



MEMORANDUM

Date: November 18, 2021

To: Mr. Donald D. Delamater, Township Manager – Towamencin Township

From: Thomas J. Figaniak, P.E.
William K. Dingman, P.E.

cc: Mike McGann, TMA Manager
Ed McCorkle, P.E., TMA Engineer
John T. Dooley, Esq.- Dischell, Bartle, Dooley

Reference: Skippack Creek Interceptor Capacity Analysis
Franconia Township 100,000 GPD (Average) / 350,000 GPM (Peak)
Additional Capacity Request

As requested, a sewer capacity analysis was completed to verify if capacity exists in the sanitary sewer system for Franconia Township's additional wastewater discharge through the Skippack Creek Interceptor, to the Rittenhouse Pump Station, to the Towamencin Municipal Authority's (TMA's) wastewater treatment plant. Franconia Township, in coordination with Franconia Sewer Authority, is seeking to divert approximately 100,000 gpd average daily flow of wastewater from their sanitary sewer system to Towamencin Township's sanitary sewer system. This connection would occur just upstream of existing manhole 508.13, located near the Towamencin Township, Franconia Township and Lower Salford Township border (Wambold Road & Schoolhouse Road).

The following items were reviewed and developed in support of the sanitary sewer capacity analysis:

- 2018 CFG Capacity Analysis with supporting flow data
- Table 1 Potential Future Public Sewer Needs
- Future Public Sewer Needs Map (November 2021)
- Table 2 Sewer Capacity Evaluation

The Sewer Capacity Evaluation (Table 2) consists of a review of the existing and future

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flows, including the additional flow from Clemens Food Group (peak flow rate of 1,600 gpm), Core 5, Hatfield Township and Lower Salford Township. We have projected the future public sewer needs for portions of Towamencin Township contributing sewage flow to the affected sanitary sewers, based on current zoning. The projection also includes flows associated with existing on-site systems and redevelopment/fill-in. The future sewer capacity need areas are shown on the attached Table 1 "Potential Future Public Sewer Needs".

The flow per EDU utilized in the capacity evaluation is 300 GPD/EDU which is approximately 10% greater than the measured existing average daily flow of 260 GPD/EDU in 2018. The 3.5 peaking factor utilized in the capacity evaluation is greater than the measured peaking factor during the five highest flow days in the 2018 analysis. Both of the above EDU flow and peaking factors are conservative values used in the capacity evaluation.

The capacity analysis shows a projected peak excess available limiting capacity of approximately 0.04 MGD in the existing 8-inch diameter sanitary sewer between manholes 508.4 to 508.3 (Approximately 46 linear feet) at the intersection of Wambold Road and Fretz Road. This is less than 10% of the available pipe capacity so the trunk sewer in this area will need to be monitored as additional flows are added to the system to verify that the peak flow rate does not exceed the system capacity or as a condition of the connection from Franconia, Franconia could be responsible for the cost to upgrade the system capacity for this section of the sewer system.

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65 E. Butler Avenue | Suite 100 | New Britain, PA 18901 | **215-345-4330** | 215-345-8606
508 Corporate Drive West | Langhorne, PA 19047 | **215-369-3955** | 215-345-8606
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119 East Linden Street | Kennett Square, PA 19348 | **610-444-9006** | 610-444-7292
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TOWAMENCIN TOWNSHIP
TABLE 1
POTENTIAL FUTURE PUBLIC SEWER NEEDS
November 2021

MAP ID	LOCATION (PROJECT)	ZONING CLASS	AREA (ACRES)	APPROX. EDU	ACTUAL EDU	MH ID
1	Franconia (100,000 GPD Request)			334		508
2	Core 5	LI	50	240	22	512
3	Fretz/Allentown	R-175	20	24		508
4	End Delp	IN	30	180	9	503.1
5	Clemens Family Corporation	PBC / R		28		512
6	Open Space	OS		0		511
7	Tomlinson	R-175	15	18		511
8	PSDC Towamencin Business Center	C/LI/SC	52	500		508
9	Detwiler Road (Green Tweed)	LI	-	15		500
10	Industrial Boulevard (Accupac/Stein Seal)	LI	20	45		500
11	Old Forty Foot / Sumneytown	R-200	45	15		SC-20
	LSTA Sold Capacity 150,000 GPD					SC-7
12	Mainland Golf Course	R-200	20	8		PS
13	Kulp / Kriebel Road	R-200	300	120		PS

ZONE	EDU YIELD / ACRE
R-200	0.4
R-180	0.7
R-175	1.2
R-125	1.4
R-50	4
PBC	8
IN	6
LI	5
OS	-

SKIPPACK CREEK INTERCEPTOR
Sewer Capacity Evaluation
Table 2

Peak Factor = 3.5

n = 0.013
GPD/EDU = 300

Tributary Area	EDU's (Units)	Total EDU's	Avg. Daily Flow (GPD)	Max Daily Flow (GPD) (MGD)	Length (FT)	MH No	Dia. (In)	Slope -----	Capacity (MGD)	Available Capacity (MGD)
Ashers Chocolates	45		13,500							
Swartley Bros. (10 Schoolhouse)	2		600							
1- Franconia (Future)	334		100,200							
2 - Core5 (Future)	22		6,600							
		403	120,900	423,150						
						508.13				
-	-									
		403	120,900	423,150						
					0.423	347	8	0.0053	0.57	0.15
						508.12				
TNC Self Storage (Lower Salford)	1		300							
		404	121,200	424,200						
					0.424	376	8	0.0055	0.58	0.16
						508.11				
-	-									
		404	121,200	424,200						
					0.424	58	8	0.0278	1.30	0.88
						508.10				
-	-									
		404	121,200	424,200						
					0.424	191	8	0.0374	1.51	1.09
						508.9				
TNC Self Storage (531 Wambold)	-									
		404	121,200	424,200						
					0.424	199	8	0.0198	1.10	0.68
						508.8				
-	-									
		404	121,200	424,200						
					0.424	198	8	0.0194	1.09	0.66
						508.7				
-	-									
		404	121,200	424,200						
					0.424	305	8	0.0095	0.76	0.34
						508.6				
-	-									
		404	121,200	424,200						
					0.424	300	8	0.0200	1.10	0.68
						508.5				
-	-									
		404	121,200	424,200						
					0.424	269	8	0.0146	0.94	0.52
						508.4				
-	-									
		404	121,200	424,200						
					0.424	46	8	0.0036	0.47	0.04
						508.3				
-	-									
		404	121,200	424,200						
					0.424	280	8	0.0099	0.78	0.35
						508.2				
AR Metalcrafters & 720 Fretz	2		600							
		406	121,800	426,300						
					0.426	248	8	0.0050	0.55	0.13
						508.1				
-	-									
		406	121,800	426,300						
					0.426	238	8	0.0050	0.55	0.13
						508				
Existing Homes & Proposed Flows from 11/2018 Analysis incl. CFG Map Id 3,5,6,7,8	5,392		1,617,600	4,356,750	CFG Flow rate is based on 1600 gpm peak flow					
Cassell Road										
Existing Homes	12		3,600							
		5,810	1,743,000	4,795,304						
					4.795	395	18	0.0060	5.26	0.47
						507				
-	-									
		5,810	1,743,000	4,795,304						

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Tributary Area	EDU's	Total EDU's	Avg. Daily Flow	Max Daily Flow		Length	MH	Dia.	Slope	Capacity	Available Capacity
	(Units)		(GPD)	(GPD)	(MGD)	(FT)	No	(In)	-----	(MGD)	(MGD)
					4.795	394		18	0.0068	5.60	0.81
							506				
-	-	5,810	1,743,000	4,795,304							
					4.795	394		18	0.0060	5.26	0.47
							505				
-	-	5,810	1,743,000	4,795,304							
					4.795	394		18	0.0060	5.26	0.47
							504				
Map ID 4 (Future)	180		54,000								
Existing Homes	3		900								
		5,993	1,797,900	4,987,454							
					4.987	200		18	0.0060	5.26	0.27
							503				
-	-	5,993	1,797,900	4,987,454							
					4.987	300		18	0.0060	5.26	0.27
							502				
-	-	5,993	1,797,900	4,987,454							
					4.987	250		18	0.0060	5.26	0.27
							501				
-	-	5,993	1,797,900	4,987,454							
					4.987	198		18	0.0070	5.68	0.70
							500				
Accupac	218		50,120								
Map ID 10 - Accupac (Future)	45		12,380								
Map ID 9 (Future)	15		4,500								
Stein Seal	10		2,800								
Existing Homes	397		119,100								
		6,678	1,986,800	5,706,704							
					5.707	75		18	0.0089	6.41	0.70
							SC-1				
-	-	6,678	1,986,800	5,706,704							
					5.707	375		18	0.0087	6.34	0.63
Flow Meter Site							SC-2				
-	-	6,678	1,986,800	5,706,704							
					5.707	217		24	0.0032	8.28	2.57
							SC-3				
-	-	6,678	1,986,800	5,706,704							
					5.707	340		24	0.0023	7.02	1.31
							SC-4				
-	-	6,678	1,986,800	5,706,704							
					5.707	340		30	0.0025	13.27	7.56
							SC-5				
-	-	6,678	1,986,800	5,706,704							
					5.707	325		30	0.0025	13.27	7.56
							SC-6				
-	-	6,678	1,986,800	5,706,704							
					5.707	95		30	0.0025	13.27	7.56
							SC-7				
LSTA (Future)	495		148,500								
Existing LSTA Contribution	5		1,500								
		7,178	2,136,800	6,231,704							
					6.232	423		30	0.0034	15.47	9.24
							SC-9				
-	-	7,178	2,136,800	6,231,704							
					6.232	218		30	0.0018	11.26	5.03
							SC-10				
-	-										

SKIPPACK CREEK INTERCEPTOR
Sewer Capacity Evaluation
Table 2

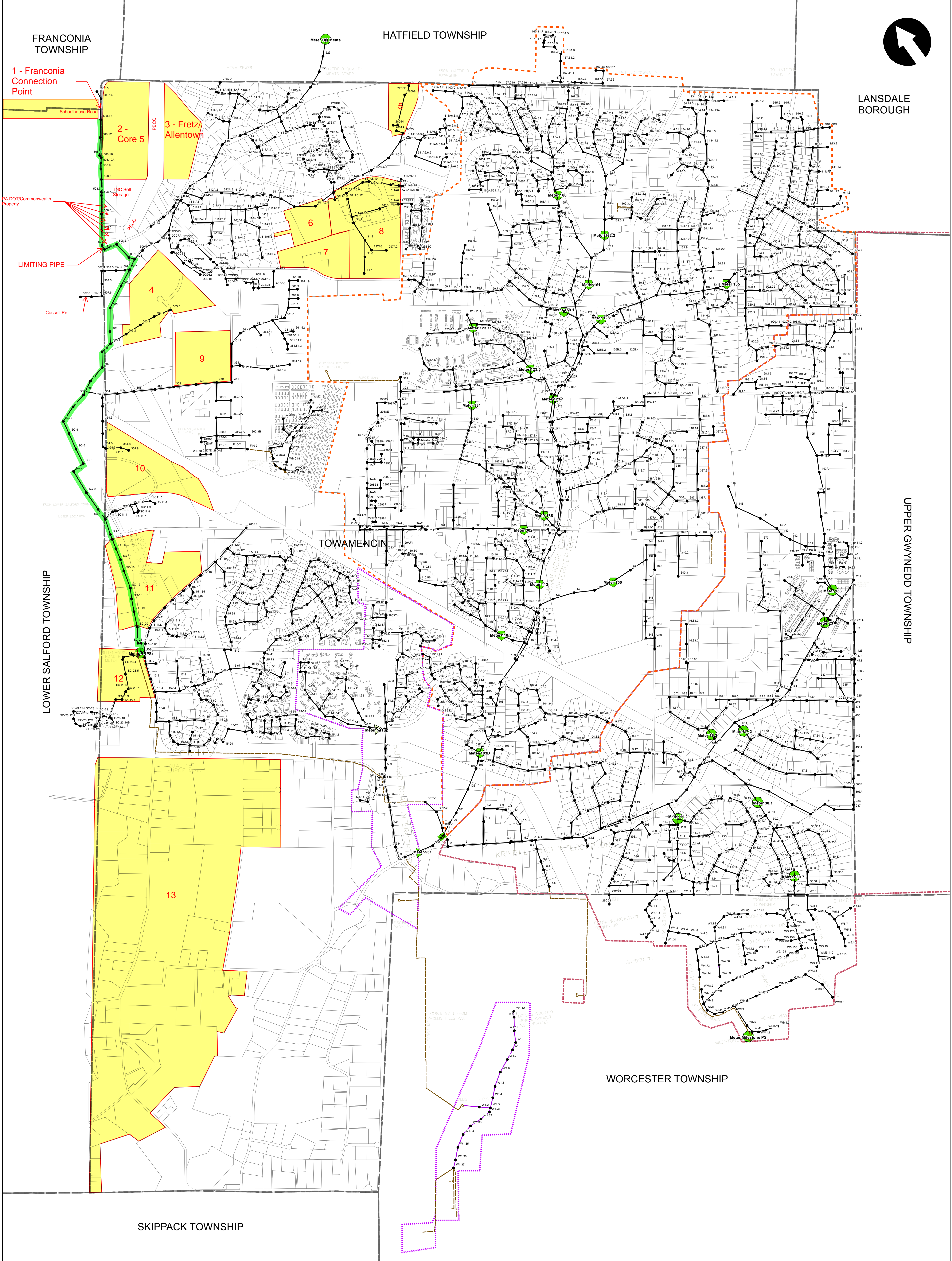
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n = 0.013
GPD/EDU = 300

Tributary Area	EDU's	Total EDU's	Avg. Daily Flow	Max Daily Flow		Length	MH	Dia.	Slope	Capacity	Available Capacity
	(Units)		(GPD)	(GPD)	(MGD)	(FT)	No	(In)	-----	(MGD)	(MGD)
		7,178	2,136,800	6,231,704							
					6.232	232		30	0.0018	11.26	5.03
							SC-11				
Mainland Square	48		14,400								
		7,226	2,151,200	6,282,104							
					6.282	400		30	0.0018	11.26	4.97
							SC-12				
-	-										
		7,226	2,151,200	6,282,104							
					6.282	225		30	0.0020	11.87	5.58
							SC-13				
-	-										
		7,226	2,151,200	6,282,104							
					6.282	75		30	0.0020	11.87	5.58
							SC-14				
-	-										
		7,226	2,151,200	6,282,104							
					6.282	368		30	0.0020	11.87	5.58
							SC-15				
-	-										
		7,226	2,151,200	6,282,104							
					6.282	155		30	0.0040	16.78	10.50
							SC-16				
-	-										
		7,226	2,151,200	6,282,104							
					6.282	400		30	0.0038	16.36	10.07
							SC-17				
-	-										
		7,226	2,151,200	6,282,104							
					6.282	183		30	0.0014	9.93	3.65
							SC-18				
-	-										
		7,226	2,151,200	6,282,104							
					6.282	135		30	0.0014	9.93	3.65
							SC-19				
Map ID 11 (Future)	15		4,500								
		7,241	2,155,700	6,297,854							
					6.298	425		30	0.0014	9.93	3.63
							SC-20				
-	-										
		7,241	2,155,700	6,297,854							
					6.298	175		30	0.0014	9.93	3.63
							SC-21				
-	-										
		7,241	2,155,700	6,297,854							
					6.298	105		30	0.0014	9.93	3.63
							SC-22				
-	-										
		7,241	2,155,700	6,297,854							
					6.298	255		30	0.0014	9.93	3.63
							SC-23				
Map ID 12 and 13 (Future)	128		38,400								
Existing Homes	1698		509,400								
Rittenhouse Road Pump Sta.		9,067	2,703,500	8,215,154			Pump Sta.			8.5	0.28
Minimum Available Capacity										0.04	

Notes:

- (1) Flows were calculated through proportional flow distribution, based on existing sewer connections between measured flow meter sites.



Legend

- Sanitary Manholes
- Sanitary Sewers
- Towamencin Creek Interceptor Basin
- Kriebel Road Interceptor Basin
- Municipal Boundary

TOWAMENCIN TOWNSHIP

2021 SCI Capacity Analysis

TOWAMENCIN TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA

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DATE: 08/01/2018