

**Application of Pennsylvania-American Water Company for Acquisition of
the Wastewater Assets of the Borough of Brentwood**

66 Pa. C.S. § 1329

Application Filing Checklist – Water/Wastewater

Docket No. A-2021-3024058

15. Plant in Service.
- a. Provide an inventory of the used and useful plant assets to be transferred. Identify separately any utility plant that is held for future use.¹

RESPONSE:

- a. See the Engineer's Assessment attached as **Appendix A-15-a** that identifies assets to be transferred as required by 66 Pa. C.S. § 1329(a)(4). It should be noted that the Engineer's Assessment contains no utility plant that is held for future use.

¹ The inventory is to be developed from available records, maps, work orders, debt issue closing documents funding construction projects, and other sources to ensure an accurate listing of utility plant by utility account.



A FULL-SERVICE CIVIL ENGINEERING FIRM

C-41166

January 13, 2023

Engineering Assessment Study of:

Brentwood Borough's Sanitary Sewer System

Brentwood Borough,
Allegheny County, Pennsylvania



PREPARED FOR

Brentwood Borough
3735 Brownsville Road
Brentwood, PA 15227

AND

Pennsylvania-American Water Company
852 Wesley Drive
Mechanicsburg, PA 17055

SUBMITTED BY

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REPORT



A FULL-SERVICE CIVIL ENGINEERING FIRM



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Executive Summary

As required by Pennsylvania Act 12 of 2016, The Gateway Engineers, Inc. has been engaged to conduct an assessment of the tangible assets of the Brentwood Borough Sanitary Sewer System and has prepared an Engineering Assessment Study of all sanitary sewer facilities located within Brentwood Borough (Borough), Allegheny County, Pennsylvania. This work was requested as part of the purchase agreement of the Borough's sanitary sewer system tangible assets by Pennsylvania American Water Company (PAWC).

The Borough's sanitary sewer system consists entirely of gravity sewers for conveyance of sewage to be treated at the Allegheny County Sanitary Authority (ALCOSAN) sewage treatment facility along Woods Run in Pittsburgh, PA. The system's pipe network is split into two sewer sheds: Point of Connection (POC) MH-89 (Saw Mill Run) and POC MH-42 (Streets Run), both of which are part of the ALCOSAN service area.

The Borough's sanitary sewer system's main trunk sewers began construction in 1919 and have been continually expanded since this initial date. This assessment classifies the installation year of each pipe, structure, and lateral located within Brentwood Borough as well as materials, sizes, lengths, and approximate depths of all assets within the system.

This assessment calculates the cost of construction of the sanitary sewer system in the year at which it was built and utilizes the National Association of Regulatory Utility Commissioners Uniform System of Accounts for Class A Wastewater Utilities to categorize the collection system. The resulting data listed within this assessment will be used by utility valuation experts (UVE) to determine the appraised value of the system as prescribed in the ACT 12 requirements.

Purpose of Report

The purpose of this assessment is to provide data and a valuation of the tangible assets which are included in the sale of Brentwood's Sanitary Sewer System to PAWC as required by Pennsylvania Act 12 of 2016. This data will be used by utility valuation experts to develop an appraisal of the current sanitary system.

Typically, the existing sanitary system is presented in subsections based on constructed year, material type, size, depth, and length. This data is generally correlated to work orders, bonds, construction bid tabulations, payment applications, easement plans, subdivision plans, etc. for an actual cost of construction. Due to most of the system being constructed prior to 1930, this data is not available, and it was determined that using cost indices would be the most accurate method for cost representation. Therefore, the data listed above has been used in conjunction with the "Handy-Whitman Index of Public Utility Construction Costs" Bulletin No. 191 – Trends of Construction Costs for cost estimation purposes. The Handy-Whitman index provides a ratio that is used to convert the current day construction costs to the construction costs in a previous year by multiplying the current costs by an index ratio developed for each historical year. This allows a calculation to determine construction costs at the year of construction based on 2022 values. Final costs include a soft cost percentage which takes design, permitting, inspection, and contract administration into consideration. Data listed in this assessment was gathered using the following means and methods: physical as built plans dating back to 1919, recorded plans, as built plans, work orders, easement plans, right of way plans, CCTV inspections, institutional knowledge, etc. This data was implemented into a GIS database and crosschecked based on datalogging of all known archived pipe/structure repairs throughout the Borough.

Methodology for the following cost calculations is described as follows:

Gravity Main Pipes – Pipe sizing, length, installation date, material, and depth data was gathered using the means and methods previously described for each pipe within the sanitary system. A 2022 material cost for each type of pipe in the system, per linear foot, was determined. A 2022 installation and restoration cost for a trench to install each pipe based on depth and size of pipe per linear footage was determined. Depths were classified with four categories: 0-8', 8-12', 12-16', and greater than 16'. The material cost per linear foot, trench installation cost per linear foot and total pipe length was used to determine the combined 2022 cost of material and installation for each pipe within the system. The Handy-Whitman cost indices were used to relate the material and installation costs in 2022 to the year the pipe was installed.

Manholes (Structures) – Installation date and structure depth data was gathered using means and methods previously described for each structure within the system. A 2022 cost was determined to install a structure, including labor and materials, for each of the following depth categories: 0-8', 8-12', 12-16', and greater than 16'. Each structure in the system was assigned an approximate 2022 cost based on their depths and corresponding 2022 values. The Handy-Whitman cost indices were then used to relate the structure cost in 2022 to the year the structure was installed.

Laterals – The total number of laterals within the system was estimated based on billing data provided by the Borough. Laterals within Brentwood that are located within their roadway right of way owned by the Borough. The total number of laterals installed per year was determined by calculating the percentage of public gravity main pipe installed per year with relation to the total length of all pipes within the system and calculated using a lump sum unit cost per lateral. This provided a ratio which approximated how much of the total system was built for each year listed in this assessment. This ratio was used to calculate the approximate number of laterals installed per year. Laterals were then assigned a 2022 cost value. The Handy-Whitman cost indices were then used to relate the lateral cost in 2022 to the year the lateral was installed.

System Description

The Brentwood Borough sanitary sewer system is only comprised of gravity sewers and manhole structures. The system is part of two sewer sheds: Saw Mill Run (POC MH-89) and Streets Run (POC MH-42). Both sewer systems are part of the ALCOSAN service area. The Brentwood system services approximately 3950 public, commercial, and residential customers throughout the 1.45 square mile Borough.

The main trunk sanitary sewer system started construction in 1919. Approximately 7% of the Borough's total sewer line length was installed between the years of 1919-1924. The majority of the system was built between the years of 1925-1930 where approximately 75% of the network was installed. Approximately 18% of the system has been installed between 1931-present.

The pipes within the system total approximately 200,000 linear feet of gravity collection main lines with depths ranging from approximately 2-26 feet deep. Pipe sizes and materials within the system are described as follows:

- Cast Iron Pipe (CAS) – 8"
- Ductile Iron Pipe (DIP) – 8"
- Polyvinyl Chloride Pipe (PVC) – 8", 10", 12", 15"
- Vitrified Clay Pipe (VCP) – 8", 10", 12", 15", 18"

There are approximately 1,050 brick/concrete manholes (structures) within the system with approximate depths varying from 2-26 feet. The average manhole depth throughout the system is approximately 8 feet.

There are approximately 3,950 8" sanitary laterals within the system. This is estimated on the basis that every billed customer within the system has one sanitary lateral tie in with the main system.

The sewer system is primarily constructed within the existing road rights of way, however, during the research for the assessment, documentation of thirty-six recorded easements have been obtained from the Borough's archives. Of these easements thirty were sold to the Borough for a fee of \$1.00. The other six easements were a partial condemnation with no fees listed. The total known purchased value of the easements is \$30.00.

The total cost of assets to be acquired, taken back to the constructed year via cost indices, is \$9,942,185.31.

Inventory of Assets



Brentwood Borough
Original Cost of Wastewater Collection System

Naruc Account ID No.	Description	Unit	Total Units	Year	Cost
353.00	Easements				
	Address			Year	
	3940 Edge Rd			1998	\$ 1.00
	4010 Edge Rd			1998	\$ 1.00
	3970 Edge Rd			1998	\$ 1.00
	3954 Edge Rd			1998	\$ 1.00
	3944 Edge Rd			1998	\$ 1.00
	3950 Edge Rd			1998	\$ 1.00
	4020 Edge Rd			1998	\$ 1.00
	3966 Edge Rd			1998	\$ 1.00
	4016 Edge Rd			1998	\$ 1.00
	3960 Edge Rd			1998	\$ 1.00
	Lot 16 Colonial Park			2001	\$ 1.00
	Lot 15 Colonial Park			2001	\$ 1.00
	Lot 14 Colonial Park			2001	\$ 1.00
	Lot 18 Colonial Park			2001	\$ 1.00
	Lot 17 Colonial Park			2001	\$ 1.00
	4110 Tuxey Ave			2004	\$ 1.00
	4114 Tuxey Ave			2004	\$ 1.00
	4116 Tuxey Ave			2004	\$ 1.00
	4120 Tuxey Ave			2004	\$ 1.00
	3312 Shadyway Dr			2005	N/A
	3338 Shadyway Dr			2005	N/A
	425 E Garden Rd			2005	N/A
	217 Burdine Ave			2005	N/A
	3310 Brownsville Rd			2005	N/A
	3500 Brownsville Rd			2005	N/A
	3340 Shadyway Dr			2005	\$ 1.00
	3311 Villawood Ave			2005	\$ 1.00
	451 E Garden Rd			2005	\$ 1.00
	3330 Willett Ave			2005	\$ 1.00
	3316 Willett Ave			2005	\$ 1.00
	3242 Willett Ave			2005	\$ 1.00
	437 E Garden Rd			2005	\$ 1.00
	4080 Edge Rd			2005	\$ 1.00
	445 E Garden Rd			2005	\$ 1.00
	441 E Garden Rd			2005	\$ 1.00
	3316 Shadyway Dr			2005	\$ 1.00
TOTAL					\$ 30.00



Appendix A-15-a

Brentwood Borough's
Sanitary Sewer System
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Naruc Account ID No.	Description	Unit	Total Units	Year	Cost
361.10	8" Cast Iron Gravity Collection Sewer	L.F.	285	1971	\$ 4,803.22
TOTAL					\$ 4,803.22
361.11	8" Ductile Iron Gravity Collection Sewer	L.F.	508	1991	\$ 38,064.22
TOTAL					\$ 38,064.22
361.12	8" Polyvinyl Chloride Gravity Collection Sewer	L.F.	981	1982	\$ 40,309.60
			951	1991	\$ 62,133.81
			392	2002	\$ 37,003.53
			894	2003	\$ 81,226.55
			1092	2004	\$ 101,491.16
			58	2005	\$ 6,294.91
			785	2006	\$ 634,651.18
			2543	2007	\$ 1,003,564.59
			1326	2008	\$ 662,772.93
			338	2012	\$ 74,680.00
			129	2014	\$ 22,142.32
TOTAL					\$ 2,726,270.58
361.13	10" Polyvinyl Chloride Gravity Collection Sewer	L.F.	147	1991	\$ 10,725.71
			1315	2003	\$ 134,476.36
			71	2006	\$ 131,317.43
			133	2007	\$ 90,037.86
			118	2008	\$ 58,979.79
TOTAL					\$ 425,537.16
361.14	12" Polyvinyl Chloride Pipe Gravity Collection Sewer	L.F.	140	2005	\$ 15,754.22
			36	2007	\$ 24,317.15
TOTAL					\$ 40,071.37
361.15	15" Polyvinyl Chloride Pipe Gravity Collection Sewer	L.F.	304	2001	\$ 23,369.46
			663	2005	\$ 80,622.03
			128	2006	\$ 16,001.26
TOTAL					\$ 119,992.75
361.16	6" Vitrified Clay Gravity Collection Sewer	L.F.	17	1930	\$ 62.70
TOTAL					\$ 62.70



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Naruc Account ID No.	Description	Unit	Total Units	Year	Cost
361.17	8" Vitrified Clay Gravity Collection Sewer	L.F.	1678	1919	\$ 6,865.28
			8501	1920	\$ 42,603.00
			868	1924	\$ 3,568.06
			24280	1927	\$ 107,355.01
			30772	1929	\$ 134,347.02
			61165	1930	\$ 269,260.94
			6406	1938	\$ 29,281.28
			376	1945	\$ 1,843.23
			950	1946	\$ 6,213.79
			619	1947	\$ 4,979.31
			1733	1948	\$ 14,728.86
			2717	1949	\$ 24,053.96
			3074	1950	\$ 27,866.82
			1167	1952	\$ 13,071.77
			2981	1958	\$ 41,231.15
			393	1961	\$ 6,040.41
			244	1963	\$ 4,271.01
			66	1964	\$ 1,162.56
			965	1966	\$ 15,125.04
			195	1971	\$ 3,425.36
132	1972	\$ 2,416.24			
5678	1991	\$ 369,190.25			
TOTAL					\$ 1,128,900.34
361.18	10" Vitrified Clay Gravity Collection Sewer	L.F.	1559	1927	\$ 10,182.84
			2290	1929	\$ 12,856.87
			9862	1930	\$ 51,891.05
			156	1961	\$ 2,187.25
			296	1991	\$ 29,834.92
TOTAL					\$ 106,952.93
361.19	12" Vitrified Clay Gravity Collection Sewer	L.F.	387	1927	\$ 2,104.17
			8594	1930	\$ 51,929.50
			383	1961	\$ 6,933.84
			432	1963	\$ 9,252.08
			1324	1990	\$ 715,774.22
TOTAL					\$ 785,993.81
361.20	15" Vitrified Clay Gravity Collection Sewer	L.F.	77	1927	\$ 711.36
			674	1929	\$ 5,366.91
			4558	1930	\$ 27,740.48
			236	1958	\$ 3,763.77
			30	1962	\$ 940.15
			356	1971	\$ 13,385.66
TOTAL					\$ 51,908.33
361.21	18" Vitrified Clay Gravity Collection Sewer	L.F.	163	1920	\$ 1,261.55
			244	1930	\$ 1,438.48
TOTAL					\$ 2,700.04



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Naruc Account ID No.	Description	Unit	Total Units	Year	Cost
361.60	Manhole Structures 0-8' Deep	EA	19	1927	\$ 2,568.57
			90	1929	\$ 12,166.90
			231	1930	\$ 29,493.46
			22	1938	\$ 2,974.13
			1	1945	\$ 165.23
			1	1946	\$ 180.25
			5	1947	\$ 1,051.46
			10	1948	\$ 2,403.34
			14	1949	\$ 3,680.11
			12	1950	\$ 3,244.51
			4	1952	\$ 1,141.59
			14	1958	\$ 5,257.30
			4	1961	\$ 1,592.21
			1	1962	\$ 405.56
			1	1963	\$ 413.07
			2	1964	\$ 841.17
			6	1966	\$ 2,658.69
			2	1972	\$ 1,381.92
			13	1991	\$ 26,752.16
			4	2003	\$ 11,836.44
2	2004	\$ 6,323.78			
1	2019	\$ 5,216.40			
2	2020	\$ 20,095.20			
1	2022	\$ 21,810.45			
TOTAL					\$ 163,653.90



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Naruc Account ID No.	Description	Unit	Total Units	Year	Cost
361.61	Manhole Structures 8-12' Deep	EA	49	1927	\$ 7,801.84
			57	1929	\$ 9,075.61
			147	1930	\$ 22,105.20
			12	1938	\$ 1,910.65
			2	1945	\$ 389.21
			1	1946	\$ 212.29
			4	1948	\$ 1,132.24
			2	1949	\$ 619.19
			5	1950	\$ 1,592.21
			1	1952	\$ 336.13
			2	1958	\$ 884.56
			3	1961	\$ 1,406.45
			1	1962	\$ 477.66
			2	1963	\$ 973.02
			1	1966	\$ 521.89
			3	1971	\$ 2,229.10
			14	1991	\$ 33,931.79
			6	2003	\$ 20,911.04
			4	2004	\$ 14,896.02
			12	2006	\$ 66,150.00
			67	2007	\$ 281,942.16
			36	2008	\$ 161,779.20
			24	2011	\$ 123,767.90
5	2012	\$ 26,536.86			
8	2013	\$ 43,025.09			
17	2014	\$ 94,736.58			
2	2015	\$ 11,428.54			
1	2016	\$ 5,829.26			
4	2017	\$ 23,741.64			
TOTAL					\$ 960,343.35



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Naruc Account ID No.	Description	Unit	Total Units	Year	Cost
361.62	Manhole Structures 12-16' Deep	EA	9	1927	\$ 1,649.29
			9	1929	\$ 1,649.29
			22	1930	\$ 3,807.62
			2	1946	\$ 488.68
			1	1948	\$ 325.79
			4	1949	\$ 1,425.31
			1	1966	\$ 600.67
			7	1991	\$ 19,526.79
			7	2003	\$ 28,078.66
			2	2013	\$ 75,570.00
			1	2014	\$ 56,400.00
			1	2020	\$ 12,804.00
			1	2022	\$ 77,517.33
TOTAL					\$ 279,843.43
361.63	Manhole Structures Over 16' Deep	EA	4	1927	\$ 733.02
			6	1929	\$ 1,099.53
			7	1930	\$ 1,211.52
			1	1938	\$ 183.25
			2	1961	\$ 1,079.17
			1	1963	\$ 559.94
			4	1971	\$ 3,420.75
			6	1991	\$ 16,737.25
			2	2004	\$ 8,572.24
			1	2018	\$ 48,020.40
			TOTAL		
361.71	Manhole to Manhole Liner Installation	LF	3296	2005	\$ 210,000.00
			5523	2007	\$ 314,401.92
			1055	2010	\$ 67,338.00
			3588	2012	\$ 296,780.40
			1621	2013	\$ 141,744.00
			962	2014	\$ 67,512.60
			4875	2015	\$ 329,170.74
			5625	2017	\$ 452,770.56
			3760	2018	\$ 206,011.80
			4307	2019	\$ 253,822.80
			2424	2020	\$ 106,105.20
			2234	2021	\$ 95,955.30
TOTAL					\$ 2,541,613.32



Appendix A-15-a

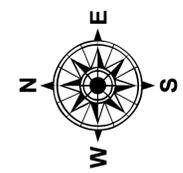
Brentwood Borough's
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Naruc Account ID No.	Description	Unit	Total Units	Year	Cost
363.00	Service Laterals	EA	37	1919	\$ 1,572.61
			200	1920	\$ 9,350.65
			16	1924	\$ 748.05
			575	1927	\$ 25,661.16
			755	1929	\$ 32,089.73
			1635	1930	\$ 69,492.33
			126	1938	\$ 5,890.91
			13	1945	\$ 718.30
			23	1946	\$ 1,417.47
			9	1947	\$ 669.42
			51	1948	\$ 4,443.68
			81	1949	\$ 7,229.75
			55	1950	\$ 5,025.97
			23	1952	\$ 2,297.28
			55	1958	\$ 7,363.64
			23	1961	\$ 3,372.61
			6	1962	\$ 905.31
			12	1963	\$ 1,836.13
			4	1964	\$ 620.54
			14	1966	\$ 2,231.40
			26	1971	\$ 5,193.86
			4	1972	\$ 833.06
			140	1991	\$ 91,338.84
			26	2003	\$ 22,488.31
			16	2004	\$ 14,689.02
			2	2015	\$ 7,875.00
			7	2016	\$ 27,650.00
			12	2017	\$ 39,410.82
			4	2018	\$ 11,725.00
			5	2019	\$ 15,033.62
			6	2020	\$ 23,835.00
			34	2021	\$ 32,490.21
			41	2022	\$ 8,327.11
			TOTAL		
Total Gravity Collection System, Manhole Structures & Laterals					\$ 9,942,185.31

Regulatory Requirements

The entire service area for the ALCOSAN Woods Run Treatment Facility is under a Federal Consent Decree along with ALCOSAN to address wet weather overflow issues throughout the sewer system. Each of the 83 municipalities that contribute to the ALCOSAN treatment plant were issued an original consent order for system evaluations and a phase I consent order for source reduction potential, which have both been completed and closed out.

Brentwood Borough Existing Sewershed Map

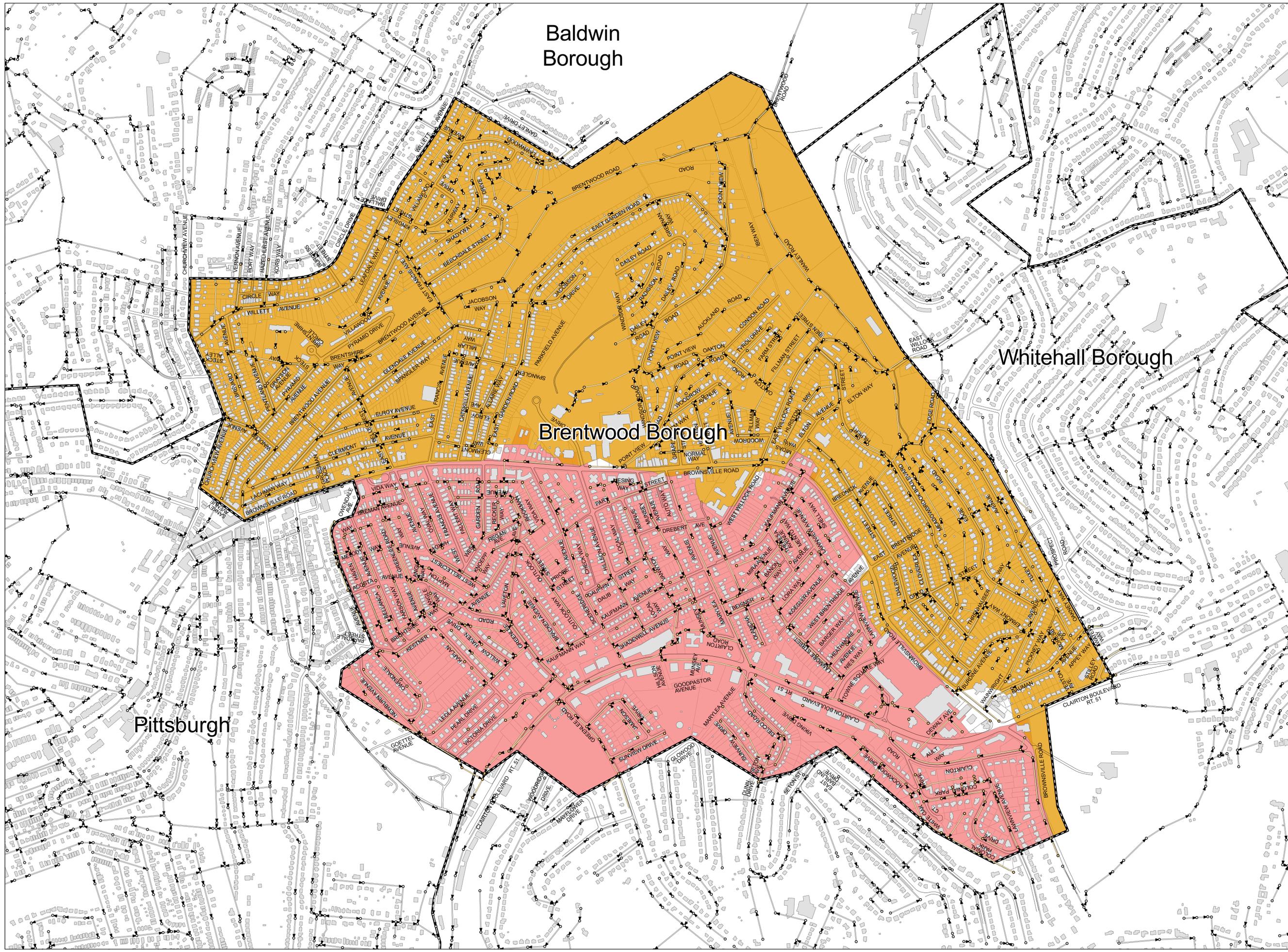


0 200 400 800 Feet

Brentwood Borough

Existing Sewershed Map

File Name & Path: L:\P-21-0049\Brentwood_Existing_Sewershed_Map_24-5-06.mxd



- Legend**
- Brentwood Structure
 - Brentwood Sewerlines
 - OneOverall Structure
 - OneOverall Sewerline
 - Building Footprints
 - Parcels
 - Municipal Boundary
 - M-42 Point of Connection
 - MH-89 Point of Connection

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