EAST GOSHEN MUNICIPAL AUTHORITY
August 10, 2020
7:00 PM

1. CALL TO ORDER/PLEDGE OF ALLEGIANCE/MOMENT OF SILENCE
   a. Ask if anyone will be taping the meeting

2. CHAIRMAN'S REPORT/OTHER MEMBERS REPORTS

3. SEWER REPORTS

   a. Director of Public Works Report.
   b. Pennoni Engineer's Report.
   c. Big Fish Environmental Report

4. APPROVAL OF MINUTES

   a. July 13, 2020

5. APPROVAL OF INVOICES

Pennoni Invoice #1033436	$	1,924.50
Pennoni Invoice #1033437	$	7,188.25
Tri-State #PCI1320569	$	5,016.00
Abel Brothers Towing #134453	$	500.00
Lenni Electric #200653	$	4,345.00

6. LIAISON REPORTS

7. FINANCIAL REPORTS

   a. July Financial Report

8. OLD BUSINESS

   a.

9. Goals:

Goal	Status
Continue to Monitor Upgrades at WGSTP and Westtown Way Pump Station	On – going, MA Rep attending WGSA meetings monthly. WGSA plans to go to bid in early 2021 on WWPS
Continue to Implement Infiltration and Inflow for the Sewer System	Ongoing Tving and portable meters 17,000 ft. on Chester Creek. 3000 ft. R.C. Collection
Implement planned capital projects:	
RCSTP Emergency Generator Replacement	Generator is installed waiting for Lenni Elec. For hook up.
Caustic Soda Project	Applied for PA Small Water and Sewer Grant; application pending. Project probably needs to be deferred to 2021
Hershey's Mill Pump Station Generator	Generator installed waiting for Lenni Elect. To connect. Suburban Propane removed tank.
Hunt Country Pump Station Mag Meter Replacement	On hold until next year
Hunt Country Pump Station Muffin Monster Replacement	Probably on hold until next year
Hunt Country Pump Station Bypass Pump	On hold until next year
Two New RC Permanent Flow Meters	We will have prices for one meter for the Aug. meeting.

10 NEW BUSINESS

a. RCSTP Permanent Flow Meter
b. Semi-Annual Sewer System Status Report #19

11. CAPACITY REQUESTS

12. ANY OTHER MATTER

13. CORRESPONDENCE AND REPORTS OF INTEREST

14. PUBLIC COMMENT

15. ADJOURNMENT

AREA CODE 610
692-7171

EAST GOSHEN MUNICIPAL AUTHORITY
EAST GOSHEN TOWNSHIP
1580 PAOLI PIKE, WEST CHESTER, PA 19380-6199

August 7, 2020

To: Municipal Authority

From: Mark Miller

Re: July 2020 Monthly Report

Monthly Flows: The average daily flow to West Goshen was 739,000 per day.

Meters: The meters were been read on a daily basis. The portable meters are all back from being calibrated. I will get together with Mike Ellis to figure out where to go next.

C.C. Collection: We visited the pump stations on a daily basis. No problems to report. We televised and cleaned 17,000 feet of pipe. We did find a manhole casting in the Corporate Park that was destroyed by a large field mower. We replaced the casting and lid. We also marked the manholes with delineators. We mowed and cleared the Sewer Right of Ways.

We received a call from a homeowner on Linden Lane that the sewage was backing up in his home. We responded and the blockage was on his side of the lateral. We cleared the blockage and advised them to contact a plumber.

Hurricane Isaias:

While it is fresh in my mind, I would like to report the following events: The Hershey Mill Pump Station was completely flooded, a weather overflow report was sent to the DEP. All stations were on emergency power for 96 hours. The Public Works Dept. monitored the stations throughout the storm and the days after as well. We had to monitor them around the clock because we lost all the alarms.

The plant held its own the plant went into storm mode our operator remained on site until the plant went back to normal. Matthew did an outstanding job operating the plant during and after the storm. We lost the internet and phone service. The plant had to be monitored around

the clock. The generators ran for 4 days, we shuttled fuel each day to fill the generators.

I have to say PECO was very responsive, I located two fuses that were destroyed causing our power problems. PECO showed that we had power when we truly didn't. I explained to the emergency operation center that they had two separate problems. The power was restored Friday morning, as of Friday morning we were still waiting on the internet service.

R.C. Collection: The pump station was visited on a daily basis. The grease was skimmed off on a by weekly basis. Sewer Right of Ways were mowed and cleared.

R.C. Plant: Routine maintenance was performed. The operators started to take the SBR3 off line. A problem occurred with the knife valve on SBR2, it would not fully close. The operator contacted Tri-State Technical. The operator and I met with the technician to discuss the repair due to the age of the valve and the electronics. I asked them to replace all the valves. The total cost was $5,016.00 plus labor. The new generator has been installed; Lenni is scheduled to hook it up next week.

Alarms: We responded to 27 alarms for July.

PA One Calls: We responded to over 77 PA One Calls for the month of July.

Monthly Rainfall: 5.93 inches for the month of July.

Lateral Caps: We replaced 8 lateral caps , most of them were on the Chester Creek side.


Ridey Creek


Old Valve

New
Valve
300/12"
CF3M

Setting new Generator

THIEL
HULLE
SPECTRUM

Christiana Executive Campus
121 Continental Drive, Suite 207
Newark, DE 19713
T: 302-655-4451
F: 302-654-2895

www.pennoni.com

EAST GOSHEN MUNICIPAL AUTHORITY
ENGINEER'S REPORT
August 6, 2020

Invoices

- Invoices with summaries are provided under separate cover.

Ridley Creek Sewage Treatment Plant (RCSTP)

- Generator Replacement – No activity by Pennoni since our last report. We will provide construction phase assistance as needed.
- Influent Metering – We met with Mark Miller at the plant to review the meter location and interior of the manhole. Our wetland scientist checked the site for potential impact of a new metering manhole. We summarized our thoughts regarding a new influent metering manhole in a memo to Mark sent August 6, 2020.

Tallmadge Drive Sewer Main Replacement

- The 2-year maintenance bond period ends March 21, 2021.

I&I Support and Reporting

- We reviewed meter data from the portable meters that were installed in the collection systems in April-May, and issued an I & I report on August 5, 2020 addressed to Mark.

Ridley Creek Collection System Permanent Meters

- We obtained quotes for three permanent metering manholes and prepared an updated memo with recommended locations and projected costs. Three permanent metering manholes are proposed. As previously discussed, we provided an actionable quote to Mark for the Hibbard Lane meter location. We also provided an updated memo and supporting documentation on August 5, 2020 summarizing planning adjustments since the last meeting.

Hershey's Mill Pump Station Generator Replacement

- No activity by Pennoni since our last report.

New Connections

- No activity by Pennoni since our last report.

Act 537 Planning

- As discussed at the May MA meeting, the need for an Act 537 Plan Update will be revisited in early 2021.

Willistown Township

- We coordinated with East Goshen and Willistown staff regarding intermunicipal agreements, ownership, and O&M responsibilities for the 20 Willistown parcels connected to East Goshen's sewer system as part of due diligence for Willistown's sewer system sale.

Westtown Way Pump Station

We reviewed documentation including plans and engineering estimates for potential value engineering options.

END OF REPORT

RCSTP Monthly Operations Report:
August 2020

Executive Summary

The Ridley Creek sewage treatment plant outfall 001 achieved compliance with the permit discharge limitations for the month of June 2020. Discharge to the Applebrook irrigation lagoon remained on line. Chemical usage utilized for pH and total alkalinity remained consistent with previous months. No significant mechanical or operational issues were observed during operation of sludge dewatering equipment or SBR treatment process. There were no odor complaints during the month. Additional operations of the centrifuge were implemented to minimize the potential for odor complaints.

Treatment Process Operation

Table 1 illustrates the final effluent composite sample data reported for outfall 001 for the June 2020 DMR.

Table 1

June 2020- Final Effluent - Outfall 001											
NPDES Permit Discharge Limitations	Flow	$CBOD_5$		TSS		NH_4-N		Phosphorus,Total		Fecal Coliform	
	MGD Average	mg/L	lbs/ month	mg/L	lbs/ month	mg/L	lbs/ month	mg/L	lbs/ month	Geo Mean	Geo Mean
	0.75	20	125	10	131	2.5	44	0.5	3	200	1,000
		40		15							
Sample Date											
June 2, 2020	0.284	2.0	4.7	2	4.7	0.100	0.24	0.18	0.43	11	1.0414
June 9, 2020	0.269	0.3	0.6	4	9.0	0.100	0.22	0.28	0.63	2	0.3010
June 15, 2020	0.303			3	7.6						
June 16, 2020	0.262	2.0	4.4	4	8.7	0.100	0.22	0.20	0.44	1	0.0000
June 23, 2020	0.268	2.0	4.5	6	13.4	0.100	0.22	0.26	0.58	10	1.0000
June 29, 2020	0.257			4	8.6						
June 30, 2020	0.293	2.0	4.9	4	9.8	0.1	0.2	0.2	0.44	1.0	0.0
Average	0.277	1.7	3.8	4	8.8	0.10	0.23	0.22	0.50	5	0.4685
Minimum	0.257	0.3	0.6	2	4.7	0.10	0.22	0.18	0.43	1	0.0000
Maximum	0.303	2.0	4.9	6	13.4	0.10	0.24	0.28	0.63	11	1.0414

Compliance with the NPDES discharge permit was achieved. The monthly average total phosphorus was reported as 0.23 mg/L as compared to the permit limitation of 0.5 mg/L. The TSS samples were consistently less than the weekly maximum of 15 mg/L. The monthly average TSS was reported as 4 mg/L as compared to the discharge limitation of 10 mg/L. The TSS weekly averages are presented below in Table 2.

Table 2	
June 2020 Final Effluent Weekly TSS Averages	
Week 1	2 mg/L
Week 2	4 mg/L
Week 3	4 mg/L
Week 4	6 mg/L
Week5*	4 mg/L

**Week 5 consisted of June 29th and 30th*

The final effluent test results demonstrate that the biological treatment process performed well during May and June. Sequencing batch reactors (SBRs) numbered 1, 3 and 4 were in service during June and July. SBR 3 was removed from service for inspection, however, the effluent valve for SBR 2 failed and required returning SBR 3 to service. Process monitoring of each SBR included ammonia as N, nitrite as N, Nitrate as N, COD, SSV, MLSS and total phosphorus. Daily analysis of the final effluent flow equalization grab sample for total phosphorus is ongoing. Sample collection and analysis of the influent wastewater collected at the influent pump station wet well is ongoing.

Discharge to the Applebrook irrigation lagoon, outfall 002, continues to remain on line. Table 3 illustrates the Applebrook sample data reported for outfall 002 for the June 2020 DMR.

The influent wastewater pollutant concentrations and loading entering the wastewater treatment facility remained within the design concentration and organic loading values. The monthly average daily concentrations were observed to be less than the design parameters for the treatment process.

Table 4 presents the available pollutant data for the influent wastewater collected at the doghouse manhole during June 2020.

Table 3

June 2020 - Applebrook - Out Fall 002											
NPDES Permit Discharge Limitations	Flow	$CBOD_5$		TSS		NH_4-N		Phosphorus,Total		Fecal Coliform	
	MGD Average	mg/L	lbs/ month	mg/L	lbs/ month	mg/L	lbs/ month	mg/L	lbs/ month	Geo Mean	Geo Mean
	0.135	**25**		**30**		**2.5**	**44**	**0.5**	**3**	**200**	**1,000**
		40		**45**							
June 2, 2020	0.0462	2.0	0.8	2	0.8	0.100	0.04	0.18	0.07	11	1.0414
June 9, 2020	0.0450	0.3	0.1	4	1.5	0.100	0.04	0.28	0.11	2	0.3010
June 15, 2020	0.0591			3	1.5						
June 16, 2020	0.0523	2.0	0.9	4	1.7	0.100	0.04	0.20	0.09	1	0.0000
June 23, 2020	0.0504	2.0	0.8	6	2.5	0.100	0.04	0.26	0.11	10	1.0000
June 29, 2020	0.0614			6	3.1						
June 30, 2020	0.0560	2.0	0.9	6	2.8	0.100	0.05	0.18	0.08	10	1.0000
Average	0.053	1.7	0.7	4	2.0	0.10	0.04	0.22	0.09	7	0.6685
Minimum	0.045	0.3	0.1	2	0.8	0.10	0.04	0.18	0.07	1	0.0000
Maximum	0.061	2.0	0.9	6	3.1	0.10	0.05	0.28	0.11	11	1.0414

Table 4

June 2020 - Influent Wastewater											
Design Basis	Flow	BOD_5		TSS		NH_4-N		TKN, mg/L		Phosphorus,Total, mg/L	
		mg/L	lbs/day	mg/L	lbs/day	mg/L	lbs/day	mg/L	lbs/day	mg/L	lbs/day
	MGD Average	**335**	**2,098**	**320**	**2,001**	**32**	**200**	**48**	**301**	**9.1**	**57**
Sample Date											
June 2, 2020	0.4159	253	878	383	1,328	30.3	105	45.7	159	7.0	24.3
June 9, 2020	0.4284	172	615	350	1,250	24.0	86	46.4	166	6.6	23.6
June 16, 2020	0.4163	203	705	248	861	29.1	101	42.7	148	6.2	21.5
June 23, 2020	0.4768	169	672	297	1,181	28.3	113	48.0	191	6.0	23.9
June 30, 2020	0.417	197	685	278	967	28.8	100	47.6	166	6.3	21.9
Average	**0.4309**	**199**	**711**	**311**	**1,118**	**28.1**	**101**	**46.1**	**166**	**6.4**	**23.0**
Minimum	**0.4159**	**169**	**615**	**248**	**861**	**24.0**	**85.7**	**42.7**	**148**	**6.0**	**21.5**
Maximum	**0.4768**	**253**	**878**	**383**	**1,328**	**30.3**	**113**	**48.0**	**191**	**7.0**	**24.3**

Table 5

July 2020- Final Effluent - Outfall 001											
NPDES Permit Discharge Limitations	Flow	$CBOD_5$		TSS		NH_4-N		Phosphorus,Total		Fecal Coliform	
	MGD Average	mg/L	lbs/ month	mg/L	lbs/ month	mg/L	lbs/ month	mg/L	lbs/ month	Geo Mean	Geo Mean
	0.75	20	125	10	131	2.5	44	0.5	3	200	1,000
		40		15							
Sample Date											
July 6, 2020	0.272			4	9.1						
July 7, 2020	0.26	3	6.5	14	30.4	0.104	0.23	0.36	0.78	3	0.4771
July 10, 2020	0.446							0.40	1.49		
July 13, 2020	0.347			3	8.7						
July 14, 2020	0.166	2.5	3.5	3	4.2	0.100	0.14	0.24	0.33	26	1.4150
July 21, 2020	0.165	2.3	3.2	9	12.4	2.63	3.62	0.33	0.45	60	1.7782
July 27, 2020	0.155										
July 28, 2020	0.16										
Average	0.246	2.6	4.4	7	12.9	0.94	1.33	0.33	0.76	30	1.2234
Minimum	0.155	2.3	3.2	3	4.2	0.10	0.14	0.24	0.33	3	0.4771
Maximum	0.446	3.0	6.5	14	30.4	2.63	3.62	0.40	1.49	60	1.7782

The foam on the SBR surface remains at approximately 70 to 100% coverage of the surface area. The foam thickness is approximately 3 to 4 inches with a light to medium brown color. These conditions may contribute to a decrease in clarity within the final effluent post flow equalization basins; however, the clarity is improved after passing through the disc filters. The operation strategy is to lower the MLSS to maintain a F:M ratio of 0.06 while ensuring the ammonia effluent discharge concentration remains within the seasonal limit of 2.5 mg/L.

Table 5 illustrates the available data for the final effluent composite sample data reported for outfall 001 for use with the July 2020 DMR.

Table 6 illustrates the available data for the Applebrook composite sample data reported for outfall 002 for use with the July 2020 DMR.

Table 6

July 2020 - Applebrook - Out Fall 002											
NPDES Permit Discharge Limitations	Flow	$CBOD_5$		TSS		NH_4-N		Phosphorus,Total		Fecal Coliform	
	MGD Average	mg/L	lbs/ month	mg/L	lbs/ month	mg/L	lbs/ month	mg/L	lbs/ month	Geo Mean	Geo Mean
	0.135	25		30		2.5	44	0.5	3	200	1,000
		40		45							
July 6, 2020	0.0620			4	2.07						
July 7, 2020	0.0648	3.0	1.6	14	7.57	0.104	0.06	0.36	0.19	3	0.4771
July 10, 2020	0.0000							0.40	0.00		
July 13, 2020	0.0038			3	0.10						
July 14, 2020	0.1729	2.5	3.6	3	4.33	0.100	0.14	0.24	0.35	26	1.4150
July 21, 2020	0.1695	2.3	3.3	9	12.72	2.630	3.72	0.33	0.47	60	1.7782
July 27, 2020	0.1503										
July 28, 2020	0.1464										
Average	0.146	2.6	2.8	7	5.4	0.94	1.31	0.33	0.25	30	1.2234
Minimum	0.000	2.3	1.6	3	0.10	0.10	0.06	0.24	0.00	3	0.4771
Maximum	0.173	3.0	3.6	14	12.7	2.63	3.72	0.40	0.47	60	1.7782

Table 7 presents the available pollutant data for the influent wastewater collected at the doghouse manhole during July 2020. The influent wastewater pollutant loadings remain within the design criteria for the treatment process and equipment.

During July, the average monthly influent wastewater flow measured at the "field" flow meter was 452,625 gallons//day as compared to the influent flow into the SBRs as 416,459 gallon/day. The average flow measured at the "field" was higher in volume than the flows to the SBRs, however, the "field" flow volume should be lower than the flow volume to the SBRs because of the absence of the internal recycle flow volume.

The field flow meter, influent flow channel, grinder and fine screen are inspected routinely for any noticeable signs (blinding of screens) that may contribute to increased head losses through the channel. The depth of grit in the channel prior to the fine grinder is also monitored for depth and for scheduling cleaning of the channel.

Table 7

July 2020 - Influent Wastewater											
Design Basis	Flow	BOD_5		TSS		NH_4-N		TKN, mg/L		Phosphorus,Total, mg/L	
		mg/L	lbs/day	mg/L	lbs/day	mg/L	lbs/day	mg/L	lbs/day	mg/L	lbs/day
	MGD Average	335	2,098	320	2,001	32	200	48	301	9.1	57
Sample Date											
July 7, 2020	0.4828	229	922	295	1,188	32.0	129	37.9	153	4.7	18.9
July 14, 2020	0.4201	155	543	268	939	27.1	95	38.8	136	5.1	17.9
July 21, 2020	0.4458	223	829	248	922	31.6	117	42.3	157	9.0	33.5
July 28, 2020	0.47779										
Average	0.4566	202	765	270	1,016	30	114	39.7	149	6.3	23.4
Minimum	0.4201	155	543	248	922	27	95	37.9	136	4.7	17.9
Maximum	0.4828	229	922	295	1,188	32	129	42.3	157	9.0	33.5

PA DEP

No activity

Significant Rainfall

During July, there were eight (9) days when rainfall occurred. Two (2) storm events resulting in a daily precipitation amount equal to or greater than 0.50 inches. These events occurred on:

July 7th 0.70 inches
July 11th 3.35 inches

A total of 4.85 inches of rainfall measured during the month.

Plant operations were adjusted to manage the precipitation to prevent exceedances of the permitted discharge limitations for Outfalls 001 and 002. Adjustments included reducing aeration minutes per cycle, extending decant minutes per cycle and reducing settling times.

Chemical Usage:

July 2020		
Chemical	**Daily Average**	**Total Monthly**
Soda Ash	300	9,600
Aluminum Sulfate solution	72.5	2,248

Flow data:

July 2020			
Flow Meter Location	**Total Volume for Month, MG**	**Average Daily Flow, gpd**	**Daily Maximum Flow, gpd**
Influent Wastewater to Screening Building*	14.031	452,625	805,660
Influent Wastewater to SBRs*	12.077	416,459	764,416
Internal Recycle**	0.212	6,834	211,846
Treated Effluent to Disc Filters	11.808	407,203	535,936
Final Effluent Discharge	6.579	212,226	446,000
Applebrook Golf Course	3.303	106,538	202,256

*The total flow measured into the SBRs is lower than the total flow measured at the "field" flow meter. The difference does not represent or is indicative on an overflow. The difference is attributed to the inconsistent accuracy with "field" flow meter.

**The internal recycle flow is only represented by one (1) day where the flow recorded at the "field" flow meter was less than the flow recorded into the SBRs.

Minor Preventative Maintenance

Flushed chemical feed lines to the SBRs.
Cleaned final effluent weir trough daily
Skimmed surface of disc filters daily
Drained and cleaned disc filters bi-weekly
Cleaned buildings and laboratory

SBR 3

SBR 3 is was removed from service for inspection on July 20th. SBR 2 was placed in service and was determined to have a failed effluent valve resulting in solids loss from the SBR into the post flow equalization basins. SBR 2 was removed from service and SBR 3 returned to service.

SBR 3 will be scheduled for removal from service during late August, cleaned and prepared for inspection.

Utility Water Pump

Mark and his team replaced the utility water pump on July 9th.

They also discovered that one of the gaskets on the Applebrook pump had blown out, which most likely is why the flow to Applebrook has been lower this year than previous years. They replaced the gaskets and everything is functioning normally.

Tropical Storm Isaias

Tropical Isaias arrives late Monday, August 3rd through Tuesday, August 4th. A total of 6.9 inches of precipitation was recorded at the plant. Mathew, plant operator, remained on site throughout the daily responding to alarms, adjusting the treatment process and managing the flows through the plant to prevent tanks from overflowing and maintain a reasonable quality of effluent discharged into Ridley Creek. The wet land area outside the treatment plant perimeter fence resembled a river, with all manholes in the wetland area submerged. By 6:00 PM on Tuesday, August 4th, the treatment plant was functioning well and processing the influent flows without any "hands on or manual adjustments." The facility lost power and continues to operate using the emergency generators (as of Thursday, August 6th).

Clean up and review of the facility and area outside of the fence was completed on Wednesday, August 6th. There was nothing unusual observed in the wetland area or discharge location to Ridley Creek.

Figure 1 Flooded Wetland Area

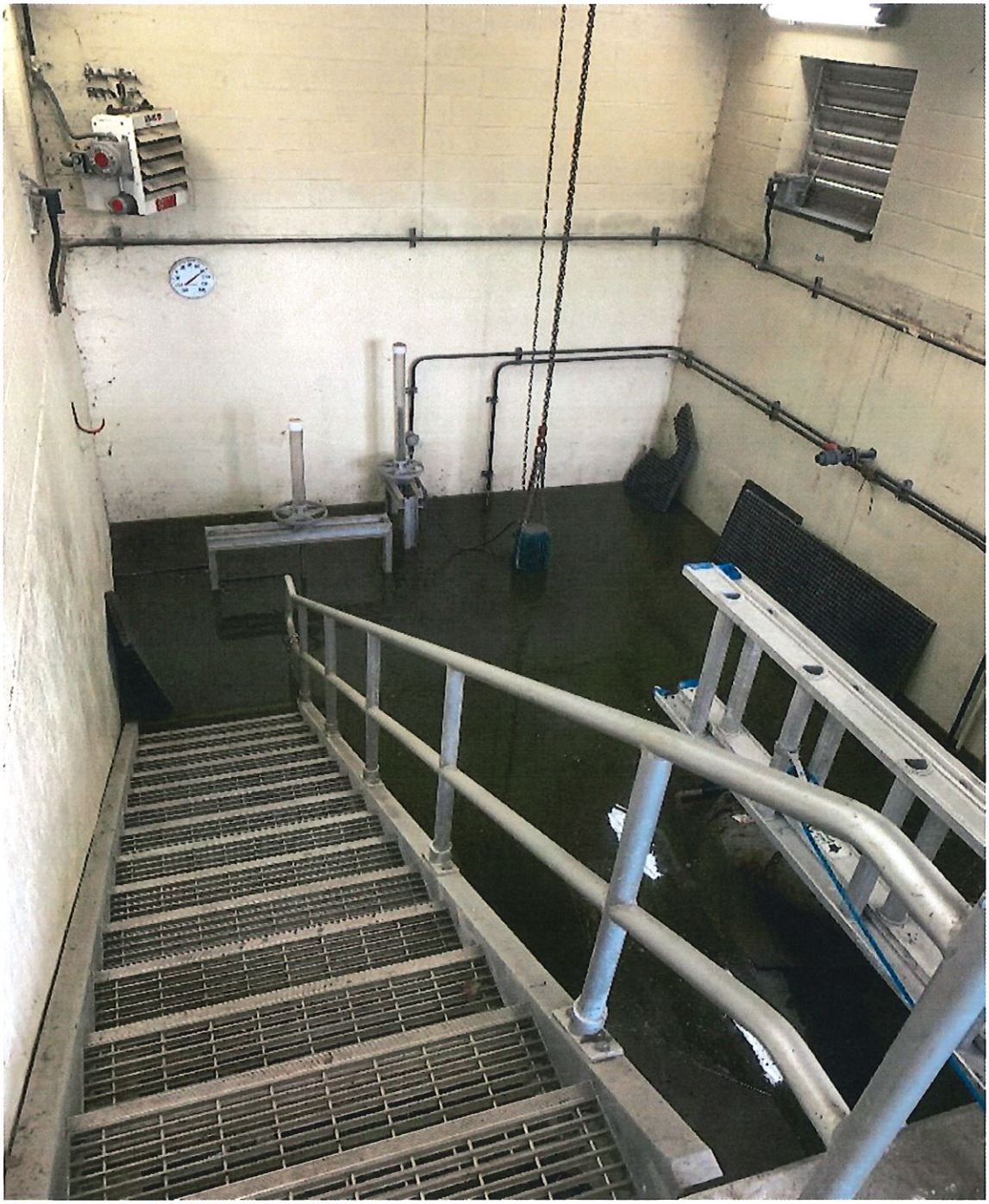


Figure 2RCSTP Influent Screening Building

DRAFT
EAST GOSHEN TOWNSHIP MUNICIPAL AUTHORITY
MEETING MINUTES
July 13, 2020

The East Goshen Township Municipal Authority held their regular meeting on Monday, July 13, 2020 at 7:00 pm. Due to restrictions caused by the COVID-19 virus, the meeting was held via electronic conferencing Zoom and in the Township Building. Members in attendance were: Chairman Phil Mayer, Jack Yahraes, Dana Pizarro and Walter Wujcik. Also in attendance were: Jon Altshul (Township Asst. Manager), Mark Miller (Director of Public Works), Mike Ellis (Pennoni), Robert C. Jefferson (Gawthrop), Michael Lynch (Township Supervisor); Scott Towler (Plant Operator) and Susan D'Amore (Township staff) .

COMMON ACRONYMS:

BFES – Big Fish Environmental Services
BOS – Board of Supervisors
CB – Conservancy Board
DEP – Department of Environmental Protection
EPA – Environmental protection Agency
HC – Historical Commission
I&I – Inflow & Infiltration
LCSTP – Lockwood Chase Sewer Treatment Plant
MA- Municipal Authority
NPDES – National Pollutant Discharge Elimination System
PC – Planning Commission
PM – Prevention Maintenance
PR – Park & Recreation Board
RCSTP – Ridley Creek Sewer Treatment Plant
SBR – Sequencing Batch Reactor
SSO – Sanitary System Overflow
WAS – Waste Activated Sludge

Call to Order & Pledge of Allegiance

Phil called the meeting to order at 7:05 pm and led those present in the Pledge of Allegiance. There was a moment of silence to remember our medical and healthcare staffs, troops, veterans and first responders. Phil asked if anyone would be recording the meeting. There was no response.

Chairman's Report

1. Phil thanked Mark Miller for the trench rescue training session. It was very good and well attended.
2. Phil attended the July 1st West Goshen meeting. They were in compliance for June. TMDL litigation costs were discussed. They have to make reports for 5 years so East Goshen will receive some bills. Jon and Mark will follow up with Mike Moffa to see how much is involved. Dana feels there will be a lot of testing.

Phil mentioned that for the WTWPS they submitted part 2 application for Fishing Wild Life Clearance. They are updating the plan and will go out to bid in a few months.

Sewer Reports

1. Director of Public Works, Mark Miller's report for June 2020:

Monthly Flows: The average daily flow to West Goshen was 760,000 gal/day.

Meters: The meters were read on a daily basis. The portable meters are due back any day from being calibrated and serviced. Once we receive them for HACH, they will be installed.

C.C. Collection: The pump stations were checked on a daily basis. Wet wells were washed down and cleaned. We excavated the pad for the new generator and poured it at the Hershey Mill Pump Station. We are currently waiting on the propane company to remove the old tank before we install the generator. The removal of the tank will take place on the 14th of July. We installed cast iron lateral covers in the Steeple Chase Development. We cleared several

trees that came down in a couple of the sewer right of ways. We started tving and cleaning the sanitary sewers on the streets that are scheduled for paving. All the stations ran on emergency power for 32 hours due to storm damage.

R.C. Collection: The pump station was checked on a daily basis. The basket was pulled and cleaned on a daily basis. Rags were removed from the basket. The wet well was scrapped and vacuumed out. The station ran on emergency power for 32 hours due to storm damage. A couple of residents called reporting a strong sewer odor on Cornwallis Drive. Steve Biondi and I made several trips out to investigate the odor. The residents reported that the odor was so strong it would wake them in the middle of the night. We installed charcoal filters in the manholes and they still called. We decided to televise the lateral of the abandoned house on Cornwallis Dr. and we located several broken caps. We replaced them. We then started receiving odor complaints from East Grand Oak Lane. I checked the wind readings from the weather station for the previous week when they noticed the odor. It was a Southwesterly wind. I reached out to Texas Eastern Pipeline to see if the station on Wineberry Lane, where they added the Mercaptan, had a problem. We could not find anything on the site. I contacted Jarred Golden at Hershey Mill Village and asked if he was having any problems. Jarred said he lost his plant about eight days ago. He said he thinks the weather and the disinfectants everyone is using caused them to lose the plant as of July 2nd. He felt that the plant was starting to come back.

Ridley Creek Plant: Routine maintenance was performed by the Public Works Department. The screen room chamber was cleaned. The temporary meter has been installed and checked every couple of days. The Public Works Department moved the old generator and demolished the old pad. The crew excavated for the new pad and installed the rebar as designed. The pad was poured on June 23rd. We are currently allowing the concrete to cure before we mount the new generator. I did receive an odor complaint from one of our neighbors behind the plant. I contacted the plant operator who stated that he was decanting the sludge holding tank overnight and that he turned the air back on which caused the odor to occur. I advised Scott Towler of the problem and he said that he would increase the dewatering operation.

The plant operator called to say that the utility water was not working on July 8th. We were tied up on a tree problem, so I told him we would be down Thursday morning. Thursday morning it was determined that the pump had to be pulled and sent to Deckmen's. We installed the backup pump and we were able to get the utility pump up and running. We also noticed that a gasket was blown out on the Applebrook water line pump. We pulled the pump and replaced the gasket and put that pump back in service. The plant was back in service.

Alarms: We responded to 56 alarms in June.

PA One Calls: We responded to over 97 PA One Calls for the month of June.

Rainfall: 5.72 inches for the month of June

Lateral Caps: We replaced 10 lateral caps and 2 cast iron boxes.

Note: Mike Lynch mentioned that he noticed an odor coming from the holding basins at the Hershey Mill Golf Club. He felt it was due to the change in the wind.

2. Pennoni Engineer's Report for June dated July 10, 2020

Invoices – Invoices with summaries were provided under separate cover.

Ridley Creek Sewage Treatment Plant (RCSTP)

- Generator Replacement – No activity by Pennoni since out last report. We will provide construction phase assistance as needed.

- Influent Metering – we reviewed Big Fish's draft analysis of the portable influent meter that was installed in a different manhole and their recommendations regarding metering.

Tallmadge Drive Sewer Main Replacement

The 2-year maintenance bond period ends March 21, 2021.

I&I Support and Reporting

We are reviewing mater data from the portable meters that were installed in the collection systems in April-May, and we will issue an I&I report upon completion of the analysis.

Ridley Creek Collection System Permanent Meters

We obtained quotes for two permanent metering manholes and prepared an updated memo with recommended locations and projected costs. Three permanent metering manholes are proposed. The third manhole is proposed for 2021 so an updated quote was not obtained for that location.

Hershey's Mill Pump Station Generator Replacement

No activity by Pennoni since our last report.

New Connections

No activity by Pennoni since our last report.

Act 537 Planning – Grant Opportunity

As discussed at the May meeting, the need for an Act 537 Plan Update will be revisited in early 2021.

Willistown Township

We coordinated with East Goshen and Willistown staff regarding intermunicipal agreement, ownership, and O&M responsibilities for the 20 Willistown parcels connected to East Goshen's sewer system as part of due diligence for Willistown's sewer system sale.

Note: Mike Ellis commented that RFQs (Request For Quotes) will go out in a few months. Mike Lynch mentioned that East Bradford sold their system in 2018 to Aqua.

3. Big Fish Environmental Services –

Scott reported that the Ridley Creek sewage treatment plant outfall 001 achieved compliance with the permit discharge limitations for the month of May 2020. Discharge to the Applebrook irrigation lagoon remained online. Chemical usage utilized for pH and total alkalinity remained consistent with previous months. No significant mechanical or operational issues were observed during operation of sludge dewatering equipment or SBR treatment process. There was one (1) odor complaint during decanting of the sludge holding tank sludge. Additional operations of the centrifuge without minimal decanting activated has been implemented to minimize the potential for odor complaints.
June data coming in looks good. The failed utility pump was replaced. SBR3 was taken out of service on July 20th for cleaning. When it passes inspection, SBR4 will be taken out of service until spring of 2021. All disc filters will be done at the same time. This task takes several people.
Scott spoke about flow meters concerns and explained the process.

Approval of Minutes

Jack moved to approve the June 8, 2020 minutes as amended. Walter seconded the motion. The motion passed unanimously.

Approval of Invoices

1. Pennoni - Jack moved to approve payment of Pennoni invoice #1029158 for $742.75. Walter seconded the motion. The motion passed unanimously.
2. Gawthrop - Dana moved to approve payment of the Gawthrop invoice #226894 for $320.00. Walter seconded the motion. The motion passed unanimously.

3.Main Line Concrete - Walter moved to approve payment of the following invoices from Main Line Concrete:

Concrete:	#462243	$1,131.00
	#463032	$2,320.50

Jack seconded the motion. The motion passed unanimously.

4. O'Rourke - Dana moved to approve payment of the O'Rourke and Sons, Inc. invoice #R45097 for $1,850.00. Jack seconded the motion. The motion passed unanimously.

5. Pipe Express - Jack moved to approve payment of the Pipe Express Inc. invoice #106100 for $156.65. Walter seconded the motion. The motion passed unanimously.

Jon suggested that the MA should discuss all invoices and then approve them as submitted in one motion.

Liaison Reports

1. Board of Supervisors – Mike Lynch reported that Jon gave a good suggestion regarding a sewer rate increase. He spoke about continuing the hybrid meetings. They are trying to work out a way to have the Zoning Hearing Board hearing, regarding Malvern Institute, as more of an in person meeting. Mike spoke about policing and wanting to have a conversation with WEGO. The Pipeline Task Force has asked the BOS to enforce the noise ordinance on the Sunoco pipeline construction. He mentioned overbilling by an attorney for pipeline activity. There are no issues in the case for East Goshen.

2. Conservancy Board – Walter reported that maintenance spraying for invasives in open spaces is continuing. At their September meeting, the CB will decide whether to hold the Keep East Goshen Beautiful Day event or not.

Financial Reports

Jon Altshul provided the following written report:

In June, the Municipal Authority recorded $6,662 in revenues (via transfers) and $9,5623 in expenses, including $7,884 for Q2 administrative charge back, for a negative variance of $2,899. As of June 30th, the fund balance was $1,286.

Goals

Goals for 2020 were reviewed.

Old Business

1. Westtown Way Pump Station – The memo from Mike Moffa was discussed. It contained information from HRG describing different types of pumps. Dana is very familiar with this type of set up and feels it's what they should have done from the start. Jon is concerned about the costs. Mike Lynch commented that we were given an original estimate and got funds based on that estimate. Now the cost is much higher. He feels we must have better communication with West Goshen. Mark Miller described what they have to do to be above the 100 yr. flood plain. He suggested letting it go to bid.

New Business

1. Hershey Mill Pump Station generator – Mark Miller mentioned that the Beale Township Fire Department purchased the generator from Hunt Country 5 years ago. However, that generator doesn't run the entire firehouse. They would like to have the Hershey Mill Pump Station generator which will take care of the entire facility. Jack moved to approve the sale of the Hershey Mill Pump

Station generator to Beale Township Fire Department for $1.00. Walter seconded the motion. The motion passed unanimously.

2. Permanent Metering material quotes and 2 permanent metering manholes - Mike Ellis reviewed his memo about RCCS Permanent Sanitary Metering. They recommend the following 3 locations for installation of flow metering devices:

a. Hibberd Lane – between manholes R-217 and R-218 within the lawn north of Boot Road, in between Hibberd Lane and The Bellingham Retirement Community. Estimated cost of materials $22,894; Labor $10,000 – 15,000; Total $33,000-38,000.

b. Line Road – between manholes R-237 and R-238 within the lawn south of the intersection of Paoli Pike and Line Road. Estimated cost of materials $19,474; labor $10,000 – 15,000; total $30,000 – 35,000.

c. Blacksmith Shop – between manholes R-020 and R-021, withing the lawn southeast of the intersection of Boot Road and North Chester Road. Estimated cost of materials $22,894; labor $10,000- 15,000; total $33,000 - $38,000.

Mike discussed the materials needed and that the Public Works Department would do most of the installations. He recommended waiting until 2021 to do the Blacksmith shop which will be more challenging because of the creek. He feels the Hibberd Lane location is more critical because it had more flow problems. Jon thinks the budget was $55,000. Jon and Mark agree to do one this year and see how the year goes.

Phil moved to approve the purchase of metering materials for the Hibberd Lane location. Walter seconded the motion. The motion passed with a 3-1 vote. Dana voted nay. He feels they are not essential and all 3 should be done next year.

Any Other Matter

1. PMAA – The Annual Conference will be held in Hershey, PA from Aug. 30 to Sept. 2. No one from East Goshen will be attending.

2. Audit Subcommittee – Walter and Dana are on this subcommittee which will follow the entire payment process of some invoices. They will meet with the auditors. They will present a report at the next meeting.

3. Future Meetings – The hybrid meeting that was used tonight was discussed. It was decided to make it available to attendees for next month's meeting.

4. On Site Sewer Systems - Mike Lynch mentioned that some residents who live in Charter Chase and Goshen Downs, which have on site sewer systems, have approached him about the possibility of connecting to public sewer. Some are selling their homes and have to replace the current on site system. Mike suggested that a letter be sent to the homeowners. Jon commented that the BOS gave instruction for him, Rick Smith and Mark Miller to meet with the HOAs which they will do over the next few months. It is very costly to homeowners.

Adjournment

There being no further business Jack moved to adjourn the meeting. Walter seconded the motion. The motion passed unanimously. The meeting was adjourned at 8:30 pm.

The next regular meeting will be held on Monday, August 10, 2020 at 7:00 pm.

Respectfully submitted,

Ruth Kiefer, Recording Secretary

INVOICE

Remit Payment To:
Pennoni Associates Inc.
P.O. Box 827328
Philadelphia, PA 19182-7328

Rick Smith
East Goshen Municipal Authority
1580 Paoli Pike
West Chester, PA 19380-6199

Invoice No : 1033436
Invoice Date : 07/29/2020
Project : EGMAU20002
Project Name : 2020 I&I Support and Reports

For Services Rendered Through 07/19/2020

Continued analysis of Ridley Creek collection system portable metering data; and initiated semi-annual I&I report.

Billing Limits	Current	Prior	To-Date
Total Billings	1,924.50	341.50	2,266.00
Limit			11,000.00
Remaining			8,734.00

Labor

	Hours	Rate	Amount	
Authority Engineer	.25	132.00	33.00	
Associate Professional	19.50	97.00	1,891.50	
Totals	19.75		1,924.50	
Total Labor				**1,924.50**
			Total this Invoice	**$1,924.50**

OK

OK

INVOICES DUE ON RECEIPT. Invoices outstanding over 30 days will have a Service Charge of 1 1/2% per month.

East Goshen Municipal Authority
EGMAU20002 Invoice Summary
Invoice Date 7/29/2020

Project:	EGMAU20002			
Pennoni Job No.:	2020 General Services			
Invoice No:	**1033436**			
Invoice Period:	3/23/2020		to	7/19/2020
Initial Authorization:	$ 11,000.00		**Date:**	7/28/2020
Contract Amount:	$ 11,000.00			
Previously Invoiced:	$ 341.50			
Current Invoice:	$ 1,924.50			
Invoiced to Date ($):	$ 2,266.00			
Invoiced to Date (%):	21%			
Remaining Budget ($):	$ 8,734.00			
Remaining Budget (%):	79%			

Budget by Phase:

Phase Name:	2020 General Services
Phase Budget:	$ 11,000.00
Previously Invoiced:	$ 341.50
Current Invoice:	$ 1,924.50
Invoiced to Date ($):	$ 2,266.00
Invoiced to Date (%):	21%
Remaining Budget ($):	$ 8,734.00
Remaining Budget (%):	79%

Comments: Continued analysis of Ridley Creek collection system portable metering data; and initiated semi-annual I&I report.

INVOICE

Remit Payment To:
Pennoni Associates Inc.
P.O. Box 827328
Philadelphia, PA 19182-7328

Rick Smith
East Goshen Municipal Authority
1580 Paoli Pike
West Chester, PA 19380-6199

Invoice No : 1033437
Invoice Date : 07/29/2020
Project : EGMAU20001
Project Name : 2020 General Services

For Services Rendered Through 07/19/2020

July Engineer's Report; and prepared for and attended July MA meeting. Continued scoping for permanent Ridley Creek collection system meters, performed field visits to proposed Hibberd Ln and Line Rd meter locations, obtained updated vendor cost quotes, and prepared and submitted an updated recommendation memo. Reviewed Big Fish's meter data analysis for RCSTP influent metering from temporary doghouse manhole location, initiated evaluation of alternatives for new meter location vs. rehab of existing field location, as-built plan research, performed field visit to evaluate alternatives with M. Miller and operator, and initiated preparation of an alternatives assessment and recommendations memo. Initiated value engineering review of Westtown Way Pump Station rehab plans and cost estimate. Prepared for visual structural and coatings condition assessment of SBR #3 (assessment rescheduled thereafter due to need for valve repairs in SBR#2).

Billing Limits	Current	Prior	To-Date
Total Billings	7,188.25	3,535.75	10,724.00
Limit			28,000.00
Remaining			17,276.00

Labor

	Hours	Rate	Amount	
Authority Engineer	19.25	132.00	2,541.00	
Senior Professional	11.25	125.00	1,406.25	
Associate Professional	28.00	97.00	2,716.00	
Engineering Technician	6.25	84.00	525.00	
Totals	64.75		7,188.25	
Total Labor				**7,188.25**
			Total this Invoice	**$7,188.25**

OK

INVOICES DUE ON RECEIPT. Invoices outstanding over 30 days will have a Service Charge of 1 1/2% per month.

East Goshen Municipal Authority
EGMAU20001 Invoice Summary
Invoice Date 7/29/2020

Project:	EGMAU20001			
Pennoni Job No.:	2020 General Services			
Invoice No:	**1033437**			
Invoice Period:	6/22/2020		to	7/19/2020
Initial Authorization:	$	27,000.00	**Date:**	7/29/2020
Contract Amount:	$	28,000.00		
Previously Invoiced:	$	3,535.75		
Current Invoice:	$	7,188.25		
Invoiced to Date ($):	$	10,724.00		
Invoiced to Date (%):		38%		
Remaining Budget ($):	$	17,276.00		
Remaining Budget (%):		62%		

Budget by Phase:

Phase Name:	2020 General Services	
Phase Budget:	$	28,000.00
Previously Invoiced:	$	3,535.75
Current Invoice:	$	7,188.25
Invoiced to Date ($):	$	10,724.00
Invoiced to Date (%):		38%
Remaining Budget ($):	$	17,276.00
Remaining Budget (%):		62%

Comments: July Engineer's Report; and prepared for and attended July MA meeting. Continued scoping for permanent Ridley Creek collection system meters, performed field visits to proposed Hibberd Ln and Line Rd meter locations, obtained updated vendor cost quotes, and prepared and submitted an updated recommendation memo. Reviewed Big Fish's meter data analysis for RCSTP influent metering from temporary doghouse manhole location, initiated evaluation of alternatives for new meter location vs. rehab of existing field location, as-built plan research, performed field visit to evaluate alternatives with M. Miller and operator, and initiated preparation of an alternatives assesment and recommendations memo. Initiated value engineering review of Westtown Way Pump Station rehab plans and cost estimate. Prepared for visual structural and coatings condition assessment of SBR #3 (assessment rescheduled thereafter due to need for valve repairs in SBR#2).

ZDRef: AAF00001-0

Remit To:
Tri-State Technical Sales Corporation
382 Lancaster Avenue · PO Box 4006 · Malvern, PA 19355
Phone: (610) 647-5700
Fax: (610) 647-3905
E-Mail: corp@tristatetech.com
Web: www.tristatetechnicalsales.com

INVOICE

Invoice Number: PCI1320569
Invoice Date: 08/03/20
Page: 1

Bill To: East Goshen Township
Attn.: Accounts Payable
1580 Paoli Pike
West Chester, PA 19380

Attention:

Ship To: East Goshen Township
Ridley Creek WWTP
1750 Towne Dr
East Goshen, PA 19380

Attention:

Customer ID: C003376
P.O. Number: 17366
Reference:
P.O. Date: 07/21/20
Our Order No.: CO1237083

Ship Via: Our Delivery
Tracking No.:
Ship Date: 08/03/20
Due Date: 09/02/20
Terms: Net 30
Contact: Roger Fryberger

	Item/Description	Customer Number	Order Qty	Shipped Qty	B/O'd Qty	Unit Price	Total Price
HB100014	52-120-141-E1B Deltech Lugged BFV, S/S Disc, EPDM Seat,Bare St		4	4		604.00	2,416.00
BA-NS	Bracket & Adapter 12" Deltech to SQ12.2		4	4		350.00	1,400.00
SERVICE	Field Service to Trouble shoot and Deliver units		8	8		150.00	1,200.00
	Delivery 1 week						

APPROVED BY: MSM
DATE PAID:
CHECK #:
CHARGED TO: 87429 - 1505

Amount Subject to Sales Tax: 0.00
Amount Exempt from Sales Tax: 5,016.00

1.5% per Month Service Charge will be added to all Overdue Balances.

American Express, MasterCard and VISA accepted

* Original Invoice *

Subtotal: 5,016.00
Invoice Discount: 0.00
Total Sales Tax: 0.00

Amount Due: 5,016.00

INVOICE

ABEL BROTHERS TOWING & AUTO
690 N. Morehall Road
MALVERN, PENNSYLVANIA 19355
(610) 644-1073
FAX (610) 644-3365

Invoice

Date	Invoice #
7/14/2020	134453

BILL TO:

East Goshen Township
1580 Paoli Pike
West Chester, PA 19380

P.O. NUMBER	TERMS	PROJECT
Generator	Net 30 Days	

QUANTITY	DESCRIPTION	RATE	AMOUNT
	On-site move: lift generator from trailer, rotate unit and place on concrete pad	500.00	500.00

APPROVED BY: MA
DATE PAID:
CHECK #:
CHARGED TO: 07429.1505

Total	TOTAL
	$500.00

LENNI ELECTRIC CORPORATION

1020 Andrew Drive
West Chester PA 19380
610-436-9922

62633

COPY

Service Invoice

Invoice#: 200653

Date: 06/30/2020

Billed To: East Goshen Township
1580 Paoli Pike
West Chester PA 19380

Project: 32053
HERSHEYS MILL STATION
1490 HERSHEY MILL RD
WEST CHESTER PA 19380

Scheduled: 05/26/2020
Time:

Employee:

Order#:

Description	UM	Quantity	Price	Ext Price
HERSHEY PUMP STATION UPGRADE SERVICE 5-26-20 AND 6-1-20 EXCAVATE TRENCH WITH MINI EXCAVATOR AND HAND DIG; INSTALL 2" PVC FROM POLE TO METER SOCKET; INSTALL 1" PVC FROM BUILDING TO FOUNTAIN CONTROL PANEL; PULL SERVICE CONDUCTOR; TERMINATE IN METER SOCKET AND IN DISCONNECT; INSTALL 160' OF 1" PVC TO FOUNTAIN.				
ELECTRICIANS - 3 MEN 8 HRS EACH	HR	24.00	86.50	2,076.00
ELECTRICIAN W/ BUCKET	HR	6.50	150.00	975.00
APPRENTICE	HR	16.00	69.00	1,104.00
MINI EXCAVATOR	LS	1.00	160.00	160.00
SERVICE TRUCK	LS	1.00	30.00	30.00

APPROVED BY: MCL
DATE PAID:
CHECK #:
CHARGED TO: 07429.1503

Terms are Net 30 days.
Balances over 30 days are subject to a finance charge of 2% per month.
Thank you for your prompt payment!

Non-Taxable Amount:	4,345.00
Taxable Amount:	0.00
Sales Tax:	0.00
Amount Due	**4,345.00**

Memo

To: Municipal Authority
From: Jon Altshul
Re: MA July Financial Report
Date: August 6, 2020

In July, the Municipal Authority recorded $10,851 in revenues (via transfers) and $10,866 in expenses, for a negative variance of $15. As of July 31, the fund balance was $1,270.

A complete list of 2020 YTD MA revenues and expenses is attached.

EAST GOSHEN TOWNSHIP
Other Funds
July 2020
Municipal Authority

Account Title	Acct #	Annual Budget	Y-T-D Budget	Y-T-D Actual	Y-T-D Variance	M-T-D Budget	M-T-D Actual	M-T-D Variance
REVENUE								
INTEREST EARNINGS	07341 1000			(100.99)	(100.99)		(14.87)	(14.87)
CAPITAL RESERVE-INTEREST	07341 1010							
INTEREST EARNED - CONSTRUCTION	07341 1020							
DCED GRANT	07354 0400			3,231.00	3,231.00			
C.C. TAPPING FEES	07364 1100							
R.C.TAPPING FEES	07364 1110							
M.C. LOAN PAYMENTS	07364 1120							
CONNECTION FEES - SEWER	07364 1130			845.64	845.64			
MISCELLANEOUS REVENUE	07380 1000	565	330	423.36	93.36	47		(47.08)
TRANSFER FROM GENERAL ACCT	07392 0100							
TRANSFER FROM SEWER OPERATING	07392 0500	319,435	186,338	13,392.50	(172,945.50)	26,620	1,062.75	(25,556.83)
TRANSFER FROM SEWER CAP RESV	07392 0501	277,000	161,584	234,082.13	72,498.13	23,083	9,802.65	(13,280.68)
TRANSFER-ANNUAL CAP.RESERVE	07392 0510							
GRANT REVENUE	07392 0800							
LOAN PROCEEDS - SEWER PROJECT	07392 0804							
TRANSFER FROM SEWER CAP RESERVE	07392 0900							
TOTAL REVENUE		597,000	348,252	251,873.64	(96,378.36)	49,750	10,850.53	(38,899.47)
EXPENSES								
ADMINISTRATIVE WAGES	07424 1400	32,000	18,666	15,768.88	2,897.12	2,667		2,666.67
R.C. LOAN ISSUANCE COSTS	07424 1500							
MISCELLANEOUS EXPENSE	07424 3000			738.00	(738.00)			
MUNIC.AUTH.-AUDITING	07424 3110			9,300.00	(9,300.00)			
ENGINEERING SERVICES	07424 3130	60,000	35,000	11,379.75	23,620.25	5,000	742.75	4,257.25
LEGAL SERVICES	07424 3140	8,000	4,666	3,358.05	1,307.95	667	320.00	346.67
W.G. C.C.STP-UPGRADE	07424 7400							
MANHOLE COVER REPLACEMENTS	07424 7405							
C.C. CAPITAL - METERS	07424 7410							
C.C. CAPITAL- COLLECTION	07424 7420							
C.C. CAPITAL- INTERCEPTOR	07424 7430							
CAPITAL PROJ.-ENGINEERING	07424 7431							
R.C. CAPITAL-STP	07424 7440							
R.C. CAPITAL - COLLECTION	07424 7450							
R.C.-CAP. PROJ.-ENGINEER	07424 7451							
CAP.REPLACEMENT R.C.	07424 7490			26,264.60	(26,264.60)			
CAPITAL REPLACEMENT ASHBRIDGE	07424 7491							
HERSHEY MILL STATION - ENGINEER	07426 1000			6,294.49	(6,294.49)			
HERSHEY MILL STATION - CONSTRUCTION	07426 2000							
TALLMADGE DRIVE	07426 3000							

Report Date 2007 08/06/20 12 : 29 PM

EAST GOSHEN TOWNSHIP
Other Funds
July 2020
Municipal Authority

Account Title	Acct #	Annual Budget	Y-T-D Budget	Y-T-D Actual	Y-T-D Variance	M-T-D Budget	M-T-D Actual	M-T-D Variance
RESERVOIR PUMP STATION - ENGINEER	07428 1000							
RESERVOIR PUMP STATION CONSTRUCTION	07428 2000							
RELINING	07429 1500							
BARKWAY PUMP STATION CAPITAL	07429 1501			2,810.99	(2,810.99)			
HERSHEYS MILL PUMP STATION CAPITAL	07429 1503	45,000	26,250	43,604.00	(17,354.00)	3,750	6,195.00	(2,445.00)
HUNT CO PUMP STATION CAPITAL	07429 1504	87,000	50,750		50,750.00	7,250		7,250.00
RCSTP CAPITAL	07429 1505	365,000	212,916	155,957.03	56,958.97	30,417	3,608.15	26,808.52
ASBESTOS CONCRETE ENGINEERING	07429 3130							
DIVERSION PROJ.- LEGAL	07429 3166							
WEST GOSHEN CAPITAL	07429 6100							
M.C.-DVRFA-DEBT SERVICE	07471 1000							
M.A.-R.C. DEBT SERVICE	07471 1010							
DVRFA PUMPING STATIONS - PRINCIPAL	07471 2000							
M.C.-DVRFA-INTEREST PAYMN	07472 1000							
M.A.-R.C. INTEREST	07472 1010							
DVRFA PUMPING STATIONS - INTEREST	07472 2000							
TRANSFER TO GENERAL FUND	07492 0100							
TRANSFER TO SEW.OPERATING	07492 0500							
TRF TO SEWER CAPITAL RESERVE FUND	07492 0550							
TRANSFER TO AUTHORITY CAP FUND	07492 0990							
TOTAL EXPENSES		597,000	348,248	275,475.79	72,772.21	49,750	10,865.90	38,884.10
NET RESULT FROM OPERATIONS			4	(23,602.15)	(23,606.15)		(15.37)	(15.37)

2020 Municipal Authority Revenues and Expenses Thru 7/31/20

Account #	Description	Per	Debits	Credits	Date	Check#	Name	Description	Description 2
07341-1000	BEGINNING BALANCE								
07341-1000	INTEREST EARNINGS	2001	15	0	1/2/2020	BANK FEES	REIMBURSE S/R FOR DEC.2019	BANK FEES	
07341-1000	INTEREST EARNINGS	2001	0	0.65	1/31/2020	INTEREST	INTEREST EARNED JANUARY 2020	7100.1035	
07341-1000	INTEREST EARNINGS	2002	15	0	2/4/2020	REIMB.FEES	REIMBURSE S/R FOR JANUARY 2020	ACH & POSITIVE PAY BANK FEES	
07341-1000	INTEREST EARNINGS	2002	0	0.64	2/29/2020	INTEREST	INTEREST EARNED FEBRUARY 2020	7100.1035	
07341-1000	INTEREST EARNINGS	2003	15	0	3/2/2020	BANK FEES	REIMBURSE S/R FOR FEB.2020	BANK FEES	
07341-1000	INTEREST EARNINGS	2003	0	0.62	3/31/2020	INTEREST	INTEREST EARNED MARCH 2020	7100.1035	
07341-1000	INTEREST EARNINGS	2004	15	0	4/6/2020	BANK FEES	REIMBURSE S/R FOR MARCH 2020	BANK FEES	
07341-1000	INTEREST EARNINGS	2004	0	1.77	4/30/2020	INTEREST	INTERERST EARNED APRIL 2020	7100.1035	
07341-1000	INTEREST EARNINGS	2005	15	0	5/4/2020	REIMBURSE	REIMBURSE S/R FOR APRIL 2020	POSITIVE PAY & ACH BANK FEES	
07341-1000	INTEREST EARNINGS	2005	0	0.11	5/31/2020	INTEREST	INTEREST EARNED MAY 2020	7100.1035	
07341-1000	INTEREST EARNINGS	2006	15	0	6/1/2020	BANK FEES	REIMBURSE S/R FOR MAY 2020	BANK FEES	
07341-1000	INTEREST EARNINGS	2006	0	0.09	6/30/2020	INTEREST	INTEREST EARNED JUNE 2020	7100.1035	
07341-1000	INTEREST EARNINGS	2007	15	0	7/2/2020	REIMBURSE	REIMBURSE S/R FOR JUNE 2020	BANK FEES	
07341-1000	INTEREST EARNINGS	2007	0	0.13	7/31/2020	INTEREST	INTEREST EARNED JULY 2020	7100.1035	
07354-0400	BEGINNING BALANCE								
07354-0400	DCED GRANT	2002	0	3231	2/1/2020	LAST 10%	DCED GRANT - MUFFIN MONSTER	DCED GRANT	
07364-1130	BEGINNING BALANCE								
07364-1130	CONNECTION FEES - SEWER	2002	0	423	2/3/2020	2670	STOFFLET, MICHAEL		
07364-1130	CONNECTION FEES - SEWER	2002	0	423	2/26/2020	659	JACOBS, ROBERT & CHERYL		
07364-1130	CONNECTION FEES - SEWER	2002	0	423	2/28/2020	869	GEORGE SMITH & CHRISTINA CONLE		
07364-1130	CONNECTION FEES - SEWER	2002	141.12	0	2/3/2020	PINE ROCK	ANNUAL PINE ROCK INSTALLMENT		
07364-1130	CONNECTION FEES - SEWER	2002	141.12	0	2/26/2020	PINE ROCK	ANNUL PINE ROCK INSTALLMENT		
07364-1130	CONNECTION FEES - SEWER	2002	141.12	0	2/28/2020	PINE ROCK	ANNUAL PINE ROCK INSTALLMENT		
07380-1000	BEGINNING BALANCE								
07380-1000	MISCELLANEOUS REVENUE	2002	0	141.12	2/3/2020	PINE ROCK	ANNUAL PINE ROCK INSTALLMENT		
07380-1000	MISCELLANEOUS REVENUE	2002	0	141.12	2/26/2020	PINE ROCK	ANNUL PINE ROCK INSTALLMENT		
07380-1000	MISCELLANEOUS REVENUE	2002	0	141.12	2/28/2020	PINE ROCK	ANNUAL PINE ROCK INSTALLMENT		
07392-0500	BEGINNING BALANCE								
07392-0500	TRANSFER FROM SEWER OPERATING	2002	0	1451.3	2/12/2020	XFER	XFER FROM SEWER TO MA		
07392-0500	TRANSFER FROM SEWER OPERATING	2002	1451.3	0	2/12/2020	REVERSE	REVERSE XFER TO MA FROM SEWER	OPERATING	
07392-0500	TRANSFER FROM SEWER OPERATING	2004	0	3666	4/15/2020	XFER	XFER TO MUN.AUTH. FROM SEWER	OPERATING AND SEWER CAPITAL	
07392-0500	TRANSFER FROM SEWER OPERATING	2005	0	1986.5	5/12/2020	XFER	XFER $ FROM 05 SEWER OPERATING	TO MA 5/12/20	
07392-0500	TRANSFER FROM SEWER OPERATING	2006	0	1677.25	6/12/2020	XFER	XFER $ FROM 05 TO MA FUND		
07392-0500	TRANSFER FROM SEWER OPERATING	2006	0	5000	6/29/2020	XFER	XFER $ FROM SEWER TO MA		
07392-0500	TRANSFER FROM SEWER OPERATING	2007	0	1062.75	7/15/2020	XFER	XFER TO 07 FROM 05		
07392-0501	BEGINNING BALANCE								
07392-0501	TRANSFER FROM SEWER CAP RESV	2002	0	4391.8	2/11/2020	RECLASS	RECLASS TRXS 72036 & 72044		
07392-0501	TRANSFER FROM SEWER CAP RESV	2002	0	10984.6	2/11/2020	RECLASS	RECLASS TRXS 72036 & 72044		
07392-0501	TRANSFER FROM SEWER CAP RESV	2002	0	16832.16	2/12/2020	XFER	XFER $ FROM SEWER CAPITAL TO	MA	
07392-0501	TRANSFER FROM SEWER CAP RESV	2003	0	18342.17	3/12/2020	XFER	XFER $ FROM SEWER CAPITAL TO	MUNICIPAL AUTH. 3/12/20	
07392-0501	TRANSFER FROM SEWER CAP RESV	2003	0	1451.3	3/17/2020	XFER	XFER FROM SEWER OPERATING TO	MA FEB.2020	
07392-0501	TRANSFER FROM SEWER CAP RESV	2004	0	156237	4/3/2020	XFER	XFER $ FROM SEWER CAPITAL TO	MUNIC.AUTH.	
07392-0501	TRANSFER FROM SEWER CAP RESV	2004	0	1422.5	4/15/2020	XFER	XFER TO MUN.AUTH. FROM SEWER	OPERATING AND SEWER CAPITAL	
07392-0501	TRANSFER FROM SEWER CAP RESV	2004	0	1451.3	4/17/2020	XFER	XFER FROM 09 TO 07 2/12/20		
07392-0501	TRANSFER FROM SEWER CAP RESV	2004	1451.3	0	4/20/2020	REVERSE	REVERSE TRX. 73370		
07392-0501	TRANSFER FROM SEWER CAP RESV	2004	1451.3	0	4/20/2020	XFER	XFER TO 09 FROM 07- 3/13/20		

07392-0501	TRANSFER FROM SEWER CAP RESV	2004	0	15000	4/27/2020	XFER		XFER $ FROM SEWER CAPITAL TO	MA 4/27/20
07392-0501	TRANSFER FROM SEWER CAP RESV	2005	0	1069.25	5/12/2020	XFER		XFER FROM 09 SEWER CAPITAL	RESERVE TO MA 5/12/20
07392-0501	TRANSFER FROM SEWER CAP RESV	2007	0	5457.65	7/1/2020	REIMBURSE		REIMBURSE MA OPERATING FOR 09	EXPENSES
07392-0501	TRANSFER FROM SEWER CAP RESV	2007	0	4345	7/17/2020	XFER		XFER FR: SEWER CAP.RESERVE TO	MUNICIPAL AUTH.
07392-0900	BEGINNING BALANCE								
07392-0900	TRANSFER FROM SEWER CAP RESERVE	2001	0	4391.8	1/15/2020	XFER		XFER $ FROM SEWER SINKING TO	MA RE: JANUARY EXPENSES
07392-0900	TRANSFER FROM SEWER CAP RESERVE	2001	0	10984.6	1/15/2020	XFER		XFER $ FROM SEWER SINKING TO	MA RE: JAN.2020 ADDL'EXP.
07392-0900	TRANSFER FROM SEWER CAP RESERVE	2002	4391.8	0	2/11/2020	RECLASS		RECLASS TRXS 72036 & 72044	
07392-0900	TRANSFER FROM SEWER CAP RESERVE	2002	10984.6	0	2/11/2020	RECLASS		RECLASS TRXS 72036 & 72044	
07424-1400	BEGINNING BALANCE								
07424-1400	ADMINISTRATIVE WAGES	2003	7884.44	0	3/30/2020		3198	EAST GOSHEN TOWNSHIP - GENERAL	QTR.1 2020 REIMBURSEMENT - M
07424-1400	ADMINISTRATIVE WAGES	2006	7884.44	0	6/26/2020		3208	EAST GOSHEN TOWNSHIP - GENERAL	QTR.2 2020 REIMBURSEMENT - M
07424-3000	BEGINNING BALANCE								
07424-3000	MISCELLANEOUS EXPENSE	2003	100	0	3/12/2020		3194	PMAA	PMAA SPRING WORKSHOP - W.W
07424-3000	MISCELLANEOUS EXPENSE	2003	638	0	3/19/2020		3196	DELAWARE RIVER BASIN COMMISSION	2020 ANNUAL FEE D-2000-030 CP
07424-3110	BEGINNING BALANCE								
07424-3110	MUNIC.AUTH.-AUDITING	2003	9300	0	3/26/2020		3197	MAILLIE FALCONIERO & CO.	EXAM.- FINANCIAL STATEMNTS 1. MUNICIPAL AUTHORITY
07424-3130	BEGINNING BALANCE								
07424-3130	ENGINEERING SERVICES	2001	1666	0	1/15/2020		3183	PENNONI ASSOCIATES INC.	SERVICES THRU 12/8/19 2019 GEI
07424-3130	ENGINEERING SERVICES	2002	893.25	0	2/12/2020		3187	PENNONI ASSOCIATES INC.	SERVICE THRU 1/19/20 2020 GEN
07424-3130	ENGINEERING SERVICES	2003	2508	0	3/11/2020		3193	PENNONI ASSOCIATES INC.	SERVICE THRU 2/16/20 2020 GEN
07424-3130	ENGINEERING SERVICES	2004	3366	0	4/15/2020		3202	PENNONI ASSOCIATES INC.	SERVICES THRU 3/22/20 2020 I&I
07424-3130	ENGINEERING SERVICES	2005	1486.5	0	5/12/2020		3205	PENNONI ASSOCIATES INC.	SERVICE THRU 4/19/20 2020 GEN
07424-3130	ENGINEERING SERVICES	2006	717.25	0	6/11/2020		3207	PENNONI ASSOCIATES INC.	SERVICES THRU 5/17/20 2020 GEI
07424-3130	ENGINEERING SERVICES	2007	742.75	0	7/15/2020		3213	PENNONI ASSOCIATES INC.	SERVICES THRU 6/21/20 2020 GEI
07424-3140	BEGINNING BALANCE								
07424-3140	LEGAL SERVICES	2001	558.05	0	1/16/2020		3185	GAWTHROP GREENWOOD & HALSTED	LEGAL SERVICE - 12/6-12/11/19
07424-3140	LEGAL SERVICES	2003	720	0	3/11/2020		3191	GAWTHROP GREENWOOD & HALSTED	LEGAL SERVICE - 1/13/20 GEN.AU
07424-3140	LEGAL SERVICES	2004	300	0	4/15/2020		3201	GAWTHROP GREENWOOD & HALSTED	LEGAL SERVICE 3/6-3/9/20 GEN.A
07424-3140	LEGAL SERVICES	2005	500	0	5/12/2020		3204	GAWTHROP GREENWOOD & HALSTED	LEGAL SERVICE 4/7-4/13/20 GEN.
07424-3140	LEGAL SERVICES	2006	960	0	6/11/2020		3206	GAWTHROP GREENWOOD & HALSTED	LEGAL SERVICES 5/8-5/14/20 GEN
07424-3140	LEGAL SERVICES	2007	320	0	7/15/2020		3212	GAWTHROP GREENWOOD & HALSTED	LEGAL SERVICE 6/5-6/8/20 GEN.A
07424-7490	BEGINNING BALANCE								
07424-7490	CAP.REPLACEMENT R.C.	2001	10984.6	0	1/15/2020		3184	EVOQUA WATER TECHNOLOGIES LLC	DECANTER VALVES
07424-7490	CAP.REPLACEMENT R.C.	2002	15280	0	2/12/2020		3188	TRI-STATE TECHNICAL SALES CORP.	ELECTRIC VALVES FOR SBR TANKS
07426-1000	BEGINNING BALANCE								
07426-1000	HERSHEY MILL STATION - ENGINEER	2001	3805.05	0	1/15/2020		3183	PENNONI ASSOCIATES INC.	SERV. THRU 12/8/19 HMPS SURVI DESIGN FOR GENERATOR
07426-1000	HERSHEY MILL STATION - ENGINEER	2002	1390.67	0	2/12/2020		3187	PENNONI ASSOCIATES INC.	SERVICE THRU 1/19/20 HMPS SUI DESIGN FOR GENERATOR
07426-1000	HERSHEY MILL STATION - ENGINEER	2003	1098.77	0	3/11/2020		3193	PENNONI ASSOCIATES INC.	SERV. THRU 2/16/20 HMPS SURVI
07429-1501	BEGINNING BALANCE								
07429-1501	BARKWAY PUMP STATION CAPITAL	2002	91.57	0	2/12/2020		3186	CONTRACTOR'S CHOICE	SLINGS & STIHL HD LOCK-BLADE k
07429-1501	BARKWAY PUMP STATION CAPITAL	2002	69.92	0	2/12/2020		3189	YALE ELECTRIC SUPPLY CO	FENDER WASHER, PVC ADAPTER, & GRAY LIQUIDTITE
07429-1501	BARKWAY PUMP STATION CAPITAL	2003	2649.5	0	3/11/2020		3192	LEC - LENNI ELECTRIC CORPORATION	MUFFIN MONSTER PIPED & WIRE
07429-1503	BEGINNING BALANCE								
07429-1503	HERSHEYS MILL PUMP STATION CAPITA	2004	37409	0	4/3/2020		3199	PREMIUM POWER SERVICES LLC.	60k W GENERATOR HERSHEY MIL
07429-1503	HERSHEYS MILL PUMP STATION CAPITA	2007	1850	0	7/2/2020		3210	O'ROURKE & SONS INC.	REBARS - HERSHEY MILL GENERAT
07429-1503	HERSHEYS MILL PUMP STATION CAPITA	2007	4345	0	7/16/2020		3214	LEC - LENNI ELECTRIC CORPORATION	HERSHEY PS UPGRADE SERVICE
07429-1505	BEGINNING BALANCE								
07429-1505	RCSTP CAPITAL	2001	586.75	0	1/15/2020		3183	PENNONI ASSOCIATES INC.	SERV. THRU 12/8/19 RCSTP GENE
07429-1505	RCSTP CAPITAL	2003	8884	0	3/11/2020		3190	DECKMAN MOTOR & PUMP INC.	REBUILT SBR PUMP #2

07429-1505	RCSTP CAPITAL	2003	2798.4	0	3/11/2020	3192	LEC - LENNI ELECTRIC CORPORATION	RIDLEY CREEK MCC BREAKER BUC
07429-1505	RCSTP CAPITAL	2003	2911.5	0	3/11/2020	3193	PENNONI ASSOCIATES INC.	SERV. THRU 2/16/20 RCSTP GENE
07429-1505	RCSTP CAPITAL	2003	1160.48	0	3/19/2020	3195	ABLE EQUIPMENT RENTAL INC.	CRANE CARRY DECK RENTAL 3/9-:
07429-1505	RCSTP CAPITAL	2004	118828	0	4/3/2020	3199	PREMIUM POWER SERVICES LLC.	450k W GENERATOR RCSTP
07429-1505	RCSTP CAPITAL	2004	1422.5	0	4/15/2020	3202	PENNONI ASSOCIATES INC.	SERV. THRU 3/22/20 2020 RCSTP REPLACEMENT
07429-1505	RCSTP CAPITAL	2004	14688	0	4/24/2020	3203	DECKMAN MOTOR & PUMP INC.	REBUILT FLYGT PUMP - RCSTP
07429-1505	RCSTP CAPITAL	2005	1069.25	0	5/12/2020	3205	PENNONI ASSOCIATES INC.	SERVICE THRU 4/19/20 RCSTP GE
07429-1505	RCSTP CAPITAL	2007	3451.5	0	7/2/2020	3209	MAIN LINE CONCRETE	CONCRETE - FOR RCSTP GENERAT
07429-1505	RCSTP CAPITAL	2007	156.65	0	7/2/2020	3211	PIPE XPRESS INC.	PIPING & CONDUITS - RCSTP GEN PAD

AREA CODE 610
692-7171

EAST GOSHEN MUNICIPAL AUTHORITY
EAST GOSHEN TOWNSHIP
1580 PAOLI PIKE, WEST CHESTER, PA 19380-6199

To: Municipal Authority

From: Mark Miller

RE: Replacement of flowmeter

If you recall, last month there was allot of discussion on the influent field flow meter at Ridley. I spoke with John Laidly who I contact when the meter goes down. John said that the application for that meter is not the greatest, we continue to have problems; consisting of lightning strikes, debris getting hung up on the cone and insects; spiders mostly.

We have pulled the meter three times this year for repairs and twice last year. I would ask that the Authority consider Mike Ellis's proposal to replace the meter.

Pennoni

Christiana Executive Campus
121 Continental Drive, Suite 207
Newark, DE 19713
T: 302-655-4451
F: 302-654-2895

www.pennoni.com

MEMORANDUM

TO: Mark Miller, Public Works Director

CC: Rick Smith, Township Manager
John Altshul, Assistant Township Manager
East Goshen Municipal Authority

FROM: Michael Ellis, PE

DATE: August 6, 2020

SUBJECT: RCSTP Permanent Flow Meter

This memo outlines the evaluation and recommendations of several operation alternatives to the sanitary sewer flow meter within the influent manhole located in the wetland area outside the fence line at the Ridley Creek Sewage Treatment Plant (RCSTP), in line with recommendations made in the RCSTP Monthly Operations Report, dated July 2020.

BACKGROUND

The RCSTP operation system utilizes five flow meters and four level sensors to measure and record wastewater flows entering the treatment plant, within the treatment process, and discharge into the receiving stream. The influent wastewater entering the treatment plant from the community, excluding any recycle wastewater flow, is used to measure the hydraulic loading reported in the annual Chapter 94 Report to the PA DEP. Over the years, the performance of the influent "field" flow meter used to measure the influent wastewater from the community has become inconsistent despite annual calibration. The measurements from this "field" flow meter have been exceeding the daily total flow volumes measured by the influent SBR and influent to the disc filter flow meters, which include the internal recycle flow from the disc filter backwash and sludge dewatering. "Field" flow measurements that exceed flow measurements into the SBRs equates to a "loss" of available hydraulic capacity for the addition of new customers or diversion of flow from West Goshen, and the possible perception of "lost" flow between the "field" and SBR flow meters. Therefore, accurate accounting of the influent wastewater hydraulic loading, excluding the recycle flows, is pertinent.

In May 2020, a portable flow meter was installed within the influent doghouse manhole, located inside the treatment facility fence line prior to the manhole entering the Screening Building, to gather daily flow volume measurements for comparison against the inconsistent "field" flow meter. The report described that the portable flow meter measurements were considerably lower compared to the "field," influent SBR, and influent to the disc filter flow meters. We anticipate that this is the result of the location of the portable flow meter. The location of the meter is not suitable because of the lack of straight length of influent pipe required for proper flow meter installation. As a result, the following alternative options for providing accurate flow measurements to report in Chapter 94 Reports include:

1. Do Nothing – Leave both flow meters as is.
2. Install a New Influent Flow Meter Chamber – Install a new influent flow meter chamber and manhole near/within the fence line, coupled with the location of the existing influent "field" and doghouse manholes, to provide metering exactly at the desired DEP location.

3. Reconfigure the Existing "Field" Flow Meter Manhole – Retrofit metering into the existing manhole by installing a flume and an ultrasonic flow meter above the flow channel to provide more reliable metering.
4. Install a Flow Meter for the Internal Recycle Flow – Install a flow meter prior to the influent pump wet well or at the entry point into the recycle flow chamber.

The attached Permanent Meter exhibit shows the existing doghouse manhole location and a possible proposed permanent influent metering manhole.

PRODUCTS

We evaluated different metering products, installations, and configurations to determine the most suitable metering device and installation type for the proposed locations. Additionally, the geometry of the existing sewer mains can impact the effectiveness and suitability of each metering device.

There are two primary styles of permanent metering devices, as well as several types of transducers within each style, for which we offer the following summary and evaluation:

1. In-Flow Sensors – These sensor types are mounted within a fully enclosed section of the sanitary pipe up- or down-stream of an existing manhole. These sensors make direct contact with the sanitary flow and measure depth, velocity, and temperature. Different sensor sub-types can be mounted to the bottom or top of the sanitary pipe. Sensor types include ultrasonic and pressure sensors.
   - PROS:
     - Accurate and consistent measurements when flow height is within acceptable range.
     - Ability to cross check results by installing sensors both up- and down-stream of a manhole.
     - Installation does not necessarily require additional structures, such as manholes or drop-in flumes.
   - CONS:
     - Devices mounted within an enclosed pipe section can be difficult to install and maintain due to tight access within the manhole and the need to bypass pipe sanitary flow for maintenance. Access into any manhole requires confined space entry procedures and safety concerns.
     - Devices in direct contact with sanitary flow are more susceptible to debris build-up blocking sensors.
     - These devices require a minimum flow depth to function properly and measure accurately.
     - Ultrasonic sensors require a water surface to determine flow height and will not function under surcharged conditions; therefore, an additional pressure sensor is required to determine flow height while surcharged.
     - Mounting bands can creep/drift downstream over time, reducing metering accuracy and increasing difficulty of maintenance.
     - Sensors must be calibrated to the existing pipe cross section dimensions and require re-calibration as standard maintenance.
2. Long-Range Sensors – These non-contact sensor types are mounted above the existing flow channel or above a flume within an existing or prefabricated manhole. Sensor types include ultrasonic and laser transducers. The laser style metering devices have a similar capability but at a cost of more than double the cost of the non-contact ultrasonic device.

- PROS:
  - Allows for installation of prefabricated drop-in flumes in order to establish precise channel cross sectional areas for device calibration.
  - Non-contact sensors are unaffected by sanitary flow debris under standard flow conditions.
- CONS:
  - Accuracy is susceptible to turbid flow when passing through existing worn manhole channels.
  - Not suitable for existing manholes with more than one inflow.
  - Laser sensors will not function in surcharged conditions and require an additional ultrasonic sensor with the added pressure sensor as a back-up during surcharged periods.

The long-range non-contact ultrasonic sensors are the most appropriate product for the proposed metering locations. This sensor style will measure both elevation and flow velocity under normal flow conditions, as well as surcharged conditions. This sensor can be installed within an existing or prefabricated manhole for ease of access and maintenance.

SITE GEOMETRY

Site geometry also plays a role in determining the applicability and effectiveness of each sensor type. While some sensors do advertise higher accuracy than others under turbulent conditions, the accuracy of all sensor types is affected by the turbulent flow through a manhole or pipe. Installing sensors in manholes with single channel flow and providing minimum lengths of straight pipe before and after the manhole can increase sensor accuracy. Installing drop-in flumes or prefabricated manholes will also improve sensor accuracy.

The existing manhole conditions and proposed metering locations generally precludes the use of an in-flow sensor due to the existing pipe angles and limited space. The site geometry and feasibility of the proposed alternative options are the following:

1. Do Nothing – This is not a viable option to provide for regulatory compliance.
2. Install a New Influent Flow Meter Chamber – Although there is limited available space with proximity to wetlands, installation of a new manhole and flow meter between the existing "field" flow meter manhole and the downstream doghouse manhole inside the fence line can be installed on the influent sewer outside of the fenced area and the wetlands. The pipe run entering the treatment plant site under the fence is approximately 70 linear feet in length allowing for enough space to install a new metering manhole 25 feet downstream of the upstream manhole where no bends/drops/etc. will be within 25 times the existing pipe diameter.
3. Reconfigure the Existing "Field" Flow Meter Manhole – The location of the existing manhole is within a wetland, making this location difficult to maintain and access. In addition, the existing manhole lacks straight channel flow and contains a secondary inflow channel, which will increase turbulence and significantly reduce the accuracy of any installed sensors. This location has proven to be both unreliable and inaccurate for gravity flow metering and has not been used for reasons noted.
4. Install a Flow Meter for the Internal Recycle Flow – There are significant bends in the upstream flow channels of the recycle line, which reduce the accuracy of any installed sensor. Where the channel is straight, there is little to no space for the installation of a meter due to the proximity of the screen building and influent wet well/valve chamber.

Therefore, as a result of these challenging geometries, we recommend the installation of a new influent flow meter chamber between the existing "field" flow meter and doghouse manholes.

RECOMMENDATIONS AND PRICING

Based on our evaluation of available products and the existing conditions of the "field" flow meter and doghouse manhole, we recommend the following products be considered for installation:

1. TRACOM prefabricated fiberglass manhole with dome top (for non-traffic areas), and integrated 18" Palmer-Bowlus flume
2. Teledyne Isco Signature Ultrasonic Flowmeter System
3. Teledyne Isco Model Ci LTE Cellular Modem Module

The prefabricated Palmer-Bowlus flume is available from TRACOM. The Palmer-Bowlus flume is recommended over a standard manhole channel for increased accuracy in metering. The Palmer-Bowlus flume is also recommended over a Parshall flume because a Parshall flume requires a drop in the channel elevation which cannot be provided when installing the manhole within the existing pipe slope.

The Teledyne Isco Signature Ultrasonic Flowmeter System, and all associated parts, come with a one-year warranty. HARTCO works with an Isco Factory Certified Flow Service Provider who can help calibrate the meters, provide training, and offer preventative maintenance and service agreements for an additional cost. For the East Goshen area, the Isco Factory Certified Flow Service Provider is WG Malden. The representative to contact is Bob Heine (717-629-2201; Rheine@wgmalden.com).

We requested additional quotes for the proposed site to include a prefabricated manhole structure with dome top and an Isco Signature ultrasonic meter package. Since we have not received the detailed quotes to date, we are basing the pricing on previous quotes for similar materials from the permanent metering analysis. The estimated price only covers the material costs of the products. Labor and installation costs are not included. Purchase of a prefabricated manhole structure with a 14-foot depth will approximately cost $14,000. The Isco Signature meter package through HARTCO Environmental is approximately $5,000.

The installation will require excavation and backfill, reconnection of the existing sanitary sewer piping, electric power feeds routed to each location from an available local source, and bypass pumping during the installation. We understand the Township Public Works Department will perform most of the installation work in-house. This installation when complete will include a new manhole and non-contact meter system with power feed, data monitoring through cellular network, and remote system data access for various flow measurements including instantaneous flow and totalized flow. The addition of an influent metering manhole will provide data for direct reporting needed for the PADEP annual report with improved reliability, accessibility and accuracy provided by the location, pipe configuration and equipment. Greater accuracy in reporting may have beneficial

A breakdown of the material and estimated labor and installation costs are in the table below.

Site	Material Cost of Manhole	Material Cost of Meter	Estimated Labor and Installation Cost	Estimated Total Cost
RCSTP Influent Meter	$14,000	$5,000	$10,000-$15,000	$33,000-$38,000

LIST OF ATTACHMENTS

- RCSTP Permanent Flow Meter Exhibit
- Signature Ultrasonic Flowmeter Specifications

54.7 ft
149.5°
31.79 ft
28.5°
32.3°
129.79 ft
31.5°

Signature®
Flow Meter

The most flexible flow meter

TELEDYNE ISCO
Everywhereyoulook™

Keep Smart Monitoring Simple

The Signature from Teledyne Isco is not just another open channel flow meter — it is a highly flexible monitoring platform, adapting right along with your current need and any future changes in your monitoring requirements. Simply add or swap flow and water quality measurement technologies as needed.

Benefits of the Signature Flow Meter

- Simple, yet comprehensive discharge monitoring solution
- Cost effective and easy installation with simple programming and interchangeable sensors
- Low cost of system integration with multiple input, output and communications options
- Easily expandable for future changing needs
- Provides a common data recording, reporting and communication platform for multiple parameters
- Easy data retrieval options
- Built in preventive maintenance alerts and detail diagnostics

Applications

- Industrial Pretreatment Compliance
- Permit Enforcement
- Wastewater Treatment Plant Discharge Monitoring
- Outfall Monitoring
- Shallow Flow Measurement in Small and Large Channels


TELEDYNE
Signature
Flow Meter
0004
Total Flow:
1644545 gal
Flow Rate-A: 113 gpm
330 Level: 3.167 in
300 Reference Humidity: 24 %
300 Case Humidity: 4 %
HELP
MENU
SHORTCUTS
A
B
C
1 2 3
4 5 6
7 8 9
. 0 ±

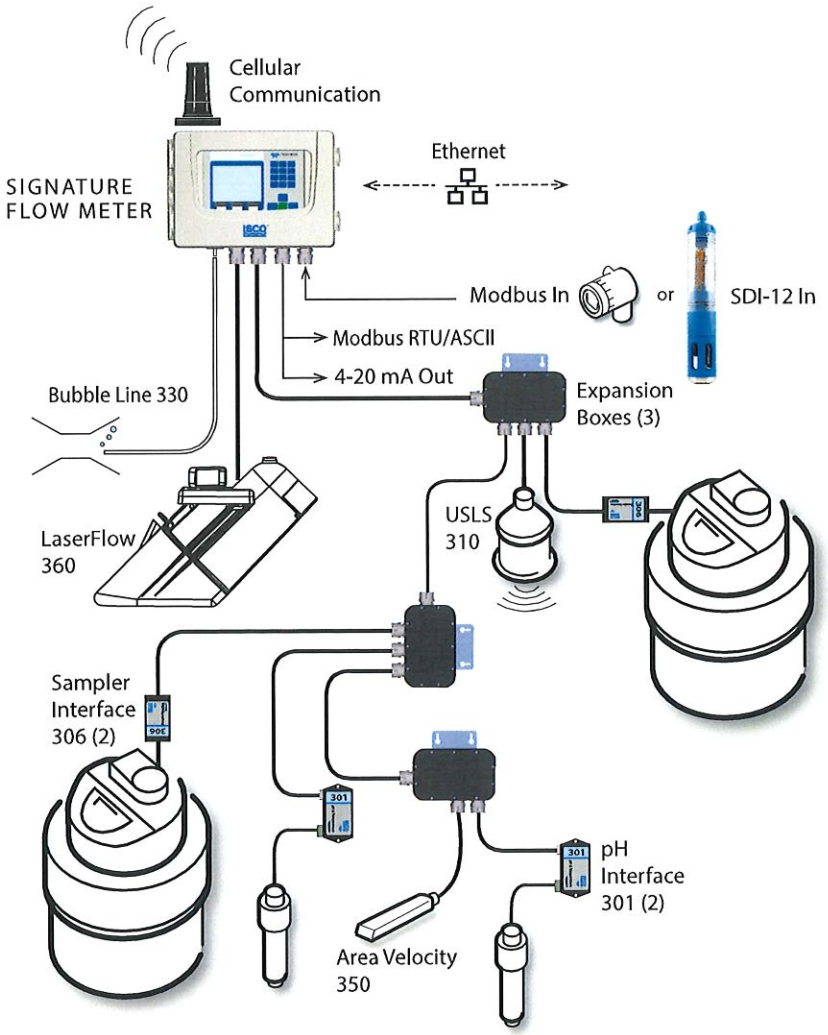
Configurable

The Teledyne Isco Environmental Network —TIENet® — is key to the Signature flow meter's flexibility. The Signature supports multiple TIENet devices to monitor one or more channels with multiple, redundant, or alternate technologies, without hardware or firmware changes. This network's intelligent design minimizes cabling and conduit costs through the use of TIENet expansion boxes, common connectors, and efficient cable configurations.

In addition to TIENet devices, the Signature also accepts SDI-12 and Modbus ASCII/RTU inputs.

Simplified Plant Integration

Acting as a system hub, the Signature records and transmits data, generates reports, and takes intelligent action in response to multiple simultaneous inputs, communicating with SCADA systems using RS-485 Modbus ASCII or RTU, or optional 4-20 mA Analog. With a diverse array of possible inputs and an industry-standard output, the Signature is a one-stop access point for process monitoring and control.

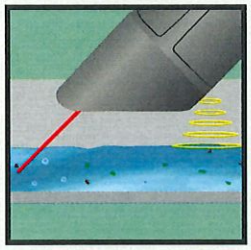


Flow Technologies

Designed with a variety of flow measurement options, the Signature has the flexibility to meet challenging site requirements head-on. Choose from four established flow measurement technologies.

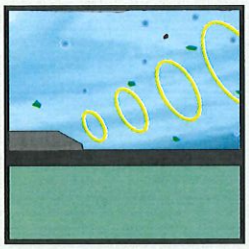
The Signature flow meter can employ any combination of these technologies simultaneously, even at great distances.

Non-contact LaserFlow™ Velocity Sensor



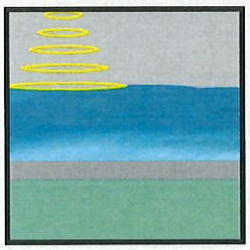
The LaserFlow sensor remotely measures flow in open channels with non-contact Laser Doppler Velocity technology and non-contact ultrasonic level technology. The sensor uses advanced technology to measure velocity with a laser beam at single or multiple points below the surface of the water. A non-contacting ultrasonic transmitter measures the liquid head height to determine the wetted area. Multiplying the wetted area by the average velocity yields the flow rate. Flow during surcharge conditions can be measured with an optional, integrally-mounted continuous-wave Doppler area velocity sensor.

Continuous-wave Doppler



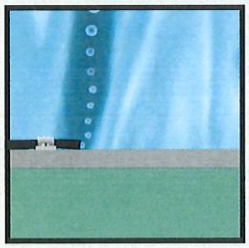
Teledyne Isco's TIENet™ 350 Area Velocity Sensor continuously transmits an ultrasonic signal into the flow stream. The signals are reflected off bubbles and particles, and then return to the sensor with a frequency shift (Doppler effect) which is proportional to velocity. A differential pressure transducer in the sensor measures liquid depth in order to determine the wetted area. Flow rate is then calculated by multiplying the wetted area of the flow stream by its average velocity.

Non-contact Ultrasonic



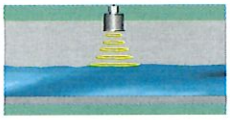
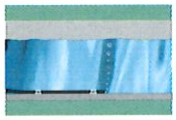
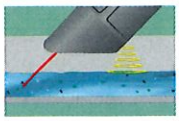
With the Teledyne Isco TIENet™ 310 Ultrasonic Level Sensor mounted above the flow stream, transmitted sound pulses are reflected off the liquid surface. The elapsed time between transmitted and returned signals determines liquid level. Flow rate is then calculated using one of the meter's built-in flow conversions, or a user-defined level-to-flow relationship.

Bubbler Module

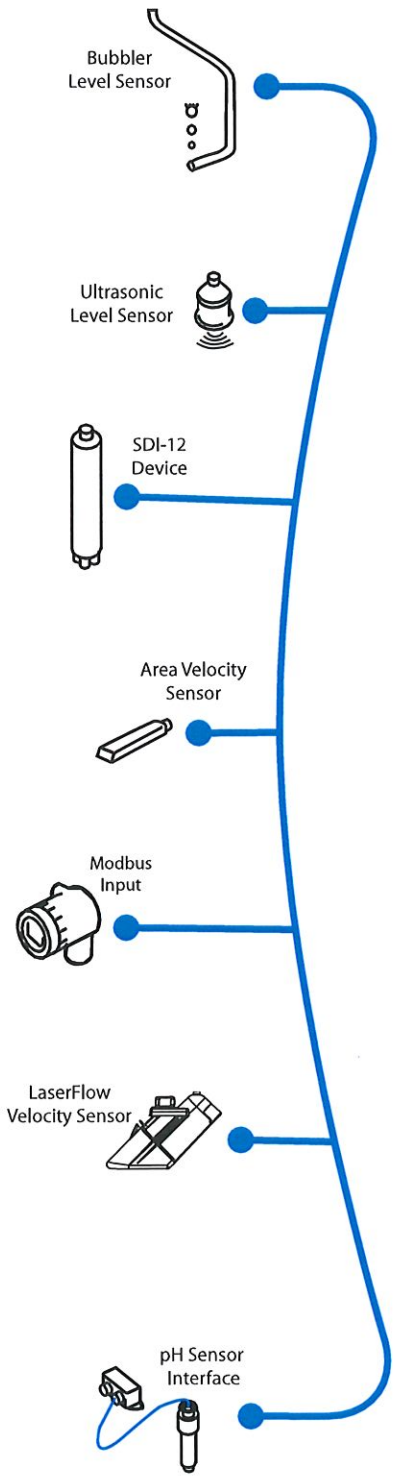


Teledyne Isco's TIENet™ 330 Bubbler Module technology is ideal in flow streams affected by harsh weather, debris, or corrosive chemicals. Since the depth of flow is determined by measuring the pressure needed to force bubbles out of the line, you are able to calculate flow rate using one of the meter's built-in flow conversions, or a user-defined level-to-flow relationship.

Signature Flow Measurement Technology Guide

Suitability for Different Applications	310 Ultrasonic Sensor	330 Bubbler	350 Area Velocity	LaserFlow
				
Weirs and flumes	Excellent [1]	Excellent	Excellent	Good [5]
Channels less than 6 in. (150 mm)	Good [2]	Excellent	Good	Good [2]
Small round pipes, 6 to 8 in. (150 to 200mm)	Good [2]	Excellent	Good	Excellent
Medium round pipes, 10 to 15 in. (250 to 375 mm)	Good [2]	Excellent	Excellent	Excellent
Large round pipes, 15 to 96 in. (375 to 2500 mm)	Excellent [2]	Excellent	Excellent	Excellent
Irrigation channels and small streams	Excellent [2]	Excellent	Good	Excellent
Rivers and large streams	Excellent [2]	Excellent	Good	Excellent
Chemical Compatibility of Sensor				
Organic Solvents	Compatible	Compatible	Not recommended	Compatible
Organic Acids	Compatible	Compatible	Not recommended	Compatible
Alcohols	Compatible	Compatible	Not recommended	Compatible
Esters	Compatible	Compatible	Not recommended	Compatible
Inorganic acids	Compatible	Compatible	Compatible	Compatible
Inorganic bases	Compatible	Compatible	Compatible	Compatible
Inorganic salts	Compatible	Compatible	Compatible	Compatible
Performance Under Adverse Conditions				
Strong wind	Not recommended	Excellent	Excellent	Not recommended
Air temperature fluctuations	Good [3]	Very good [3]	Excellent	Good [3]
Steam above liquid	Not recommended [4]	Excellent	Excellent	Not recommended [4]
Foam on liquid	Not recommended [4]	Excellent	Excellent	Not recommended [4]
Flow stream turbulence	Not recommended [4]	Excellent	Excellent	Not recommended [4]
Floating debris	Not recommended [4]	Excellent	Excellent	Not recommended [4]
Floating oil or grease	Not recommended [4]	Excellent	Excellent	Not recommended [4]
Suspended solids	Excellent	Good	Very good	Excellent
Suspended grease	Excellent	Good	Very good	Excellent
Silting	Excellent	Good	Very good	Excellent
Liquid temperature fluctuations	Very good	Excellent	Good [4]	Very good
Submerged flow	Not recommended	Not recommended	Excellent	Excellent
Full pipe flow	Not recommended	Not recommended	Excellent	Excellent
Surcharged flow	Not recommended	Not recommended	Excellent	Excellent
Reverse flow	Not recommended	Not recommended	Excellent	Excellent
Maintenance Requirements Caused by Adverse Conditions				
Silting	None	Occasional	Occasional	None
Suspended solids	None	Occasional	Occasional	None
High grease concentration	None	Occasional	Occasional	None

1. Use with caution on small flumes
2. There must be adequate space above for mounting sensor
3. Large air temperature fluctuations will affect accuracy
4. Conditions that limit access to the water level may adversely affect measurement
5. Non free flow conditions may require programming adjustments



Inputs

Flow monitoring combines with a variety of inputs to produce an in-depth representation of the measurement site. All input data can be recorded and used for reporting, output or control.

Flow Technologies

- Ultrasonic
- Bubbler
- Continuous wave Doppler
- Laser and Doppler

pH

The TIENet 301 pH/temperature sensing device provides acidity/alkalinity measurements to the Signature.

SDI-12

Two SDI-12 inputs accept data ranging from single-parameter sensors to multi-parameter sondes and other SDI-12 output devices.

Modbus Input

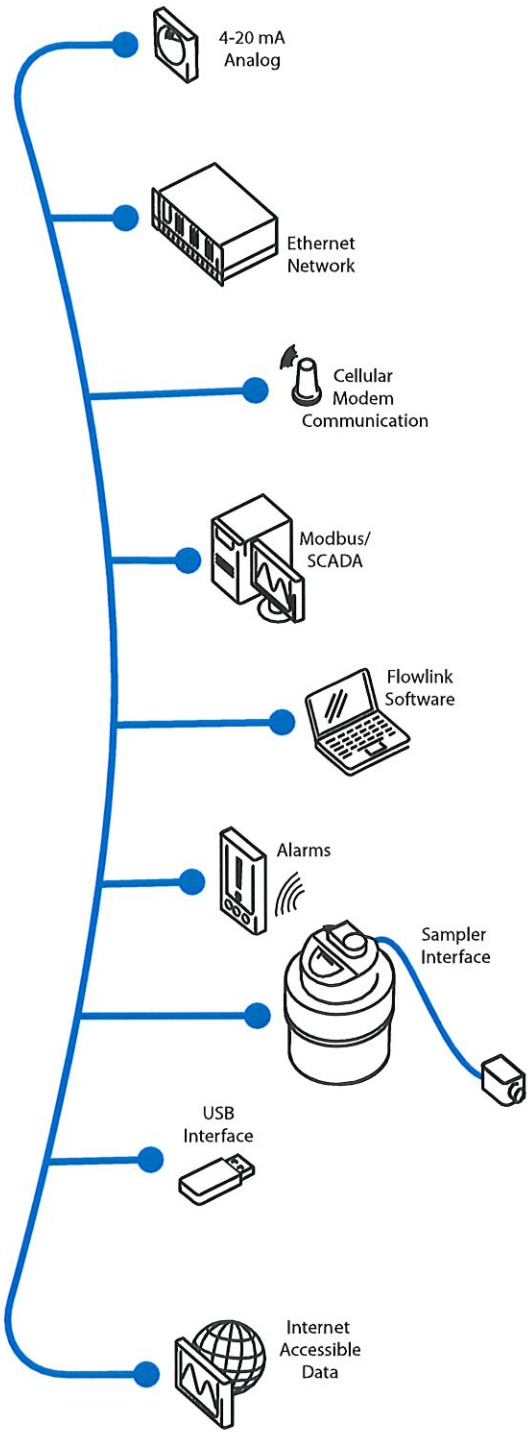
The Signature accepts up to two writable modbus registers to request updated readings from other measurement devices, totaling up to 40 parameters.

TIENet™ Devices

- TIENet input and output device utilize a common, proprietary interface protocol.
- Low system integration cost with multiple measurement technologies, Input/Outputs, protocols and communication options.
- Configurable and upgradable without hardware or firmware changes in Signature Flow Meter.
- Quick set-up with an identifiable, unique address for each device.
- Easy trouble shooting with built in device diagnostics.

Outputs and Communication

The Signature can export selected data in the industry format of choice to associated equipment for remote data acquisition and/or process control. The Signature's ability to communicate over great distances using a number of protocols makes it a powerful tool for smart triggering, alarming, reporting, and data infrastructure.



Modbus Output

Simplified Plant Integration - The Signature communicates with SCADA systems using RS-485 Modbus ASCII/RTU output.

4-20 mA Current Loop

Optional dual Analog Output cards support up to six independent 4-20 mA current loops for external control. Additional outputs are possible with an Expansion Box.

Sampler Interface

The TIENet 306 Sampler Interface connects the Signature to an automatic wastewater sampler. The Signature can then enable the sampler based on user-specified conditions, (threshold, logic and equation) pace the sampling routine based on flow, and receive sample and bottle information from the Teledyne Isco sampler.

USB Connectivity

USB connectivity allows easy retrieval of report files via the front panel USB port with a flash drive, or a direct Windows® PC connection. Report files may be viewed as a text file or imported into Teledyne Isco's Flowlink® software. USB connectivity can also be used to save or load program settings and update firmware.

Ethernet

An Ethernet card provides remote retrieval of data and summary reports, remote programming, and alarming via SMS text messaging or email.

Cellular

An internal CDMA or GSM cellular modem enables long distance, remote programming, data retrieval, and alarms. Data can be automatically sent to server at set time intervals.

SCADA

The Signature provides a Modbus output for exporting site data to an external control system.

Intelligent

The Signature responds intelligently to multiple concurrent inputs, with preprogrammed actions.

Actions

- Trigger and pace an automatic water sampler based on site conditions, with the optional TIENet 306 Sampler Interface
- Log or push data at more frequent intervals during critical events to capture higher-resolution data, returning to the primary rate during normal operating conditions
- Switch from one flow measurement technology to another based on site conditions
- Send alarm notifications via SMS text messaging or email
- Humidity alarms for preventive maintenance

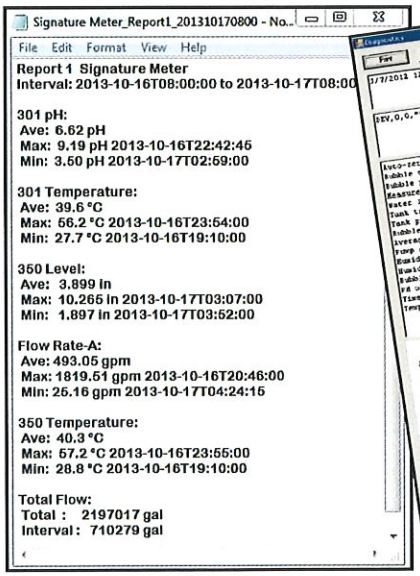
Compliant

The Signature secures the integrity of your site data through verifiable reports with data authentication for regulatory agencies.

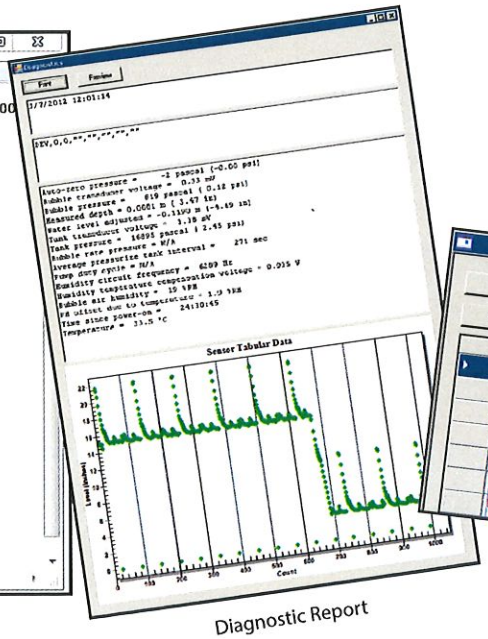
Reports

Digital reports are accessible through the many communication options, eliminating the expense of hard copy report storage and paper roll/ribbon servicing. Report types include:

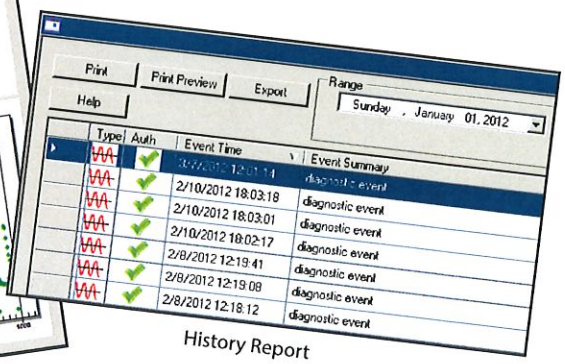
- Summary – Includes the daily minimum, maximum, and average for selected data types
- Diagnostic – Tracks all diagnostic tests and results to ensure data quality. This can be useful in analyzing site or application issues
- Program – Contains the current configuration and tracks any changes
- History – Contains all user and meter events such as data transfers, program changes, and level adjustments. This information can be used to confirm equipment operation and detect tampering



Summary Report



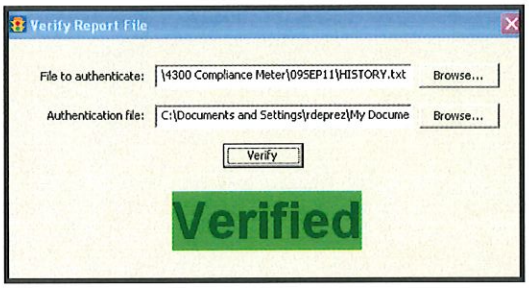
Diagnostic Report



History Report

Original and Authentic—Verified!

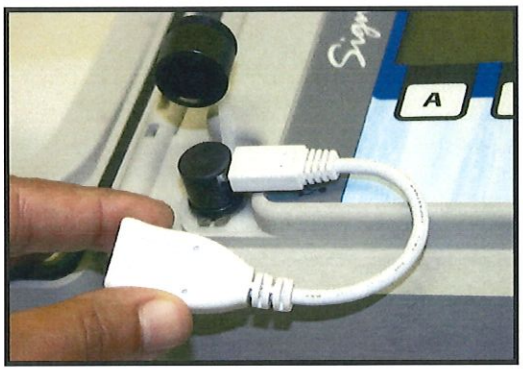
Use the free Report Verification tool installed alongside Flowlink on your computer to verify data integrity. All downloaded Signature data is accompanied by a singular key calculated with a hash-based message authentication code (HMAC). Even the slightest change to your data will result in a drastically different key.



USB Connectivity

With a USB flash drive attached, you can quickly download Diagnostic, Program, History, and Summary reports, update firmware in the Signature flow meter and connected TIENet devices, and download data files for use with Flowlink software.

In addition, the USB port provides direct serial connection with a computer running Flowlink.



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Everywhereyoulook™

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Teledyne Isco reserves the right to change specifications without notice.

L-2156_121616

Signature® Flow Meter Expansion Box

Custom Networking for Your Site Needs

Application Note

TELEDYNE ISCO
Everywhereyoulook™

Expertise in Flow

Signature® Flow Meter

Standard Features:

- Multi-parameter data logging
- Program & summary reports
- Data integrity verification
- Triggering, sampler enabling
- Compatible w/ Flowlink® software
- Multiple simultaneous flow technologies
- pH and temperature input
- SDI-12 input
- RS-485 input
- RS-485 output
- Analog outputs
- Remote communication via cell phone or Ethernet

TIENet™ Expansion Box

- Rated IP67 (NEMA 4X, 6) w/ appropriate ID conduit connection, cord-grip fittings, or plugs
- Up to 3 TIENet terminal connections
- Option card mounting

TIENet™ 308 4-20mA 2-Channel Analog Output Card

"The Future of Flow!"™

Flow monitoring site requirements can often call for cable connections that are different from the available standard cable lengths of the devices.

The optional water-tight Signature Expansion Box enables a variety of configurations for adding length, as well as connecting multiple devices at once. The Expansion Box connects to a TIENet™ terminal strip in the Signature, and contains three additional strips inside, as well as a TIENet connection for an option card.

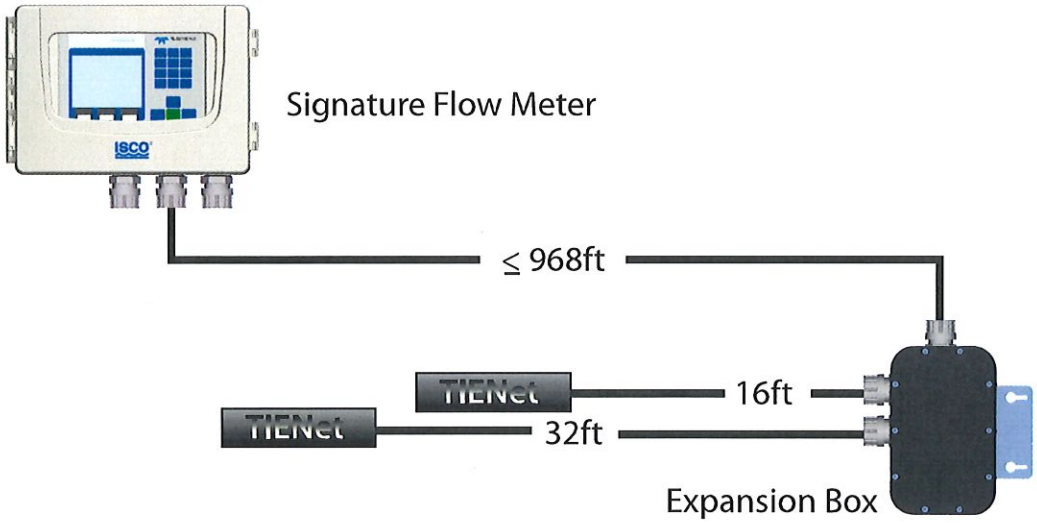
Adding Length Between Signature and Sensors

Distance can increased by installing the Expansion Box closer to the field-mounted TIENet device(s) and adding a custom-length TIENet cable between the box and the Signature. The maximum recommended distance between the LaserFlow sensor and its power source is 45.7 meters (150 feet). The maximum recommended distance between all other system components is 305 meters (1,000 feet). Longer distances may result in signal degradation and drops in voltage.

TIENet Device	Standard Cable Length
301 pH Device	5m, 10m, 23m 16ft, 32ft, 75ft
310 Ultrasonic Sensor	
306 Sampler Interface	5m, 10m, 23m 16ft, 32ft, 75ft
360 Laser Velocity Sensor	
350 Area Velocity Sensor	5m, 10m, 23m 16ft, 32ft, 75ft LaserFlow surcharge kit: 350 w/ 2ft cable & TIENet plug

The exception to this rule is the internally mounted TIENet 308 Analog Output Card, which can operate at up to 914 meters (3,000 feet) from the next device, for a maximum total of 1,219 meters (4,000 feet).

A Signature flow monitoring system can include up to nine TIENet™ devices connected to one Signature Flow Meter. When calculating the length of bulk cable required, factor in the length of the longest sensor cable.



☑ Note

Cabling should be kept as short as possible in all installations.

Area Velocity Applications

Signature systems using the expansion box with the TIENet 350 Area Velocity sensor must have a means to vent the sensor's reference air line.

Distance of 100 Feet or Less:

If the total distance is 30.5 meters (100 feet) or less, the Signature's air system will normally supply adequate desiccated air through the TIENet cable air line to the interior of the expansion box,. This means the 350 AV sensor is referenced at the Signature's installation location.

The un-vented TIENet expansion box can be used for these applications.

Distances Greater than 100 Feet:

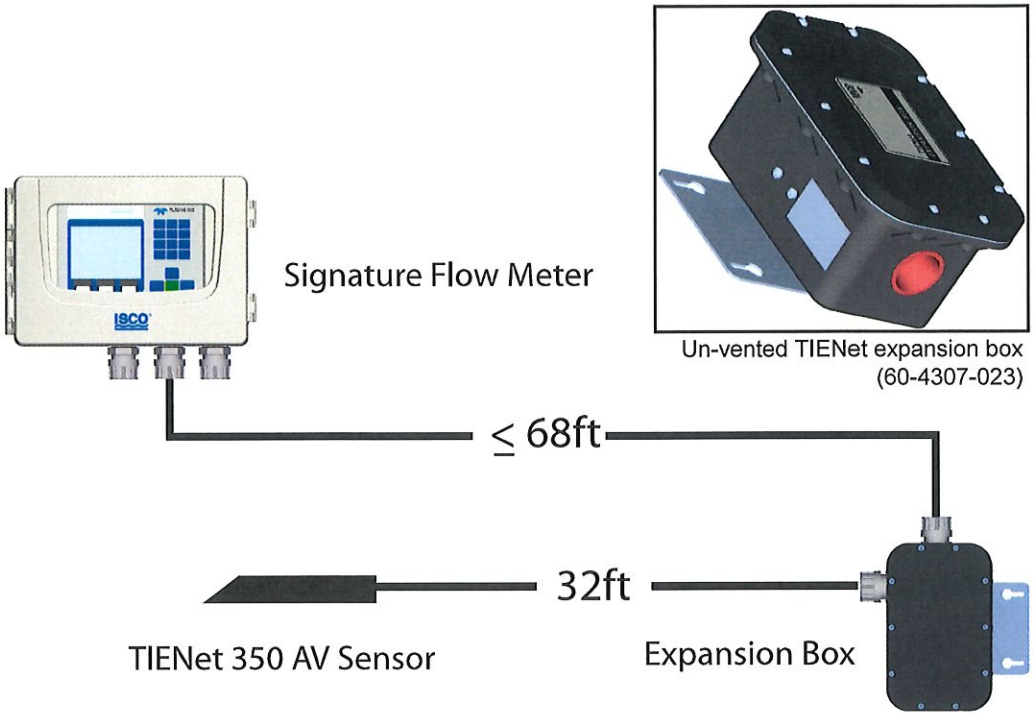
If the total distance is greater than 30.5 meters (100 feet), or a different reference location is required, the reference air line must be vented outside the expansion box.

The TIENet expansion box with reference air is designed for this purpose. The desiccator tube mounted on the side vents dried air to its interior.

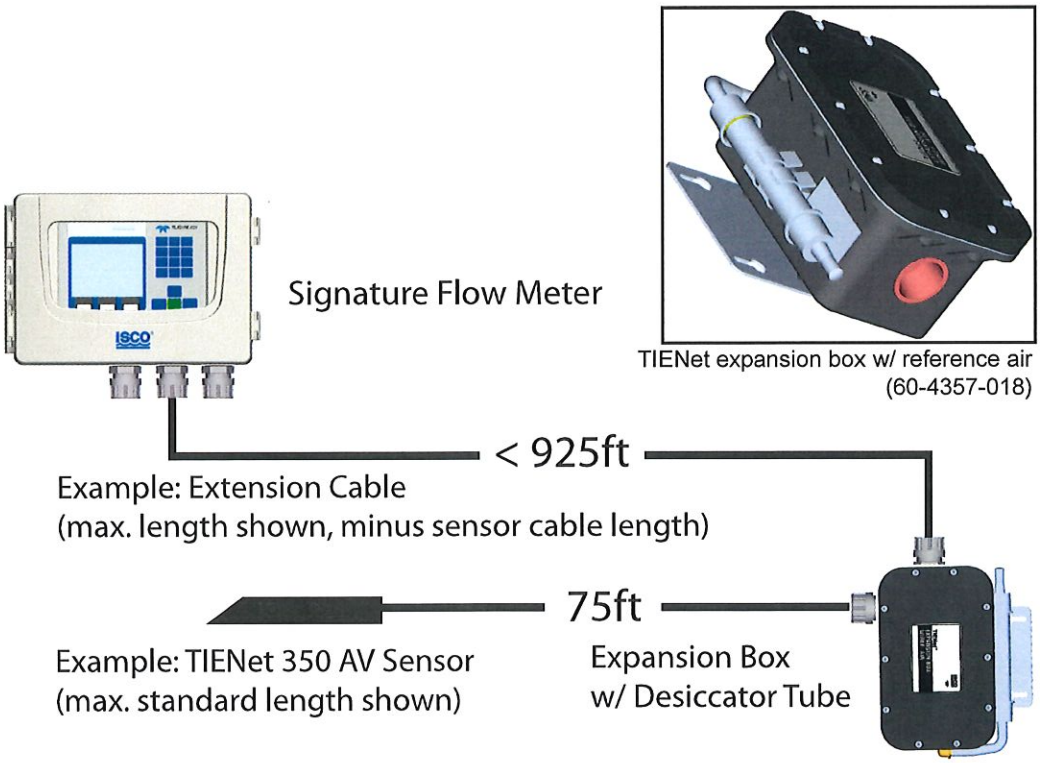
Surcharge Option for LaserFlow™

When configuring extended distances for a LaserFlow system with the optional surcharge kit installed, factor in the length of both the LaserFlow sensor cable, and the 2-foot terminated 350 AV sensor cable.

Distance of 100ft or less: Normal venting inside the Signature Flow Meter.



Distance of 100 to 1,000 ft or different reference location: Vent outside the box.



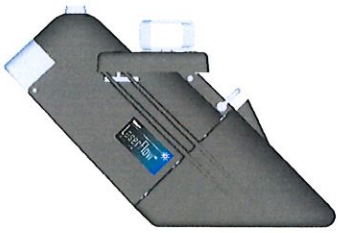
External TIENet™ Devices from Teledyne Isco:

301 pH Device

306 Sampler Interface

310 Ultrasonic Level Sensor

350 Area Velocity Sensor

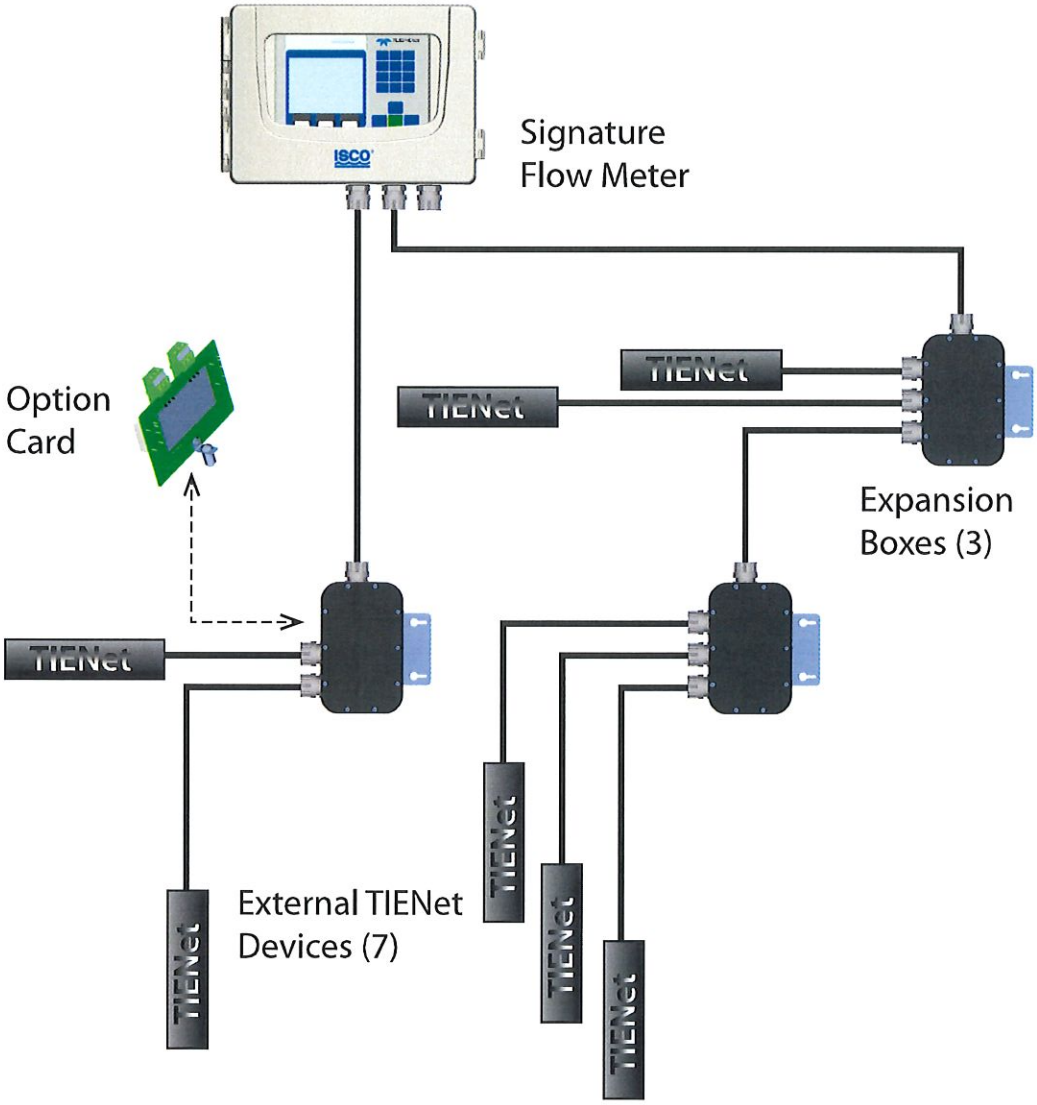


360 LaserFlow Velocity Sensor

Configuring Multiple TIENet Devices

As mentioned earlier, the Signature Flow Meter can have up to 9 connected TIENet devices running independently and simultaneously, including the internal 300 circuit board (all Signature flow meters), internal option cards, and 330 Bubbler Module.

Depending on the needs of the monitoring site, multiple expansion boxes can be used to connect multiple devices, creating any number of possible daisy-chain configurations.



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www.pennoni.com

August 5, 2020

EGMAU20002

East Goshen Municipal Authority
Attn: Mark Miller, Public Works Director
1580 Paoli Pike
West Chester, PA 19380

RE: Semi-Annual Sewer System Status Report #19
East Goshen Municipal Authority

Dear Mr. Miller:

The following Semi-Annual Sewer System Status Report is a continuation of the reports previously required under the Consent Order & Agreement (CO&A) executed between the Pennsylvania Department of Environmental Protection (PADEP) and the East Goshen Municipal Authority in December 2008. Mandatory reporting to the PADEP ended on March 31, 2012, but the reporting was requested to continue to serve as an internal reference document for the Township.

Our reports in past were formatted to describe all actions (maintenance, monitoring, etc.) taken within the previous period and those which will be taken in the subsequent monitoring period. However, this report has been reformatted to specifically address our inflow and infiltration (I & I) analysis based on the data provided by the Municipal Authority and our recommendations biased on this analysis. We have removed all action items related to televising and rehabilitation within the service areas from this report. These items are addressed in your monthly reports to the Municipal Authority and in the Annual Chapter 94 Reports. We also removed the action item related to the ongoing house lateral investigation program originally implemented in 2008. As you know this program routinely inspects properties within each service area to ensure cleanouts, vent caps, and laterals are in proper condition and any broken cleanouts, vent caps, or lateral are repaired or replaced.

This report will continue to document any suspected I & I within the service areas and provide recommendations to isolate and eliminate suspected I & I. The report is broken into three sections. Section one will address our analysis of provided portable meter data from the service areas. Section two will address an overall analysis of each service area by analyzing the permanent meter data within the service areas over a 13 month period and a five year period. Section 3 will address recommended corrective actions or investigations to implement within the service areas.

EXECUTIVE SUMMARY

Permanent meter data from 2020 indicates I & I continues to occur within both the Ridley Creek and continues Chester Creek Service Areas, particularly in the subarea CC-2, as depicted in the attached Figure 1.

In the Chester Creek Service Area, the average flow from the East Goshen portion of the Chester Creek Service Area in 2020 increased by approximately 24,700 gpd (9%) compared to the average flow from 2014 to 2016, and the 2020 average flow decreased by approximately 74,500 gpd (20%) compared to the average daily flow

from 2019. The average flow from the East Goshen portion of the Chester Creek Service Area in 2019 was significantly higher than the average flow from 2014 to 2016, possibly due significant amount of rain in 2019. The total annual rainfall has been lower in 2020 (21.59 inches) than in 2019 (62.01 inches).

Seven portable meters were installed between January 2020 to June 2020 to isolate areas of I & I within the Ridley Creek Service Area. Observations and analysis from those meters are summarized in the flowing table.

Table 1 - RCSA Portable Meter Summary Table

Portable Meter Location	Dry-Weather Infiltration	Wet-Weather Infiltration	Inflow	Comments
MH R-589	☐	☒	☒	Minimal I & I during storm events greater than one inch
MH R-568	☒	☐	☐	Approximately 12,000 gpd unaccounted flow upstream of meter location; Recommend investigation (televising)
MH R-569	☐	☒	☐	Flows increased by up to 183% 1 to 2 days follow larger storm events (greater than 0.5-inches)
MH R-625	☐	☒	☐	Flows increased by up to 200% 1 to 2 days follow larger storm events (greater than 0.5-inches)
MH R-238	☒	☒	☒	Approximately 4,000 gpd unaccounted flow upstream of meter location; Flows increased by up to 150% during larger storm events (greater than 1 inch)
MH R-265	☐	☐	☐	No suspected I & I
Ridley Creek STP	☐	☐	☐	There appears to be an error with the portable meter.

Based on the analysis we suggest the Township should focus on analysis of permanent metering in the Chester Creek Service Area and continue to install and monitor portable meters in the Ridley Creek Service Area over the next six months. Visual observation of flows within manholes during overnight hours should also continue with follow-up televising as needed.

DEFINITIONS

Base flow – Base flow is the untreated wastewater discharge from residential, commercial, and industrial facilities that enter the sanitary sewer collection system to be transported to a wastewater treatment plant. This flow value does not include wastewater from inflow or infiltration and tends to fluctuate throughout the day depending on the amount of wastewater created. Typically, the lowest base flow occurs during the early hours of the morning when most people are asleep.

Infiltration – Infiltration occurs when groundwater seeps into sewer pipes through crack, leaky pipe joint and/or deteriorated manholes. There are two types of infiltration dry weather and wet weather infiltration. Dry weather infiltration is present if the flows in the system are greater than the base water flows during periods of little to know rain. When an area is determined to have dry infiltration investigations such as televising can occur to determine the source of the infiltration. Wet weather infiltration is present if the flows in the system significantly increase and slowly decrease one to three days after a rain event.

Inflow – Inflow is stormwater that enters the sewer system through rain leaders, basement sump pumps, or foundation drains illegally connected to the sewer during a rain event. If an area is expected to have inflow investigations such as smoke testing can occur to determine the source of the inflow.

TEMPORARY METERING

Ridley Creek Service Area

Six portable meters were installed between January 2020 through June 2020. Refer to the attached Figure 1 showing a map of past and future meter locations.

- *Double Pond MH R-589 (Bow Tree)*

  A portable meter was installed within Manhole R-589 on February 8, 2019 and removed on April 16, 2019 and then re-installed in March 2020.

  In the first period, the meter appears to be functioning continuously from February 8, 2019 to April 16, 2019 recording an average flow of 20,271 gpd (14.1 gpm) and a maximum flow of 81,187 gpd (56.4 gpm) resulting in a peaking factor of 5.3. The expected base flow is estimated to be 17,688 gpd based on the 2016 sewer billing records. Therefore, when comparing the average flow to the expected base flow there is approximately 3,000 gpd of unaccounted flow. From March 19, 2019 to April 16, 2019, there appears to be no dry-weather infiltration, but there does appear to be inflow and wet-weather infiltration occurring upstream of this location.

  In the second period, the meter appears to be functioning continuously from March 2020 to mid-April 2020 recording an average flow of 14,098 gpd and a maximum flow of 24,668 gpd resulting in a peaking factor of 1.75. There does not appear to be any dry-weather infiltration occurring upstream of this location given that the average flow was less than the expected base flow. There are a few instances in the second period where the flow increases by around 160% during storm events greater than one inch, inducing inflow. **Therefore, it can be concluded that there is likely minimal inflow and wet-weather infiltration upstream of R-589 during wet weather conditions.**

- *Eldridge MH R-568 (Bow Tree)*

  A portable meter was installed within Manhole R-568 on February 8, 2019 and removed on April 16, 2019 and then re-installed in March 2020 to early April.

  In the first period, the meter appears to be functioning continuously from February 8, 2019 to April 16, 2019. recording an average flow of 13,606 gpd (9.45 gpm) and a maximum flow of 16,235 gpd (11.27 gpm) resulting in a peaking factor of 1.19. The expected base flow is estimated to be 12,261 gpd based on the 2016 sewer billing records. Therefore, when comparing the average flow to the expected base flow there is approximately 1,000 gpd of unaccounted flow.

  In the second period, the meter appears to be functioning continuously from March 2020 to mid-May 2020 recording an average flow was 28,383 gpd and a maximum flow of 37,901 gpd resulting in a peaking factor of 1.34. Therefore, when comparing the average flow to the expected base flow there is approximately 13,000 gpd of unaccounted flow. Due to the significant increase in unaccounted flow within the last year, we question whether the meter data is indicative of continuous dry-weather infiltration. There was no correlation observed between precipitation and flow at this meter to indicate wet weather I & I. **There appears to be dry-weather infiltration occurring upstream of this meter location. We recommend an investigation of the pipes and laterals upstream of this meter location.**

- *Forest Lane MH R-569 (Bow Tree)*

  A portable meter was installed within Manhole R-569 in mid-January 2020 to late-February 2020.

  The meter appears to be functioning continuously from mid-January 2020 to late-February 2020recording an average flow of 5,445 gpd and a maximum flow of 9,979 gpd resulting in a peaking factor of 1.83. The expected base flow is estimated to be 8,241 gpd based on the 2016 sewer billing records. There does not appear to be any dry-weather infiltration occurring upstream of this location given that the average flow was less than the expected base flow.

  There was a correlation observed between precipitation and flow at this meter location. There is an instance where the flow increased by around 183% approximately 1 to 2 days following a storm. **Therefore, it can be concluded that minimal wet weather infiltration is occurring upstream of R-569.**

- *Bow Tree Road MH R-625 (Bow Tree)*

  A portable meter was installed within Manhole R-589 on February 8, 2019 and removed on April 16, 2019 and then re-installed in March 2020.

  The meter appears to be functioning continuously from March 2020 to early-April 2020 recording an average flow of 5,085 gpd and a maximum flow of 22,435 gpd resulting in a peaking factor of 4.41. The expected base flow is estimated to be 4,824 gpd based on the 2016 sewer billing records. There appears to be minimal dry-weather infiltration occurring upstream of this location given that the average flow and expected base flow are virtually the same.

  There was a correlation observed between precipitation and flow at this meter location. There are a few instances where the flow increases by around 200% approximately 1 to 2 days following storm events greater than a half inch. **Therefore, it can be concluded that wet weather infiltration is occurring upstream of R-625 during wet weather conditions.**

- *Line Road MH R-238*

  It should be noted that a portable meter was installed in this manhole in August 2014 to March 2015. The flow data from that period indicated that there was little to no infiltration upstream during dry weather periods. A portable meter was installed within Manhole R-569 in mid-January 2020 to late-February 2020 which collected about 31 days of flow data during that period. The following analysis is based on the limited data set. We suggest the portable meter be re-installed for at least 4 months for more accurate analysis.

  The meter appears to be functioning continuously from mid-January 2020 to late-February 2020recording an average flow of 51,042 gpd and a maximum flow of 80,914 gpd resulting in a peaking factor of 1.59. The expected base flow is estimated to be 47,436 gpd based on the 2016 sewer billing records. Therefore, when comparing the average flow to the expected base flow there is approximately 4,000 gpd of unaccounted flow.

  Based on the limited amount of flow data during this period, there appears to be a correlation observed between precipitation and flow at this meter location. There are a few instances where the flow increases by around 120% to 150% during storm events greater than one inch. **Therefore, it can be concluded that I & I is occurring upstream of R-238 of this meter location.**

- *Sorrell Hill MH R-265*

  A portable meter was installed within Manhole R-569 in mid-January 2020 to late-February 2020.

  The meter appears to be functioning continuously from mid-January 2020 to late-February 2020recording an average flow of 11,600 gpd and a maximum flow of 18,014 gpd resulting in a peaking factor of 1.55. There is no observed unaccounted flow when comparing the average daily to the expected flow of 21,909 gpd from the 2016 sewer billing records.

  There is likely no I & I occurring upstream of this location. **Therefore, it can be concluded that no I & I is occurring upstream of R-265.**

- *RCSTP Portable Influent Meter*

  A portable meter was installed in a doghouse manhole upstream of the Ridley Creek Sewage Treatment Plant. The portable meter was installed to validate the accuracy of the permanent "Field" influent meter for flow entering the plant. However, it appears that the average flow indicated by the portable flow meter is significantly lower than the average flow indicated by the permanent "Field" influent flow meter. **The portable meter location should be revisited and/or the portable meter should be re-calibrated.**

Chester Creek Service Area

No portable meters were installed in the collection and conveyance system between January 2020 through June 2020.

PERMANENT METERING

Ridley Creek Service Area

The permanent "field" influent meter is located on the Ridley Creek Interceptor in Manhole R-001, the first manhole upstream of the Plant. It meters all flow into the Plant's influent pump station except recycled flow. We were provided average daily flows for approximately 4 to 5 days a month from January 2019 to June 2020 as taken from the "Big Fish" monthly reports included in the East Goshen Municipal Authority meeting agendas. Additionally, we were provided average daily flow for the months of May and June 2020.

The "Big Fish" reports do not have continuous data, but we do have enough data to make a general assumption. The average flow was 464,601 gpd with a maximum flow of 741,000 resulting in a peaking factor of 1.60. There appears to be some unaccounted flow when comparing the average daily to the expected flow of 402,603 gpd from the 2016 sewer billing records. This unaccounted flow appears to occur after a significant amount of precipitation either over one day or combined over several days, thus it can be concluded that the Ridley Creek Service Area experiences I & I due to wet weather conditions. This type of infiltration can be caused by an increased groundwater table or by an increase in surface water elevation.

The additional provided average daily flows for the months of May and June 2020indicated an average flow of 497,077 gpd and a maximum flow of 671,760 gpd resulting in a peaking factor of 0.74. There appears to be some unaccounted flow when comparing the average daily flow to the expected flow of 402,603 gpd from the 2016 sewer billing records. This unaccounted flow appears to occur after a significant amount of precipitation either over one day or combined over several days, but the limited amount of data makes it difficult to draw any conclusions regarding the cause of the unaccounted flow.

Chester Creek Service Area

Flow data from the eight permanent meters throughout the Chester Creek Service Area were analyzed for the previous 13 months and the previous five years; six of the meters are in gravity interceptor sewers and two are on pump station discharge pipes. Instantaneous or hourly meter data is not recorded on these meters; therefore, only a rough flow analysis can be performed because inflow and instantaneous peaks, and continuous base flows are unknown.

The Westtown Way meter records the total flow from the Chester Creek Service Area including flow from West Goshen Township. The average flow at Westtown Way in 2020 was 1,046,105 gpd with the average flow from the East Goshen portion of the Chester Creek Service Area comprising 744,905 gpd (71%). East Goshen's portion of the flow in the Chester Creek Service Area has comprised approximately 72% of the total flow to the Westtown Way meter consistently from 2013 to 2018. The flow from West Goshen in 2020 averaged 301,200 gpd.

The average flow in the Chester Creek Service Area to date in 2020 was lower than the average flows in 2019. The average from the East Goshen portion of the Chester Creek Service Area in 2019 was 774,632 gpd, which is 4% higher than the average flow in 2020. The average flow from West Goshen in 2019 was 375,694 gpd, which is 20% higher than the average flow in 2020. This decrease in the flows within the Chester Creek Service Area is mostly likely caused by the decrease in rainfall between 2019 (62.01 inches) and 2020 (21.59 inches).

When analyzing the flow within the Chester Creek Service Area over the most recent 5-year period there does not appear to be any continuous infiltration. However, continuous infiltration has been observed in previous reports when analyzing portable meters data within the Chester Creek Service Area. Therefore, although there does not appear to be continuous infiltration in the overall service area there could be isolated cases within subareas. The largest spikes in the flow rate appear to be preceded by either one day of increased precipitation or several days of increased precipitation in a row. This indicates that there is I & I occurring within the system as the result of wet weather flow.

We also analyzed East Goshen's sewer billing information from 2016 compared to the flow data from the permanent meters during 2020. This analysis consisted of using the sewer billing information from 2016 to determine how many billing units were located upstream of each permanent meter. This billing unit value was then multiplied by the Chapter 94 report gpd/EDU rate from 2019 to determine the expected flow upstream of the permanent meter. This expected flow was then compared to the actual flow data from the permanent meters during 2020 to determine if there was any unaccounted flow likely caused by I & I.

In previous reports we separated the Chester Creek Service Areas into four sub-areas, as seen in Figure #1, however during this period a meter was not installed between CC-3 and CC-1. Therefore, we were unable to analyze the isolated flow from CC-3 and CC-1. However, we were able to separate CC-3 into CC-3A and CC-3B as shown in Figure #1. We can analyze CC-4, CC-2, CC-3A and combined flow from CC-3B and CC-1. Based on this analysis, CC-4 has some unaccounted flow (16,285 gpd) and the combined flow from CC-3B and CC-1 and the flow from CC-3A has little to no unaccounted flow, and the CC-2 continues to have a significant amount of unaccounted flow (184,793 gpd), consistent with prior years' analyses. Therefore, sub-area CC-2 is considered to have the highest amount of I & I and should continue to be the focus of investigations in the service area.

RECOMMENDATIONS

The Bow Tree Development should be investigated via either televising and/or smoke testing to determine the source of the I & I observed in all four portable meters placed within the development over the previous

four months. Additionally, it should be noted that a majority of the I & I observed appears to be the result of wet weather I & I, which is the result of high groundwater table or sump pumps being connected to the sanitary sewer system.

A portable meter should be re-installed at MH R-238 on Line Road to provide a larger data set to accurately verify our analysis.

Visual observation of flows within manholes during overnight hours should also continue with follow-up televising as needed.

Over the next six months, the Township should install and monitor portable meters in the Chester Creek Service Area. Visual observation of flows within manholes during overnight hours should also continue with follow-up televising as needed. Additionally, the Chester Creek interceptor should be televised and/or smoke tested. We believe that a majority of the I & I occurring during wet weather conditions is occurring along the interceptor which runs adjacent to Chester Creek.

This Semi-Annual Status Reports is submitted by copy to the East Goshen Municipal Authority to describe the progress made towards achieving the previous Corrective Action milestone events. We anticipate preparation and submission of Semi-Annual Sewer System Status Report #20 by January 30, 2021.

If you should have any questions, please do not hesitate to contact me.

Sincerely,

PENNONI ASSOCIATES INC.

Michael J. Ellis, PE
Authority Engineer

cc: Rick Smith, Township Manager
Jon Altshul, Assistant Township Manager
East Goshen Municipal Authority

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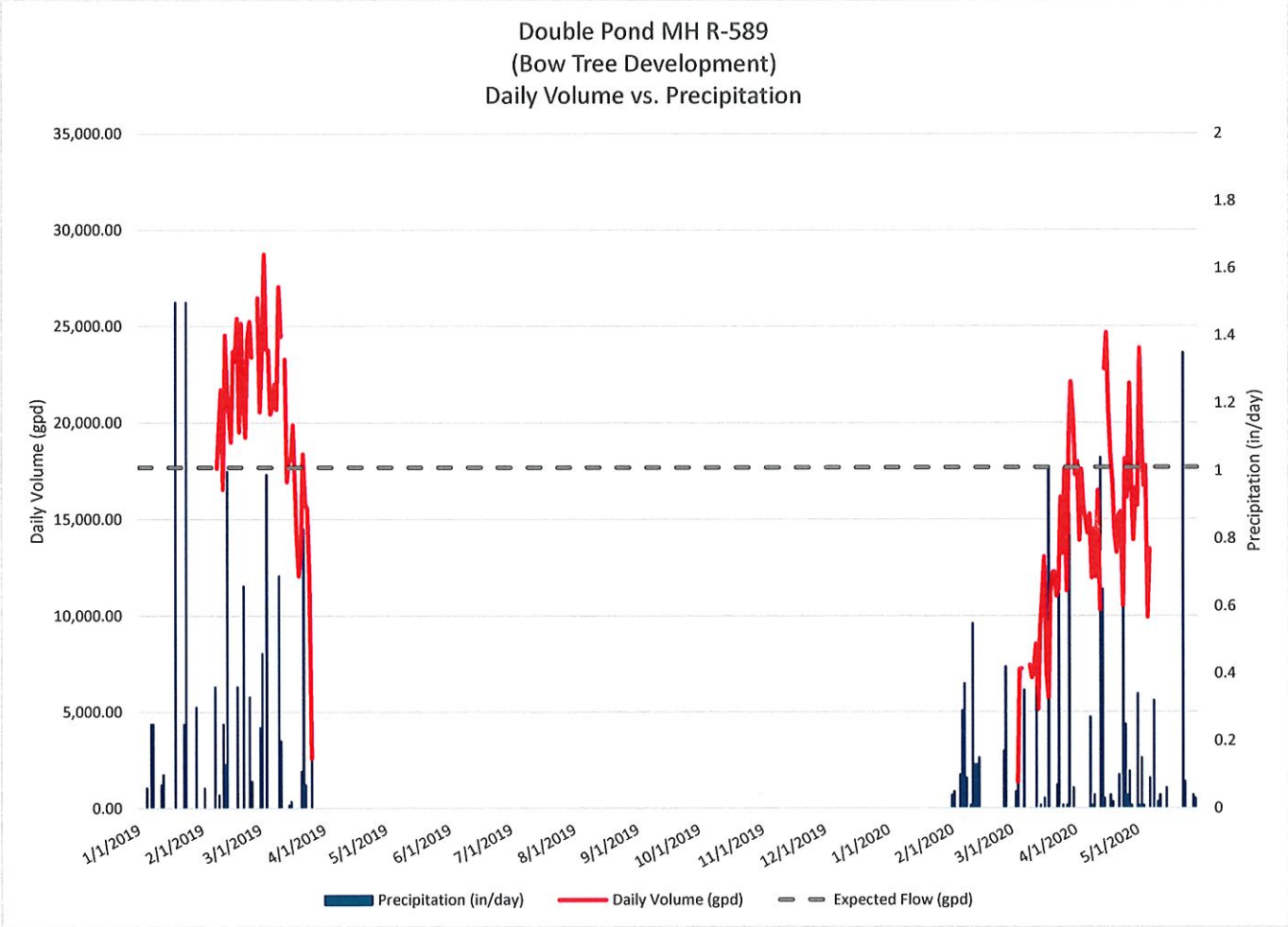
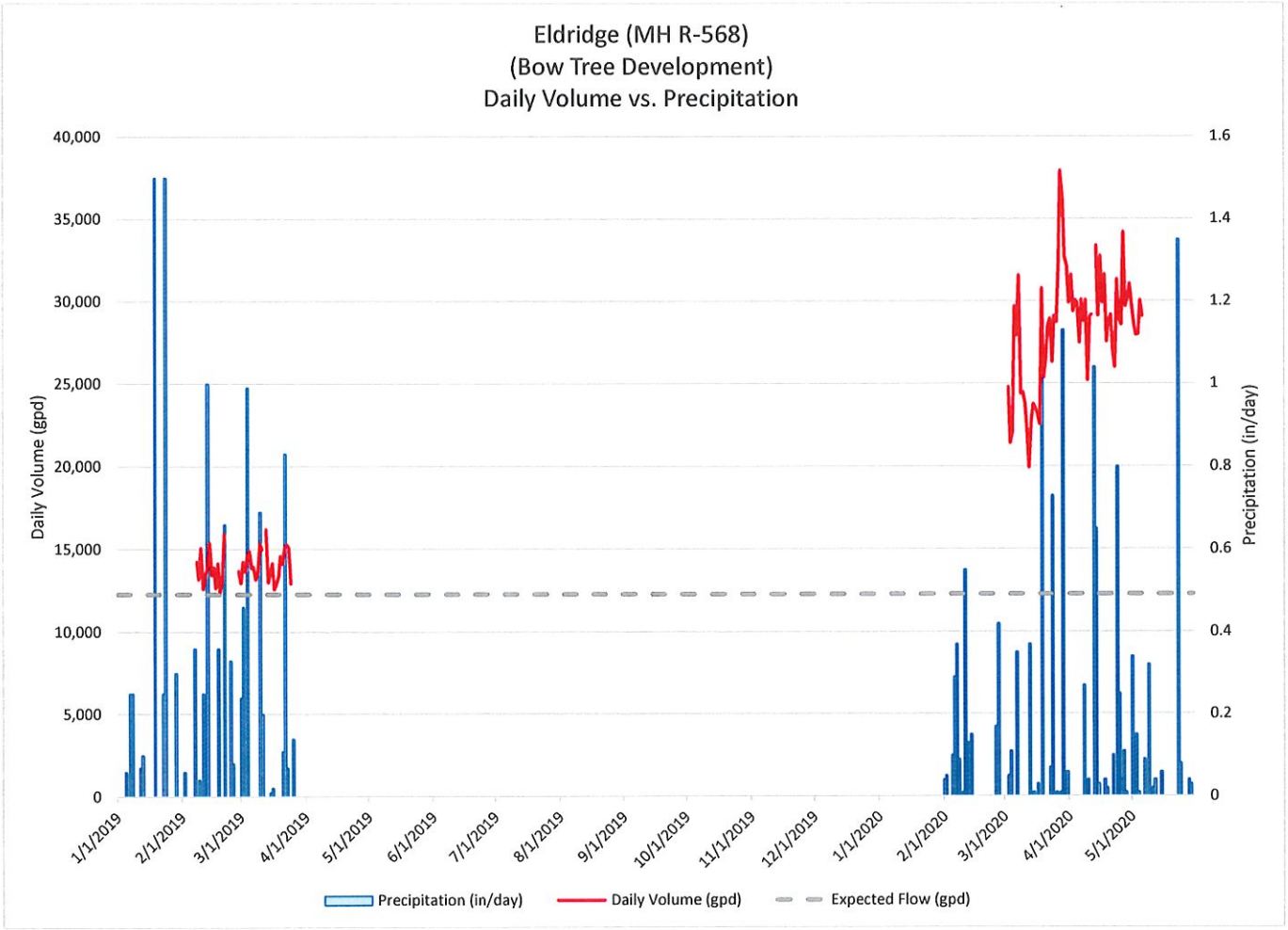
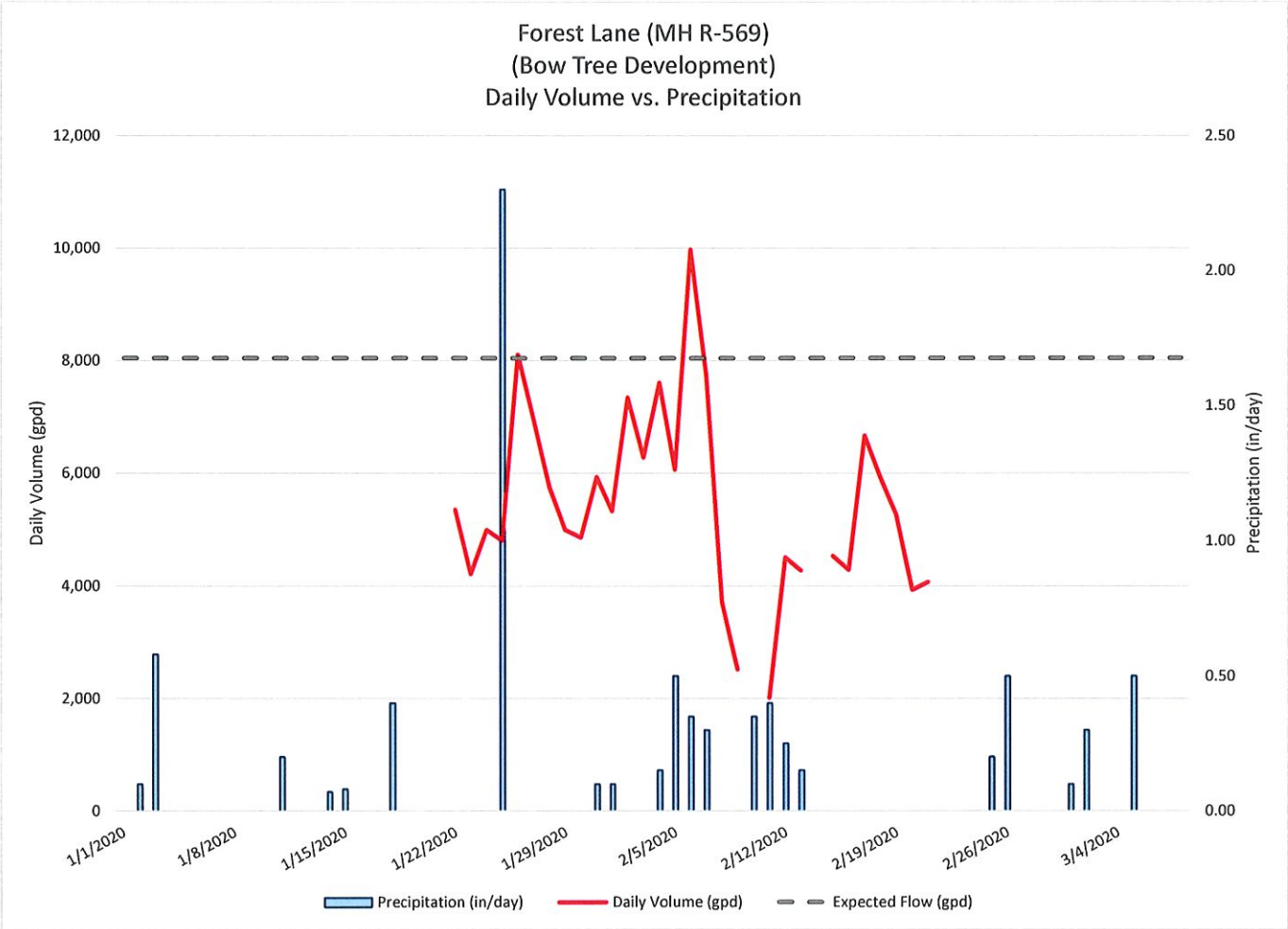
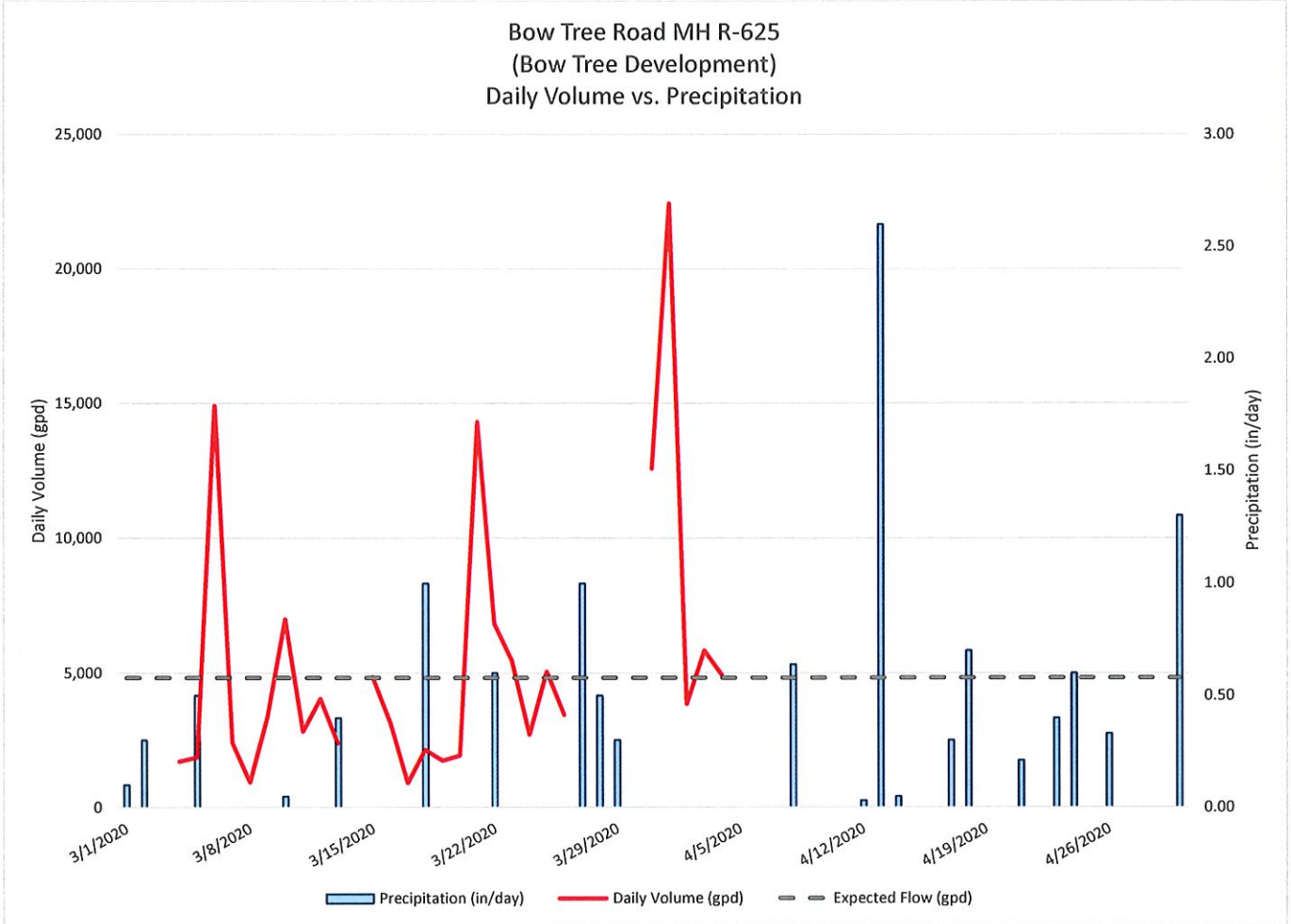
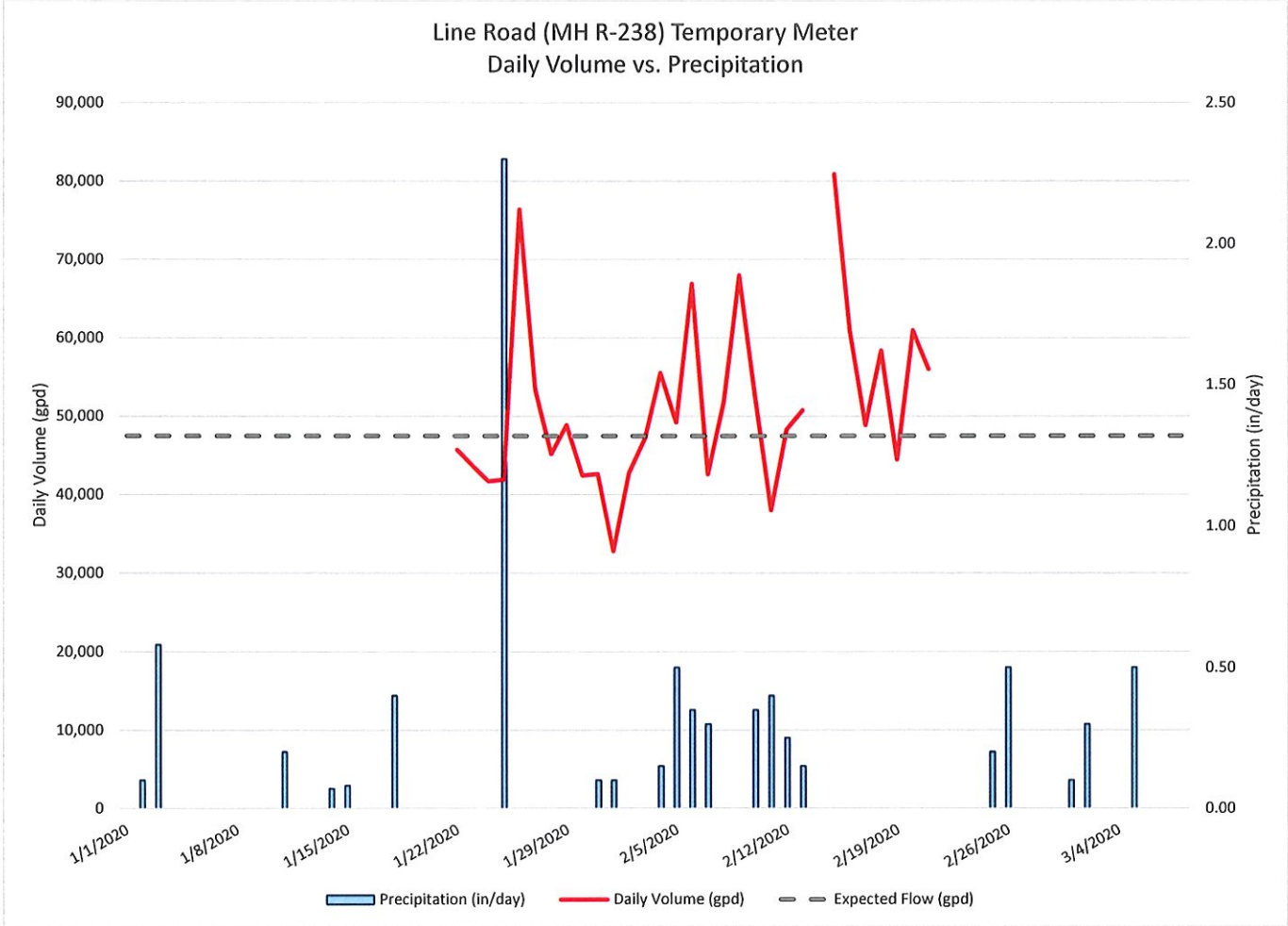
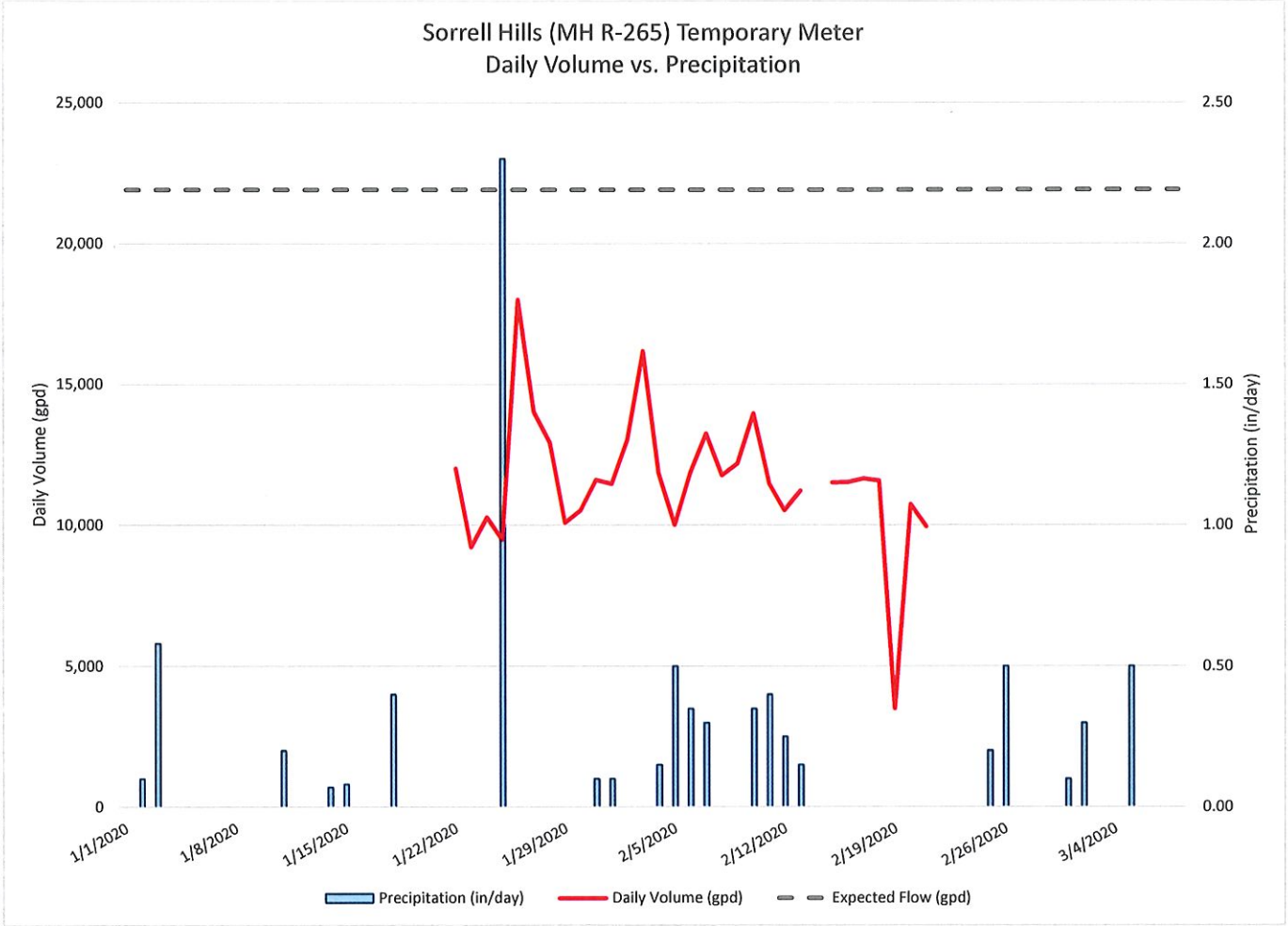

Double Pond MH R-589
(Bow Tree Development)
Daily Volume vs. Precipitation
Daily Volume (gpd)
Precipitation (in/day)
35,000.00
30,000.00
25,000.00
20,000.00
15,000.00
10,000.00
5,000.00
0.00
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
1/1/2019
2/1/2019
3/1/2019
4/1/2019
5/1/2019
6/1/2019
7/1/2019
8/1/2019
9/1/2019
10/1/2019
11/1/2019
12/1/2019
1/1/2020
2/1/2020
3/1/2020
4/1/2020
5/1/2020
Precipitation (in/day)
Daily Volume (gpd)
Expected Flow (gpd)

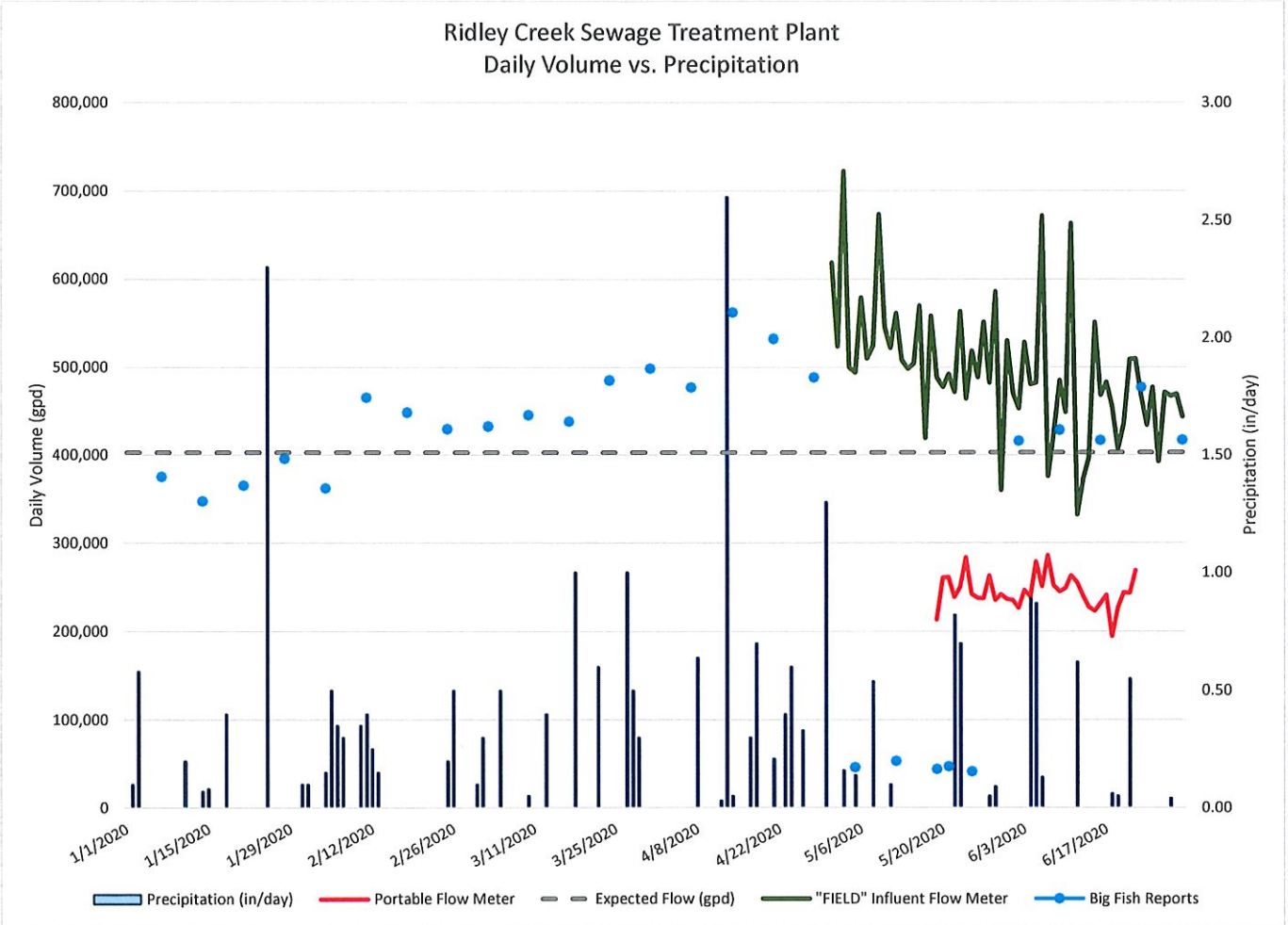

Eldridge (MH R-568)
(Bow Tree Development)
Daily Volume vs. Precipitation
Daily Volume (gpd)
Precipitation (in/day)
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
1/1/2019
2/1/2019
3/1/2019
4/1/2019
5/1/2019
6/1/2019
7/1/2019
8/1/2019
9/1/2019
10/1/2019
11/1/2019
12/1/2019
1/1/2020
2/1/2020
3/1/2020
4/1/2020
5/1/2020
Precipitation (in/day)
Daily Volume (gpd)
Expected Flow (gpd)

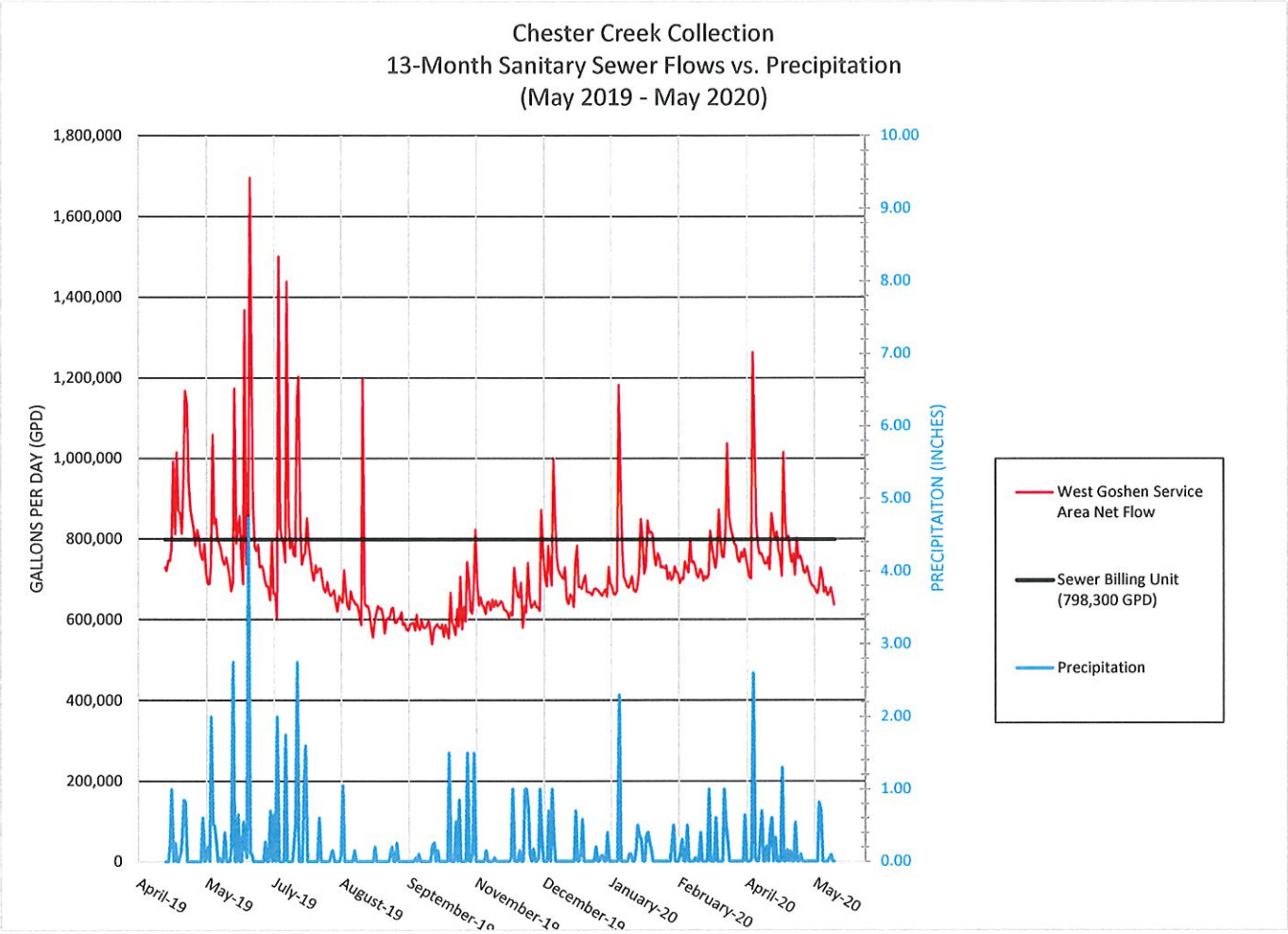

Forest Lane (MH R-569)
(Bow Tree Development)
Daily Volume vs. Precipitation
Daily Volume (gpd)
Precipitation (in/day)
12,000
10,000
8,000
6,000
4,000
2,000
0
2.50
2.00
1.50
1.00
0.50
0.00
1/1/2020
1/8/2020
1/15/2020
1/22/2020
1/29/2020
2/5/2020
2/12/2020
2/19/2020
2/26/2020
3/4/2020
Precipitation (in/day)
Daily Volume (gpd)
Expected Flow (gpd)

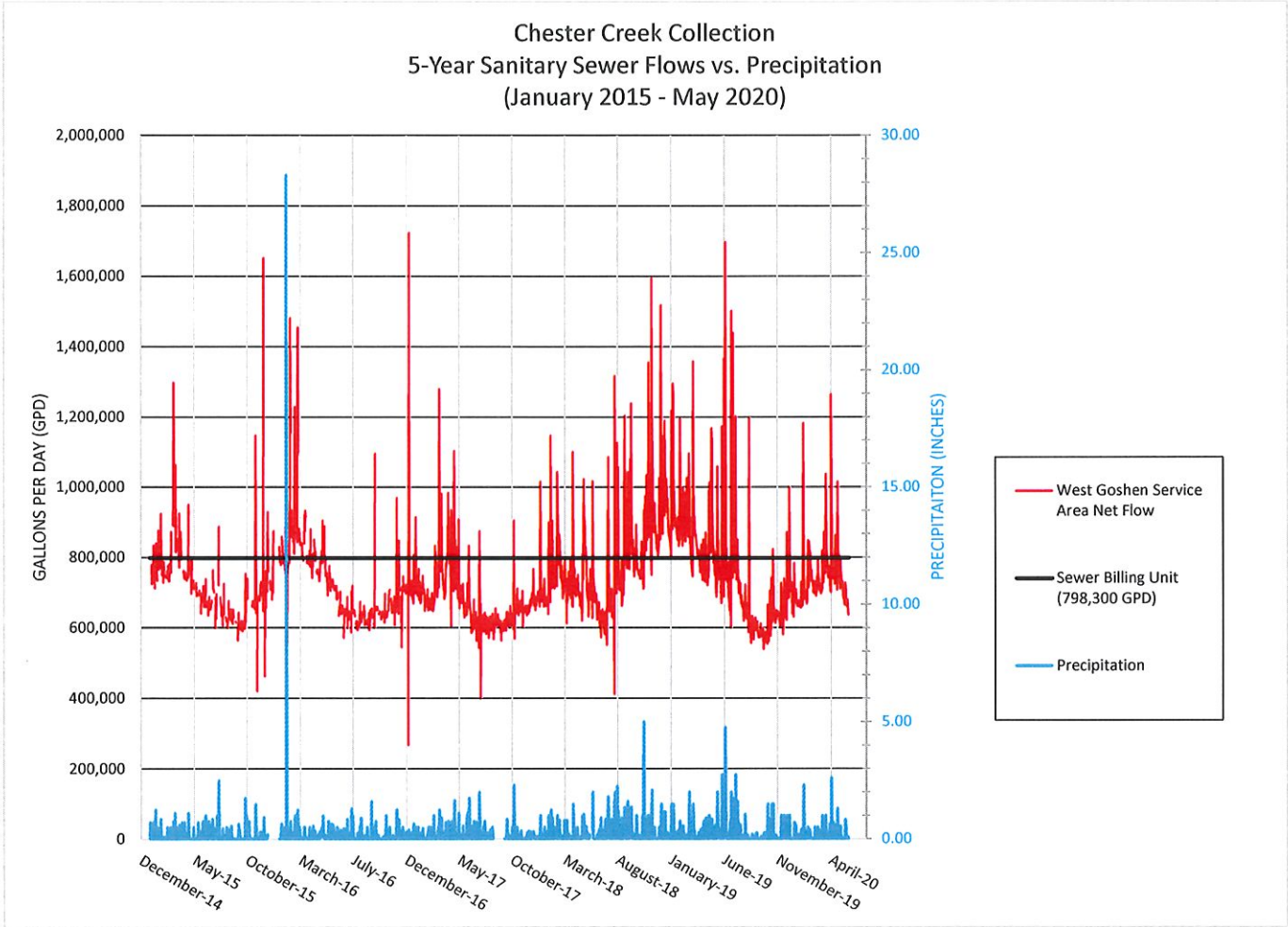

Bow Tree Road MH R-625
(Bow Tree Development)
Daily Volume vs. Precipitation
Daily Volume (gpd)
Precipitation (in/day)
25,000
20,000
15,000
10,000
5,000
0
3.00
2.50
2.00
1.50
1.00
0.50
0.00
3/1/2020
3/8/2020
3/15/2020
3/22/2020
3/29/2020
4/5/2020
4/12/2020
4/19/2020
4/26/2020
Precipitation (in/day)
Daily Volume (gpd)
Expected Flow (gpd)


Line Road (MH R-238) Temporary Meter
Daily Volume vs. Precipitation
Daily Volume (gpd)
Precipitation (in/day)
90,000
80,000
70,000
60,000
50,000
40,000
30,000
20,000
10,000
0
2.50
2.00
1.50
1.00
0.50
0.00
1/1/2020
1/8/2020
1/15/2020
1/22/2020
1/29/2020
2/5/2020
2/12/2020
2/19/2020
2/26/2020
3/4/2020
Precipitation (in/day)
Daily Volume (gpd)
Expected Flow (gpd)

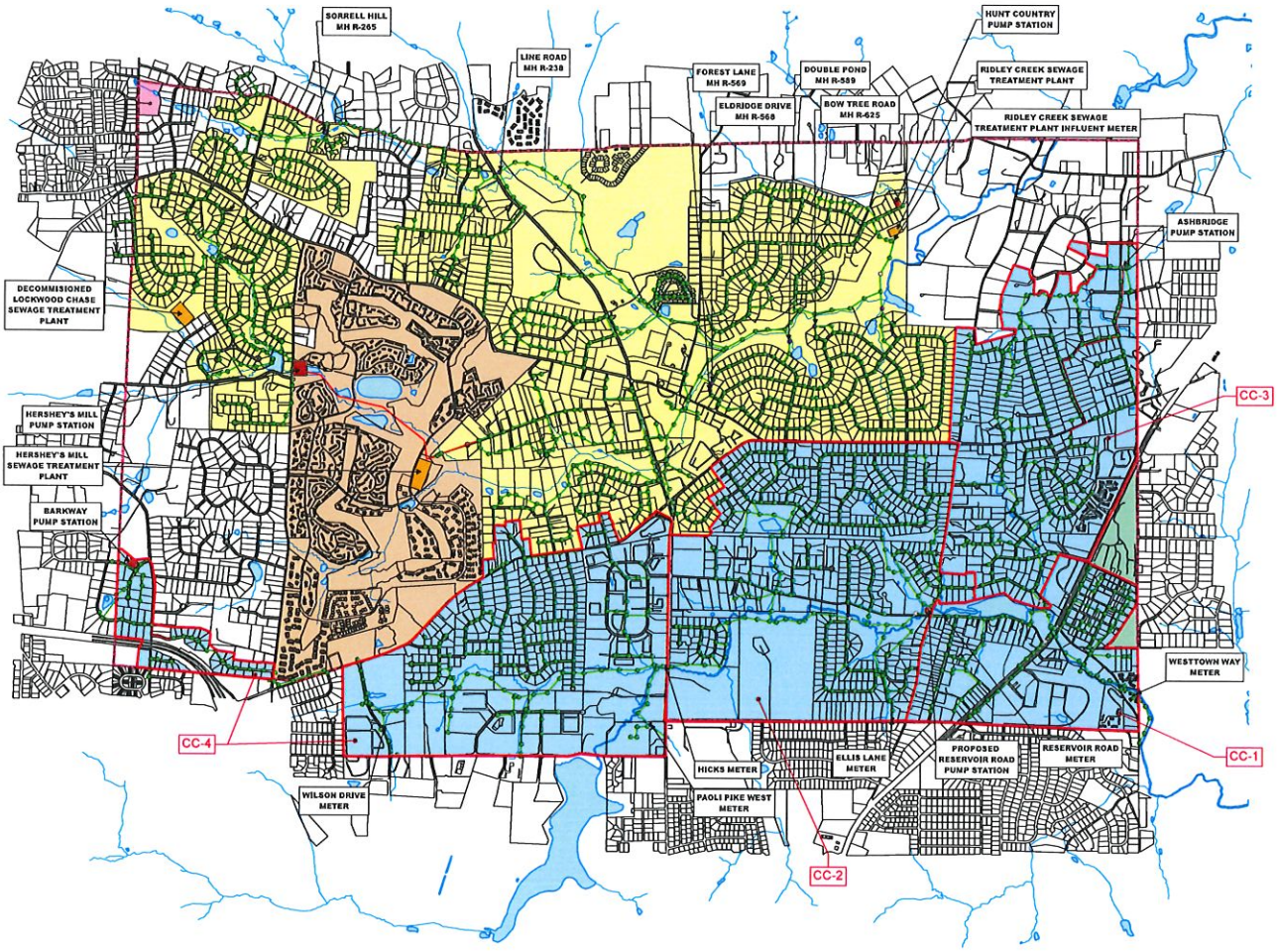

Sorrell Hills (MH R-265) Temporary Meter
Daily Volume vs. Precipitation
Daily Volume (gpd)
Precipitation (in/day)
25,000
20,000
15,000
10,000
5,000
0
2.50
2.00
1.50
1.00
0.50
0.00
1/1/2020
1/8/2020
1/15/2020
1/22/2020
1/29/2020
2/5/2020
2/12/2020
2/19/2020
2/26/2020
3/4/2020
Precipitation (in/day)
Daily Volume (gpd)
Expected Flow (gpd)


Ridley Creek Sewage Treatment Plant
Daily Volume vs. Precipitation
Daily Volume (gpd)
Precipitation (in/day)
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
3.00
2.50
2.00
1.50
1.00
0.50
0.00
1/1/2020
1/15/2020
1/29/2020
2/12/2020
2/26/2020
3/11/2020
3/25/2020
4/8/2020
4/22/2020
5/6/2020
5/20/2020
6/3/2020
6/17/2020
Precipitation (in/day)
Portable Flow Meter
Expected Flow (gpd)
"FIELD" Influent Flow Meter
Big Fish Reports


Chester Creek Collection
13-Month Sanitary Sewer Flows vs. Precipitation
(May 2019 - May 2020)
GALLONS PER DAY (GPD)
1,800,000
1,600,000
1,400,000
1,200,000
1,000,000
800,000
600,000
400,000
200,000
0
PRECIPITAITON (INCHES)
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
April-19
May-19
July-19
August-19
September-19
November-19
December-19
January-20
February-20
April-20
May-20
West Goshen Service Area Net Flow
Sewer Billing Unit (798,300 GPD)
Precipitation


Chester Creek Collection
5-Year Sanitary Sewer Flows vs. Precipitation
(January 2015 - May 2020)
GALLONS PER DAY (GPD)
2,000,000
1,800,000
1,600,000
1,400,000
1,200,000
1,000,000
800,000
600,000
400,000
200,000
0
PRECIPITAITON (INCHES)
30.00
25.00
20.00
15.00
10.00
5.00
0.00
December-14
May-15
October-15
March-16
July-16
December-16
May-17
October-17
March-18
August-18
January-19
June-19
November-19
April-20
West Goshen Service Area Net Flow
Sewer Billing Unit (798,300 GPD)
Precipitation

EAST GOSHEN WASTEWATER FACILITIES FIGURE 1



Legend

- SubAreas
- PUMP STATION
- SEWAGE TREATMENT PLANT
- MANHOLE
- PERMANENT METER
- PORTABLE METER (2016)
- PORTABLE METER (2019)
- PORTABLE METER (2020)
- SANITARY SEWER
- FORCEMAIN
- TOWNSHIP BOUNDARY
- PARCELS
- PONDS & LAKES
- RIVERS
- EAST WHITELAND SERVICE AREA
- HERSHEY'S MILL SERVICE AREA
- RIDLEY CREEK SERVICE AREA
- WEST GOSHEN SERVICE AREA
- WESTTOWN SERVICE AREA

Pennoni

0 1,000 2,000 4,000 Feet

1 inch = 1,000 feet

610-692-7171
www.eastgoshen.org

BOARD OF SUPERVISORS

EAST GOSHEN TOWNSHIP
CHESTER COUNTY
1580 PAOLI PIKE, WEST CHESTER, PA 19380-6199

FYI

July 31, 2020

Dear Property Owner:

The purpose of this letter is to inform you that William and Jessica Boyle, 1137 N. Chester Rd., have applied for a Zoning Variance requesting relief from the zoning ordinance. The Boyles are requesting dimensional relief from the side yard setback requirements of the ordinance; §240-9-G. The applicant proposes to construct a two-story addition that will encroach 6 feet into the required 20' side yard setback area.

Pursuant to Township policy, property owners within 1000 feet of the subject property are notified of Zoning Variance applications.

This application is scheduled to be discussed during the meetings outlined below:

Wednesday August 5, 2020 - Planning Commission meeting (7:00 pm)

Tuesday August 18, 2020 – Board of Supervisors meeting (7:00 pm)

Wednesday August 26, 2020 – Zoning Hearing Board (7:00 pm) **(Zoning Hearing)**

Due to COVID -19 all township meetings and hearings are being held virtually via video / telephone conference. These meetings will be conducted remotely via Zoom teleconference. Members of the public can participate via telephone and view the teleconference on YouTube. Meeting access information can be found on the Township website at https://eastgoshen.org/ under the Latest News posts.

The public is welcome and encouraged to attend and participate in these meetings. The application information is available for public inspection at the Township Building. Please call the Township staff at 610-692-7171 if you need assistance finding the meeting access information, or email me at mgordon@eastgoshen.org if you have any questions or need additional information.

Sincerely,

Mark A. Gordon
Township Zoning Officer

Cc: All Township Authorities, Boards and Commissions