

CITY OF COLUMBIA HEIGHTS

PUBLIC WORKS DEPARTMENT

TO: MAYOR AND CITY COUNCIL
CITY MANAGER

FROM: KEVIN HANSEN
PUBLIC WORKS DIRECTOR

SUBJECT: JACKSON POND AREA – HISTORICAL CONTEXT

DATE: May 7, 2021

With the discussions on the recent proposed developments and the sanitary sewer study in progress for trunk line in Collection District 1, I am providing some background and history of the area.

Flooding in and around the Jackson Pond area has been occurring for decades – attached is a photo/newspaper article from 1965, along with a photo showing the approximately same area from 2017. The area is subject to flooding during extreme rainfall events – high intensity/short duration, and back to back storm events. The history below is from when I started with the City.

In 1997, significant storm event(s) occurred resulting in widespread flooding throughout the City, including the Jackson Pond area. Staff worked in multiple areas addressing those issues with multiple studies and improvements to mitigate the localized flooding (the improvements were a driving factor in developing our storm water utility in 2000). In 2003, a storm event caused Jackson Pond to overtop again. From that event, the following activities/programs/studies were completed:

- Sump Pump Disconnect Program.
- Removal of a cross connection between Jackson Pond and the trunk sanitary sewer system.
- Lining of the trunk sanitary sewer lines from Central west to 44th Avenue.
- A feasibility report looking at changes/improvements to Jackson Pond to improve capacity.
- A foundation drain disconnect program was discussed with the Council (2 separate occasions) but not acted on. At that time, estimates were \$1,500 - \$4,000 per affected household to disconnect foundation drains.
- A backflow device program was offered to all properties previously impacted by sewer backups. The City paid for a backflow prevention device and slice gate valve installed in basements for properties that requested it.

It is important to clarify and separate storm sewer causes – (i) Jackson Pond overtopping and (ii) the primary cause of sanitary sewer backup – inflow and infiltration (I-I). In our analysis of Jackson Pond, the pond did not have adequate storage capacity. In flow monitoring of the sanitary sewer system – the cause of sanitary sewer issues are clearwater connections from private property to the sanitary sewer system. As we have completed the sump pump disconnect program Citywide, it is clear that the source is from foundation drain connections. We have evaluated the sewer system in each of the three collection districts, and in each we have found little or no lag (time) in the surge we see at flow monitors following rain events. This is clear evidence of rainwater entering the system. I asked the hydraulic engineers (from Bolton-Menk) currently evaluating the trunk line currently of the impact of I-I and this is his response:

“I would have to agree with Tim’s statement below. I believe the surcharging issues are exclusive to I/I.

Taking a quick look at the flow meter data that we have collected thus far, we have an average flow of 69 gpm and a peak flow of 195 gpm. These flows enter the system at the 10” meter placed in the invert of MH-35A11. The average daily peak looks to sit around 120-140 gpm entering MH-35A11 from the East. A very minimal amount of flow enters MH-35A11 from the South.

Based off of slopes, it looks like the downstream 10” pipes have a 100% full pipe capacity of approximately 400 gpm and the downstream 12” pipes have a 100% full pipe capacity of approximately 600 gpm. Assuming a peak daily flow of 140 gpm entering the system from the East and assuming a proposed peak flow from the development on Jackson of 45 gpm we can estimate a peak daily flow (without I/I) of approximately 200 gpm. Granted we have more flow entering the system further downstream from Madison, Jefferson, Washington, 7th, etc. it looks like the 10” and 12” pipes would have plenty of capacity to carry the additional flow from the 66 unit development.

I/I seems to clearly be the issue here.” (Dallas Jones)

From Tim Olson (out of town on vacation):

“Kevin - since i dont have access to the data, i am cc’ing Dallas Jones to this email.

My gut says yes - the surcharge is exclusive to i/i, and even a moderately peaked base flow would be below capacity. This is also evident in the gage data.”

Staff note: gpm is gallons per minute.

Jackson Pond: The original feasibility report (2008/09) recommended removing the dead pool of standing water in the pond, excavating and deepening the pond, and installing a pumping station to pump water out of the pond. After evaluating funding resources, the City partnered with the MWMO and reconstructed the pond in 2013, becoming operational in 2014. Our records indicated that Jackson Pond has not flooded (overtopped) since its reconstruction. I should also add that rain events vary, and no storm water system is designed for every event.