

## **Chapter 9: Sewer**

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### **A. PROPOSED ZONING ACTION (GENERIC ANALYSIS)**

#### **EXISTING CONDITIONS**

##### *INTRODUCTION*

The parcels within the MOD Zoning Area are located within the Westchester County Peekskill Sanitary Sewer District (see **Figure 9-1**) which is serviced by Westchester County (Peekskill Wastewater Treatment Plant). Sanitary flows from the proposed MOD Parcels would flow to an existing County trunk line and would ultimately be treated at the Peekskill Wastewater Treatment Plant. A description of the existing sewer lines is provided below.

##### *MCGREGOR BROOK INTERCEPTOR SEWER (AKA COUNTY TRUNK SEWER)*

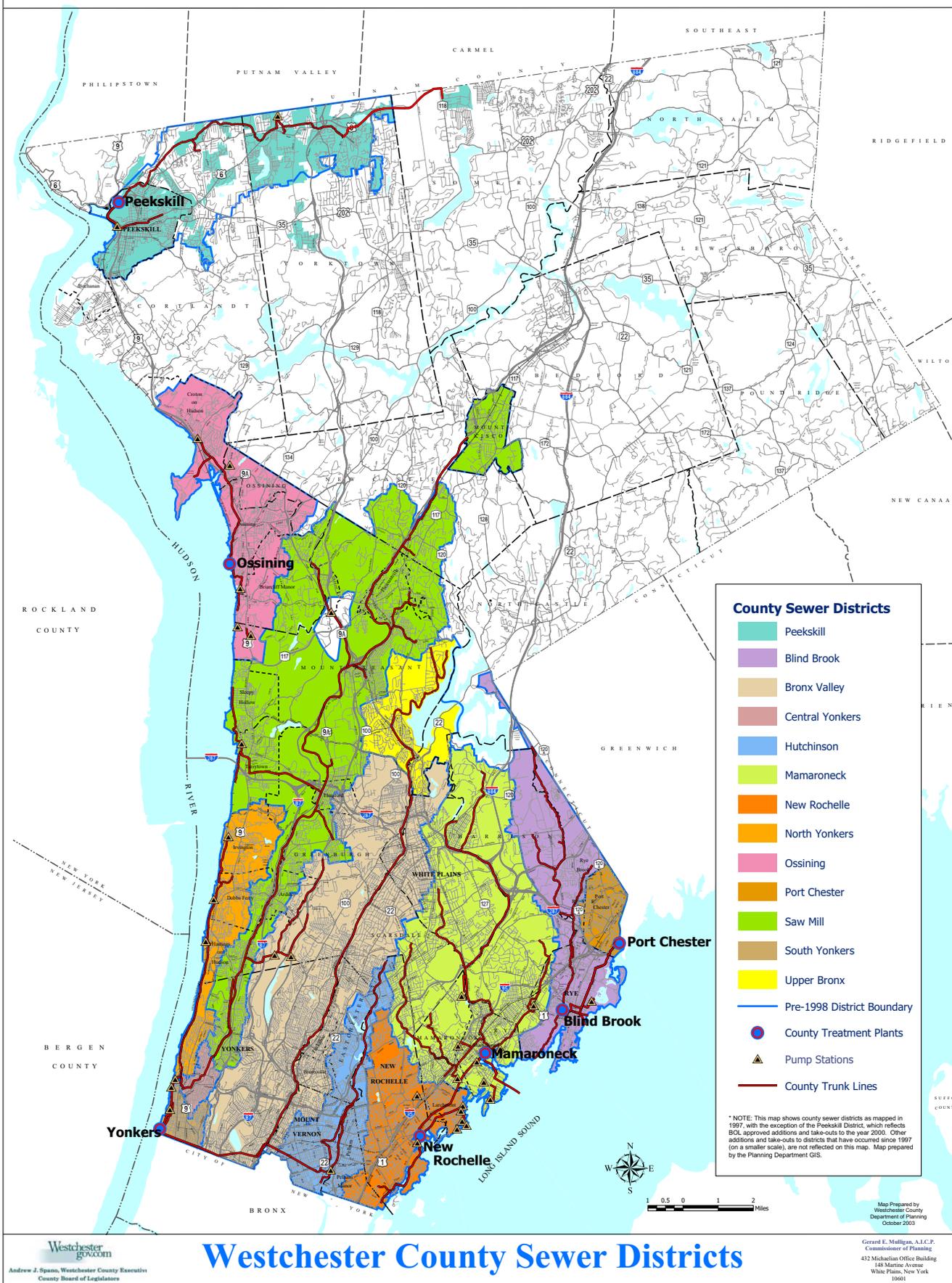
###### *Background*

In 2003, the Town of Cortlandt evaluated the formation of a central sanitary sewer collection system “Tamarack Sewers” at the request of the surrounding communities which have long sought sewer. It was proposed that this central sanitary sewer could convey wastewater to the McGregor Brook Interceptor via connection to the Conklin East Sewer District. Due to cost and the lack of available grants to offset these costs, the district was not formed. With the proposed MOD Development Plan, capacity in the County Trunk Line has been identified as limited. Therefore, the Applicants will be required to design and provide improvements to mitigate impacts to the County Trunk Sewer. In addition, the revival of a potential Tamarack Sewer District has been identified as a community betterment and the Applicants will be required to evaluate these off-site connections by designing improvements to include their sanitary flows, as well as design and potentially construct portions of the off-site improvements that may be considered mitigatable impacts.

The applicants will be required to work in conjunction Westchester County Department of Environmental Facilities (WCDEF) to obtain all necessary permits with agencies with regulatory approval (e.g., Westchester County Department of Health (WCDOH), United States Army Corps of Engineers (USACE) and New York State Department of Environmental Conservation (NYSDEC).

###### *Existing Conditions*

Westchester County McGregor Brook Interceptor Sewer extends from Route 202/35/Crompond at Conklin Avenue to the Peekskill Sanitary Treatment Plant. At its head end, it consists of a 12-inch cast iron pipe that follows along McGregor Brook. The size of the sewer increases in size to a 14-inch pipe downstream of MH 32 (see **Figure No. 9-2**, *Schematic Sewer System Layout Plan*). The

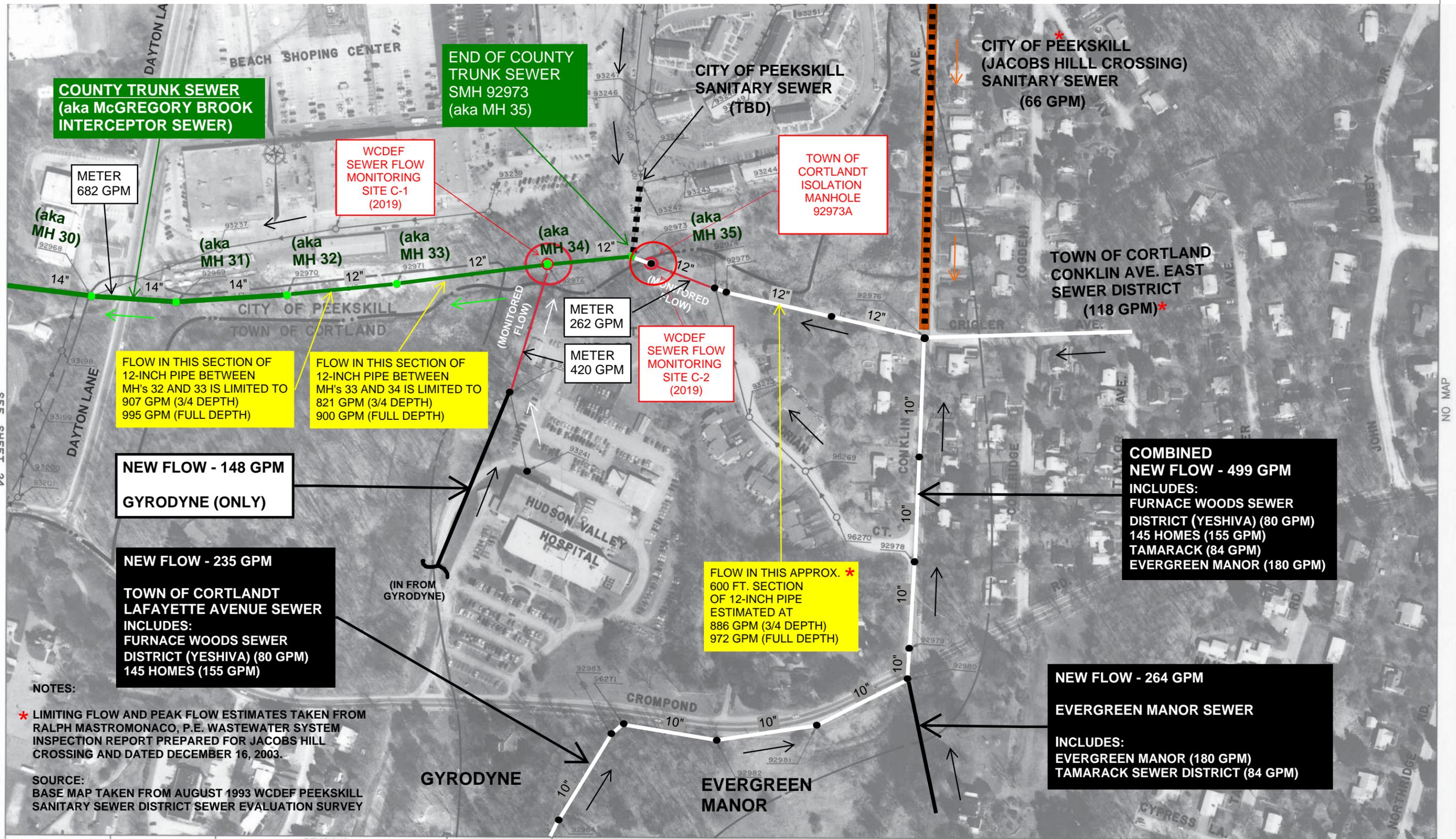


**Figure 9-1  
WESTCHESTER  
COUNTY SEWER  
DISTRICTS**

Medical Oriented District  
Draft Generic Environmental  
Impact Statement

**DIVNEY • TUNG • SCHWALBE**  
Intelligent Land Use





**Figure 9-2**  
**SCHEMATIC SEWER SYSTEM LAYOUT PLAN**  
 Medical Oriented District  
 Draft Generic Environmental Impact Statement



The information contained in this data is NOT to be construed as a legal description. The town and its consultants do NOT provide any guarantee of accuracy or completeness and will NOT be held liable for any damages or losses due to its use. Data Sources: August 1993 WCDEF Peekskill Sanitary Sewer District Sewer Evaluation Survey

section of the McGregor Brook Interceptor Sewer with the least capacity is an approximate 250 linear feet (LF) section of 12” cast iron pipe located between County Manholes 33 and 34 (aka 92971 and 92972) with a limiting slope of 0.27%. The capacity of this limiting section of 12” diameter pipe is estimated to be approximately 821 gallons per minute (gpm) when flowing at  $\frac{3}{4}$  full or 9-inch flow depth and 900 gpm when flowing full. This limiting section of pipe is identified on **Figure 9-2**.

In 2017, the Town of Cortlandt performed flow monitoring on the Westchester County Interceptor Sewer upstream of MH 30 near Dayton Lane. Based on the flow monitoring data provided by the Town of Cortlandt, the average daily flow was 324 gallons per day (GPD) (0.466 MGD) and the measured peak flow over the 2-month monitoring period was 682 gpm (0.982 MGD). More recently the Westchester County DEF performed a comprehensive sewershed analysis. While the results have not yet been shared with the Town or Applicants, any potential improvements associated with the Proposed Action and required by the County shall be designed and implemented or constructed by the developers and paid for by the developers. See **Figure 9-2** for approximate flow meter location.

*ROUTE 202/35/CROMPOND ROAD AND CONKLIN AVENUE SEWER (TOWN OF CORTLANDT SEWER)*

The Route 202/35/Crompond Road and Conklin Avenue Sewer presently receives flow from the existing Town of Cortlandt Lafayette Avenue Sewer and the Stephen Lane Pumping Station and is expected to receive additional flow from the Furnace Woods Sewer District<sup>1</sup> and 156 additional residences with access to the sewer.

The capacity limiting this section of pipe in this sewer is reportedly in a 12” DIP section, located just upstream of the connection to the County Trunk Sewer, with a capacity of 972 gpm when flowing full.<sup>2</sup>

**FUTURE WITHOUT THE PROPOSED ACTION (NO-BUILD CONDITION)**

In the Future without the Proposed Action, no changes to the existing sanitary sewer infrastructure servicing the proposed MOD Zoning Area is anticipated. However, flow through the McGregor Brook Interceptor Sewer is expected to experience an increase in demand from other planned and/or approved sewer connections in the area. These other contributory properties (and their estimated peak flows) include the preliminary planned Tamarack Sewer District comprised of approximately 79 homes (84 gpm), the approved Furnace Woods Sewer District<sup>3</sup> (estimated between 68 and 126 gpm depending on offsite connections), and approximately 156 single-family residences (167 gpm) assumed contributory to the Lafayette Avenue Sewer. The combined sewer flow from these properties has the potential to increase sewer flows through the Interceptor Sewer as identified in Table 9-3 below.

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<sup>1</sup> Currently in design with an estimated average daily flow of 16,000 gpd minimum and 78,400 gpd maximum at full build out (157 parcels)

<sup>2</sup> Limiting flow taken from Ralph Mastromanaco, P.E. Wastewater System Inspection Report prepared for Jacobs Hill Crossing and dated December 3, 2003.

<sup>3</sup> Furnace Woods includes the Yeshiva Ohr Hameir and 156 residential homes.

## **PROBABLE IMPACTS OF THE PROPOSED ZONING (BUILD CONDITION)**

The Proposed Zoning Action would not directly result in the generation of any new sanitary flows. However, any new development proposed as part of the MOD would be required to be located within the Peekskill Sanitary Sewer District and connect to municipal sewer. Since the proposed MOD Zoning would be expected to result in an increase in the permitted density of MOD Zoning Area, it is anticipated that the MOD Zoning Area Build Out would have the potential to increase sanitary flows to the Peekskill Wastewater Treatment Plant over the potential build out under existing zoning. Any projects proposed under MOD Zoning would be required to complete site-specific SEQR, which would include an analysis of the project's proposed sanitary flows, the infrastructure needed to carry the flows, and the capacity of the Peekskill Wastewater Treatment Plant to accommodate those flows.

## **MITIGATION**

Any new development proposed as part of the MOD would be required to connect to municipal sewer and be located within the Peekskill Sanitary Sewer District. Any development in the MOD would also require the formation of a local sewer district(s). All proposed MOD development would be required to complete site-specific SEQR. If any significant adverse impacts from the proposed sanitary flows are identified as part of the environmental review, mitigation would be required.

## **A. MOD DEVELOPMENT PLAN**

### **EXISTING CONDITIONS**

#### *EVERGREEN*

The Evergreen site is located within the Westchester County Peekskill Sanitary Sewer District (see **Figure 9-1, County Sewer Districts**). Currently, there is an existing 10-inch PVC, Town of Cortlandt owned and operated sanitary sewer in Route 202/35/Crompond Road which parallels the site's frontage. The 10-inch existing sewer continues east along Route 202/35/Crompond Road, turning north along Conklin Avenue and west along McGregor Brook, ultimately discharging to the head end of the existing 12-inch, cast iron, Westchester County owned and operated trunk sewer known as the McGregor Brook Interceptor Sewer which conveys its sewage to the Peekskill Wastewater Treatment Plant, located in Peekskill, New York.

#### *GYRODYNE*

The proposed Gyrodyne Project Site is currently comprised of a grouping of five medical office buildings and three single-family residences. The average daily flow for these uses, based upon NYSDEC Design Standards for Intermediate Sized Wastewater Treatment is estimated at 11,600 gpd. All of the existing uses on the site are connected to the public sanitary sewer located along the McGregor Brook, and the subject parcels are all located within the Peekskill Sanitary Sewer District. On November 1, 2018, correspondence was sent to the Westchester County Department of Environmental Facilities requesting a letter of sewer capacity availability. Gyrodyne has been

made aware that capacity will be available subject to the completion of necessary improvements made to the McGregor Brook.

**PROBABLE IMPACTS OF MOD DEVELOPMENT PLAN**

*EVERGREEN*

Due to the planned mixed-use development on the Evergreen Manor site, there will be an increase in sanitary flows to the existing 10” Town of Cortlandt sewer main located in Route 202/35/Crompond Road. The estimated average daily sanitary flow for the Evergreen Manor development is approximately 74,000 gallons per day with an estimated peak flow of approximately 180 gallons per minute. See **Table 9-1**, Estimated Water and Wastewater Demands (NYSDEC Flow Values) for a summary of this flow estimate.

**Table 9-1**  
**Evergreen Estimated Water and Wastewater Demands (NYSDEC Flow Values)**

Use Type	Amount		Unit	Unit Flow (gpd <sup>1</sup> )	Water Demand		Sanitary Load	
	No.	Beds			Unit Flow <sup>2</sup> (10% additional)	Average Daily Flow (gpd)	Unit Flow <sup>1</sup>	Average Daily Flow (gpd)
Apartments <sup>3</sup>	166	180	Bed	110	121 gal/unit	21,780	110 gal/unit	19,800
Hotel, Rooms	100	100	Bed	110	121 gal/unit	12,100	110 gal/unit	11,000
Retail	15,000	-	Sf	0.10	0.11 gal/unit	1,650	0.10 gal/unit	1,500
Restaurant	190	-	Seat	35	38.50 gal/unit	7,315	35 gal/unit	6,650
Office/Lab	15,000	-	Sf	0.10	0.11 gal/unit	1,650	0.10 gal/unit	1,500
Assisted Living Residents	89	89	Bed	110	121 gal/unit	10,769	110 gal/unit	9,790
Independent Living Residents	31	62	Bed	110	121 gal/unit	7,502	110 gal/unit	6,820
Assisted Living Employees	30	-	Emp.	15	17 gal/unit	495	15 gal/unit	450
Reserve Capacity	1	-	Ea.	16,500	18,150 gal/unit	18,150	16,500 gal/unit	16,500
Total Daily Flow (gpd)						81,411		74,010

Total Daily Flow (gpm) <sup>4</sup>	57		51
Design Peak Rate of Flow (gpm) <sup>5</sup>	283		180
<sup>1</sup> Unit flow values based on NYSDEC Design Standards for Wastewater Treatment Works, § B.6.b, Design Flow, March 2014. <sup>2</sup> 10 percent added to NYSDEC Design Standards for Wastewater Treatment Works, March 2014 unit flow rate to obtain water demand flow rate. <sup>3</sup> Evergreen proposes 152 one-bedroom/studios and 14-two bedroom units: total of 180 bedrooms. <sup>4</sup> Equivalent to 75 two-bedroom units per NYSDEC Design Standards for Wastewater Treatment Works March 2014. <sup>5</sup> Flow based on 24 hour day <sup>6</sup> Peaking Factor, Instantaneous =5.0 for water and 3.5 for sanitary, Mixed Use Project			

*McGregor Brook Interceptor Sewer (aka County Trunk Sewer)*

Based on the 2017 sewer flow monitoring data provided by the Town and a review of record plan and profile information shown on WCDEF mapping, the existing County Trunk Sewer is estimated to have adequate capacity under full flow conditions (900 gpm) to convey the estimated combined peak sewer flow (862 gpm) from the estimated Evergreen Manor development peak flow (180 gpm) and the recorded 2017 peak flow (682 gpm) through the McGregor Brook Interceptor Sewer.

The Town of Cortlandt, however, has indicated sewer flow through the McGregor Brook Interceptor Sewer is expected to experience an increase in peak demand due to the addition of other planned and/or approved sewer connections in the area. These other contributory properties (and their estimated peak flows) include the proposed Gyrodyne development (148 gpm), Buttonwood (125 gpm), the planned Tamarack Sewer District comprised of approximately 79 homes (84 gpm), the approved Yeshiva development (part of the Furnace Woods Sewer District) off Furnace Dock Road, and up to 156 single-family residences assumed contributory to the Lafayette Avenue Sewer (estimated between 68 and 126 gpm depending on offsite connections). The combined sewer flow from these properties has the potential to increase sewer flows through the Interceptor Sewer by approximately 160,640 GPD with an estimated peak demand of approximately 390 gpm. Refer to **Table 9-2, County Trunk Sewer Estimated Sanitary Sewer Capacity Based On Average Daily Flow** and **Table 9-3, County Trunk Sewer Estimated Sanitary Sewer Capacity Based On Peak Daily Flows**.

**Table 9-2**  
**County Trunk Sewer (aka McGregor Brook Interceptor Sewer)**  
**Estimated Sanitary Sewer Capacity Based on Average Daily Flow**

Description	Number of Units	Loading	Unit	Amount
<b>A. Estimated Average Daily Sanitary Flows From Proposed Developments</b>				
<b>1. Proposed Evergreen Manor</b>				
Evergreen Build-Out			gpd	74,040
Average Flow (1)			gpm	51
<b>2. Proposed Tamarack Sewer District</b>				
Single Family Homes (assumes 4-bedroom) (2)	79	440	gpd	34,760
Average Flow			gpm	24

3. Furnace Woods Sewer District (Yeshiva and up to 156 residential homes)				
Proposed Flow (2)			gpd	51,840
Average Flow			gpm	36
B. Measured Flow in County Trunk Sewer (3)				
Measured maximum Average daily flow			mgd	0.4660
			gpm	324
C. Estimated Average Daily Flow (A1-A3) + Measured Average Daily Flow (B)				
Estimated Proposed Average Flow+ Measured Average Flow			gpm	458 (within capacity)
D. County Trunk Sewer Limiting Pipe Capacity (pipe with least slope) (4)				
Existing Pipe size			(in)	12
Material			Cast Iron Pipe	
Manning's "n"				0.012
Min Slope			%	0.27
Capacity (5)				
	Full		gpm	900
	¾ depth (9")		gpm	821
E. Peaking Factor				
Pipe Capacity (Full Flow) ÷ Average Daily Flow			gpm	1.96
Notes:				
(1) Taken from Table 9-1, Estimated Water and Wastewater Demands (NYSDEC Flow Values) this DGEIS.				
(2) Estimated flow value or number of units provided by the Town of Cortlandt, Dept. of Technical Services.				
(3) Measured flows provided by the Town of Cortlandt, Dept. of Technical Services. Measurements were taken from 12/7/16 through 2/7/17 in the Westchester County interceptor sewer downstream of Conklin Avenue @ Meter 1.				
(5) The pipe with the least capacity was determined from WCDEF record drawings dated November 1976 and is between County Manholes 33 and 34 on the County Trunk Sewer. Refer to Figure 9-2 for location.				
(6) Estimated using Manning's equation ( $Q=1.49/n \times A \times R^{2/3} S^{1/2}$ ).				

**Table 9-3  
County Trunk Sewer (aka McGregor Brook Interceptor Sewer)  
Estimated Sanitary Sewer Capacity Based on Peak Daily Flows**

Description	Number of Units	Loading	Unit	Amount
<b>A. Estimated Peak Daily Sanitary Flows From Proposed Developments</b>				
1. Proposed Evergreen Manor				
Average Flow (1)			gpd	74,040
Peak Factor			gpm	51
Peak Flow				3.5
				180
2. Proposed Tamarack Sewer District				
Single Family Homes (assumes 4-bedroom) (2)	79	440	gpd	34,760
Average Flow (2)			gpm	24
Peak Factor				3.5
Peak Flow				84
3. Furnace Woods Sewer District (Yeshiva plus up to 156 residential homes)				

Medical Oriented District (DGEIS)  
& MOD Development Plan (DEIS)

Proposed Flow (2) (includes Yeshiva and 156 homes)			gpd	51,840
Average Flow (1)			gpm	36
Peak Factor				3.5
Peak Flow				126
Peak Flow Used (6)				126*
<i>* estimated between 68 and 126 gpm depending on offsite connections</i>				
<b>TOTAL FLOW</b>			<b>gpd</b>	<b>160,640</b>
<b>TOTAL PEAK FLOW</b>			<b>gpm</b>	<b>390</b>
<b>B. Measured Flow in County Trunk Sewer (3)</b>				
Measured Peak Flow			mgd	0.9820
			gpm	682
<b>C. Estimated Peak Flow (A1-A3) + Measured Peak Flow (B)</b>				
Estimated Peak Flow+ Measured Peak Flow			gpm	1,072 (exceeds capacity)
<b>D. County Trunk Sewer Limiting Pipe Capacity (pipe with least slope) (4)</b>				
Existing Pipe size			(in)	12
Material			Cast Iron Pipe	
Manning's "n"				0.012
Min Slope			%	0.27
Capacity (5)				
Full			gpm	900
¾ depth (9")			gpm	821
Notes: (1) Taken from Table 9-1, Estimated Water and Wastewater Demands (NYSDEC Flow Values) this DGEIS. (2) Estimated flow value or number of units provided by the Town of Cortlandt, Dept. of Technical Services. (3) Measured flows provided by the Town of Cortlandt, Dept. of Technical Services. Measurements were taken from 12/7/16 through 2/7/17 in the Westchester County interceptor sewer downstream of Conklin Avenue @ Meter 1. (5) The pipe with the least capacity was determined from WCDEF record drawings dated November 1976 and is between County Manholes 33 and 34 on the County Trunk Sewer. Refer to Figure 9-2 for location. (6) Estimated using Manning's equation ( $Q=1.49/n \times A \times R^{2/3} S^{1/2}$ ).				

If all the projects identified above connect to the McGregor Brook Interceptor Sewer, some sections of the Interceptor Sewer may not have the capacity to accommodate the increased flows. While the flow estimates for proposed projects and existing projects with no recorded data are conservative, the potential for overflow and backups is of concern. Based on these flow estimates approximately 500 feet of the existing 12" McGregor Brook Interceptor Sewer between MH 32 and MH 34 may require replacement with new sanitary infrastructure to increase the flow capacity through these sections of the County Trunk Sewer. The pipe replacement costs will be equitably distributed among the stakeholders. Upsizing of the McGregor Brook Interceptor Sewer will require the review and approval of both the Westchester County Department of Environmental Facilities and Westchester County Department of Health. Alternative designs could include the construction of a parallel 12" sewer main servicing Gyrodyne, Buttonwood and the Hospital to bypass the section of the existing County Trunk Sewer with limited capacity. All design criteria and material requirements would be subject to each agency's review and approval.

NYSDEC Freshwater Wetlands Permitting will also be involved as McGregor Brook is a regulated state wetland/watercourse. Temporary disturbances adjacent to the McGregor Brook would likely

be required to install a replacement or bypass of the existing pipe. Disturbed areas would be restored to original grades and revegetated or re-stabilized, in the case of any access roadways, post-installation as required by the approval authorities. A monitoring period during the growing seasons would follow the completion of the restoration.

*Route 202/35/Route 202/35/Crompond Road and Conklin Avenue Sewer (Town of Cortlandt Sewer)*

The Route 202/35/Crompond Road and Conklin Avenue Sewer will receive the sewer flow from the proposed Evergreen Manor development. In addition, this sewer presently receives flow from the existing Town of Cortlandt Lafayette Avenue Sewer and the Stephen Lane Pumping Station and is expected to receive additional flow from the Tamarack Sewer District, the planned and/or approved Yeshiva Development off Furnace Dock Road, and 156 additional residences with access to the sewer. The Gyrodyne development (and any Buttonwood Road homes that may be serviced in the future) are not contributory to this sewer main.

The capacity limiting this section of pipe in this sewer is reportedly in a 12” section, located just upstream of the connection to the County Trunk Sewer, with a capacity of 972 gpm when flowing full.

The estimated peak flow entering the Route 202/35/Crompond Road and Conklin Avenue sewer system from the proposed Evergreen Manor Development, when combined with the Tamarack Sewer District and other new planned and/or approved projects in the service area is estimated at approximately 470 gpm. The 2017 recorded flows through the McGregor Brook interceptor sewer at its upstream end, without the contribution from the Hospital, was 262 gpm. Using this as the base flow for this sewer is considered conservative as this recorded flow also included flows from Jacobs Hill Crossing and the Conklin Avenue East Sewer District. Combining the 2017 recorded flow of 262 gpm base flow and the estimated new flow of 470 gpm totals an estimated peak daily flow of 732 gpm. This combined peak flow (existing plus proposed and planned future demands) is within the reported capacity of the existing sewer main and thus no impacts to the existing system are anticipated because of the estimated increase in sewer flows.

*Evergreen Manor Sewer System (Town of Cortlandt Sewer and Private Service Laterals)*

The proposed on-site sewage collection system is to be comprised of a newly constructed public sewer main and series of private service laterals. Combined, the system is expected to require the on-site installation of approximately 1500 linear-feet of new sewer piping, comprised of a mix of 8-inch and 6-inch PVC (SDR 35) sanitary sewer pipe. All collector mains will be a minimum of 8-inch diameter and shall be offered to the Town of Cortlandt for dedication, with a series of private service laterals connecting each development parcel to the dedicated main. All five (5) of the on-site development parcels will convey its sewage to the existing 10” sewer main located in Route 202/35/Crompond Road. Four (4) of the five (5) on-site development parcels will connect to the new on-site 8” collector sewer main proposed for installation within the new Evergreen Manor access road. Parcel 2, the proposed restaurant parcel, will have its own direct service connection to the nearby, Town of Cortlandt existing 10” PVC sewer main located within the Route 202/35/Crompond Road right-of-way.

The private sewer lateral servicing Parcel 3 is also being considered as a point of possible tie-in for the planned Tamarack Sewer District. Should this occur, the service lateral will be dedicated to the Town of Cortlandt as a collector main. All new public sewer mains and private service

laterals (with the capacity to convey in excess of 2,500 GPD) will require the review and approval of the Westchester County Department of Health and will be designed in strict accordance with local standards, the customary Ten States Standards, and regulatory Westchester County Department of Health (WCDOH) requirements. This will require, but shall not be limited to, the establishment of minimum pipe slopes based on pipe diameter (for self-cleansing velocities) and 4-foot minimum depth of cover over all sanitary sewer main pipes (for frost protection.)

The on-site sanitary sewer collection system will also be designed with added capacity to receive and convey flows from a planned future Tamarack Sewer District. The exact location of the future Tamarack Sewer District sewer main connection(s) will be coordinated with the Town of Cortlandt. Consideration will be given to extend the collection system as a community betterment.

*GYRODYNE*

The proposed Gyrodyne Project consists of a four-story medical office building and a five-story, 200 unit multi-family residential apartment building. As shown in Table 9-4, the average daily sanitary load for this project, based upon NYSDEC Design Standards for Intermediate Sized Wastewater Treatment, is estimated at 53,035 gpd. The projected peak hourly flow is approximately 185,623 gpd, based on a peaking factor of 3.5.

**Table 9-4**  
**Gyrodyne Estimated Water and Wastewater Demands (NYSDEC Flow Values)**

Use Type	Amount		Unit	Unit Flow (gpd <sup>1</sup> )	Water Demand		Sanitary Load	
					Unit Flow <sup>2</sup> (10% additional)	Average Daily Flow (gpd)	Unit Flow <sup>1</sup>	Average Daily Flow (gpd)
Apartments <sup>3</sup>	200	220 beds	Bed	110	121 gal/unit	26,620	110 gal/unit	24,200
Laundry (per machine)	10		machines	580	638 gpd/machine	6,380	580 gpd/machine	5,800
Retail	4,000	-	Sf	0.10	0.11 gal/sf	440	0.10 gal/unit	400
Retail Employment	9		Emp.	15.0 gpd/employee	16.5 gpd/employee	148.5	15.0 gpd/employee	135
Medical Office (# of doctors)	90	-	doctors	250	250 gpd/doctor	22,500	250 gpd	22,500
Total Daily Flow (gpd)						56,089		53,035
Total Daily Flow (gpm) <sup>4</sup>						38		37

Design Peak Rate of Flow (gpm) <sup>5</sup>	190 <sup>6</sup>		130 <sup>6</sup>
<sup>1</sup> Unit flow values based on NYSDEC Design Standards for Wastewater Treatment Works, § B.6.b, Design Flow, March 2014. <sup>2</sup> 10 percent added to NYSDEC Design Standards for Wastewater Treatment Works, March 2014 unit flow rate to obtain water demand flow rate. <sup>3</sup> Gyrodyne proposes 180 one-bedroom/studios and 20-two bedroom units: total of 220 bedrooms. <sup>4</sup> Equivalent to 75 two-bedroom units per NYSDEC Design Standards for Wastewater Treatment Works, March 2014. <sup>5</sup> Flow based on 24 hour day <sup>6</sup> Peaking Factor, Instantaneous =5.0 for water and 3.5 for sanitary, Mixed Use Project			

The proposed collection system for the Gyrodyne Project Site involves a series of manholes, with 8-inch sewer mains, connecting to an existing manhole in the northwest corner of the property. The discharge continues through an existing 10-inch main through the New York Presbyterian Hospital property, ultimately discharging into the public sanitary sewer located along McGregor Brook.

The new flow generated by the Gyrodyne project on its own is 148 GPM. This sewer line connects to the McGregor Brook Interceptor Sewer at MH 34. This is also the location of WCDEF sewer flow monitoring site C-1. East of this point, flow is also coming from the City of Peekskill (Jacobs Hill Crossing) Sanitary Sewer and the Town of Cortlandt Conklin Avenue East Sewer District. The Town of Cortlandt has estimated that this flow from the east entering MH 34 is 262 GPM. The section of 12" pipe between MH 34 and MH 33 is limited to 821 GPM (¾ depth) and 900 GPM (full depth). The section of 12" pipe between MH 33 and MH 32 is limited to 907 GPM (¾ depth) and 995 GPM (full depth) (see **Figure 9-2**).

The existing flow at Town Meter 1 of the McGregor Book Interceptor Sewer is 682 GPM. The proposed flow expected at the same point following the construction of the Gyrodyne and Evergreen Manor projects is 1,297<sup>4</sup> GPM. The existing pipe capacity at the worst slope location along the trunk sewer line, located downstream from MH 34 is 821 GPM. In order to accommodate the additional flow, it is proposed that 600 LF of existing 12" pipe between MH 34 and MH 32 would be replaced with 16" pipe, which would increase the pipe capacity to 1,773 GPM (¾ depth). As an alternative to replacing the 12" pipe with 16" pipe, a new 12" pipe could be installed parallel to the existing 12" pipe in the same segment as previously mentioned.

The Westchester County Health Department has requested that the Applicant dedicate all on- and off-site mains to the Town of Cortlandt. The Applicant would comply with this request by dedicating the mains via written easements.

## MITIGATION

### *EVERGREEN*

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<sup>4</sup> This number assumes the following: 148 GPM for Gyrodyne, 180 gpm for Evergreen, 126 gpm for Furnace Woods Sewer District (Yeshiva plus 156 homes), 84 gpm for future Tamarack Sewer District, 77 gpm for future Buttonwood connection, and 682 gpm existing flow.

### *Project Wastewater Flows*

To reduce the sanitary sewer demand of the project, water saving fixtures and devices will be used in all new buildings. Further, all new sanitary sewer piping will be pressure tested for leakage in accordance with WCDOH regulations and will be required to pass such testing before being allowed to be placed into service. This will assure little or no inflow or infiltration will enter the sewer system from the new construction.

### *Off-site Sewer Connections*

As outlined above, the Town has identified several areas near and adjacent to the site that are not currently served by public sewers but are being considered for possible connection. One of the off-site areas is the planned Tamarack Sewer District. In 2003, the Town canvassed the residents of the proposed Tamarack Sewer District to gauge interest in the formation of a sewer district but did not receive the two-thirds majority consent required to form the district.<sup>5</sup> As part of the environmental review of the proposed MOD, the Town has requested that the proposed sanitary sewer layout for the development sites within the MOD, be designed to facilitate the possible future connection of the surrounding properties.

The planned Tamarack Sewer District is adjacent to the east side of the Evergreen Manor site. The Town has developed a preliminary sewer layout for the Tamarack Sewer District which includes approximately 9,300 linear-feet of gravity sewer serving 79 single-family homes. The proposed off-site district will contribute an estimated average daily sanitary flow of 34,760 GPD (approximately 24 gpm) and a maximum peak rate of approximately 84 gpm.<sup>6</sup> The proposed Evergreen Manor on-site sanitary sewers will be designed to accommodate the estimated peak flows from the planned Tamarack Sewer District.

### *Sewer Ownership and Maintenance*

The proposed layout includes the creation of five (5) development parcels that are accessed by a central cul-de-sac. The proposal anticipates dedication of the cul-de-sac to the Town so that it will become a public right-of-way. The sewer main within the proposed right-of-way will be dedicated to the Town of Cortlandt and owned and maintained by the Town. The sewers connecting the proposed buildings to the sewer main will be private service laterals, owned and maintained by the individual parcel owners.

Any sewer main which ultimately conveys flow from the proposed Tamarack Sewer District across lands of Evergreen Manor, will be dedicated to and maintained by the Town of Cortlandt as per WCDOH regulations. Further, any such sewer main(s) that cross an Evergreen Manor development parcel will be located within a utility easement granting access to the Town for future maintenance of the sewer main.

## *GYRODYNE*

### *Project Wastewater Flows*

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<sup>5</sup> Letter from Michael Preziosi, PE, Town of Cortlandt, dated October 23, 2018.

<sup>6</sup> Sanitary flow rates based on New York State Standards for Intermediate Sized Wastewater Treatment Systems, March 5, 2014 and a peaking factor of 3.5.

## Chapter 9: Sewer

To reduce the sanitary sewer demand of the project, water saving fixtures and devices will be used in all new buildings. Further, all new sanitary sewer piping will be pressure tested for leakage in accordance with WCDOH regulations and will be required to pass such testing before being allowed to be placed into service. This will assure little or no inflow or infiltration will enter the sewer system from the new construction.

### *Off-site Sewer Connections*

At the request of the Town of Cortlandt, Cameron Engineering reviewed the on-site pipe capacity in the event that the residential community along Buttonwood Avenue is connected to the sewer. The potential Buttonwood Avenue off-site district will contribute an estimated average daily sanitary flow of 77 gpm. Cameron Engineering developed a technical memorandum which concluded that if the residential community along Buttonwood Avenue were to be connected to the sewer the on-site sewer pipe would function at less than 50% capacity when factoring peaking factors, well within 10 States Standards.