The Events of the Sewage Backup of September 22, 2021

The Craigleith Main Lift Station has a firm capacity of 180 L/second, with 100% redundancy. This pumphouse was originally built in 1986, and it has the original pumps. The pumping station is equipped with a back-up generator, in case of a power outage, the facility will keep on running. The station is connected to the Town's Wastewater SCADA System and can be monitored remotely. In addition, the system will alarm when certain set points are met, the alarms notify operators through their on-call cell phone. This pumping station has two available forcemains to pump into, however, for the most part, only one is normally online during this time of year.

On the morning of Tuesday September 21, 2021, with the forecasted heavy rainfall, the operators opened the second forcemain, and ensure it was clear and operating properly. The operators also considered there may be a need to store rainwater at the plant, to prevent the plant from being washed out due to high flows. Half of the Craigleith Wastewater Treatment Plant (WWTP) was empty and available for storage, should it be needed. Operators also considered the options for the Thornbury WWTP, and the lagoon system was pumped right down, in anticipation of the potential for needed storage. Also, at the Craigleith WWTP, the second UV channel was also started, as well as the Filters 3 and 4 with the anticipated high flows.

Prior to the on-set of rain, the Craigleith Lift Station was humming along with a flow between 10 to 50 L/s. this is typical for this time of year. The flow into the station started to increase early on the morning of Wednesday September 22, as the rain started to fall. There is a direct correlation between the rain fall and the increased flows, with little or no lag time. This clearly indicates a direction between the sewer system and either eave troughs or surface run off, or both. By 3:30 in the afternoon, the flow had reached 225 L/s briefing, but appeared to be dropping off. This is significantly higher than the firm capacity of the station. There were periods of extremely heavy rainfall, then periods of it slowing down considerably. The changes can be seen directly in the flow to the station.

At 6:51pm on September 22, 2021, the on-call operator responded to a Craigleith Main Sewage Pumping Station high level and pump #1 at the station had fail alarm. The alarm indicated there was a ground short circuit. The Operator contacted ARO, the Town's Integrator and Electrical support contractor. ARO responded immediately. At roughly 7:44pm, pump #2 failed, motor overload. The On-call operator called in ROHES, sludge hauler, in to start hauling out of the lift station. The hauler was able to haul 510m^3 from the lift station directly to the plant. The On-call operator received calls from 106 Lakeshore Road East, 125 Fraser Cres and 209799 Hwy 26 about sewage flooding their basements. Residents were directed to contact their Insurance Companies. ARO and staff were able to restart both pumps, however they would only run in manual. When the pumps were put in auto mode, they failed. Fans were directed at the drives to prevent them from overheating. Over the course of the night, the flows out of the station ran between 200 L/s and 240 L/s, with both pumps running in manual, at 60 hertz.

When the second pump failed, the Wastewater Supervisor and a second Operator were called in to provide support. At roughly the same time, Mill Street Sewage Pumping Station was struggling to keep up. ROHES commenced hauling out of this lift station to the Thornbury WWTP lagoons. Hauling was also required at the Shore Acres Sewage Pumping Station.

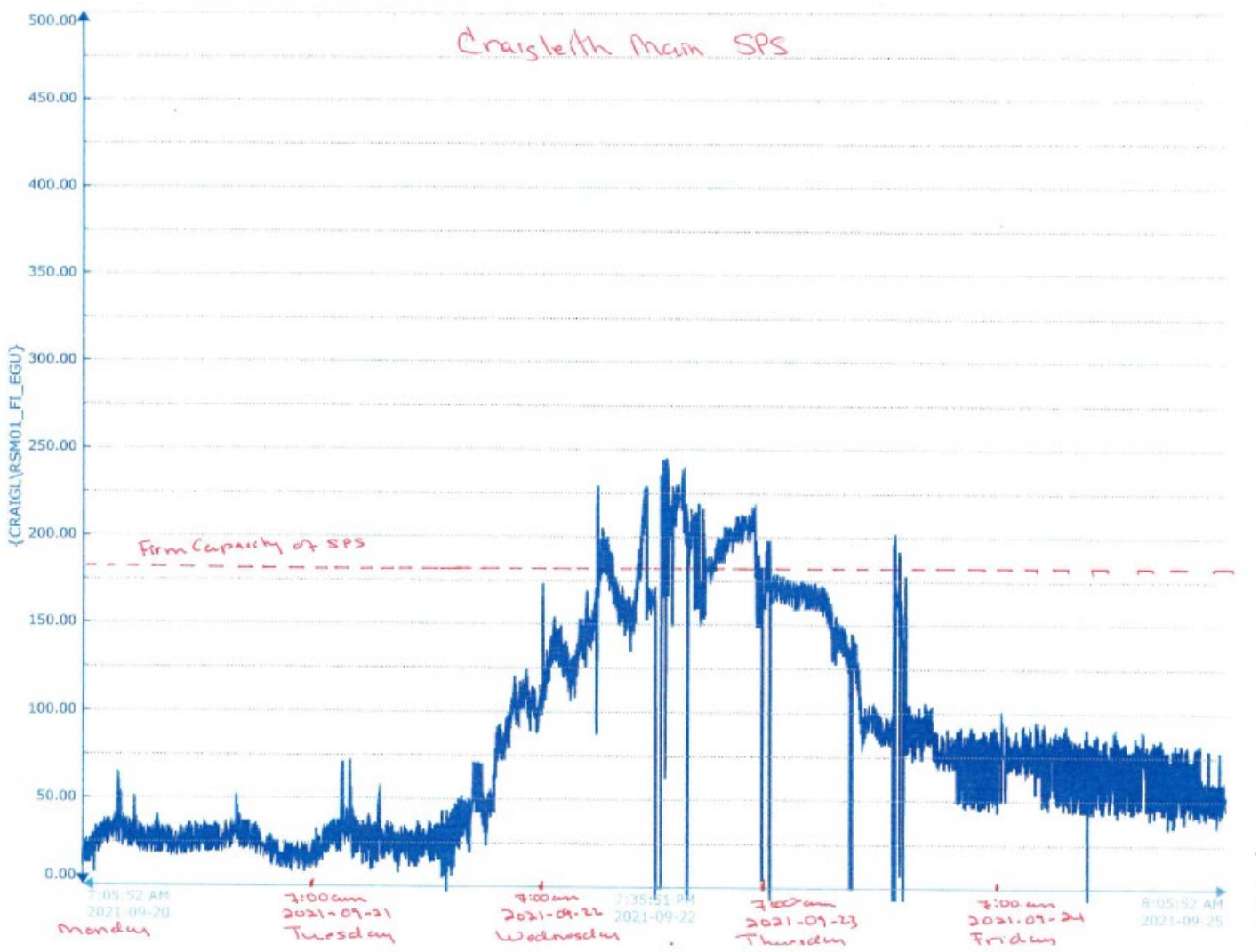
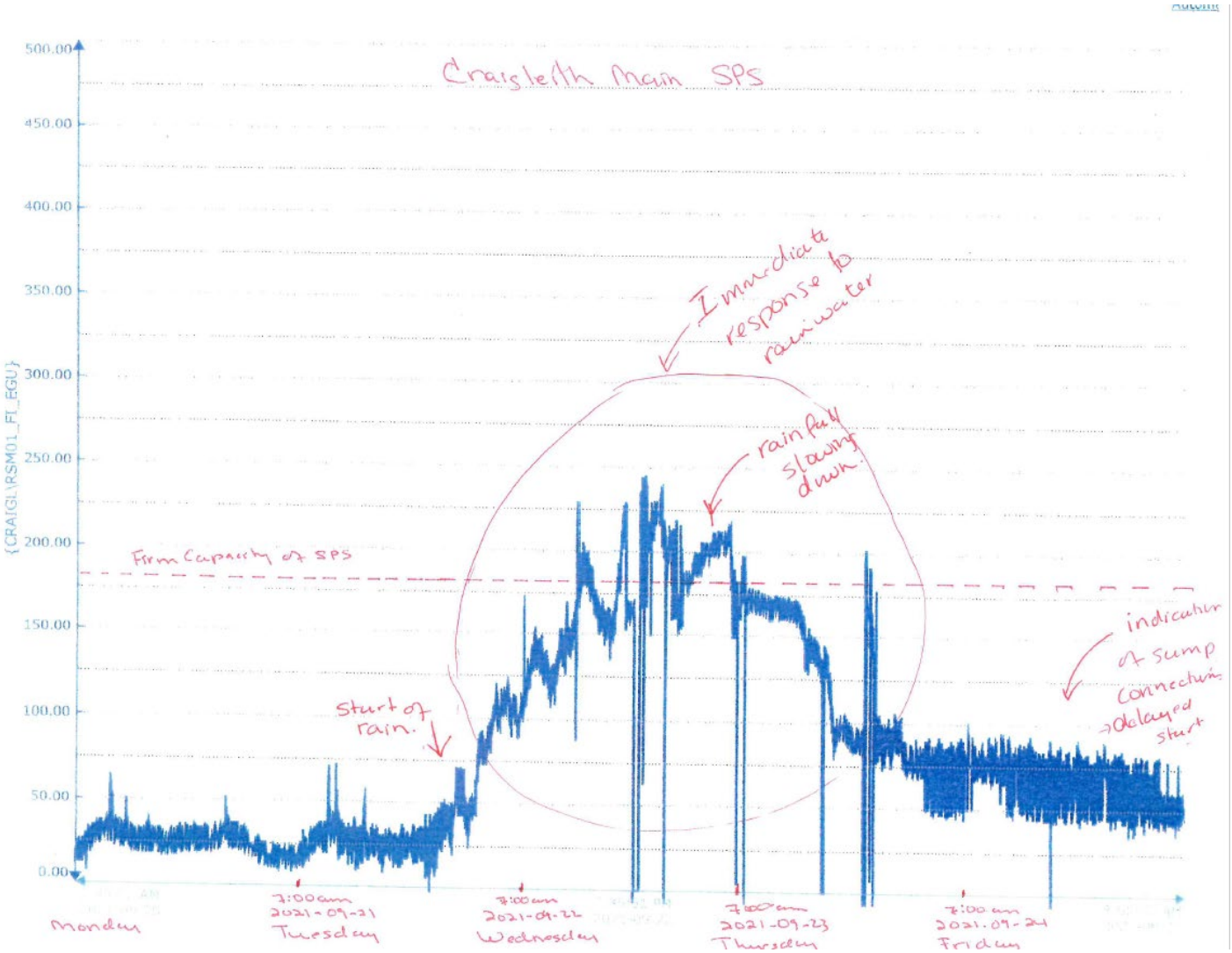
At 7:35am on Thursday September 23, 2021, pump #1 at the Craigleith SPS failed, and it could not be restarted. A Millwright contractor were brought in to assess the pump. The pump was removed Friday

morning, as it needed more repairs then could be completed on site. The pump is due to be reinstated in the morning of Tuesday September 28, 2021.

On Wednesday September 22, 2021, there was 133mm of rainfall in the collection area of Craigleith WWTP. Rain started in the early morning hours and continued right through fairly heavily until 3am September 23, 2021. The rain still continued to fall, but the intensity dropped significantly.

Staff, ARO and ROHES were onsite right through the night until 11am the following morning. By this time, the rain had stopped and the station, even with one pump was able to keep up.

Below is the flow out of the Craigleith Lift Station from Monday September 20, 7:00 am to Saturday September 25, 7:00 am



Below is the analysis based on rainfall