



To: Chairman Wetzel and members of the Public Works Commission      September 9, 2022  
From: Peter Hartz – Water Systems Manager

Re:            Agenda item – September 13, 2022 - Public Works Commission meeting

**Wastewater Department:**

1. Review and discuss – Rain Event on June 15, 2022 – surface flooding, basement backups and response plans during rain events or power outages. (Country Club Lane complaint)

We have 18 outlying lift stations in Watertown plus the 1 main pump station at the wastewater plant. 2 outlying lift stations have permanent stand by emergency generators (the largest outlying stations) and the remainder are smaller stations where we will trailer a portable generator and set it (them) up, then move around with the truck mounted generator and leapfrog around pumping stations down and checking the generators we set up. None of the wastewater list stations were designed to handle flood waters (storm water) or the inflow – infiltration from groundwater or storm water during heavy rain events. Watertown has a lot of combined sewers remaining that we are working on disconnecting from the sanitary laterals; those are home primarily constructed prior to 1970 where the foundation tiles (interior & exterior) are combined with the sanitary lateral.

The lift stations are spread all over the city, we identify most by the road they are located on or near; here is our list - Fifth ward (N Church St.), Allerman (Richards Ave.), Front St., Hidde (E. Main St.), Riverside Park (Anne St.), Carlson Place, Boughton St., River Lawn, Oak Ridge Ct., 702 N. Water St., Hinze (Silver Creek Rd.), Fox Creel (Fox Creek Dr.), Country Club (1134 N. Water St.), 18<sup>th</sup> Hole (1622 Country Club Ln.), Grandview (Beacon Dr.), Spaulding St., South Concord (West Haven Dr.), Watertown East (Hall & Boughton)

Here is a list of our generators and where they are located – (portables are pick-up & trailer units)

Unit Location	Make	KW	Model	Diesel fuel tank size	Run time under normal load full tank of fuel
Main Plant	Cummins	2000	DQKC-5568528	4000 gallons	91 hours
Hidde Lift Station	Kohler	135	135ROZJ	230 gallons	48 hours
Boughton St. Lift Station	Kohler	50	50REOZJC	230 gallons	62 hours
Pickup Mounted - #1	Onan	25	DKAF-3371155	60 gallons	27 hours
Trailer Unit - #2	Generac	45	MMG45	78 gallons	30 hours
Trailer Unit - #3	Generac	45	MMG45IF4	78 gallons	30 hours
Trailer Unit - #4	Onan	25	DKAF-3371155	60 gallons	27 hours
Trailer Unit - #5	Onan	25	DKAF-5996146	60 gallons	27 hours

The lift station on Country Club Lane in question is the last in a line of 3 stations (we call that one 18<sup>th</sup> hole). Putting a generator at that station will not solve the clear water infiltration problem experienced during heavy rain events coupled with power outages. If that station has a generator and the other 2 downstream do not it will cause an overflow somewhere else. Issues identified for placing a generator at the 18<sup>th</sup> Hole is that the easement small (6' by 25'), Country Club Lane has limited space but is a better however utilities present limit both sites due to lack of space to site a generator next to the wet well and control panels.

The Country Club subdivision dates to the 1960's and all the early homes all had septic systems, I would hope those earlier homes didn't have the sumps or foundation tiles going to their septic systems. Likely none did. The city put in sanitary when the septic systems started failing so back in 1989. And for the 18<sup>th</sup> Hole lift station there are 32 homes on the sanitary line that drain to that lift station the homeowner in question is in the lowest area of the sanitary drainage basin. All the other 30+ homes are contributing factors to the sanitary sewer when the power is out, however those homes all have private wells so in theory there is a limited amount of wastewater that could be discharged in the event of a neighborhood wide power outage.

The sanitary manholes and collection system were constructed with PVC pipe so good joint connections, but no system is 100% watertight. Looking at the as-built plan they do show elevations as a reference and show the flood elevation line near the home owners house and Silver Creek. As it sounds the home has a finished basement with a full bathroom, and I'm not sure where the sump discharges, but know the home has 2 sumps which tells me the groundwater is very high on the end by Silver Creek. Plus, the as-built lift station plans show the lowest buildable floor elevation of 827.3' and the home in question looks to be located where it wouldn't allow a basement, I don't know the basement elevation. The as-builts also show that the lot to the west is unbuildable but I see a house there now so not sure what transpired to allow a home to be built on that lot but understand it does not have a basement and sits on a concrete slab.

While adding a generator will pump the excess clear water, it does not solve the basement back up issues as the problem is not with the city sanitary sewer system in that location – the problem is clear water entering the city sewer system from other areas, i.e., private laterals from cracks, inflow – infiltration into the sanitary, or illegal clear water connections. During power outages and rain events the sumps will fill up and if the power is out (without battery backups) the water will spill out of the sump and into a floor drain or into the basement. The 18<sup>th</sup> hole lift station can hold approximately 2,000 gallons of water (not counting the collection pipe holding capacity, we have 2 pumps each rated at 125 gallons per minute) – and with the power out the homes in that area are not able to pump water since they all have private wells so during the power outage duration the water usage drops and there is ample volume to hold normal usage even if everyone flushes all their toilets during the power outage (assuming the toilets are the only means of holding water when a well pump is inoperable; 3 per home at 5 gallons each = less than 500 gallons). Another estimate is if each water pressure tank holds 25 gallons, then the maximum amount of water would be 800 gallons available + the above volume of 500 gallons = 1,300 gallons; still less than the wet well holding volume.

In the meantime, I have been trying for a few years to move forward with our inspections and enforcement of the city codes related to this issue of clear water entering the sanitary sewer - current codes in existence that reference our sanitary laterals are City Code §508-8. The questions focus on what this might cost for the homeowners notified of the issues found. Most would need a new sanitary lateral and others possibly a sump pump installed – some concerns and feedback received is that in making those corrections then the groundwater discharge to the surface would further exacerbate the surface water flooding issues and inundate the storm water system so it's a larger issue the city if faced with so moving along slow.

During events such as this past one in June, staff must first respond and address the wastewater treatment plant, assure the plant is operational before leaving to address other issues in the collection system. Staff did respond to the lift station with a portable generator, but first the generator had to be set and started at the Spaulding lift station, then the Country Club lift station, after that the 18<sup>th</sup> hole lift station was set up with a generator. I was not able to determine how high the water rose in Silver Creek, or the storm water ditch drainage system during the rain event. That dictates how well the storm water drains, the city storm water system in that entire subdivision is not improved with a piped collection system, its all on the surface of the ground on either side of the road no real collection system that I can see and if there was it would still go to silver creek like it does now. A quick estimate of surface water during the rain event could be done by using the road right of way surface area (that does not include the yard acreage); there is approximately 3.6 acres of drainage area from a storm. With 1" of rain on 1 acre of land equaling 27,154 gallons of water there would be 97,750 gallons of water, we measured just under 4" of rain that day in less than 2 hours. 4" on 3.6 acres = 391,000 gallons of rainwater. These are just quick back of napkins estimates for discussion. We had reports of 6" of rain on the north side of the city from multiple locations. June rain event preceding the 15<sup>th</sup> include 06/04 – 06/08 totaling 1.85", 06/11 event of 0.10", and 06/13 event of 0.80" all of which saturated the soils which slows infiltration into the ground.

Since there is a history of the basement backing up during intense rain events, in my opinion; I think in this situation a sanitary sewer check valve would be a reasonable low-cost solution to that isolated problem, power outage or not when it rains heavy, they seem to have issues with clear water entering the sanitary lateral from collection system. (And its clear water that pushes back the sewer waste into the basement – the sewage in the basement is most likely from the homeowners own lateral; a cleanse of sorts of their own waste pushed backwards). Perhaps a neighborhood plan would be to have every one of those 32 homes inspect the private laterals and get rid of the cracks and such that are leaking water, in addition to communicating that dumping storm water into the sanitary lateral is not only illegal but floods the neighbor's basement. That may help as we mobilize and bring a generator in the future.

The wastewater utility does have plans for a generator at the Spaulding Lift Station in the budget and planned for purchase in 2022 – that is coming to a future meeting.

Sincerely,  
*Peter Hartz*

Water Systems Manger

