✓ IAPMO (International Association of Plumbing and Mechanical Officials)
✓ Countless State and Local Agency Listings

## 16 Q: Will the pump clog or jam?

Table 1- Household Items added to the Pump Basin	NSF 46-1997
Item	Frequency
Toilet tissue, 24 perforated sheets (wetted in test water)	4 times per day, 5 days per week
Facial Tissue	2 per day, 5 days per week
Filter Tip Cigarette	1 per day, 5 days per week
Egg	1 per day, 5 days per week
Paper towel*	1 per day, 5 days per week
Condom*	1 per day, 5 days per week
Sanitary napkin* (wetted in test water)	1 per day, 5 days per week
Chlorine laundry bleach* (8 ounces)	1 per day, 5 days per week
Cotton swab* (plastic stick)	1 per day, 5 days per week
Disposable diaper* (large childerns size)	1 per day, 5 days per week
Tampon* (plastic applicator added separetely)	1 per day, 5 days per week
Adhesive bandage* (paper wrapper added separetely)	1 per day, 5 days per week
Dental floss (12 inch piece)	1 per day, 5 days per week
Alkali drain cleaner (8 ounces)	1 per week, at random
Handi-wipe	1 per week, at random
Acidic drain cleaner (8 ounces)	1 per week, at random
Liquid animal fat (4 ounces)	1 per week, at random
One pair nylon panty hose (size large)	1 per week, at random
Cloth diaper (wetted in test water)	1 time during test, at random
Toothbrush	1 time during test, at random
Wood pencil	1 time during test, at random
Plastic table utensil	1 time during test, at random
Metal bottle cap	1 time during test, at random
HDPE bottle cap	1 time during test, at random
Metal, toy car (Matchbox or Hotwheels)	1 time during test, at random
Eight ounce drinking glass (crushed)	1 time during test, at random
* Items added separately each day in succession	

#### Q: What materials or object will clog the pump?

A: The E|One pump is capable of accepting and pumping all materials commonly found in domestic wastewater as well as a wide range of material such as plastic-glass-diapers-sanitary napkins which regulatory agencies recommend not be introduced into a public sewer.

### **18** Q: What type of Warranty does E|One unit have?

A: Environment One Corporation provides a two year, on site, parts and labor warranty from the date of installation or 27 months from the date of shipment. The warranty is for the entire pump unit (no pass through warranties) and includes parts and service which can be done on site.

### **19** Q: What happens when my pump needs service?



A: Freemire & Associates is your Factory Authorized Repair Center. We maintain a fleet of service trucks equipped to fix your pump 24/7.

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## 20 Q: What did I forget?



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# Provided by WSSC

- e/One Simplex Grinder Station with 476 gallon tank
- Large capacity tanks to last through extended power outages
- 2-year manufacturer's warranty, plus an additional 8-year warranty purchased by WSSC
- Portable generator and generator receptacle (electrical panel upgrade) purchased by WSSC



## Recommended Design for Low Pressure Sewer Environmental Benefits



- Reduces required tree removals and maintains existing shade and privacy
- Risk of tree root penetration and sewer overflow contamination minimized to eliminated
- Smaller, trenchless installed pipe is less invasive
- Construction disturbance limited to paved road, which will be milled and overlayed after construction

# **Summary of Pros and Cons**

#### **Backyard Sewer Alignment**

#### Pros

- Gravity sewer system no need for on-site grinder pumps
- Shorter length of lateral rehabilitation, i.e. lower WSSC contract cost

#### Cons

- Permanent easement required, restricted use of backyard
- Tree removal impacts
- High risk of sewer overflow and contamination due to root penetration of sewer system
- Increased and challenging maintenance
- Private sewer laterals not renewed by WSSC
- Construction impacts at both front and back of homes

# **Summary of Pros and Cons**

#### **Eastern Avenue Sewer Alignment**

#### Pros

- Full length of laterals to be relocated by WSSC, i.e. renewed laterals at no cost to homeowner
- Easy future maintenance access for the sewer main, no need to enter the property for main rehabilitation alone
- No tree removals
- No easements required, full use of yard
- Water and sewer construction impacts in the same location at front of home

#### Cons

- Reliance on grinder pumps (maintenance and power outages)
  - WSSC providing grinder pump warranty and generator
- Homeowner responsible for grinder pump maintenance costs after 10 years
  - Homeowner responsible for maintenance costs of private lateral with either alignment
- Right-of-entry required to install grinder pump and electrical upgrades

# Summary of Pros and Cons

#### **No-Build Alternative**

#### Pros

- No reliance on grinder pump system
- No easements or Right-of-entry required, full use of yard
- No tree removal impacts
- No construction impacts from a planned sewer and water main replacement project
- Continued service from WSSC, including maintenance and emergency response

#### Cons

- Increased maintenance and emergency response by both WSSC and homeowners
- No opportunity for full lateral renewal by WSSC (as would occur with low pressure sewer alignment)
- Reliance on aged sewer and water mains
- Difficult access for maintenance and emergency repairs
- No upgrade to fire protection
- No upgrades to 1 <sup>1</sup>/<sub>2</sub>" water house connections

# **Recommended Solution**

If concurrence to Property Appraisal by **April 3**, develop final design for:

- Backyard alignment for sewer and front yard alignment for water
- 20-foot easement
- Install 8" sewer main in backyards
- Install 4" sewer laterals from main to edge of easement to reconnect to existing lateral
- Tree removals and root pruning as needed
- Install 1 ½" water service from back of house to main connection on road
- Edge-to-edge paving and milling



# **Recommended Solution**

If no unanimous concurrence to Property Appraisal by April 3, develop final design for:

- Front alignment for water and sewer
- Install 2" sewer main on Little Eastern Avenue
- Install 1 ¼" sewer laterals from main to grinder pump (trenchless)
- Install 1 ½" water service from back of house to main connection on road
- Install e/One grinder pump and support
  - Dual pumps
  - Oversized tank
  - Generator
  - Service plan
- Edge-to-edge paving and milling



# **Moving Forward**

Moving forward, WSSC will finalize the design and begin to have meetings with each individual property owner to work out Easement Agreements, Right of Entry Agreements, and other specifics relevant to the properties.

The schedule will be most dependent upon WSSC receiving all community permissions, including Right of Entry agreements, property value assessments, and easement agreements.

# **Project Timeline**

Activity	Duration
Finalize Design Based on Recommended Solution	Completed July 2015
Secure Easements/Right of Entry Permissions	Unknown Duration
Procure Construction Services	3-4 months
Construction Phase	9-12 months

# **Thank You**

Questions