



## ***Magnolia Damaged Pipe Investigation Project***

### **Community Meeting Summary**

February 16, 2017, 6:30 p.m. to 8:30 p.m.

Discovery Park Learning Center

3801 Discovery Park Boulevard, Seattle WA

#### **Overview**

King County's Magnolia Damaged Pipe Investigation Project team hosted a community meeting on February 16, 2017. The project team shared information about the damaged pipe investigation, including background on the project, actions taken to locate the pipe break's specific location, an update on geotechnical monitoring, upcoming next steps and how to stay in touch during the investigation. Wastewater Treatment Division Director Mark Isaacson also gave a brief update on the West Point Treatment Plant. The team emphasized that safety has been and will remain their top priority throughout the investigation. They also explained that while communication may not have felt like a typical King County project, moving forward the community will be informed through the County's normal methods: flyers, online and site visits.

Approximately fifteen (15) members of the public attended the meeting.

This report provides a summary of the presentation, and question and answer session.

#### **Agenda**

- Welcome and introductions
- Presentation
  - Meeting purpose
  - Project overview and background
  - Geotechnical investigation overview
  - Pipe cleanout
  - Upcoming work
  - How to stay informed
  - Question and answer session (throughout presentation)

#### **Presentation**

##### Welcome, introductions and meeting purpose

WTD Director Mark Isaacson began the meeting by thanking the community for their time and patience as crews have worked to assess the pipe break. He introduced project staff and noted that crews have been doing a lot of drilling work on West Galer Street. He explained that typically, King County notifies neighbors of work as far in advance as possible and keeps the community informed as work progresses. In this situation, the County is working in rapid-response conditions and has not had as much information as is typical to share with the community.



Mark Isaacson shared the purpose of the meeting: to update the community on the progress of assessing the pipe break to-date and to honor the County's commitment to meet with the neighborhood prior to resuming work. He noted that contractor crews plan to resume drilling next week.

Prior to further discussion about the pipe, Mark Isaacson provided an update on the equipment failures at West Point Treatment Plant (visit WTD incident response web page for more details).

#### Project overview and background

King County Project Representative Marty Noble provided a project overview. The project was finished in spring 2015 and inspected in late December 2015.

In September 2016, County operations staff noticed that the storage tank was not filling up as expected during a storm. To begin investigating the cause, the County pumped stormwater out of the pipe and noticed a lot of debris, bricks, concrete and rocks. Initially, the County thought the City of Seattle pipe system could be carrying debris through to the County's pipes and causing a soil plug. Cameras were run through the pipes to see if a plug could be identified. The County also began cleaning out the pipe. When crews were about 300 feet into cleaning the pipe, pipe shards came out. At this time, the County thinks a smaller break occurred in one location.

While the County was working to inspect and clean the line, the County contacted their geotechnical consultants, Shannon & Wilson. Marty Noble introduced Mike Kucker to discuss the geotechnical investigations.

#### Geotechnical investigation overview

Project geotechnical consultant Mike Kucker of Shannon & Wilson noted that the first thing his team looked at was soil loss. They wanted to ensure a sinkhole would not be created as a result of the pipe break. Shannon & Wilson surveyed a number of times to look at any changes in soils or ground loss near the surface from west of 28<sup>th</sup> Avenue West to Judkins Park. Soil or ground loss would also help crews identify the location of the pipe break. No changes were found.

Crews noticed two anomalies deeper below the surface just west of Thorndyke Avenue West on West Galer Street needing further investigation. These anomalies could have indicated where the pipe break occurred. To identify the areas of soil loss, crews drilled borings 40 feet apart between the two anomalies, inserting a cement-like grout to fill all areas of soil loss.

After the drilling investigation, Shannon & Wilson believes the break is likely in the area just west of Thorndyke Avenue West on West Galer Street. To ensure that there are no additional areas of soil loss, crews plan to drill again between the three holes that originally showed soil loss. They have found no conditions that indicate homes are at risk at this time.

#### Pipe cleanout

Marty Noble explained the next step in the investigation was to try to clean out the pipe to assess the breach. With the critical soil areas around the pipe filled with grout and sufficiently



reinforced, the pipe could be safely inspected. A California-based company was hired to clean out the pipe. They were able to clean past the break but groundwater pressure inserted more soils into the pipe before a full inspection could occur. As a result, the County was unable to get a clear picture of the pipe break.

### Upcoming work

Marty Noble stated the next step moving forward is to ensure the soil around the pipe remains stable. Beginning as early as Tuesday, Feb. 21, crews will drill five holes near West Galer Street and Thorndyke Avenue West. Crews will have one drill rig and will insert grout in areas of soil loss, if areas of soil loss are found. During this drilling, vibration monitors will be posted on the closest house to monitor vibrations. The County knows that homeowners felt vibrations on the first borings but one drill rig seemed to cause more vibrations than the others. The County removed the more disruptive drill rig from the project.

Depending on what the pipe break looks like, solutions could range from replacing the pipe completely to internal repair of the pipe. The County will look at all options and come to the community prior to making a decision. The top priority is fixing the pipe with the least amount of impact to surrounding neighbors.

### How to stay informed

We will work to keep you informed through the methods below.

- **Project Website:** <http://www.kingcounty.gov/depts/dnrp/wtd/capital-projects/active/south-magnolia-cso-storage.aspx>
- **Project Contact:** Doug Marsano
- **Email:** [doug.marsano@kingcounty.gov](mailto:doug.marsano@kingcounty.gov)
- **Phone:** 206-423-0480

### **Summary of Questions & Comments**

Questions and discussion from the meeting attendees are summarized below. Questions were taken throughout the presentation.

#### West Point Treatment Plant

##### *What was the cause of the flooding?*

West Point Treatment Plant has a capacity for 440 hydraulic gallons/day. At about 2:15 a.m. on Feb. 9, the plant was hit with 15 million gallons of water which exceeded the plant's capacity. Our crews did the best they could to save what they could at the plant while the plant was flooding. We are dealing with a tremendous amount of damage but we will fix it.

##### *Have you received any reports of solids washing up on beaches? Is there any cleanup effort underway?*

There is no visible evidence of solids on the beach so there is nothing to cleanup at this time. Right now, it is a water quality issue because we are not meeting water quality permits with the water flowing into the Puget Sound.



*Are you testing the water?*

Yes, we are conducting water testing daily. The Department of Public Health is the agency that decided to close the beaches and we honor that. They need at least two days of meeting water quality permit standards prior to opening the beaches

*Do you plan to make improvements to the plant to prevent this in the future?*

Our highest priority is to get the plant back online. If there are ways we can make improvements while doing that, we may, but we need to get the plant up and running as soon as possible. There are systems that we will be looking at over time but we want to get the primary system working at its full capacity.

*Was there no forecasting for this type of event? Is it to be expected in the coming years?*

We do not have the answer to this question yet. We will do a complete analysis and report out to the public and the Department of Ecology on why the plant failed. We will work to understand what caused the breakdown but our immediate priority is employee safety. We are working to safely clean the equipment and get the plant running at full capacity.

*My understanding is that there was some offloading to the facilities in the area. Can those facilities handle the extra overflow?*

Yes, they are handling it right now.

### South Magnolia CSO pipe

*Can you explain how this pipe works and how it is connected to West Point?*

The pipes in Magnolia operate as a combined system, meaning both sewer and stormwater flow through the same pipes. Before the pipe and storage facility were installed, if there was a large storm event that exceeded the capacity of the system, flows would outfall into Elliot Bay. The new pipe was installed to divert flows into the new storage facility. The storage facility stores the flow until the system has capacity to carry the flows to the Interbay Pump Station and then to West Point.

*Do you have a sense of the volume of soil that you removed from the pipe?*

We have measured everything we have taken out. Crews have taken out 160 cubic yards of sand. We believe that this is the same amount that came in from the breach.

*How deep is the pipe?*

About 150 feet below W. Galer Street.

*Where is the system currently draining? Is the old system currently in use?*

The old system is in use.

*Looking at the broken pieces, it looks like the pipe broke right at the joint, is that the case?*

The joint did not pull apart but it did break.



*Any theories on why the pipe broke?*

No, and we may never know. We do not think there was a geological event. After the pipe was installed, we put cameras in to inspect it. It looked good. This is brand new, thick pipe that has been used in the industry for 10 years. At this time, we do not have a clear answer for why it broke.

*Has the pipe been analyzed for faults?*

We are looking more into fixing the pipe at this point but will look into that as well. This is not unlike West Point Treatment Plant where public safety is our number one priority. The second priority is evaluating a solution for the fix. After we fix it, we will spend a considerable amount of time with everyone involved in construction to determine what went wrong and that will take some time.

*It has failed within a year and clearly the pipe is in a difficult place to maintain. How can we trust that it will not break again?*

We have done multiple pipes underground before and they have been fine. We will find out why this one broke. We will be looking at several different solutions. If we need to change materials and use a different kind of pipe material, we will do that.

*Have you been in contact with the manufacturer?*

We have been in contact with the manufacturer and are waiting to hear back from them to see if they have any ideas on why the pipe may have broken.

*When the pipe was installed, I recall that all but 175 feet of the pipe was pulled through the route which descends and then curves. Is it possible that stress was applied when crews were pulling the pipe through?*

We will look at that closely but the pull forces were very small until the last 100 feet when they had to apply a bit more force to get the pipe into the casing.

*Is King County working with all parties that were involved with this project to determine who is responsible?*

Yes, we have actively engaged and involved all parties. Our first priority is public safety. When soil was entering the pipe and causing voids, we did not want to wait for the voids to get to the surface.

*When you were designing the route that this pipe now takes, wasn't the major limiting factor right-of-way rights?*

That was one factor. We also had to design a pipe that would be outside the footprint of the current and future Magnolia Bridge, in addition to maintaining a consistent grade to the sewer system.



## Drilling

*Where are you drilling?*

Just in a small area near West Galer Street and Thorndyke Avenue West.

*Where do you insert the grout? Is it placed inside or around the casing?*

We grout around the casing.

*When you insert the casings, is that where you are looking for the break? How do you know you found the break? What are you looking for?*

We are looking for lost ground, areas of soil loss. This is an indicator of where the soil breach is. We will not know from the drilling exactly where the breach is but we will be able to isolate the zone around the breach because the area of soil loss will be near it.

*Has there been any indication that you have hit some sort of glacial boulder?*

No borings have hit a boulder.

*How big does a soil void have to be to become a problem for the homeowners above?*

Any size can be a problem unless it is filled. There are no current issues for homeowners. We are working to fill the voids so that they do not become problems for homeowners.

*Do you feel that the voids have been filled or are you still looking into the issue?*

We put in 150 cubic yards of grout to fill in the voids. Based on what was taken out, we think it is about 150 to 200 cubic yards of soil lost. When we go back to drill again, we will verify that there are no additional areas of soil loss.

*What is the material of the hollow casings?*

Casings are made of PVC and are about three-inch in diameter and about 3/8 of an inch thick. We drill a six-inch hole, insert a three-inch casing and grout around the rest.

*How long will the next phase of drilling be?*

Approximately two to three weeks.

## Communications

*It would be helpful if you stick to the hours stated in fliers so we can plan around work. There are times when work has started earlier than stated on the flier.*

In that particular situation, crews had traffic issues with the later start time and pushed the start time earlier after permission from the City. We apologize that we did not communicate the earlier start time in advance to the public and will note it for the future.

*Can you provide a larger map that would show the different County and City systems in the neighborhood and how they interface?*

Yes, we can send that out to the neighborhood via our listserv.



**Magnolia Damaged Pipe Investigation Project Team Attendance**

*King County Wastewater Treatment Division*

Mark Isaacson, Rebecca Gauff, Marty Noble, Doug Marsano

*Shannon and Wilson*

Mike Kucker, David Ward

*EnviroIssues*

Diane Adams, Kathryn Murdock