

City of Bethlehem Act 537 Special Study

Prepared for:

City of Bethlehem
Hanover Township Lehigh County
Hanover Township Northampton County
Hellertown Borough
Fountain Hill Borough
Bethlehem Township
Freemansburg Borough
City of Allentown
Salisbury Township
Lower Saucon Township
Palmer Township
Lower Nazareth Township
East Allen Township

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Special Study Summary

This Special Study was prepared for the City of Bethlehem (City) in accordance with Act 537, the Pennsylvania Sewage Facilities Act as codified in Title 25, Chapter 71 of the Pennsylvania Code. The purpose of this current planning effort is to evaluate alternatives to upgrade the City's wastewater treatment plant (WWTP) such that the WWTP's organic design capacity can be increased from 39,365 pounds per day (lbs/day) of biochemical oxygen demand (BOD) to 50,000 lbs/day.

The City of Bethlehem WWTP serves the City of Bethlehem as well as the municipalities (whole or in part) of Hanover Township Northampton County, Hanover Township Lehigh County, Hellertown Borough, Fountain Hill Borough, Bethlehem Township, Freemansburg Borough, the City of Allentown, Salisbury Township, Lower Saucon Township, Palmer Township, Lower Nazareth Township and East Allen Township.

The alternatives evaluated to address the organic design capacity in this Special Study are the liquid train improvements as identified in the 2012 Act 537 Plan and Chemically Enhanced Primary Treatment (CEPT). The institutional arrangement to implement either alternative is implementation by the City of Bethlehem.

As presented in the 2012 Act 537 Plan, the cost of the liquid train improvements was \$26,854,000. Adjusting to 2022 dollars, the cost would be approximately \$38,000,000.¹ The cost for installation of the CEPT system is \$1,400,000, which is based on an accepted bid. The cost of the CEPT system is based on a 12,500-gallon high density linear polyethylene chemical storage tank with a chemical feed system on a concrete slab.

The selected alternative for this Special Study is installation of the CEPT system. The implementation of the CEPT alternative provides a great deal of value in terms of increasing the WWTP's organic design capacity at a small fraction of the cost estimated for implementation of the 2012 Act 537 Plan recommendations.

The Implementation Schedule is as follows:

Complete Draft Plan	May 2023
Public Agency Review	May-July 2023
30-Day Public Comment Period	July 2023
City and Tributary Municipalities Adopt Special Study	August 2023 – January 2024
City submits Plan to Pennsylvania Department of Environmental Protection (PADEP)	February 2024
PADEP Approves Plan	Time Zero
City Submits Part II Permit to increase organic design capacity of WWTP to 50,000 lbs/day	30-days from Time Zero
PADEP Approves Part II Permit	90-days from Time Zero
City Implements Selected Alternative – CEPT System	* See below

* As mentioned in Chapter III, the City has already received a Part II Permit for CEPT for the purposes of addressing ammonia exceedances. CEPT is also the selected alternative for addressing the organic design capacity as described throughout this Special Study. Construction of the CEPT system began in January 2023 and is expected to be completed in January 2024.

¹ Consumer Price Index Calculator; Bureau of Labor Statistics.

Chapter I. Previous Sewage Facilities Planning

A. Previous Wastewater Plans

1. City of Bethlehem Act 537 Plan Update Revision (2012)

The City of Bethlehem Act 537 Plan Update Revision (2012 Act 537 Plan) was approved by the Pennsylvania Department of Environmental Protection (PADEP) in August 2012. Increased influent organic loading had reduced the allowable flow to the City's Wastewater Treatment Plant (WWTP) from the permitted hydraulic capacity of 20 million gallons per day (mgd) to an administratively set flow limit of 15.5 mgd in order to stay within the organic design capacity of 39,365 pounds per day (lbs/day) as established in Water Quality Management (WQM) Permit No. 4818402-Amendment No. 1 (A-1). The primary recommendations of the 2012 Act 537 Plan fell into several categories, which are as follows:

- Liquid train improvements to address the organic loading issue
- Improvements to WWTP to address aging equipment and poor performance
- Improvements to solids handling system
- Collection system improvements

Further description of the above-mentioned recommendations are as follows:

- *Liquid train improvements to address the organic loading issue:*
 - Continue to use existing primary clarifiers.
 - Construct a new secondary treatment train, consisting of a 4.5-million gallon (MG) new aeration tank volume paired with the existing final clarifiers, which would operate in parallel to the existing aeration tanks and intermediate clarifiers.
 - Retrofit existing aeration tanks with new, more efficient mechanical aerators rather than a diffused aeration system. New aeration tanks would be deeper [18-foot side water depth (SWD)] than the existing aeration tanks and use fine bubble diffused aeration.
 - Split flow equally between both trains.
 - Incorporate an anoxic selector zone in the front of the first pass for improved settleability and reduced odor potential. To accommodate the selector zone in the existing Aerobic Treatment Systems (ATS), the first mechanical aerator in the pass would need to be replaced with submersible mixing, and a baffle wall would need to be constructed to prevent back-mixing of flow from the downstream aerated zone.
- *Improvements to WWTP to address aging equipment and poor performance:*
 - Replace (in-kind) existing bar screens and grit collector equipment.
 - Install primary sludge dewatering equipment.
 - Convert the existing chlorine gas disinfection system to a liquid sodium hypochlorite disinfection system.

- Construct a 2,475-square foot laboratory and administration building to be located between Primary Clarifier No. 1 and Trickling Filter No. 1. Administrative and laboratory functions, along with personnel spaces such as lunchroom, locker rooms, and showers, would be moved from the existing Control Building into this new space, allowing the existing laboratory and lunchroom to be used for relocation of the dewatering polymer system.
- Install a fourth final effluent pump to increase the plant peak flow capacity to 50 mgd.
- *Improvements to solids handling system:*
 - Construct a new 35-foot diameter primary sludge thickener located to the south of existing Secondary Digester No. 1 and northeast of Primary Clarifier No. 1.
 - Continue pre-thickening of Waste Activated Sludge (WAS) in the existing gravity thickener.
 - Replace the existing rotary drum thickener with two new gravity belt thickeners. Expand the existing mechanical sludge thickener building to accommodate the two new gravity belt thickeners. In addition, expand and relocated the existing thickening polymer system within the new building expansion.
 - Convert the two existing secondary digesters into primary digesters through the addition of heating and pumped sludge mixing systems (i.e., Rotamix).
 - Construct a fifth primary digester to be located east of the existing Pump Station No. 2, *if necessary*. The new primary digester would also contain the same pumped sludge mixing systems as the converted secondary digesters. New innovative sludge pretreatment technologies should be considered in the future in lieu of the new digester construction.
 - Replace the existing heater and mixing systems with a new pumped sludge heating and mixing system in the two existing primary digesters.
 - Construct a new 600,000-gallon sludge storage tank upstream of the solids dewatering process. Replace the existing two belt filter presses with three dewatering centrifuges.
 - Relocate the existing dewatering polymer systems within the Control Building.
- *Collection system improvements:*
 - The 2012 Act 537 Plan recommended collection system improvements consisting of those addressing level of service issues, as well as previously documented capital improvement projects (CIP).
 - Approximately 876 linear feet of pipe improvements were recommended to address level of service issues for current and future dry and wet weather flows identified through the City's collection system model simulations.
 - The CIP projects (Priority groups 1 and 2) will include approximately 18,310 linear feet of pipe improvements.

B. Sewage Facilities Planning Not Implemented

For the purposes of this planning effort, it should be noted that the City has not implemented all of the liquid train improvements as recommended in the 2012 Act 537 Plan. Subsequent to the 2012 Act 537 Plan, it was determined that changes to the influent characteristics to the WWTP were such that 20 mgd was no longer achievable through the implementation of liquid train improvements. As such, it was determined that the 2012 Act 537 Plan needed to be revisited to define the new flow and loading projections. In a letter from Ed Boscola, P.E., Director of Water and Sewer Resources, City of Bethlehem to Robert Corby, Sewage Planning Specialist, PADEP dated December 19, 2018, relative to the recommendations in the 2012 Act 537 Plan, the City committed to new Act 537 planning to, among other things, *re-evaluate wet stream process alternatives and include any new or alternatives in the updated plan* (see Appendix A for referenced correspondence). As such, the primary purpose of this current Act 537 Special Study is to evaluate improvements to the WWTP other than the liquid train improvements identified in the 2012 Act 537 Plan that would better achieve an increase in organic design capacity in consideration of the increase in influent organic concentrations.

C. Sewage Facilities Planning Anticipated by a Chapter 94 Corrective Action Plan

The City of Bethlehem WWTP is not currently subject to a Chapter 94 corrective action plan per the 2022 Chapter 94 Report, which can be found in Appendix B.

D. Sewage Facilities Planning Module Revisions to the City of Bethlehem Act 537 Plan

Approved planning modules for development served by the City of Bethlehem WWTP are reflected in the 2022 Chapter 94 Report, included in Appendix B.

Chapter II. Physical and Demographic Analysis

A. Planning Area

The City of Bethlehem WWTP serves the City of Bethlehem as well as the municipalities (whole or in part) of Hanover Township Northampton County, Hanover Township Lehigh County, Hellertown Borough, Fountain Hill Borough, Bethlehem Township, Freemansburg Borough, the City of Allentown, Salisbury Township, Lower Saucon Township, Palmer Township, Lower Nazareth Township and East Allen Township.

B. Drainage Basins, Hydrology, and Floodplains

This Special Study only addresses the liquid train process of the WWTP relative to organic design capacity; therefore, this section is not applicable.

C. Wetlands

This Special Study only addresses the liquid train process of the WWTP relative to organic design capacity; therefore, this section is not applicable.

D. Soils

This Special Study only addresses the liquid train process of the WWTP relative to organic design capacity; therefore, this section is not applicable.

E. Topography

This Special Study only addresses the liquid train process of the WWTP relative to organic design capacity; therefore, this section is not applicable.

F. Geologic Features

This Special Study only addresses the liquid train process of the WWTP relative to organic design capacity; therefore, this section is not applicable.

G. Water Supply

This Special Study only addresses the liquid train process of the WWTP relative to organic design capacity; therefore, this section is not applicable.

Chapter III. Existing Sewage Facilities in the Planning Area – Identifying the Existing Needs

A. City of Bethlehem WWTP

1. Location, Size, and Ownership of Collection, Conveyance and Treatment Facilities

The City of Bethlehem owns, operates, and maintains wastewater collection, conveyance, and treatment facilities located within its corporate borders. The City's conveyance facilities include approximately 250 miles of gravity sewer lines, which vary in size from 8 to 66 inches in diameter; six lift stations and their attendant force mains that serve small specific areas; and five major siphons. In addition to the City, the service area of the WWTP includes the municipalities (whole or in part) of Hanover Township Northampton County, Hanover Township Lehigh County, Hellertown Borough, Fountain Hill Borough, Bethlehem Township, Freemansburg Borough, the City of Allentown, Salisbury Township, Lower Saucon Township, Palmer Township, Lower Nazareth Township and East Allen Township. The City maintains 51 miles of sewer lines in Hanover Township Northampton County. Sewer lines and pump stations in the remaining contributing municipalities' sewer systems are maintained by each of those communities. A more detailed description of the City's collection and conveyance system can be found in the 2022 Chapter 94 Report, which is included as Appendix B. Treated effluent from the WWTP is discharged to the Lehigh River.

The City's WWTP operates in accordance with National Pollutant Discharge Elimination System (NPDES) Permit No. PA-0026042-Amendment No. 1 (A-1). See Appendix C for NPDES Permit. The NPDES Permit, which was originally issued on November 10, 2008, contains effluent limitations for carbonaceous biochemical oxygen demand (CBOD₅), pH, total suspended solids (TSS), ammonia-nitrogen (NH₃-N), fecal coliform, and total residual chlorine (TRC). The effluent limitations were determined using an effluent discharge rate of 20 mgd. The NPDES Permit PA-0026042-A-1 was issued by PADEP on December 12, 2012, became effective on January 1, 2013 and expired on November 30, 2013. It has been administratively extended by PADEP. A Re-Draft NPDES Permit was issued by PADEP on November 2, 2017. The City submitted written comments to PADEP on February 8, 2018. On March 5, 2021, PADEP issued a letter to the City requiring updates to the City of Bethlehem NPDES Permit Renewal Application. The City submitted its responses and updated information on June 23, 2021.

On December 16, 2022 PADEP issued a Redraft NPDES Permit for the Bethlehem WWTP and Sewer System. The City submitted written comments to PADEP on February 27, 2023.

For the purposes of this Special Study, Supplemental Information paragraph (3) on page 15 of the Redraft NPDES Permit states:

The organic design capacity of 39,365 lbs BOD₅ per day for the treatment facility is used to prepare the annual Municipal Wasteload Management Report to determine whether an “organic overload” condition exists, as defined in 25 Pa. Code Chapter 94.

The NPDES Permit Fact Sheet Addendum that accompanied the Redraft NPDES Permit states on page 2:

Potential Facility Rerating: *The NPDES Permit template incorporates the existing WWTP's organic design capacity for Chapter 94 purposes. If the City pursues WWTP rerating (for increased organic design capacity as discussed separately with the Department), any future final Part II WQM Permit would note that the rerated value governs until the NPDES Permit is subsequently amended or renewed.*

2. Wastewater Treatment Plant

The City's WWTP consists of mechanical bar screens, grit collectors, raw sewage pumping, primary clarifiers, aeration basins, intermediate clarifiers with return activated sludge (RAS) pumping, intermediate lift pumps, trickling filters, final clarifiers, and a chlorination system. Treated effluent from the WWTP is discharged to the Lehigh River. In addition, sludge is stabilized in anaerobic digesters and dewatered in a centrifuge prior to agricultural land application.

Wastewater enters the treatment facility via 66-inch and 36-inch diameter influent interceptors, passes through four 0.25-inch mechanical bar screens and four grit collectors for preliminary treatment. The screenings and grit are disposed of at a landfill.

The raw sewage pump station consists of three constant speed (12 mgd each) and three variable speed (10 mgd each) pumps capable of handling dry weather peak flow and wet weather flow.² Wastewater is pumped to Control Box No. 1. and evenly split to the two primary clarifiers. The settled primary sludge is pumped directly to the anaerobic digesters.

Effluent from the clarifiers flows into Manhole No. 3., where diversion measure is provided. Under normal conditions, flow continues into the aeration tanks. Under wet-weather conditions, excessive flow can be diverted to the downstream trickling filters by gravity to prevent overwhelming the aeration treatment process. The aeration tanks consist of three aeration basins (1.5 MG each) in a series (serpentine "plug flow"). The activated sludge removes the biochemical oxygen demand (BOD) and partially treats the ammonia (nitrification). In 2011, the City installed ten new energy-efficient Variable Frequency Drive (VFD)-controlled mechanical aerators along with dissolved oxygen (DO) monitors to maintain the desired level of DO in each basin. Effluent from the aeration basin flows into the two intermediate clarifiers.

The intermediate clarifiers provide gravity settling of the activated sludge. The amount of sludge removed is controlled by the Return Activated Sludge (RAS) pumps. The sludge is either recycled (RAS) to the aeration basins or sent as Waste Activated Sludge (WAS) to the gravity sludge thickener.

Effluent from the intermediate clarifiers is pumped to the four trickling filters. The intermediate pump station is equipped with two variable speed pumps and two constant speed pumps. The trickling filter effluent flows by gravity to the two final clarifiers where the sludge is pumped back to the primary clarifiers for co-settling.

Effluent from the final clarifiers is chlorinated by chlorine gas prior to entry into the chlorine contact tanks. The disinfected wastewater flows into the effluent wet well and

² The City is in the process of replacing the three constant speed pumps with three new variable speed pumps (the West Wing Pump Room Project) with an estimated completion date of July 2023.

Pump Station No. 3. Under normal conditions, the effluent flows by gravity to the Lehigh River. Under wet-weather conditions, the final effluent is pumped to a pressurized chamber for discharge into the Lehigh River. In 2017, the effluent pump station was upgraded with two 15 mgd pumps and two 25 mgd pumps. Plant wet-weather hydraulic capacity is now 50 mgd.

WAS from the intermediate clarifiers is pumped to the gravity sludge thickener, then a gravity belt thickener (GBT) where polymer is added. In 2013, the City constructed a new thickened waste activated sludge (TWAS) thickening facility. It includes two new GBTs, new TWAS pumps, and a filtrate pump station.

Primary raw sludge and TWAS are pumped to the anaerobic digesters for solids reduction and stabilization. Originally, there were two primary and two secondary digesters. In 2013, the City converted the south secondary digester to an additional primary digester and upgrade the south primary digester. In 2017, upgrades to the north primary digester were completed. These improvements produce additional methane gas and improve dewatering capabilities. Methane gas is used by the plant boilers to heat the sludge in the digesters to 98°F.

Since 2011, the City has disposed of biosolids by beneficial use (mine reclamation) and/or landfill disposal. In 2017, a new biosolids dewatering facility was completed with two new centrifuges, a new polymer system, and new sludge pumps. Digested sludge is sent to the centrifuges for dewatering and final disposal. In 2017, the City received its General Permit PAG-08 2224 for the beneficial use of Class B biosolids by land application. Land application of biosolids onto farm fields as fertilizer commenced in 2018.

In 2022, the WWTP discharged 3.982 billion gallons of sewage (daily average of 10.9 mgd) and disposed of 11,368 wet tons (or 2,159 dry metric tons) of biosolids. The biosolids averaged 20.93% total solids.

An aerial photograph of the existing WWTP can be found in Appendix D.

3. Description of Problem with Existing Facilities

The City's WWTP has a permitted hydraulic capacity of 20 mgd and an organic design capacity of 39,365 lbs/day of BOD. The 2022 Chapter 94 Report projects a maximum 3-month hydraulic flow of 13.7 mgd and a maximum month average influent loading of 39,343 lbs/day of BOD in the year 2027. While no organic overload is projected in the next 5 years, the City has concerns that increases in influent organic concentrations have made the organic loading the limiting factor at the plant and that an organic overload may be experienced in the next 5 to 10-year period.

In addition, on December 6, 2021, PADEP issued a Notice of Violation to the City indicating effluent violations to the limitations set forth in NPDES Permit No. PA-0026042-A-1. The monitoring period of the violations was from September 2018 through October 2021. Most of the violations were from ammonia-nitrogen exceedances. In recent years, the WWTP has experienced issues maintaining compliance with current effluent ammonia (NH₃) standards during cold weather periods and during transition periods when the permitted effluent NH₃ limit changes from 15 milligrams per liter (mg/L) to 5 mg/L. The cause of ammonia exceedances was insufficient nitrification in the activated sludge system, primarily due to intermediate clarifier mechanical failure and shutdown for repairs or extreme cold weather minimizing the activity of the nitrifying organisms. In March 2022, the City submitted a WQM Part II Permit Application to construct a

Chemically Enhanced Primary Treatment (CEPT) system at the WWTP. WQM Permit No. 4818402-A-1 was issued on April 28, 2022 (see Appendix E). The CEPT system will improve nitrification stability by reducing the organic and solids load to the secondary process, which in turn decrease WAS production and increase solids residence time (SRT) at the same Mixed Liquor Suspended Solids (MLSS) levels to improve nitrification stability and ammonia treatment. The City is striving to complete construction of the CEPT project by January 2024, which consists of a 12,500 gallon high density linear polyethylene chemical storage tank with a chemical feed system on a concrete slab. It should be noted that the CEPT project is just one of several corrective actions taken by the City to maintain compliance in response to the December 6, 2021 Notice of Violation. For a description of the other projects, see Corrective Action Plan described in the City's December 20, 2021 letter to PADEP in response to the Notice of Violation, which can be found in Appendix F.

4. Details of Scheduled or In-Progress Upgrading of Treatment Facilities

The CEPT project and schedule is described in Section 3 above. Section 2.2.2 of the 2022 Chapter 94 Report summarizes the various Sewer Capital projects and purchases completed by the City in 2022 including those at the WWTP.

5. Operations and Maintenance Requirements for Small Flow Treatment Facility Systems

This Special Study only addresses the liquid train process of the WWTP relative to organic design capacity; therefore, this section is not applicable.

6. Disposal Areas Other Than Stream Discharge

This Special Study only addresses the liquid train process of the WWTP relative to organic design capacity; therefore, this section is not applicable.

B. Existing Individual On-Lot Systems

This Special Study only addresses the liquid train process of the WWTP relative to organic design capacity; therefore, this section is not applicable.

C. Wastewater Sludge and Septage Generation, Transport, and Disposal

Per the 2022 Chapter 94 Report, during 2022, the City generated and disposed of 11,368 wet tons of biosolids (2,159 dry metric tons). The biosolids averaged 20.93% total solids. Synagro transported 10,725 wet tons of biosolids to various beneficial use sites (land application) in Pennsylvania.

Chapter IV. Future Growth and Land Development

Given the limited scope of this Special Study, which is to evaluate liquid train improvement alternatives to address the organic design capacity as described in Chapter I, an evaluation of future growth and land development is not warranted. For the purposes of this Special Study, the projected growth over the next 5 years as identified in the 2022 Chapter 94 Report (Appendix B) serves as the basis for the identification of future sewage planning needs.

A. Municipal and County Planning Documents

This Special Study only addresses the liquid train process of the WWTP relative to organic design capacity; therefore, this section is not applicable.

B. Existing Developments or Plotted Subdivisions

This Special Study only addresses the liquid train process of the WWTP relative to organic design capacity; therefore, this section is not applicable.

C. Future Growth Areas, Population Projections

This Special Study only addresses the liquid train process of the WWTP relative to organic design capacity; therefore, this section is not applicable.

D. Land Use Regulations and Plans Relating to the Use and Protection of Water Resources

This Special Study only addresses the liquid train process of the WWTP relative to organic design capacity; therefore, this section is not applicable.

E. Identification of Sewage Planning Needs

The 2022 Chapter 94 Report indicates that the projected maximum month average influent loading at the WWTP in the year 2027 will be 39,343 lbs/day. The existing permitted capacity of the WWTP per WQM Permit No. 4818402-A-1 is 39,365 lbs/day. The City anticipates reaching the permitted organic load limit in 5 to 10 years, and this Special Study evaluates alternatives to address said sewage need.

Chapter V. Alternatives to Provide New or Improved Wastewater Disposal Facilities

A. Identify Alternatives to Provide for Improved Sewage Facilities

As stated in Chapter I, the primary purpose of this Special Study is to evaluate liquid train improvement alternatives recommended in the 2012 Act 537 Plan with other alternatives to address the organic design capacity at the WWTP. The other alternatives to be described in this chapter include a CEPT Alternative and a No-Action Alternative.

Prior to describing the alternatives, a discussion of the influent organic loading trends is warranted. The selected liquid train alternative from the 2012 Act 537 Plan (described below) was intended to reinstate the full hydraulic capacity of 20 mgd based on the permitted organic capacity of 39,365 lbs/day. At the time of the 2012 Act 537 Plan, the hydraulic capacity of the WWTP was thought to be 15.5 mgd based on the influent loading concentrations used in said plan (influent data from 2004 to 2007). It should be noted that the 2012 Act 537 Plan included a previous planning effort from 2004 and included a discussion of increasing BOD influent concentrations from previous years. The 2012 Act 537 Plan noted that since 1995, a significant increase in influent BOD concentrations had been observed. The reasons cited for this increase in BOD influent concentrations between the years 1995 and 2004 were as follows:

- The Bethlehem Steel operations were terminated, which eliminated a significant amount of flow that had diluted BOD concentrations.
- Water saving devices had become standard in new construction, which reduced the amount of water needed to convey a given amount of waste.
- Recycling had encouraged more people to rinse partially empty jars, bottles and other recyclable containers resulting in higher BOD concentrations being discharged into the sanitary sewer system.
- The use of garbage disposal units had increased the amount of concentrated organic waste being discharged into the sanitary sewer system.

After the 2012 Act 537 Plan was adopted, the City continued to see increased influent organic loading concentrations which prompted the need to revisit Act 537 planning relative to liquid train improvements as described in the December 19, 2018 letter from City to PADEP referenced in Chapter I.B. of this Special Study and included as Appendix A. As a precursor to Act 537 Planning, in 2017 the City re-evaluated organic and hydraulic trends at the WWTP and found that the hydraulic flow decreased while the organic load increased in the 10 years since the 2012 Act 537 Plan data set. This re-evaluation found that based on influent data from 2015-2017, the design organic loading of 39,365 lbs/day would be reached at 12.3 mgd if no action were taken. Further analysis of data from 2018-2019 found that hydraulic flow had increased and organic influent concentrations had decreased concluding that the design organic loading would be reached at 14.4 mgd. A long-term indication of the influent concentration trends is found in Figure 1 below.

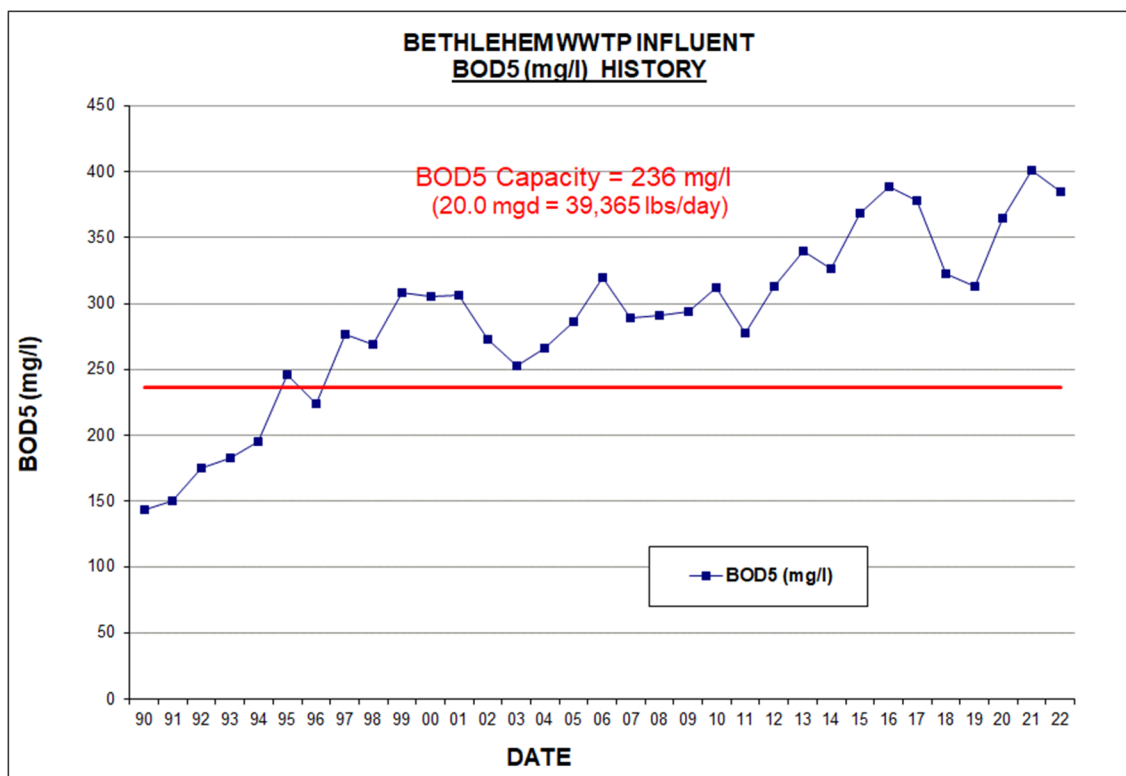


Figure 1. Long Term Indication of the Influent Concentration Trends

1. 2012 Act 537 Plan Recommended Liquid Train Improvements Alternative

The 2012 Act 537 Plan pertaining to liquid train components of the treatment process were primarily aimed at restoring the originally permitted flow of 20 mgd. For the purposes of the alternative's evaluation, the primary recommendation of the 2012 Act 537 Plan was the construction of additional bioreactor volume, which consisted of the installation of a new 4.5 MG aeration train to be constructed on the area of the existing trickling filters. This new treatment train would operate in parallel with the existing tankage, receive 50% of plant flow, and utilize the existing final clarifiers as a dedicated solids separation step. Designed at a deeper depth (18 feet), this new train would utilize diffused air instead of the mechanical surface aerators in use on the existing aeration train.

The 2012 Act 537 Plan liquid train selected alternative also included a retrofit of the existing aeration tanks surface aerators with new generation higher efficiency surface aerators and incorporation of anoxic selector zones, comprising roughly 8% of the total tank volume, into both the new and existing tankage. The incorporation of anoxic selector zones would involve some baffling and the installation of sub-surface mechanical mixers to provide mixing without oxygen transfer.

A discussion of these primary elements of the 2012 Act 537 Plan selected alternative related to the liquid train follows.

Installation of Additional Reactor Volume

The addition of the new aeration train, paired with the existing final clarifiers, would operate in parallel to the existing aeration tanks and intermediate clarifiers. The intended 50/50 split of primary effluent requires that the biological capacity of the proposed

treatment train be equivalent to the existing treatment train. The additional volume proposed (4.5 MG) is essentially equal to the volume provided by the existing train, if operated at the same MLSS concentration and RAS rates, the hydraulics and solids loading on the final settling tanks (FSTs) would be as noted in Table 1.

Table 1. The hydraulic and solids loading on the final settling tanks (FSTs)

	With Two FSTs Online	With One FST Online	Typical Design Guidelines
Surface Overflow Rate @ 10 mgd, gallon per day per square feet	350	700	400-700
Solids Loading Rate @ 10 mgd, pound per day per square feet	12	24	24-36

In looking at the resultant loadings on the final settling tanks, the solids loading rate is well within guidelines even with one FST out of service. In terms of hydraulic loading, however, with one FST out of service, the surface overflow rate (SOR) is marginal. This is made even worse by the shallow depth of the FSTs, which have an SWD of only 10 feet, compared to the intermediate settling tanks at 14 feet SWD. The addition of a second parallel treatment train is a technically feasible alternative to achieving full 20-mgd capacity. The primary operational disadvantage of this alternative is the difficulty of running two parallel treatment trains with different hydraulic grade lines and that the existing lack of secondary clarifier redundancy is not resolved, but in fact, replicated.

While not identified in the 2012 Act 537 Plan, an additional intermediate settling tank (IST) and FST clarifier would be required under this alternative. With the loss of either one IST or FST, the affected train would not have capacity for treatment of 25 mgd each during a wet weather event of 50 mgd so by-pass would still be necessary for a portion of the flow. In addition, the depth of the FSTs is only 10 feet, so it's unlikely that they will perform even as well as the 14-foot ISTs, which currently are overloaded when one unit is out of service. Also, the use of the FST for a parallel train would remove this unit from service during wet weather by-pass conditions, which presently is possible without plant upset since the solids loading from the main plant flow from the trickling filter effluent is low on the FSTs where combined with primary clarifier effluent by-pass flows. If the FSTs are now used as a parallel train, excessive by-pass flows would need to be routed to the effluent side of the FST for disinfection, which may impact performance and ultimately increase TSS in the effluent during wet weather events.

Aeration of Proposed and Existing Treatment Trains

The next element of this alternative is to upgrade the surface aerators in the existing treatment train to a newer generation, more efficient surface aerator and install fine bubble diffusers (FBD) in the proposed train, which would operate at a deeper depth. It is recognized that FBD are often used at relatively deep depths of tankage, and it is further recognized that FBD would less likely be employed in the shallower depths of the existing bioreactors. However, it should be noted that the WWTP has in the past struggled with cold weather nitrification. While a subsurface diffuser system would not usually be employed in a shallow SWD, in this case, 12 feet, for efficiency reasons, a sub-surface aeration technology is better at retaining heat, in some cases by 3°C or more. Additionally, the ability to independently control oxygen transfer and mixing is an advantage in the event the plant must treat for total nitrogen (TN) in the future.

Incorporation of Pre-anoxic Zone in Both Proposed and Existing Treatment Trains

The final major element of this alternative is to incorporate an anoxic zone consisting of 8% of the total volume on the front end of both the existing and proposed bioreactor trains. While it is within normal operating parameters to include some anoxic volume to be used as a selector, it would be preferable to incorporate a pre-anoxic zone sized more in the range that would be typically applied in TN treatment processes [e.g., an Modified Ludzack-Ettinger (MLE) process]. While the plant does not currently have a TN limit, such a configuration would allow the WWTP to address permit modifications in the future, reduce oxygen demand and sludge production, and maximize the recovery of alkalinity. The WWTP has had some success with an “ad hoc” version of this configuration. Further optimization would result by allocating more in the order of 25-33% of the total volume for pre-anoxic operation. To maintain enough aerobic volume when nitrification kinetics are depressed (e.g., in cold weather), the pre-anoxic volume would have aeration capabilities as well.

2. Chemically Enhanced Primary Treatment (CEPT) Alternative

CEPT is a rather simple approach that is used to improve the performance of primary settling, both in terms of BOD and TSS removal. CEPT adds a coagulant, such as alum, ferric chloride (ferric) or polyaluminum chloride (PAC), and a small amount of polymer to increase flocculation and make the settling process faster and more efficient than conventional primary settling. This approach can reduce both TSS and BOD load into the activated sludge process. This improved primary effluent quality is also beneficial during wet weather operational mode at the WWTP when primary effluent is diverted around the activated sludge process to prevent a hydraulic overload.

In order to better ascertain the anticipated capacity improvements that CEPT provides, a series of sensitivity analyses were performed to project the response of the plant to increases in organic loading with a CEPT system. This analysis entitled, *City of Bethlehem WWTP Capacity with Chemically Enhanced Primary Treatment*, dated April 2023, is included as Appendix G. The results of the analysis indicate that, with CEPT, the WWTP can treat 50,000 lbs/d of BOD. An aerial photograph of the WWTP showing the location of the CEPT system can be found as Appendix H.

Additional benefits of this approach are as follows:

- Improved (i.e., reduced) TSS and BOD loading to secondary process means that there will be less waste activated sludge. Lowering solids removal from secondary (i.e., WAS) while holding MLSS constant increases the solids retention time and will improve nitrification stability.
- Removing more BOD in the form of primary sludge will increase organic loading to the digesters, improving gas production. Primary sludge is more digestible than WAS and has a higher caloric value.
- Reducing BOD load to secondary also reduces oxygen demand. Instead of consuming energy to aerobically treat the BOD in the secondary process, more energy is recovered in the form of biogas production.
- CEPT would also improve the City’s wet weather treatment strategy. When wet weather flow exceeds the process capacity of the aeration basin, additional flow is diverted to four trickling filters, and the enhanced primary settling efficiency

from CEPT reduces BOD and TSS loading to the tricking filters, final settling, and disinfection systems.

3. No-Action Alternative

A No-Action alternative is not deemed acceptable. As stated earlier, the 2022 Chapter 94 Report indicates that the WWTP is projected to be very close to the permitted organic design capacity in the year 2027. As such, it would be projected that the City would be unable to meet the sewage treatment needs of the tributary municipalities in the year 2028, which would prevent the City from meeting both the short term and long-term sewage treatment needs of the tributary municipalities. This would have a negative impact on residential, commercial and industrial growth in the tributary municipalities and thus impact overall economic conditions. A No-Action alternative could also lead to organic load exceedances in the effluent, which could cause negative environmental impacts such as water quality degradation of the Lehigh River. Said impacts could also cause a loss in recreational opportunities associated with the Lehigh River.

Chapter VI. Alternatives Evaluation

A. Consistency Evaluation

Under the Act 537 planning process, feasible alternatives as identified in Chapter V must be further evaluated for consistency with other environmental planning and regulatory programs, financial feasibility, and administrative requirements. The consistency of these alternatives relative to applicable planning and regulatory programs is discussed in the following sections. For the purposes of this chapter, the 2012 Act 537 Plan Liquid Train Alternative and the CEPT Alternative are deemed feasible.

1. Clean Water Act

The alternatives described do not present any known conflicts with the Clean Water Act.

2. Chapter 94 Municipal Wasteload Management Plan

The alternatives described do not present any known conflicts with the 2022 Bethlehem WWTP Chapter 94 Report.

3. Federal Water Quality Act

The Federal Water Quality Act of 1987 establishes specific planning requirements for wastewater facilities applying for federal funding assistance. It is not anticipated that the City will be seeking federal funding for the alternatives described in this Special Study.

4. Comprehensive Plans

Given the limited scope of this Special Study, Comprehensive Plans of the tributary municipalities and the County were not reviewed.

5. Anti-Degradation Requirements of Chapters 93, 95, and 102

Chapters 93 and 95 of Pa Code Title 25 address water quality criteria of receiving streams and wastewater treatment requirements, respectively. The effluent limits per the WWTP NPDES Permit No. PA0026042-A-1 are for an average daily flow of 20 mgd to the Lehigh River as noted in Table 2.

Table 2. Effluent Limitations

Discharge Parameter	Mass Units (lbs/day) ⁽¹⁾		Concentrations (mg/L)			
	Monthly Average	Weekly Average	Minimum	Monthly Average	Weekly Average	Instantaneous Maximum ⁽²⁾
Flow						
CBOD ₅	4,170	6,672		25	40	50
Total Suspended Solids	5,004	7,506		30	45	60
NH ₃ -N (5/1 to 10/31)	834			5.0		10.0
NH ₃ -N (11/1 to 4/30)	2,502			15.0		30.0
pH				6.0 to 9.0 Standard Units at All Times		
Fecal Coliform (5/1 to 9/30)				200/100 ml		**
Fecal Coliform (10/1 to 4/30)				2000/100 ml		
Total Residual Chlorine				0.50		1.20

**Not greater than 1000/100 ml in more than 10% of the samples tested.

(1) When sampling to determine compliance with mass effluent limitations, the discharge flow at the time of sampling must be measured and recorded.

(2) The Instantaneous Maximum Discharge Limitations are for compliance use by PADEP only. Do not report instantaneous maximums on Discharge Monitoring Reports (DMRs) or supplemental DMRs unless specifically required on those forms to do so.

Both of the described alternatives are consistent with the required effluent limits.

6. State Water Plan

The alternatives described do not present any known conflicts with State Water Plans.

7. Pennsylvania Prime Agricultural Land Policy

The alternatives described do not present any known conflicts with Pennsylvania Prime Agricultural Land Policy.

8. County Stormwater Management Plan

The alternatives described do not present any known conflicts with the County Stormwater Management Plan.

9. Wetland Protection Standards

No wetland disturbance is directly proposed pursuant to this planning effort, and no inconsistency exists.

10. Pennsylvania Natural Diversity Inventory (PNDI)

As previously discussed, WQM Permit No. 4818402-A-1 (see Appendix E) was issued on April 28, 2022 for the CEPT system. PNDI clearance was confirmed as part of this WQM permitting.

11. Pennsylvania Historic Preservation Act

As previously discussed, WQM Permit No. 4818402-A-1 (see Appendix E) was issued on April 28, 2022 for the CEPT system. PHMC clearance was confirmed as part of this WQM permitting.

B. Resolution of Inconsistencies

It does not appear that any of the alternatives described are inconsistent with the programs and policies discussed above.

C. Water Quality Standards and Effluent Limitations

The alternatives described are consistent with the effluent limitations as described in Section A.5 above.

D. Costs

2012 Act 537 Plan Recommended Liquid Train Improvements Alternative – as presented in the 2012 Act 537 Plan, the cost for these improvements was \$26,854,000. Adjusting to 2022 dollars, the cost would be approximately \$38,000,000.³

CEPT Alternative – the cost for installation of the CEPT system is \$1,400,000, which is based on an accepted bid. This estimate is based on a 12,500-gallon high density linear polyethylene chemical storage tank with a chemical feed system on a concrete slab.

E. Funding

As described in Chapter I of this Special Study, the liquid train improvements described in the 2012 Act 537 Plan were part of the overall selected alternative that also included improvements to the collection and conveyance system, solids handling system and other miscellaneous improvements to the WWTP to address aging equipment. The overall costs for said improvements was estimated to be \$73,104,300 in 2008. The 2012 Act 537 Plan anticipated that the cost for the selected alternative to be shared among the tributary municipalities and the City and also recommended that the City apply for PennVEST funding to secure low interest loans.

For the CEPT alternative, it is anticipated that the City would fund the improvements through their existing capital reserve account. There is no need for additional borrowing.

F. Phasing

The 2012 Act 537 Plan envisioned that the liquid train improvements would be phased based on short-term and long-term needs. Short term improvements would address the need to maintain current plant operations and equipment age and condition. Long term needs would address improvements address future growth and the need to restore the original plant capacity of 20 mgd.

Given the relative simplicity of the CEPT alternative, phasing of said alternative is not warranted.

³ Consumer Price Index Calculator; Bureau of Labor Statistics.

G. Administrative Requirements and Legal Authority

The City has the administrative capability and legal authority to implement the alternatives described in this Special Study.

Chapter VII. Institutional Evaluation

A. Existing Authorities

There are no existing municipal wastewater authorities in the City of Bethlehem.

B. Institutional Alternatives

No new municipal departments would need to be created for the implementation of the selected alternative. The City currently operates and maintains the WWTP and is capable of implementing the selected alternative. Funding for the selected alternative is described in Chapter VI.

C. New Administrative Activities

The City has the staff and the administrative resources in place to implement the selected alternative. No new administrative activities are required to implement the selected alternative.

D. Selected Institutional Alternative

The selected institutional alternative for implementation of the selected alternatives is implementation by the City of Bethlehem.

Chapter VIII. Selected Alternatives and Implementation Schedule

A. Selected Alternative

The selected alternative that best meets the needs of the City to address the organic loading issue is the implementation of the CEPT alternative. The implementation of the CEPT alternative provides a great deal of value in terms of increasing WWTP's organic design capacity at a small fraction of the cost estimated for implementation of the 2012 Act 537 Plan recommendations. CEPT will also improve nitrification stability by reducing the organic and solids load to the secondary process, which in turn decrease WAS production and increases SRT at the same MLSS to improve nitrification stability and ammonia treatment. As shown in the Implementation Schedule below, the City has already received a Part II Permit for the installation of a CEPT system to address the ammonia Notice of Violation.

CEPT would also improve the City's wet weather treatment strategy. When wet weather flow exceeds the process capacity of the aeration basin, additional flow is diverted to four trickling filters, and the enhanced primary settling efficiency from CEPT reduces BOD and TSS loading to the trickling filters, final settling, and disinfection systems. With the implementation of CEPT, the organic design capacity of the WWTP can increased to 50,000 lbs/day BOD.

B. Financing Plan

No capital financing will be required to implement the selected alternatives.

C. Implementation Schedule

The Implementation Schedule for the selected alternatives is as follows:

Complete Draft Plan	May 2023
Public Agency Review	May-July 2023
30-Day Public Comment Period	July 2023
City and Tributary Municipalities Adopt Special Study	August 2023 – January 2024
City submits Plan to PADEP	February 2024
PADEP Approves Plan	Time Zero
City Submits Part II Permit to increase organic design capacity of WWTP to 50,000 lbs/day	30-days from Time Zero
PADEP Approves Part II Permit	90-days from Time Zero
City Implements Selected Alternative – CEPT System	* See below

*As mentioned in Chapter III, the City has already received a Part II Permit for CEPT for the purposes of addressing ammonia exceedances. CEPT is also the selected alternative for addressing the organic loading issue as described throughout this Special Study. Construction of the CEPT system began in January 2023 and is expected to be completed in January 2024.

Appendices

Appendix A

City of Bethlehem Act 537 Plan Update Correspondence



CITY OF BETHLEHEM

10 East Church Street, Bethlehem, Pennsylvania 18018-6025

Department of Water and Sewer Resources

www.bethlehem-pa.gov

Phone: 610-865-7207

Fax: 610-865-7331

December 19, 2018

Robert Corby, Sewage Planning Specialist
Clean Water Program
Pennsylvania Department of Environmental Protection
Northeast Region – Bethlehem District Office
4530 Bath Pike
Bethlehem, PA 18017

Re: City of Bethlehem
Act 537 Plan Update

Dear Mr. Corby:

The City of Bethlehem's Act 537 Plan Update Revision was approved by PaDEP in August 2012. Since that time, the City has completed several wet stream process and solids handling improvements at the wastewater treatment plant (see attached list). Based on current operating conditions, we believe it is prudent to conduct another Act 537 Plan Update, but one that is limited in scope.

We recommend that a new Act 537 Plan Update should focus on the following items:

- Update flow and load trends based on current conditions – The information used in the 2012 Act 537 Plan is from the 2002-2007 timeframe. We will use more recent data to get a better understanding of current conditions and future trends.
- Re-evaluate wet stream process alternatives and include any new or alternative technologies in the updated plan – We anticipate the next major round of improvements will occur in the wet stream processes.
- Perform a cursory review of solids handling processes – Several major solids handling projects have been completed in the past six years; evaluate the need for any future improvements.
- Perform a cursory review of Contributing Municipality requirements and make changes as needed to future growth projections. Projected flows from East Allen Township should be added to the list of contributors.
- Update recommendations, budgets, and implementation schedule for system improvements – Develop a revised plan for the WWTP and collection systems based on current conditions and projected needs.

Note that the City does not anticipate any change in overall projected influent flow and loads as defined in the 2012 Act 537 Plan.

In accordance with PaDEP guidelines on Plan Revisions, the City would like to schedule a meeting with appropriate DEP representatives to discuss our approach and the proposed scope for an Act 537 Plan Update before we engage a professional consultant. Our goal is to complete this effort in calendar year 2019.

I will follow-up with you to schedule a meeting in January 2019. In the meantime, do not hesitate to contact me at the above number should you have any questions or require any additional information.

Sincerely,



Edward J. Boscola, P.E.
Director – Water and Sewer Resources
City of Bethlehem

Cc: Jack Lawrence – Bethlehem WWTP Superintendent
Matt Dorner – Chief Engineer, City of Bethlehem
Rob Stermer – Environmental Group Manager, PaDEP
File

BETHLEHEM WWTP

CSO LTCP / ACT 537 - CONSTRUCTION PROJECTS

PROJECT	DESCRIPTION	WQM PERMIT	START DATE	SUBSTANTIAL COMPLETION DATE	TOTAL COST
Activated Sludge Upgrade	Replace 10 surface aerators Install Dissolved Oxygen monitoring and control system	N/A	2009	June 2011	\$2,500,000
Digester / WAS Thickening Phase I	Conversion of Secondary Digester-1 to Primary Digester-3 New mixing and heating in Primary Digesters-1,3 Two Gravity Belt Thickener Units	4811401	2011	PD-3 - July 2013 PD-1 - April 2014	\$9,800,000
Digester / WAS Thickening Phase II	New Concrete Roof on Primary Digester-2 New mixing and heating in Primary Digester-2		2015	PD-2 - August 2017	\$2,500,000
CSO Relocation - CSO 012	Relocation of CSO Outfall 004 New CSO Outfall 012 Facility into Lehigh River	4812402	2013	February 2016	\$3,500,000
Dewatering Facility and Effluent Pump Station	New facility with two centrifuges, polymer system, sludge pumps Two new effluent pumps - Increase plant capacity to 50 mgd	4813402	2013	April 2017	\$12,800,000
Bar Screen and Detritor Replacement	Four new bar screens and detritors Washer/Compactor/Grit Removal	4818402	2019	TBD	\$2,500,000 (Budget)
Non-Potable Water Upgrade	New non-potable pumps Water for plant processes	N/A	2018	2019	\$600,000 (Budget)
Disinfection Alternatives Evaluation	Analysis of alternatives to gaseous chlorination (Study)	TBD	2018	2019	\$40,000 (Budget)
Centrate Sidestream Treatment	Ammonia treatment of centrate	TBD	2019	TBD	\$1,500,000 (Budget)

Appendix B

2022 Chapter 94 Municipal Wasteload Management Annual Report



CITY OF BETHLEHEM

Department of Water and Sewer Resources

Wastewater Treatment Plant - 144 Shimersville Road, Bethlehem, Pennsylvania 18015

www.bethlehem-pa.gov

Phone: 610-865-7168

Fax: 610-865-7216

March 31, 2023

Bharat R. Patel, P.E.
Environmental Program Manager
Clean Water Program
PADEP – Northeast Regional Office
2 Public Square
Wilkes-Barre, PA 18701-1915

Re: 2022 Municipal Wasteload Management Annual Report
City of Bethlehem, PA Northampton County
NPDES Permit No. PA-0026042

Dear Mr. Patel:

In accordance with Section 94.12 of the Pennsylvania Code, Title 25, Chapter 94 "Municipal Wasteload Management", enclosed is the City of Bethlehem's 2022 Municipal Wasteload Management Annual Report, in duplicate.

If you have any questions or comments, please feel free to contact me at 610-865-7168.

Sincerely,

A handwritten signature in black ink, appearing to read "Jack Lawrence".

Jack Lawrence
Superintendent
Wastewater Treatment Plant

Encl.

Cc: E. Boscola
File

2022

CHAPTER 94
MUNICIPAL WASTELOAD MANAGEMENT
ANNUAL REPORT

CITY OF BETHLEHEM

PREPARED BY

Jack Lawrence

Jack Lawrence, Superintendent
Wastewater Treatment Plant

SUBMITTED BY

Edward J. Boscola

Edward J. Boscola, P.E., Director
Water and Sewer Resources



WASTE WATER TREATMENT PLANT

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1.0 INTRODUCTION

In accordance with Chapter 94 of Title 25 of the Pennsylvania Code, the City of Bethlehem (City) is submitting its Municipal Wasteload Management Annual Report to the Pennsylvania Department of Environmental Protection (PADEP) for the calendar year 2022. This Report includes the following:

1. A discussion of the condition of the City's sewer system. Includes sewer system monitoring, maintenance, sewage lift stations and Combined Sewer Overflows;
2. A discussion of the City's WWTP. Includes operation, maintenance, analyses of plant loadings and removal efficiencies and flow metering calibration reports;
3. Line graphs depicting the monthly average flows and monthly average organic loading for each month for the past five years and projecting the monthly averages for the next five years. Includes a discussion of the basis for the projections;
4. Contributing municipalities' information attached in Appendix B. Includes maps showing all sewer extensions in the past year as well as lists summarizing the extensions and the population served;
5. City of Bethlehem's 2022 Industrial Pretreatment Program Annual Report is attached in Appendix C.

2.0 EVALUATION OF SEWER SYSTEM

2.1 COLLECTION SYSTEM

2.1.1 General

The City of Bethlehem owns, operates and maintains wastewater collection, conveyance and treatment facilities located within its corporate borders. The City's conveyance facilities include approximately 250 miles of gravity sewer lines, which vary in size from 8 to 66 inches in diameter, six lift stations and their attendant force mains that serve small specific areas and five major siphons. In addition to the City, the service area of the WWTP includes the municipalities (whole or in part) of Hanover Township Northampton County, Hanover Township Lehigh County, Hellertown Borough, Fountain Hill Borough, Bethlehem Township, Freemansburg Borough, the City of Allentown, Salisbury Township, Lower Saucon Township, Palmer Township, Lower Nazareth Township and East Allen Township.

The City maintains 51 miles of sewer lines in Hanover Township Northampton County. Sewer lines and pump stations in the remaining contributing municipalities' sewer systems are maintained by each of those communities. Information on the contributing municipalities' systems can be found in Appendix B.

2.1.2 Sewers

The collection and conveyance sewers functioned in a satisfactory manner in 2022. The City's preventive maintenance program for the sewer lines and manholes consists of:

- Flushing and rodding as many sewer lines as possible during the year;
- TV sewer lines for leaks, blockages and I & I reduction;
- Cleaning, inspecting, and repairing manholes found to be defective;
- Checking sewer lines in various problem areas throughout the City for root intrusion, solids deposition, and other potential blockages.

In 2022, the City's Sewer Maintenance Bureau continued to treat 85 locations throughout the City with Quorum ProBac MicroTabs for grease control. The dissolvable MicroTabs product adds grease-eating bacteria into the sewer mains. The City's Sewer Maintenance Bureau continued its increased flushing operations. An additional flusher unit was purchased in 2020. This improved the operation of the collection system and avoided potential problems, especially during Covid-19 with increased use and disposal of cleaning supplies (rags, mops, flushable wipes). The preventive maintenance activities performed on the collection system in 2022 are summarized on Table 2-1.

TABLE 2-1

CITY OF BETHLEHEM

SUMMARY OF SANITARY SEWER LINE MAINTENANCE - 2022

Month	Lift Stations Checked (6 Weekly)	Siphons Checked (5 Weekly)	Watch List Checked (50 Weekly)	Flushing Amount	Preventive Footage	Flushing Amount	Emergency Footage	Line Excavations	TV Inspection Amount	Footage	Dye Tests
January	24	20	200	378	80,484	19	4,120	1	1	60	
February	24	20	200	242	53,338	16	3,810		29	5,967	
March	30	25	250	251	61,386	15	4,574	3	3	1,400	
April	24	20	200	190	48,266	21	3,050	2	2	455	
May	24	20	200	154	39,436	8	2,455		14	2,582	
June	30	25	250	141	35,812	11	2,812	1	14	1,985	
July	24	20	200	230	57,938	11	3,765		5	1,644	
August	30	25	250	131	35,731	15	4,095	1	16	4,130	
September	24	20	200	78	21,040	9	5,375	1	11	2,715	
October	24	20	200	116	27,857	11	2,716	1	12	2,370	
November	30	25	250	114	32,594	15	3,417		8	1,525	
December	24	20	200	58	17,280	21	7,360		2	350	
Total	312	260	2,600	2,083	511,162	172	47,549	10	117	25,183	0

SUMMARY OF SANITARY MANHOLE MAINTENANCE - 2022

Month	MH Checked	Visual Flow Checks	MH Renewal	MH Reset	Service Calls Requests	Footage	PA One Call Marking (Act 287)	Water Usage (gal)
January	967	967		1	19	4,120	787	90,025
February	677	677			16	3,810	790	84,032
March	830	830			15	4,574	1,313	69,700
April	723	723			21	3,050	1,639	62,236
May	670	670			8	2,455	1,500	39,080
June	642	642			11	2,812	1,489	39,300
July	618	618			11	3,765	1,395	66,700
August	543	543			15	4,095	1,532	45,200
September	641	641			9	5,375	1,442	22,000
October	450	450			11	2,716	1,311	38,050
November	447	447			15	3,417	1,268	40,675
December	609	609			21	7,360	832	32,500
Total	7,817	7,817	0	1	172	47,549	15,298	629,498

2.1.3 Lift Stations

Operation of the City's six sewage lift stations was satisfactory in 2022. The following is a description of the six lift stations:

1. Airport Road Lift Station - Services a small built-up area of Lehigh Valley Industrial Park I and the Lehigh Valley International Airport. This station has two 900-gallon per minute (gpm) Fairbanks Morse pumps. In 2021, both motors were rebuilt and one pump was replaced. In 2022, a new controller and 100 amp breaker were installed.
2. Brighton Street Lift Station - This station was built in 1969 and services a three block residential area. This station contains two four-inch, 100-gpm Smith and Lovelace pumps.
3. Langhorne Avenue Lift Station - This station was built in 1970 and services a three-block residential area. This station contains one four-inch, 100-gpm Flygt pump and one 120-gpm Homa pump (installed in 2005). In 2022, a new controller was installed.
4. Conestoga Street Lift Station - This station was built in 1997 and replaced the former Lehigh Street Lift Station. The lift station services approximately 2,700 feet of sewer line with approximately 17 EDU connections. This station contains two 50-gpm ABS grinder pumps.
5. Applebutter Road Lift Station - This station was built in 1991 and services Lower Saucon Township, the IESI-Bethlehem Landfill and Calpine Electric. In 2015, the lift station was upgraded with new electric service and three new 314-gpm ABS pumps. The total station capacity is 0.904 million gallons per day (mgd).
6. LVIP VII Lift Station - This station was built in 2007 and services the Easton Road portion of the LVIP VII industrial park. The station contained two 56-gpm Hydromatic grinder pumps. In 2019, the lift station was upgraded with two new 100-gpm ABS Piranha pumps and a Cummins 36 KW generator. In 2021, a bubbler system was installed to help fight a solids issue. In 2022, both lift station pumps failed due to an excessive solids discharge. They were replaced with two new 100-gpm ABS Piranha pumps.

The lift stations are checked daily (or when possible due to manpower) and all equipment is routinely lubricated and maintained. The lift stations are constantly monitored by the City's SCADA System and have alarms to indicate any malfunctions. None of the lift stations are equipped with flow meters to monitor total flows handled by each station. However, none of these stations are expected to be hydraulically overloaded in the next five years since they serve relatively small, built-out areas. In 2023, design plans are underway to install a flow meter at the Applebutter Road Lift Station.

In addition, several contributing municipalities operate sewage lift stations. Information on their maintenance and flows can be found in their reports. None of these stations are expected to be hydraulically overloaded in the next five years according to the contributing municipalities' reports.

2.1.4 Siphons

Operation of the five (5) major siphons in the collection system was satisfactory in 2022. Each siphon is inspected weekly to ensure proper operation. Each siphon will be cleaned as necessary. No siphon overflows were reported in 2022.

2.1.5 Intermunicipal Metering Stations

The City wants to accurately monitor all flows from outside municipalities to find excessive inflow/infiltration and any excess permitted flows. Currently, Bethlehem Township, Hellertown, Lower Saucon Township, Lower Nazareth Township, Fountain Hill, Hanover Township Lehigh County (partial), East Allen Township and Salisbury Township use sewer meters to monitor their flows. However, water consumption records are used for the City of Bethlehem, Allentown, Freemansburg, Hanover Township Northampton County and Hanover Township Lehigh County (partial). The water records are utilized due to number of connection points which make the use of sewer meters impractical and not cost effective.

2.1.6 Combined Sewer Overflows (CSOs)

Part A of the City's NPDES Permit No. PA0026042 A-1 authorizes discharges from the Combined Sewer Overflow (CSO) discharge points located at the City's WWTP. It authorized the activation of the new CSO 012 facility discharge point along the Lehigh River. Full operation was completed on April 21, 2016. The CSO 012 facility is a relocation of CSO 004 facility. Per the Permit, at that time Outfall 004 became de-activated. However, Outfall 004 is maintained as an emergency outfall. The CSO outfall discharge points are identified in the NPDES Permit as follows:

<u>Outfall Number</u>	<u>Description</u>	<u>Receiving Stream</u>
003	36" South Influent Overflow	Saucon Creek
012	Two (2) – 36" North Interceptor Overflows	Lehigh River
004 (Emergency Outfall)	48" North Influent Overflow	Saucon Creek

The CSO outfalls are inspected monthly and maintained as needed. All CSO outfalls were in operation during 2022. In 2022, there were zero (0) CSO discharge events from Outfall 003 and two (2) CSO discharge events from Outfall 012. The CSO 012 discharge events were caused by

heavy rainfall from storms and the influent pump limitations (pumps out-of-service). In 2022, there were zero (0) emergency discharge events from Outfall No. 004. The CSO 012 discharge events were monitored and characterized and shown on Table 2-2.

The City's amended Long Term Control Plan (LTCP) revision was submitted to USEPA and PADEP on August 31, 2009. Included was an August 2009 "Updated Implementation Report for the Nine Minimum Technology Based Combined Sewer Overflow Controls". On October 15, 2010, a PADEP letter stated their concurrence with the LTCP. On October 19, 2010, an USEPA letter stated that the City has met the conditions for its LTCP.

Per the LTCP, construction of the \$3.2 million CSO Outfall 004 Relocation Project commenced in 2014. The project relocated CSO Outfall 004 from the Saucon Creek to the new CSO Outfall 012 along the Lehigh River, upstream of the Northeast Trunk Line. This should eliminate reoccurrence of the NE Trunk Line CSO-related wet-weather overflows.

During wet-weather events, a CSO-related in-plant bypass at the WWTP is essential to prevent a biomass washout from the activated sludge system and assure efficient operation. During a CSO-related in-plant bypass, flow in excess of 20 mgd is diverted around the activated sludge system (aeration basin and intermediate clarifiers) and directly to the trickling filters and final clarifiers. All plant flow is chlorinated prior to discharge. During 2022, the WWTP had six (6) CSO-related in-plant bypasses due to wet-weather events. Attached is a Table 2-3 listing the CSO 012 discharge events and CSO-Related In-Plant Bypass events.

2.1.7 Sanitary Sewer Overflows (SSOs)

In 2022, there were seven (7) dry-weather Sanitary Sewer Overflow (SSO) events from the City's sewer collection system. The SSO events were caused by sewer blockages due to debris, grease and/or rags. The City's Sewer Maintenance personnel worked quickly to unclog the lines (rodded/flushed) and put them back in service. Information on the dry-weather SSO events is summarized in Table 2-4.

In 2022, there was one (1) wet-weather Sanitary Sewer Overflow (SSO) event from the City's sewer collection system. The SSO event was caused by a cracked sewer main that overflowed during high flow conditions. The City's Sewer Maintenance personnel worked quickly to repair and seal the line before any more wet weather. Information on the wet-weather SSO event is summarized in Table 2-4.

The PADEP Northeast Region-Bethlehem office was immediately notified at the time of each SSO event. The City submitted documentation letters, a SSO Report and a Non-Compliance Report eDMR or an OnBase Notification to PADEP on each SSO event. Sewer Maintenance personnel have taken remedial actions to prevent occurrences in the future. Actions include increased monitoring and rodding / flushing in the affected areas. In areas with frequent excessive grease buildup, users are contacted in addition to the increased preventive maintenance. The City is also developing an Oil and Grease Program with requirements on fats, oil and grease handling and disposal.

SUMMARY OF COMBINED SEWER OVERFLOW EVENTS - 2022

[illegible]

TABLE 2-3

CITY OF BETHLEHEM

2022 - COMBINED SEWER OVERFLOWS and CSO-RELATED IN-PLANT BYPASSES

DATE	CSO-RELATED IN-PLANT BYPASS TIME		CSO (OUTFALL 012) DISCHARGE TIME		CSO (OUTFALL 003) DISCHARGE TIME		REASON / COMMENTS
	START	STOP	START	STOP	START	STOP	
04-07 to 04-08	1:00 PM (4-7)	7:00 PM (4-8)	8:18 PM (4-7)	3:45 AM (4-8)	-----	-----	CSO from Outfall 012. CSO 012 discharge metered at 1.84 MG to Lehigh River. (April 7 = 1.21 MG, April 8 = 0.63 MG) Total Rain Bethlehem - 2.18". Peak plant influent flow 31.76 MGD (Limited - Influent Pumps Out-of-Service). No CSO from Outfall 003 to Saucon Creek; South Influent Gate not closed.
04-19	6:15 AM	12:00 PM	-----	-----	-----	-----	No CSO. MH #3B. High flow wet-weather event. Influent peak 26.5 mgd. Total Rain Bethlehem - 1.86" and flash flooding.
05-07	12:00 PM	11:45 PM	-----	-----	-----	-----	No CSO. MH #3B. High flow wet-weather event. Influent peak 31.6 mgd. Total Rain Bethlehem - 2.78" and flash flooding.
10-04	12:50 PM	3:30 AM (10-05)	-----	-----	-----	-----	No CSO. MH #3B. High flow wet-weather event. Influent peak 30.5 mgd. Total Rain Bethlehem - 3.34". (Hurricane Ian)
10-05	6:30 AM	3:00 PM	-----	-----	-----	-----	No CSO. MH #3B. High flow wet-weather event. Influent peak 21.0 mgd. Total Rain Bethlehem - 3.34". (Hurricane Ian)
10-13 to 10-14	3:40 PM (10-13)	8:27 PM (10-14)	7:30 PM (10-13)	1:00 AM (10-14)	-----	-----	CSO from Outfall 012. CSO 012 discharge metered at 0.64 MG to Lehigh River. (Oct. 13 = 0.60 MG, Oct. 14 = 0.04 MG) Total Rain Bethlehem - 2.81". Peak plant influent flow 40.93 MGD. No CSO from Outfall 003 to Saucon Creek; South Influent Gate not closed.

TABLE 2-4

CITY OF BETHLEHEM

SUMMARY OF SANITARY SEWER OVERFLOW EVENTS - 2022DRY WEATHER EVENTS

Event Date	Location of Overflow (Manholes)	Estimated Overflow Quantity (gallons)	Time Start - End (Discovered)	Precipitation (in)	Comments
March 14	Manhole No. 472 Hasting Swale and Shakespeare Road Bethlehem	50	10:00 pm - 12:00 am	0.0"	Sanitary Sewer Overflow - Blockage Solids and grease blocking sewer main. Line was jet flushed and opened.
May 13	Manhole at LVIP VII Pump Station 1235 Easton Road Bethlehem	50	2:00 pm - 2:45 pm	0.0"	Sanitary Sewer Overflow - Pump Station Failure Heavy solids (Polymer/sludge-like) in wet well. Both pumps failed. Temporary Godwin pump utilized.
June 29	Manhole at LVIP VII Pump Station 1235 Easton Road Bethlehem	100	9:00 am - 9:06 am	0.0"	Sanitary Sewer Overflow - Temporary Pump Failure Heavy rags and excess flow from user. Temporary pump clogged and failed.
August 10	Manhole at Wegmans Drive and Route 512 Hanover Township Northampton County	1	12:30 pm - 1:50 pm	0.0"	Sanitary Sewer Overflow - Blockage Solids and grease blocking sewer main. Line was jet flushed and opened.
September 30	Manhole No. 3090 Pierce Street and Third Street (at Greenway) Bethlehem	600	1:30 pm - 5:00 pm	0.0"	Sanitary Sewer Overflow - Blockage 2A modified stone, mud and rags blocking sewer main. Line was jet flushed and opened.
December 13	Manhole No. 1022 Center Street and Market Street Bethlehem	50	11:19 am - 11:46 am	0.0"	Sanitary Sewer Overflow - Blockage Rags and grease blocking sewer main. Line was jet flushed and opened.
December 29	Manhole No. 7980 Catasauqua Road and Cloverdale Road Bethlehem	50	11:08 am - 11:46 am	0.0"	Sanitary Sewer Overflow - Blockage Grease blocking sewer main. Line was jet flushed and opened.

TABLE 2-2

CITY OF BETHLEHEM

SUMMARY OF SANITARY SEWER OVERFLOW EVENTS - 2022WET WEATHER EVENTS

Event Date	Location of Overflow (Manholes)	Estimated Overflow Quantity (gallons)	Time Start - End (Discovered)	Precipitation (in)	Comments
September 1	Sewer Section No. 2901074583 Pierce Street and Third Street Bethlehem	Unknown	Unknown	Rain Events Unknown Amount	Sewer Overflow into Storm Sewer Sewer main cracked and overflowed under high flow conditions. Line was repaired with sealant and cement.

2.1.8 Implementation of Nine Minimum Controls

As part of its NPDES Permit CSO requirements, the City is continuing its implementation of the Nine Minimum Controls (NMC). In 2009, the City revised and updated its Nine Minimum Controls (NMC) Plan. The “Updated Implementation Report for the Nine Minimum Technology Based Combined Sewer Overflow Controls” was reviewed and approved by PADEP and USEPA. On October 15, 2010, a PADEP letter stated their concurrence with the LTCP. On October 19, 2010, an USEPA letter stated that the City has met the conditions for its LTCP. Documentation of sewer system operations and maintenance and Combined Sewer Overflow characterization has been covered in other areas of this Report.

Street Sweeping Program

The City’s Bureau of Street Maintenance has an ongoing program for sweeping streets and removing debris within the areas serviced by combined sewers. The data outlining the City’s street sweeping program is attached in Attachment 1.

Pollution Prevention

The following programs are in place in the City and assist in minimizing the amount of street litter that enters the collection system:

1. Curbside trash collection program for businesses and residences;
2. Curbside recycling program for aluminum and metal cans, glass and plastics, newspapers and cardboard;
3. Drop-off recycling center for the items listed above as well as for telephone books, scrap metal and other materials;
4. Drop-off recycling center for leaves, tree branches and yard waste;
5. Public trash disposal program in the City's downtown areas;
6. County hazardous waste collection services for households.

The Division of Recycling is responsible for the City’s Recycling Program. The Bureau of Street Maintenance and the Department of Public Works are involved with the control of street litter and trash disposal.

Control of Solids and Floatable Material

The WWTP personnel conduct regular inspection visits to the CSO discharge locations. Any solids or other material that may be resultant from a CSO event are immediately cleaned up.

In April 2016, construction of the new CSO 012 facility was completed. The new CSO 012 facility includes a Hydrojet bar screen to remove solids and floatable material prior to the CSO discharge. The solids are automatically returned to the WWTP.

Public Participation

The City has an ongoing public participation program regarding the CSO program. As part of this program, the City published a Public Notice on January 28, 2022 in the Morning Call newspaper. A copy of the Public Notice is attached in Attachment 2.

Water Quality Monitoring Program

The City has a water quality monitoring program for the Saucon Creek and the Lehigh River in the vicinity of the WWTP. The sampling points were selected to monitor the impact of the CSO discharges on the water quality of the Saucon Creek and Lehigh River. The water quality data is obtained on a quarterly basis for both dry-weather and wet-weather conditions. Data is also collected during and after all CSO events. This data has been summarized on Table 2-5. The sampling points are illustrated on Figure 2-1. In March 2015, a new sampling location was added upstream of the new CSO 012 facility along the Lehigh River.

2.1.9 Inflow and Infiltration Reduction Program

The City has an ongoing Inflow & Infiltration (I & I) Reduction Program to help reduce hydraulic wastewater loadings to the WWTP. Several locations throughout the collection system have been metered to determine potential I & I problems. The City's Sewer Maintenance personnel continued to install manhole inserts to prevent storm water inflow. Sewer Maintenance personnel have attended PADEP Inflow & Infiltration Abatement Training courses to learn the latest I & I monitoring and reduction technology. The Sewer Maintenance Bureau continues to investigate potential sources of I & I.

In 2022, the Sewer Maintenance Bureau continued Inflow & Infiltration abatement. Personnel installed 200 manhole inserts in West Bethlehem, reducing an estimated potential of 1,000,000 gallons. In 2019, the City and Bethlehem Township repaired 27 connecting points and lined 9 manholes along the Northeast Trunk Line. Additional inflow is being identified and the Bureau is working to disconnect.

Through 2022, the City's I & I Reduction Program has identified an estimated potential of 39,936,023 gallons of inflow peak flow and diverted an estimated potential of 38,539,981 gallons of inflow peak flow. This data has been summarized on Table 2-6.

Engineering and Sewer Maintenance personnel continue to meet monthly to discuss I & I progress. The City owns several flow meters and has installed meters at strategic locations in the system to monitor flows for I & I identification. These meters allow real-time monitoring during rainfall events and have provided valuable information. The effort is ongoing.

TABLE 2-5

CITY OF BETHLEHEM

WATER MONITORING DATA - 2022

Quarter	Sample Point	Sample Date	pH (SU)	Conductivity (µS/cm)	DO (mg/l)	Temperature (°C)	CBOD ₅ (mg/L)	NH ₃ -N (mg/L)	TSS (mg/L)	Fecal Colliform (colonies/100mL)	Hardness (mg/L)	N - as Nitrate-Nitrite (mg/L)	Total N (mg/L)	TKN (mg/L)	Total P (mg/L)	TDS (mg/L)	Weather	Location
1st Quarter 2022	1 (003A-SC)	10-Mar-22	6.3	554	11.0	6.9	2.0	<1	6	49	179	2.52	<3.19	<0.67	0.08	361	36° F Cloudy	Rt. 412 bridge
	4 (004B-SC)	10-Mar-22	6.7	599	11.8	5.7	2.5	<1	8	36	190	2.34	<2.84	<0.50	0.07	327		shimers bridge
	5 (001A-LR)	10-Mar-22	6.9	739	10.5	9.9	6.4	24.3	34	20	75	0.65	<27.15	<26.50	3.05	357		florence junction
	6 (001B-LR)	10-Mar-22	7.4	306	12.3	4.7	2.9	<1	2	40	71	1.48	<2.54	<1.06	0.14	217		freemansburg bridge
	7 (012A-LR)	10-Mar-22	7.6	183	12.7	4.5	2.3	<1	6	22	39	0.90	<1.40	<0.50	0.02	134		sand island boat launch
2nd Quarter 2022	1 (003A-SC)	07-Apr-22	6.5	219	10.1	11.4	11.4	<1	270	2700	71	0.67	<2.36	<1.69	0.19	133	CSO Rain	Rt. 412 bridge
	4 (004B-SC)	07-Apr-22	6.5	226	10.8	10.0	<10	<1	350	2900	76	0.61	<2.06	<1.45	0.23	129		shimers bridge
	5 (001A-LR)	07-Apr-22	6.6	251	11.0	9.7	6.4	<1	30	5800	57	1.36	2.67	1.31	0.17	125		florence junction
	6 (001B-LR)	07-Apr-22	6.8	230	11.0	9.7	4.3	<1	220	3700	66	0.81	<2.23	<1.42	0.22	137		freemansburg bridge
	7 (012A-LR)	07-Apr-22	7.0	200	11.2	9.5	5.3	<1	50	1300	48	1.20	<1.70	<0.50	0.07	62		sand island boat launch
2nd Quarter 2022	1 (003A-SC)	08-Apr-22	6.5	284	10.8	9.7	8.6	<1	43	600	82	0.98	<1.48	<0.50	0.11	170	Sunny 49° F	Rt. 412 bridge
	4 (004B-SC)	08-Apr-22	6.7	302	11.0	9.3	<7.9	<1	46	700	85	0.90	<1.40	<0.50	0.09	181		shimers bridge
	5 (001A-LR)	08-Apr-22	6.4	168	11.0	9.8	<4	<1	52	1,000	40	1.24	<1.74	<0.50	0.07	108		florence junction
	6 (001B-LR)	08-Apr-22	6.9	174	11.3	9.0	<3.2	<1	99	800	42	1.27	2.00	0.73	0.08	106		freemansburg bridge
	7 (012A-LR)	08-Apr-22	5.9	156	11.2	9.7	<3.8	<1	71	600	38	1.16	<1.72	<0.56	0.08	101		sand island boat launch
2nd Quarter 2022	1 (003A-SC)	09-Apr-22	6.4	412	9.9	12.7	2.8	<1	10	130	130	2.04	<2.54	<0.50	0.06	191		Rt. 412 bridge
	4 (004B-SC)	09-Apr-22	6.6	449	10.3	11.3	<3.26	<1	12	100	143	1.92	<2.42	<0.50	0.05	201		shimers bridge
	5 (001A-LR)	09-Apr-22	7.0	218	10.9	10.3	2.7	<1	44	80	52	1.63	<2.70	<1.07	0.13	71		florence junction
	6 (001B-LR)	09-Apr-22	7.0	196	11.0	10.1	<1.92	<1	22	120	51	1.78	<2.28	<0.50	0.05	76		freemansburg bridge
	7 (012A-LR)	09-Apr-22	7.1	155	11.1	9.9	<1.74	<1	18	170	39	1.51	<2.01	<0.50	0.03	89		sand island boat launch
2nd Quarter 2022	1 (003A-SC)	10-Apr-22	6.1	418	10.0	11.3	2.7	<1	46	100	146	2.20	<2.70	<0.50	0.05	187	43° F Cloudy	Rt. 412 bridge
	4 (004B-SC)	10-Apr-22	6.6	452	10.6	10.1	<2	<1	36	70	150	2.10	<2.60	<0.50	0.05	199		shimers bridge
	5 (001A-LR)	10-Apr-22	7.1	170	11.3	9.2	<2.1	<1	20	190	43	1.45	1.95	0.50	0.03	85		florence junction
	6 (001B-LR)	10-Apr-22	7.0	183	11.4	9.1	<1.9	<1	58	60	48	1.56	2.06	0.50	0.03	86		freemansburg bridge
	7 (012A-LR)	10-Apr-22	7.0	144	11.6	8.7	<2.1	<1	14	70	35	1.12	<1.62	<0.50	0.03	58		sand island boat launch
3rd Quarter 2022	1 (003A-SC)	01-Sep-22	6.9	490	9.1	16.5	<1.4	<1	3	100	222	2.50	<3.00	<0.50	0.15	336	Sunny 74° F	Rt. 412 bridge
	4 (004B-SC)	01-Sep-22	7.2	519	8.8	17.1	<1.31	<1	4	150	237	2.52	<3.02	<0.50	0.09	328		shimers bridge
	5 (001A-LR)	01-Sep-22	7.5	314	7.9	22.3	<1.26	<1	5	180	97	2.28	<3.18	<0.90	0.20	180		florence junction
	6 (001B-LR)	01-Sep-22	7.4	315	7.4	22.0	<1.46	<1	4	120	98	1.84	2.54	0.70	0.15	179		freemansburg bridge
	7 (012A-LR)	01-Sep-22	6.3	280	7.9	22.1	<1.49	<1	3	180	90	1.75	<2.25	<0.50	0.13	157		sand island boat launch
4th Quarter 2022	1 (003A-SC)	13-Oct-22	6.4	208	8.7	16.9	9.9	<1	100	6,000	81	1.23	2.93	1.70	0.29	170	CSO Start Rain 56° F	Rt. 412 bridge
	4 (004B-SC)	13-Oct-22	6.7	188	9.0	15.7	3.3	<1	210	5,800	79	0.83	2.74	1.91	0.31	147		shimers bridge
	5 (001A-LR)	13-Oct-22	6.9	265	9.1	15.0	2.4	<1	28	4,700	78	1.41	<2.07	<0.66	0.15	190		florence junction
	6 (001B-LR)	13-Oct-22	7.0	232	9.0	15.1	2.5	<1	84	5,300	75	1.12	2.64	1.52	0.29	179		freemansburg bridge
	7 (012A-LR)	13-Oct-22	7.2	225	9.1	14.8	1.7	<1	90	1,500	68	1.70	<2.35	<0.65	0.11	180		sand island boat launch

TABLE 2-5

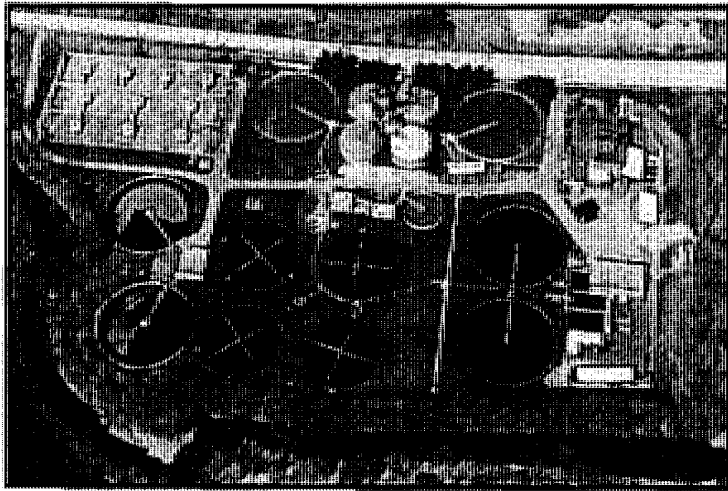
CITY OF BETHLEHEM

WATER MONITORING DATA - 2022

Quarter	Sample Point	Sample Date	pH (SU)	Conductivity (µS/cm)	DO (mg/l)	Temperature (°C)	CBOD ₅ (mg/L)	NH ₃ -N (mg/L)	TSS (mg/L)	Fecal Colliform (colonies/100mL)	Hardness (mg/L)	N - as Nitrate-Nitrite (mg/L)	Total N (mg/L)	TKN (mg/L)	Total P (mg/L)	TDS (mg/L)	Weather	Location
4th Quarter 2022	1 (003A-SC)	14-Oct-22	6.7	218	9.0	16.0	4.3	<1	30	>600	85	1.18	<2.56	<1.38	0.20	139	CSO End Cloudy 52° F	Rt. 412 bridge
	4 (004B-SC)	14-Oct-22	6.7	253	9.5	14.7	4.9	<1	36	>600	94	0.08	<1.05	<0.97	0.16	159		shimers bridge
	5 (001A-LR)	14-Oct-22	6.9	268	9.1	14.5	2.7	<1	12	940	80	1.81	<2.48	<0.67	0.22	147		florence junction
	6 (001B-LR)	14-Oct-22	7.0	269	7.0	14.5	3.8	<1	18	3,160	83	1.08	<2.02	<0.94	0.21	152		freemansburg bridge
	7 (012A-LR)	14-Oct-22	7.2	217	na	14.0	2.3	<1	6	660	65	0.96	1.46	0.50	<0.11	120		sand island boat launch
4th Quarter 2022	1 (003A-SC)	15-Oct-22	6.5	468	9.9	12.7	<2.36	<1	6	460	176	1.81	<2.58	<0.77	0.10	318	Clear 40° F	Rt. 412 bridge
	4 (004B-SC)	15-Oct-22	6.9	568	9.9	11.9	<2.46	<1	4	390	203	2.67	<3.41	<0.74	0.07	369		shimers bridge
	5 (001A-LR)	15-Oct-22	7.1	312	10.0	12.7	<2.6	<1	5	90	80	1.61	<2.26	<0.65	0.15	191		florence junction
	6 (001B-LR)	15-Oct-22	7.1	343	10.1	12.3	<2.59	<1	5	170	97	1.76	<2.70	<0.94	0.14	234		freemansburg bridge
	7 (012A-LR)	15-Oct-22	7.3	235	10.0	12.4	<2.26	<1	5	140	67	1.16	1.82	0.66	0.06	172		sand island boat launch

Sample Locations

- 1 (003A-SC) Above CSO Outfall 003 - Saucon Creek
- 4 (004B-SC) Below CSO Outfall 004 - Saucon Creek
- 5 (001A-LR) Above Outfall 001 and Saucon Creek - Lehigh River
- 6 (001B-LR) Below Outfall 001 and Saucon Creek - Lehigh River
- 7 (012A-LR) Above CSO Outfall 012 - Lehigh River



* SP7 [8]
012 CSO
OUTFALL
(2) 36" DIAMETER

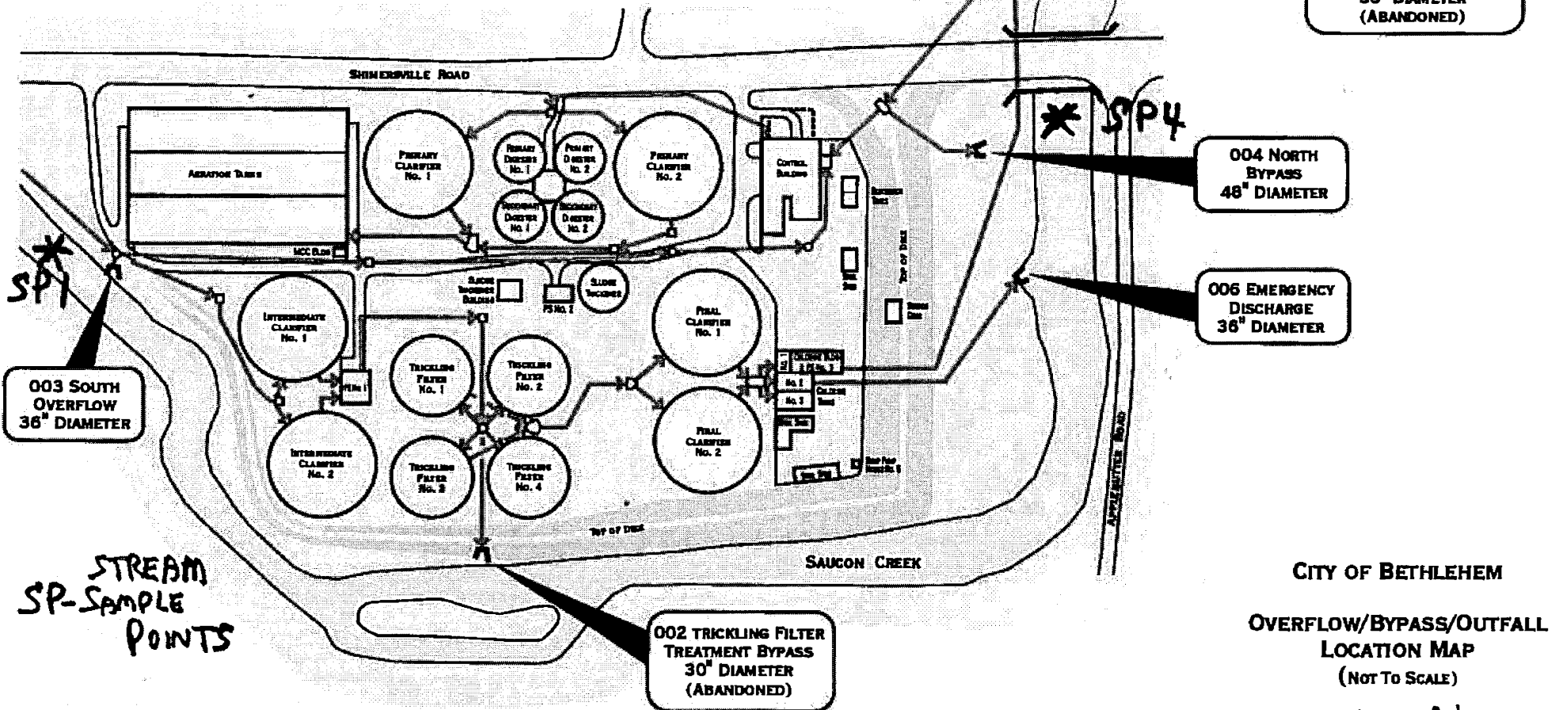
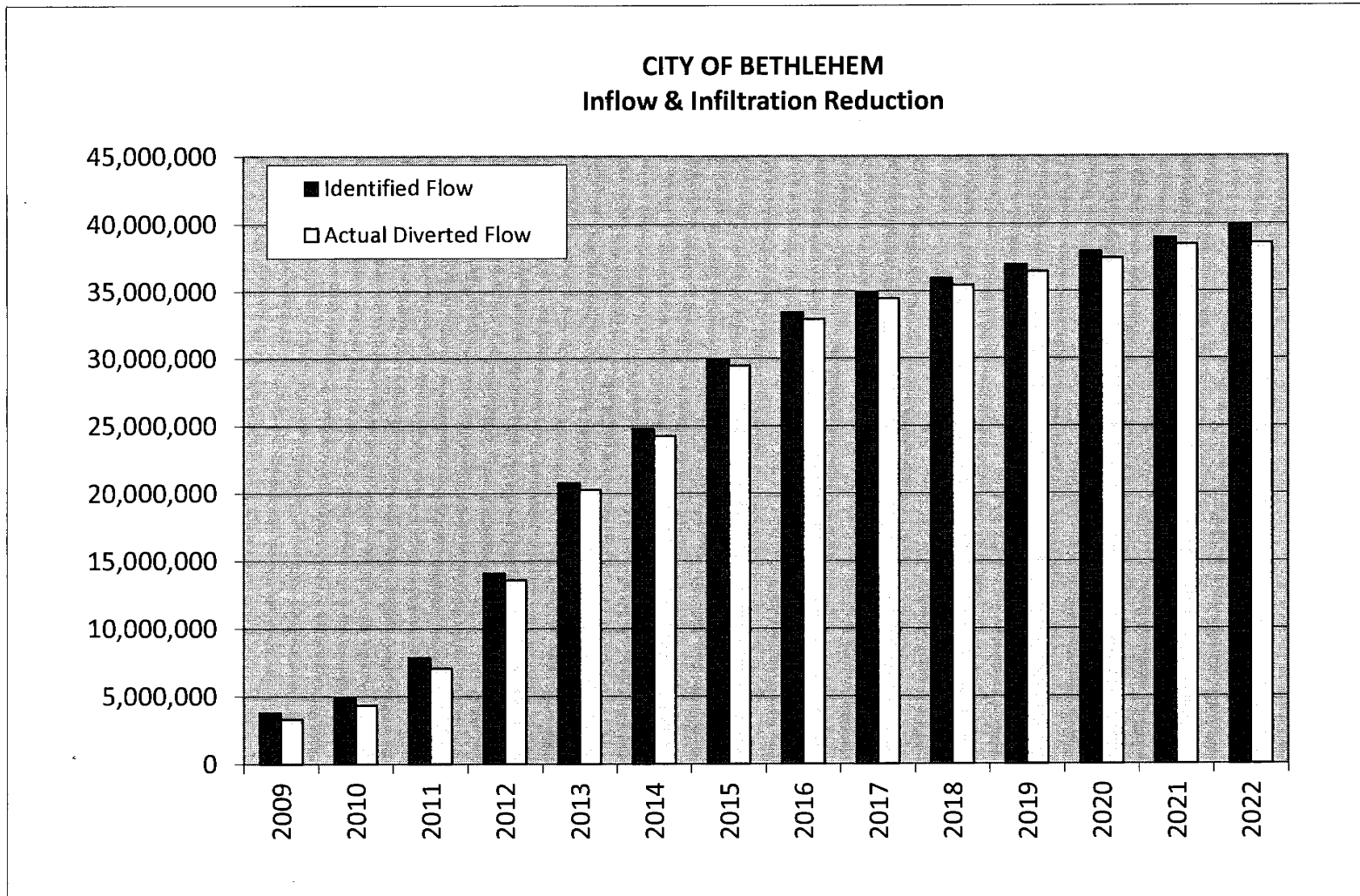


TABLE 2-6

CITY OF BETHLEHEM

INFLOW INFILTRATION REDUCTION



2.1.10 Planned Sewer Collection System Improvements (2023)

For 2023, the City has the following sewer capital projects in the budget for future improvements to the sewer collection system:

Sewer Laterals - \$5,000

This item is to construct and repair sewer laterals as required throughout the collection system. Additional funds, as needed.

Collection System - \$260,000

This item is to construct and repair sewer mains and lift stations as required throughout the collection system. This includes costs to address sanitary sewer overflows (SSOs) and combined sewer overflows (CSOs).

Inflow / Infiltration Mitigation - \$50,000

This item's overall purpose is to reduce excessive non-wastewater flow to the WWTP. This item is to investigate, seal, line or chemically treat leaking sewer mains and to locate and eliminate storm drain connections. Additional funds available, as needed.

Act 537 Collection System Improvements - \$1,750,000

This item is for collection system improvements. Plan for sewer main replacement and upgrades to eliminate overflows. Locations include Fifth and Pierce Streets and the Broadway sanitary sewer replacement.

Sewer Maintenance Equipment - \$200,000

This item is for sewer maintenance equipment. Includes new CCTV camera equipment, an excavator and a collection system trailer mounted debris vac.

Applebutter Road Lift Station - \$80,000

This item is for the design and construction to upgrade pump station performance during wet-weather events and install a flow meter.

Sewer Department Vehicles - \$260,000

This item is for sewer department vehicles. Includes a new Mack single axle dump truck for 2022. Also included are lease payments for two (2) Sewer Maintenance dump trucks and a WWTP dump truck.

2.1.11 Sewer System Extensions

There were zero (0) major City sewer main extensions completed in 2022. There are zero (0) major sewer main extensions planned for 2023.

The City of Bethlehem issued twenty-five (25) new Sanitary Sewer Connection Permits in 2022. The new connections will produce an estimated additional flow of 26,250 gallons per day and will serve an estimated additional population of 87. Most of these connections were made to existing sewers and did not include any major extensions.

A list of the new City sanitary sewer extensions and connections has been attached in Appendix A. Information on sewer system extensions in the contributing municipalities can be found in their reports attached in Appendix B.

2.1.12 Municipal Industrial Pretreatment Program

The City continued to implement its USEPA-required Municipal Industrial Pretreatment Program (MIPP), in accordance with the conditions listed in its NPDES Permit. In 2022, a total of thirty-eight (38) facilities in the WWTP service area were identified as Significant Industrial Users (SIUs) and all had Industrial Waste Discharge Permits. Thirteen (13) of the SIUs were classified as Categorical Industrial Users. Twenty-five (25) of the SIUs were classified as Significant, Non-Categorical Industrial Users. During 2022, there were two (2) additions (Bowery Farming, Tyber Medical LLC) and zero (0) deletions to the number of SIUs. A total of 478 industrial user sampling events were conducted during 2022. In addition, all of the 38 SIUs were inspected. A total of seventeen (17) Notices of Noncompliance, twelve (12) Notices of Violation with fines, one (1) Compliance Schedule and one (1) Cease and Desist Order were issued in 2022. A total of \$15,000 of fines was collected in 2022.

In 2022, there was one (1) instance of WWTP pass-through or interference caused by an Industrial User discharge. On March 13, there was a sanitary sewer overflow (SSO) at the LVIP VII lift station. The overflow was caused by a viscous material that damaged the pumps. The City determined that Pando International LLC was the source of the viscous material. The City issued a Cease and Desist Order to stop the discharge.

In 2022, four (4) SIUs were in Significant Noncompliance (SNC). MacIntosh Linen & Uniform was in TRC violation for exceeding their oil & grease limits. Pando International LLC was in violation for their discharge of the viscous material causing interference. Piramal Critical Care, Inc. was in TRC violation for exceeding their chloroform, diethylamine, and methyl chloride limits. Strong Brews LLC was in violation for failure to submit required reports within 45 days.

A copy of the City's Industrial Pretreatment Program Annual Report to the USEPA for 2022 has been included in Appendix C.

2.2 WASTEWATER TREATMENT PLANT

2.2.1 General

The City's WWTP operates in accordance with PADEP NPDES Permit No. PA0026042 Amendment No. 1 (A-1). The NPDES Permit contains effluent limitations for carbonaceous biochemical oxygen demand (CBOD5), pH, total suspended solids (TSS), ammonia-nitrogen (NH3-N), fecal coliform, and total residual chlorine (TRC). The effluent limitations were determined using an effluent discharge rate of 20.0 million gallons per day (mgd). The NPDES Permit A-1 was issued by PADEP and became effective January 1, 2013 and expired on November 30, 2013. It has been administratively extended by PADEP. A Re-Draft NPDES Permit was issued by PADEP on November 2, 2017. The City submitted written comments to PADEP on February 8, 2018. On March 5, 2021, PADEP required updates to the City of Bethlehem NPDES Permit Renewal Application. The City submitted its updated information on June 23, 2021. An updated Re-Draft NPDES Permit was issued by PADEP on December 16, 2022. The City submitted written comments to PADEP on February 27, 2023.

The WWTP consists of mechanical bar screens, grit collectors, raw sewage pumping, primary clarifiers, aeration basins, intermediate clarifiers with return activated sludge (RAS) pumping, intermediate lift pumps, trickling filters, final clarifiers, and a chlorination system. Treated effluent from the WWTP is discharged to the Lehigh River. In addition, there is primary sludge and thickened waste activated sludge (TWAS) thickening pumping to the anaerobic digesters for sludge stabilization and a centrifuge for dewatering. In 2022, biosolids disposal was at various beneficial use sites (agricultural land application).

During 2022, the WWTP discharged approximately 3,982 million gallons (Annual Average Daily Effluent Flow of 10.9 MGD) of wastewater. During 2022, the region received 51 inches of rain, which was 4 inches above the normal annual average rainfall amount (47 inches).

2.2.2 Capital Projects (2022)

In 2022, a total of \$4,285,219 was expended for various Sewer Capital projects and purchases. The following is a summary of the major Sewer Capital projects and purchases during 2022:

- Collection System New/Renewal. \$297,274.
- WWTP West Intermediate Clarifier. \$363,937.
- WWTP RAS Pump. \$37,029.
- Inflow-Infiltration Mitigation. \$1,793.
- Act 537 Collection System. \$612,382.
- WWTP Chlorination System. \$15,624.
- WWTP Substation Replacement. \$475,057.
- Sewer Maintenance Equipment. \$123,091.
- WWTP Fixed Asset Repairs. \$358,488.
- WWTP GBT Building Upgrades. \$17,185.
- WWTP Clarifier Catwalk Replacement. \$356,284.

- WWTP Chemically Enhanced Primary Treatment. \$158,201.
- Sewer Trench Restoration. \$50,000.
- Applebutter Road Lift Station. \$16,920.
- WWTP SCADA System Upgrades. \$2,800.
- WWTP Equipment. \$5,605.
- WWTP Lab Equipment. \$17,660.
- WWTP West Influent Pump Room. \$653,419.
- WWTP Main Control Building Reno. \$81,400.
- Sewer Maintenance Vehicles. \$327,698.
- WWTP Facilities Improvement. \$64,194.
- WWTP Raw Sewage Pumps. \$71,770.
- WWTP East Intermediate Clarifier. \$143,603.
- Aeration Tank Upgrades. \$33,635.

2.2.3 Biosolids Disposal

With the completion of the WWTP Digester and the Dewatering projects and upgrades, the quality of the digested sludge has improved to Class B biosolids. In 2017, the City submitted a Notice-of-Intent with PADEP for beneficial utilization of sewage biosolids. The City received PADEP General Permit PAG-08 2224 on August 7, 2017. Beneficial utilization (land application) of biosolids commenced on January 1, 2018 through a contract with Synagro LLC.

In 2022, biosolids disposal was at various beneficial use sites (land application) in Pennsylvania by Synagro. The City and Synagro complete manifest forms that verify the quantity and location of biosolids at each site. During 2022, the City generated and disposed of 11,368 wet tons of biosolids (2,159 dry metric tons). The biosolids averaged 20.93% total solids. Synagro transported 10,725 wet tons of biosolids (2,075 dry metric tons) to various beneficial use sites (land application) in Pennsylvania. Table 2-7 provides a summary of the amount of biosolids removed from the WWTP by month.

2.2.4 Act 537 Plan

PADEP approved the City's Act 537 Plan on August 1, 2012. Implementation of the recommended WWTP and collection system improvement projects has continued. Attached is the Act 537 Construction Projects table listing completed and currently planned projects. To date, the cost of these projects exceeds \$49,000,000.

Major construction projects at the WWTP completed to date include:

- Digester and Waste Activated Sludge Thickening
- Dewatering Facility and Effluent Pump Station
- CSO Relocation Project
- Preliminary Treatment (Bar Screens/Detritors) Upgrade
- West Intermediate Clarifier Upgrade

TABLE 2-7

CITY OF BETHLEHEM

SUMMARY OF BIOSOLIDS DISPOSAL RECORDS - 2022Quantity Disposed

Month	<u>Landfill</u>				<u>Beneficial Use Land Application</u>				Screenings Landfill (Wet Tons)
	(Wet Tons)	% Dry Solids	(Dry Tons)	(Dry Metric Tons)	(Wet Tons)	% Dry Solids	(Dry Tons)	(Dry Metric Tons)	
January					675.75	20.36	137.58	124.82	16.20
February					771.94	19.63	151.53	137.47	12.77
March					1,163.69	19.32	224.82	203.96	22.56
April					1,022.11	21.88	223.64	202.88	14.84
May					1,037.62	21.42	222.26	201.63	14.29
June					917.29	21.64	198.50	180.08	12.10
July					916.28	21.08	193.15	175.23	11.07
August					1,097.20	21.17	232.28	210.72	19.19
September					1,018.52	21.47	218.68	198.38	14.42
October					824.40	21.69	178.81	162.22	27.07
November					900.92	20.98	189.01	171.47	13.65
December					1,021.91	20.49	209.39	189.96	20.57
Quantity Disposed	0.00	#DIV/0!	0.00	0.00	11,367.63	20.93%	2,379.66	2,158.82	198.73 16.56

Total Wet Tons - 11,367.632,379.66 Total Dry Tons2,158.82 Total Dry Metric Tons

(1 Ton = 0.9072 Metric Tons)

Waste Connections - Bethlehem

Major projects currently under construction at the WWTP include:

- West Influent Pumps Replacement
- East Intermediate Clarifier Upgrade
- Chemically Enhanced Primary Treatment (CEPT)

Collection system projects completed to date include sewer line replacements at Founders Way and Pierce Street to address SSO susceptible areas. The sewer line replacement at Broadway is scheduled for 2023.

In 2022, the City and its engineering consultant, AECOM, submitted to PADEP a Water Quality Management (WQM) Part II Permit Application for the Chemically Enhanced Primary Treatment (CEPT) Project. PADEP issued the Part II Permit to the City on April 28, 2022. By design, this system can increase the plant's organic capacity up to 50,000 lbs/day of BOD5. In 2023, the City and AECOM plan to submit to PADEP an Act 537 Plan Update and WQM Part II Permit Application requesting a revision to the influent organic loading capacity of the WWTP. The City has been in discussion with PADEP's Planning Section and Permit Section on this matter.

3.0 WASTEWATER TREATMENT PLANT LOADINGS

3.1 REVIEW OF WWTP MONITORING DATA

The City's WWTP operates in accordance with PADEP NPDES Permit No. PA0026042 Amendment No. 1 (A-1). The NPDES Permit A-1 was issued by PADEP and became effective January 1, 2013 and expired on November 30, 2013. It has been administratively extended by PADEP. The effluent limitations have remained the same.

During 2022, the City's WWTP had ten (10) monthly average NPDES Permit effluent exceedances for ammonia-nitrogen (Outfall 001). There were one (1) monthly average, one (1) weekly average and three (3) instantaneous maximum NPDES Permit effluent exceedances for total suspended solids. The West Intermediate Clarifier rebuild and upgrade project produced significant plant operation and nitrification issues. In addition, there were several extreme wet weather events. All NPDES Permit effluent exceedances were reported to PADEP and noted on the monthly Discharge Monitoring Reports.

On December 6, 2021, PADEP issued a Notice of Violation to the City indicating effluent violations to the limitations set forth in NPDES Permit No. PA0026042 from September 2018 through October 2021. Most of the violations were from ammonia-nitrogen exceedances. The City responded to PADEP on December 20, 2021. The vast majority of the violations (17 out of 20) were caused by unforeseen mechanical failures of the Intermediate Clarifiers. These caused significant operational and nitrification issues. On November 9, 2022, PADEP conducted a Compliance Inspection at the WWTP. The City and PADEP personnel discussed the status of the plant operation and reviewed past/future projects to address and eliminate the exceedances.

Influent and effluent (Outfall 001) monitoring data at the WWTP for 2022 are shown in Tables 3-1 and 3-2 and can be summarized as follows:

1. The annual average influent flow for the WWTP was 10.9 mgd. The maximum consecutive 3-month average influent flow was 12.0 mgd, which was below the WWTP's hydraulic design capacity of 20.0 mgd.
2. The annual average influent organic loading was 34,463 lbs/day of BOD5. The maximum monthly influent organic loading was 37,952 lbs/day of BOD5, which was below the WWTP's organic design capacity of 39,365 lbs/day of BOD5.
3. The annual average effluent CBOD5 concentration was 6.9 mg/l. The WWTP met its monthly average NPDES Permit limits for CBOD5 for all months.
4. The annual average effluent TSS concentration was 12.8 mg/l. The WWTP met its monthly average NPDES Permit limits for TSS for all months but exceeded its monthly average for TSS for March.

TABLE 3-1

CITY OF BETHLEHEM

SUMMARY OF WWTP PERFORMANCE DATA - 2022

Month	Effluent Flow (mgd)	Influent Flow (mgd)	BOD5				CBOD5				Total Suspended Solids						Ammonia - Nitrogen								
			Wastewater		Septage	Total	Wastewater		Effluent (mg/l)	Effluent (lbs/day)	Percent Removal (%)	Wastewater		Septage	Total	Effluent (mg/l)	Effluent (lbs/day)	Percent Removal (%)	Wastewater		Septage	Total	Effluent (mg/l)	Effluent (lbs/day)	Percent Removal (%)
Influent (mg/l)	Influent (lbs/day)	Influent (lbs/day)	Influent (lbs/day)	Influent (mg/l)	Influent (lbs/day)	Influent (mg/l)	Influent (lbs/day)	Influent (mg/l)				Influent (lbs/day)	Influent (mg/l)	Influent (lbs/day)	Influent (mg/l)				Influent (lbs/day)	Influent (mg/l)	Influent (lbs/day)	Influent (mg/l)			
January	10.1	10.5	433	37,721	18	37,739	400	34,880	11.7	992	97%	374	32,671	39	32,710	18.6	1,573	95%	30.9	2,694	1	2,695	34.4	2,982	-11%
February	11.4	11.4	406	37,928	24	37,952	367	34,117	8.5	842	98%	430	39,566	38	39,604	15.0	1,524	96%	29.3	2,717	1	2,718	32.7	3,085	-14%
March	10.7	18.7	419	37,163	41	37,204	367	32,610	12.4	1,106	97%	403	35,572	90	35,662	31.6	2,845	92%	30.3	2,688	2	2,690	33.6	2,986	-11%
April	13.4	13.4	325	35,451	37	35,488	283	30,832	9.7	1,235	96%	295	32,593	150	32,743	20.7	2,621	92%	24.9	2,694	13	2,707	28.1	3,082	-14%
May	12.2	12.0	330	32,482	47	32,529	300	29,561	5.5	621	98%	254	25,014	136	25,150	8.0	859	97%	26.0	2,563	12	2,575	22.2	2,273	12%
June	10.8	10.5	344	30,233	99	30,332	283	24,931	3.2	290	99%	287	25,189	183	25,372	5.5	494	98%	28.0	2,450	19	2,469	9.1	817	67%
July	10.0	9.7	390	31,625	31	31,656	333	27,018	3.3	278	99%	290	23,465	65	23,530	4.7	390	98%	29.8	2,420	1	2,421	13.9	1,162	52%
August	9.9	9.7	434	34,810	132	34,942	357	28,713	4.5	369	99%	303	24,308	1,028	25,336	6.6	547	98%	30.0	2,407	16	2,423	12.3	1,009	58%
September	10.3	10.2	375	31,835	50	31,885	327	27,742	4.8	407	99%	268	23,035	113	23,148	8.9	762	97%	30.0	2,535	6	2,541	10.6	506	64%
October	11.2	11.3	373	34,311	29	34,340	314	28,715	9.3	946	97%	244	22,259	56	22,315	15.9	1,612	93%	28.3	2,602	13	2,615	13.8	1,280	51%
November	10.1	10.1	417	35,178	51	35,229	344	29,006	4.9	408	99%	309	25,859	143	26,002	6.6	562	98%	29.7	2,509	5	2,514	9.1	772	69%
December	10.9	10.9	376	34,224	38	34,262	301	27,307	4.9	446	98%	286	25,652	127	25,779	11.2	1,019	96%	28.8	2,602	3	2,605	6.3	580	78%
Annual Average	10.9	10.9	385	34,413	50	34,463	331	29,619	6.9	662	98%	312	27,932	181	28,113	12.8	1,234	96%	28.8	2,573	8	2,581	18.8	1,745	34%
Max 3-Month Average		12.0																					Averages		
																							13.7	1,241	61%
																							24.0	2,248	16%
Max Month	13.4		433			37,952		34,880																	Summer
																									Winter
Permit or Design Limits	20.0	20.0	236			39,365				25.0	4,170				31,025	30.0	5,004					5,004			Summer
																							15.0	2,502	Winter

TABLE 3-2

CITY OF BETHLEHEM

**SUMMARY OF MISCELLANEOUS WWTP MONTHLY
EFFLUENT MONITORING RESULTS - 2022**

Date	pH (STD units) Instantaneous		Fecal Coliform (col/100 ml)	TRC (mg/l)	
	Minimum	Maximum		Monthly Average	Instantaneous Maximum
January	7.2	7.6	2	0.36	1.14
February	7.2	7.8	2	0.37	0.87
March	7.1	7.6	24	0.44	0.99
April	6.8	7.6	2	0.47	0.95
May	6.9	7.6	3	0.38	0.83
June	7.0	7.4	2	0.43	0.86
July	7.2	7.5	3	0.39	0.81
August	7.1	7.5	3	0.35	0.76
September	6.9	7.4	11	0.38	0.82
October	6.9	7.5	4	0.44	0.80
November	6.9	7.5	1	0.38	0.74
December	6.5	7.3	1	0.42	0.69
Inst. Minimum	6.5	7.8	Overall Ave	0.40	1.14
Inst. Maximum			5		
Annual	6.0	9.0	4	0.50	1.20
Average			5		
Permit	6.0	9.0	200 Summer	0.50	1.20
Limits			2,000 Winter		

5. The annual average effluent Ammonia-Nitrogen concentration was 13.7 mg/l (summer) and 24.0 mg/l (winter). The WWTP exceeded its monthly average NPDES Permit limits for NH₃-N for January thru October. The WWTP met its monthly average for November thru December.
6. The effluent pH was within the WWTP's NPDES Permit limits of 6.0 to 9.0 standard units for all months. Minimum of 6.5 and maximum of 7.8.
7. The annual average effluent Fecal Coliform concentration was 5 colonies/100 ml. The WWTP met its monthly average NPDES Permit limits for Fecal Coliform for all months.
8. The annual average effluent Total Residual Chlorine (TRC) concentration was 0.40 mg/l. The WWTP met its monthly average NPDES Permit limits for TRC for all months.

3.2 SEPTAGE TREATMENT

In 2022, the WWTP received 689,600 gallons of septage for treatment. A signed manifest and a pH analysis were completed for each septic tank waste load delivered to the WWTP. Daily composite samples of the septic tank waste loads were analyzed for biochemical oxygen demand (BOD₅). Once a week, a daily composite sample was analyzed for chemical oxygen demand (COD), total suspended solids (TSS) and ammonia-nitrogen (NH₃-N). Once a month, a daily composite sample was analyzed for metals, cyanide and oil & grease.

Based on this data, the septage discharged to the WWTP had the following average daily waste loadings:

- Biochemical Oxygen Demand - 50 lbs/day;
- Chemical Oxygen Demand - 162 lbs/day;
- Total Suspended Solids - 181 lbs/day;
- Ammonia-Nitrogen - 8 lbs/day.

The septage waste loadings for 2022 are summarized on Table 3-3. Since the septage was discharged to a manhole downstream of the WWTP influent sampling units, the waste loadings associated with septage were added to the wastewater influent loadings to reflect the total wastewater influent loading to the WWTP.

TABLE 3-3

CITY OF BETHLEHEM

SUMMARY OF SEPTAGE LOADINGS AT WWTP - 2022

Month	Total Loads	Total Gallons	Biochemical Oxygen Demand (lbs/day)	Chemical Oxygen Demand (lbs/day)	Total Suspended Solids (lbs/day)	Ammonia Nitrogen (lbs/day)
January	9	12,000	18	16	39	1
COB	1	200				
February	18	23,500	24	62	38	1
COB	0	0				
March	29	42,200	41	109	90	2
COB	1	3,300				
April	39	50,200	37	163	150	13
COB	0	0				
May	45	54,600	47	202	136	12
COB	1	3,000				
June	69	101,800	99	257	183	19
COB	0					
July	45	59,700	31	58	65	1
COB	2	520				
August	48	61,230	132	504	1028	16
Musikfest	8	36,000				
COB	2	3,300				
September	45	55,500	50	165	113	6
Celtic Classic	0					
COB	0					
October	56	69,550	29	87	56	13
RV	2	800				
November	43	48,500	51	141	143	5
COB	1	3,000				
December	44	57,100	38	181	127	3
COB	1	3,600				
Total	509	689,600				
Average Loading			50	162	181	8

COB - City of Bethlehem

3.3 ANALYSIS OF HYDRAULIC AND ORGANIC LOADINGS

A summary of past and projected hydraulic and organic loadings on the WWTP is shown in Table 3-4 and presented graphically in Figure 3-1 and Figure 3-2. The basis for the hydraulic and organic loading projections is summarized in Table 3-5. The projected loadings were based on an evaluation of past history and predicted growth for the City and information provided by each of the contributing municipalities. Projections were developed using the averages of 2018, 2019, 2020, 2021 and 2022 flows, peaking factors and strengths.

The average monthly hydraulic loadings for the past 5 years are listed in Table 3-6. The average monthly organic loadings for the past 5 years are listed in Table 3-7. The septage loadings have been included in the total organic loadings.

A summary of the municipal population projections is shown on Table 3-8. A summary of the municipal flow projections is shown on Table 3-9. A summary of City-approved Planning Modules in 2022 is shown on Table 3-10.

The WWTP's hydraulic and organic loading capacities are identified in a Water Quality Management (WQM) permit issued by PADEP. The Chapter 94 projections do not predict any hydraulic or organic overload conditions at the WWTP or in its collection system during the next five years (2023-2027). Information generated as part of the City's Act 537 Plan may be used for future projections. Hydraulic and organic loading information for the City of Bethlehem is contained in Appendix A. Information received from each of the contributing municipalities is contained in Appendix B.

Per PADEP regulations, a hydraulic overload is based on the maximum three consecutive month average flow exceeding the WWTP's hydraulic design capacity. The WWTP's current hydraulic capacity and NPDES Permit effluent standards are based on a rate of 20.0 mgd. Previous years' flow data indicates that the combined sewage generated during rainfall events has an impact on total flows at the WWTP. During 2022, the region received 51 inches of rain, which was 4 inches above the normal annual average rainfall amount (47 inches). In 2022, there were two (2) wet-weather CSO events at Outfall 012. The CSO events were caused by heavy rainfall from storms and several influent pumps being out-of-service for repairs.

As compared to 2021, the monthly average influent flow for 2022 slightly decreased from 11.1 mgd to 10.9 mgd and the maximum three consecutive month average influent flow slightly increased from 11.8 to 12.0 mgd. The 2022 plant flow remained at typical, expected level based on near normal rainfall amounts. The August 2018-July 2019 period had 78 inches of rain, the third wettest 12-months on record. Since August 2019, regional rainfall and subsequently plant flows have decreased back to more typical levels.

Per PADEP regulations, an organic overload is based on the maximum month average loading exceeding the WWTP's organic design capacity. The WWTP's current organic capacity is based on a loading of 39,365 lbs/day of BOD5. As compared to 2021, the monthly average influent loading for 2022 decreased from 36,674 to 34,463 lbs/day and the maximum month average influent loading decreased from 39,096 to 37,952 lbs/day. The projected maximum month

TABLE 3-4

CITY OF BETHLEHEM

HYDRAULIC AND ORGANIC LOADINGS - PAST AND PROJECTED

Year	<u>Influent Hydraulic Loading (Flow)</u>			<u>Influent Organic Loading (BOD5)</u>			
	Annual Avg. (mgd)	Max. 3-Month (mgd)	Peaking Factor	Annual Avg. (lbs/day)	Max. Month (lbs/day)	Peaking Factor	Strength (lbs/gal)
2018	12.4	14.6	1.18	32,413	39,056	1.20	0.0026
2019	13.0	15.8	1.22	33,030	37,580	1.14	0.0025
2020	10.7	10.8	1.01	32,176	37,109	1.15	0.0030
2021	11.1	11.8	1.06	36,674	39,096	1.07	0.0033
2022	10.9	12.0	1.10	34,463	37,952	1.10	0.0032
5-Year Average	11.6	13.0	1.11	33,751	38,159	1.13	0.0029
<hr/>							
<u>Projections</u>							
2023	11.8	13.1	1.11	33,880	38,374	1.13	0.0029
2024	11.9	13.3	1.11	34,012	38,524	1.13	0.0029
2025	12.0	13.4	1.11	34,240	38,782	1.13	0.0029
2026	12.2	13.6	1.11	34,504	39,081	1.13	0.0029
2027	12.3	13.7	1.11	34,735	39,343	1.13	0.0029

Projections - Based on past 5-Year Averages
and Contributing Municipalities' Reports projected flows.

Plant Capacity - Hydraulic Design Capacity - 20.0 mgd Flow
Organic Design Capacity - 39,365 lbs/day BOD5

FIGURE 3-1
CITY OF BETHLEHEM
PAST AND PROJECTED HYDRAULIC LOADINGS
2018-2022 & 2023-2027

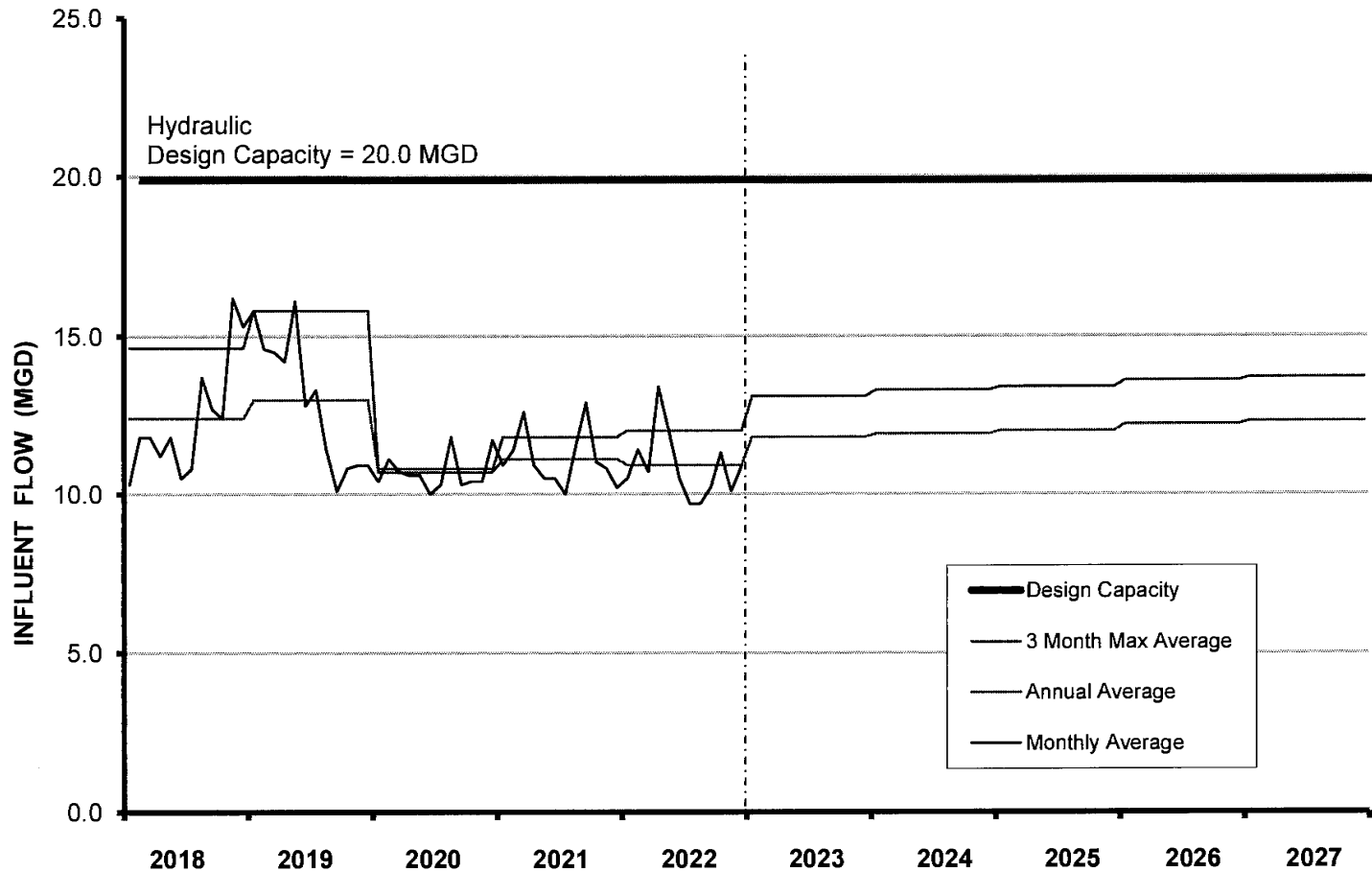


FIGURE 3-2
CITY OF BETHLEHEM
PAST AND PROJECTED ORGANIC LOADINGS
2018-2022 & 2023-2027

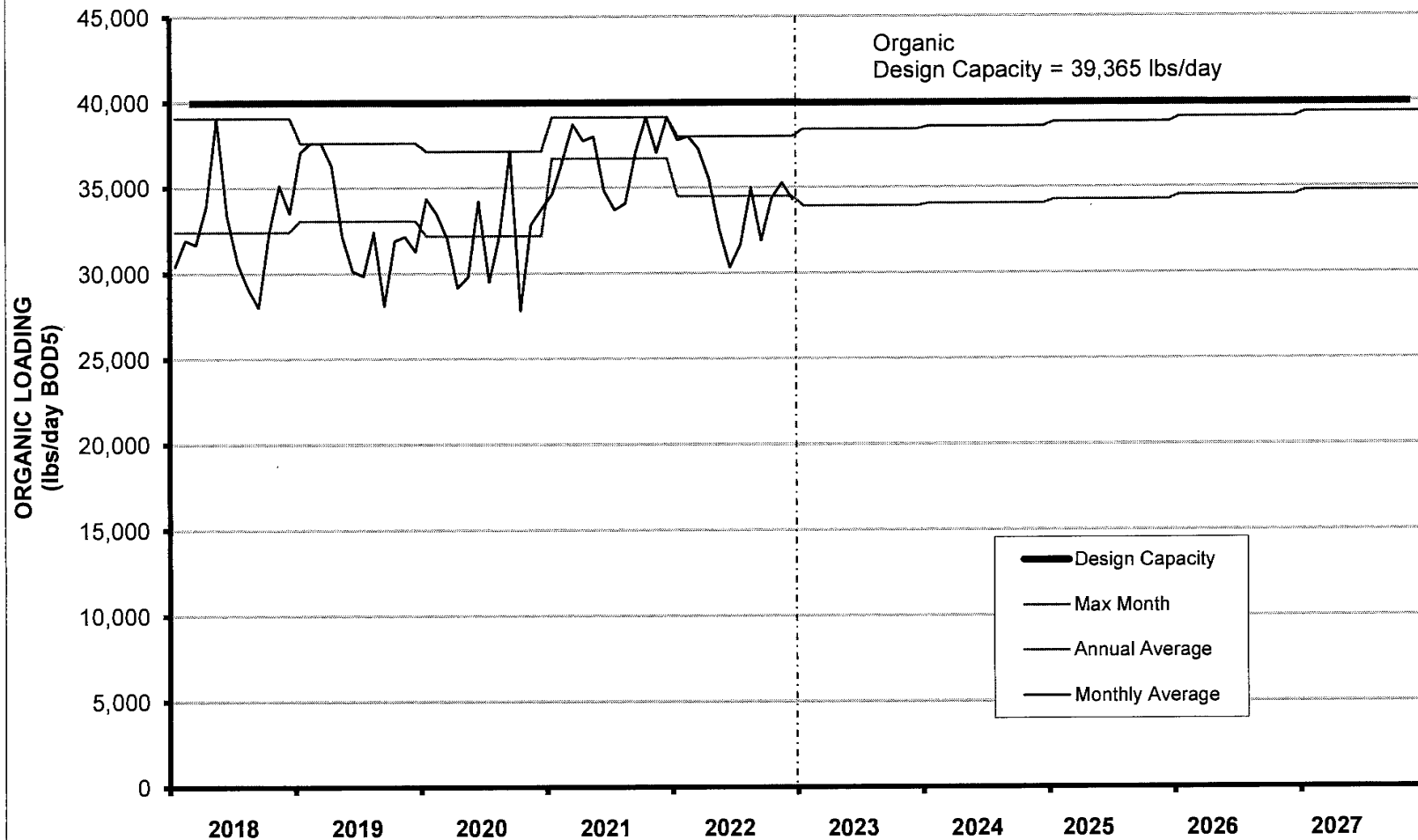


TABLE 3-5

CITY OF BETHLEHEM

BASIS FOR HYDRAULIC AND ORGANIC LOADING PROJECTIONS

Hydraulic Loading Projections - Flow

(See Table 3-4)

- Projected Flow – Annual Average (mgd)
Projected Flow Annual Average = [Average of Past 5-Year Flow Annual Averages +
Projected Flow from Contributing Municipalities]
Average of Past 5-Year Flow Annual Averages = 11.6 mgd
2018-2022 = 12.4, 13.0, 10.7, 11.1, 10.9
- Projected Flow – Maximum 3-Month (mgd)
Projected Flow Maximum 3-Month = [Projected Flow Annual Average x Projected
Flow Peaking Factor]
- Projected Flow – Peaking Factor [Max 3-Month / Annual Average]
Projected Flow Peaking Factor = Average of Past 5-Year Flow Peaking Factors
Average of Past 5-Year Flow Peaking Factors = 1.11
2018-2022 = 1.18, 1.22, 1.01, 1.06, 1.10

Organic Loading Projections - BOD5

(See Table 3-4)

- Projected BOD5 Load – Annual Average (lbs/day)
Projected BOD5 Annual Average = [Average of Past 5-Year BOD5 Annual Averages
+ Projected EDU BOD5 Load from Contributing Municipalities]
Average of Past 5-Year BOD5 Load Averages = 33,751 lbs/day
2018-2022 = 32,413, 33,030, 32,176, 36,674, 34,463
- Projected BOD5 Load – Maximum Month (lbs/day)
Projected BOD5 Maximum Month = [Projected BOD5 Annual Average x Projected
BOD5 Peaking Factor]
- Projected BOD5 Load – Peaking Factor [Max 3-Month / Annual Average]
BOD5 Peaking Factor = Average of BOD5 Peaking Factors
Average of BOD5 Peaking Factors = 1.13
2018-2022 = 1.20, 1.14, 1.15, 1.07, 1.10
- Projected BOD5 Load – Strength (lbs/gal)
BOD5 Strength = Average of BOD5 Strengths
[BOD5 Annual Average / (Flow Annual Average x 1,000,000)]
Average of BOD5 Strengths = 0.0029 lbs/gal
2018-2022 = 0.0026, 0.0025, 0.0030, 0.0033, 0.0032

TABLE 3-6**CITY OF BETHLEHEM****AVERAGE MONTHLY HYDRAULIC LOADINGS**
DURING THE PAST 5 YEARS

Month	<u>Average Monthly Influent Flow (mgd)</u>				
	2018	2019	2020	2021	2022
January	10.3	15.8	10.4	10.9	10.5
February	11.8	14.6	11.1	11.4	11.4
March	11.8	14.5	10.7	12.6	10.7
April	11.2	14.2	10.6	10.9	13.4
May	11.8	16.1	10.6	10.5	12.0
June	10.5	12.8	10.0	10.5	10.5
July	10.8	13.3	10.3	10.0	9.7
August	13.7	11.4	11.8	11.5	9.7
September	12.7	10.1	10.3	12.9	10.2
October	12.4	10.8	10.4	11.0	11.3
November	16.2	10.9	10.4	10.8	10.1
December	15.3	10.9	11.7	10.2	10.9
Annual Average	12.4	13.0	10.7	11.1	10.9
Max 3-Month Average	14.6	15.8	10.8	11.8	12.0
Peaking Factor	1.18	1.22	1.01	1.06	1.11

2019 - Max 3-Month Ave = Nov 18, Dec 18, Jan 19

TABLE 3-7

CITY OF BETHLEHEM

AVERAGE MONTHLY ORGANIC LOADINGS
DURING THE PAST 5 YEARS

Month	<u>Average Monthly Influent BOD5</u> (lbs/day)				
	2018	2019	2020	2021	2022
January	30,404	37,045	34,318	34,584	37,739
February	31,935	37,580	33,445	36,521	37,952
March	31,673	37,546	32,053	38,670	37,204
April	33,883	36,244	29,156	37,702	35,488
May	39,056	32,172	29,797	37,931	32,529
June	33,392	30,128	34,174	34,786	30,332
July	30,590	29,856	29,502	33,647	31,656
August	29,129	32,395	32,228	34,023	34,942
September	28,012	28,115	37,109	37,024	31,885
October	32,283	31,891	27,833	39,087	34,340
November	35,111	32,131	32,802	37,012	35,229
December	33,486	31,255	33,698	39,096	34,262
Annual Average	32,413	33,030	32,176	36,674	34,463
Maximum Month	39,056	37,580	37,109	39,096	37,952
Peaking Factor	1.20	1.14	1.15	1.07	1.10

TABLE 3-8

CITY OF BETHLEHEM

SUMMARY OF MUNICIPAL POPULATION PROJECTIONS

<u>Municipality</u>	Reported 2022 Population	<u>Population Projections</u>				
		2023	2024	2025	2026	2027
Bethlehem	75,624	75,724	75,824	75,924	76,024	76,124
Allentown	240	240	240	240	240	240
Bethlehem Township	22,491	22,705	22,910	23,135	23,390	23,500
East Allen Township	304	394	423	423	423	423
Fountain Hill	4,808	4,813	4,846	4,849	4,851	4,854
Freemansburg	2,900	2,905	2,910	2,916	2,921	2,926
Hanover Township Lehigh County	1,046	1,067	1,088	1,110	1,132	1,154
Hanover Township Northampton County	13,456	13,506	13,556	14,056	14,556	15,056
Hellertown	5,920	5,920	5,980	6,010	6,090	6,200
Lower Nazareth Township	188	210	216	222	228	234
Lower Saucon Township	5,288	5,288	5,301	5,317	5,398	5,463
Palmer Township **	291	291	294	294	294	294
Salisbury Township	1,550	1,556	1,562	1,568	1,574	1,580
Total Population	133,815	134,328	134,856	135,770	136,827	137,754
Total Population Increase		(+) 513	(+) 528	(+) 914	(+) 1057	(+) 927
Total EDU Increase (3.5 Persons / EDU)	38,233	147	151	261	302	265
Flow / EDU (2018-2022 Average)	301					

Reported 2022 Population and Population Projections - Based on Contributing Municipalities' Reports

City of Bethlehem - Based on U. S. Census Bureau and Lehigh Valley Planning Commission Projections

** Palmer Township's 2022 Population - Included in Bethlehem Township's 2022 Report

TABLE 3-9

CITY OF BETHLEHEM

SUMMARY OF MUNICIPAL FLOW PROJECTIONS

<u>Municipality</u>	<u>2022 Flow Reported (gal/day)</u>	<u>Flow Projections (gal/day)</u>				
		2023	2024	2025	2026	2027
Bethlehem	6,883,801	6,963,801	7,043,801	7,103,801	7,163,801	7,223,801
Allentown	15,000	15,000	15,000	15,000	15,000	15,000
Bethlehem Township	1,909,000	1,930,000	1,950,000	1,975,000	2,000,000	2,010,000
East Allen Township	10,333	56,940	61,100	61,100	61,100	61,100
Fountain Hill	575,388	575,890	579,220	579,470	579,720	579,970
Freemansburg	152,000	154,000	156,000	158,000	160,000	162,000
Hanover Township Lehigh County	104,563	106,654	108,787	110,963	113,182	115,446
Hanover Township Northampton County	1,801,023	1,816,523	1,822,833	1,847,833	1,897,833	1,922,833
Hellertown	550,000	550,000	570,000	570,000	585,000	585,000
Lower Nazareth Township	16,750	18,750	19,250	19,750	20,250	20,750
Lower Saucon Township	238,751	238,800	240,100	241,600	249,400	255,700
Palmer Township **	18,864	18,864	19,025	19,025	19,025	19,025
Salisbury Township	127,243	127,820	128,413	129,016	129,623	130,232
		12,554,178	12,694,504	12,811,533	12,974,909	13,081,832
Total Annual Flow Increase (gal/day)	12,383,852	(+) 170,326	(+) 140,326	(+) 117,029	(+) 163,376	(+) 106,923

Reported 2022 Flow and Flow Projections - Based on Contributing Municipalities' Reports

Bethlehem's 2022 Flow - Based on Water/Sewer Records

** Palmer Township's 2022 Flow - Included in Bethlehem Township's 2022 Report

TABLE 3-10 - City of Bethlehem Approved Planning Modules Summary - 2022

City of Bethlehem and Allentown	Hanover Township Northampton County	Bethlehem Township	Hellertown	Lower Saucon Township	Fountain Hill	Hanover Township Lehigh County	Salisbury Township	Freemansburg	Lower Nazareth Township	East Allen Township	
Projected Annual Average Flows & Total Approved Module Amounts - 2016 through 2021 (MGD)											
7.523126	2.018113	2.052900	0.504325	0.227425	0.642430	0.131363	0.161854	0.174460	0.009366	0.000860	13.446
2022 - Total Approved Module Amounts (MGD)											
0.0799005	0.00539	0.0335955	0.002277	0.03995	0	0.001575	0	0.004725	0	0	0.167
2022 - List of Approved Module Amounts (MGD)											
0.001571	0.0052	0.00125	0.002277	0.03995		0.001575		0.004275			
0.0102595	0.00019	0.0008455						0.00045			
0.00045		0.024									
0.00315		0.0075									
0.000225											
0.003											
0.00315											
0.00075											
0.0046255											
0.008218											
0.0012995											
0.00195											
0.0009375											
0.00296											
0.0009											
0.006356											
0.00009											
0.00198											
0.00245											
0.0008											
0.000927											
0.0025											
0.0061875											
0.0096											
0.0009											
0.003764											
0.0009											
2022 - Projected Annual Average Flow (MGD) Per Modules [2021 Projected Flow + 2022 Projected Module Flow]											
7.603026	2.023503	2.086496	0.506602	0.267375	0.642430	0.132938	0.161854	0.179185	0.009366	0.000860	13.614
2022 - Projected Annual Average Flow (MGD) Per Sewer Consumptions (Sewer Bills or Meters)											
6.895	1.439	1.886	0.620	0.238	0.629	0.105	0.129	0.152	0.011	0.010	12.114
2022 Flow from Bethlehem and Allentown water meters	2022 Flow from HTNC water meters. (No I/I included)	2022 Flow from Bethlehem Twsp. sewer meters.	2022 Flow from Hellertown sewer meters.	2022 Flow from Lower Saucon sewer meters.	2022 Flow from Fountain Hill sewer meters.	2022 Flow from HTLC water meters. (No I/I included)	2022 Flow from Salisbury Twsp. sewer meters.	2022 Flow from Freemansburg water meters. (No I/I included)	2022 Flow from Lower Naz. Twsp. sewer meter.	2022 Flow from East Allen Twsp. sewer meter.	5.230
6.883801											
0.011659											
(No I/I included)											
2022 - Actual Annual Average Influent Flow (MGD) at Wastewater Treatment Plant											
											10.92

average organic loading for 2027 is 39,343 lbs/day which is close to the WWTP's current organic capacity of 39,365 lbs/day of BOD5.

The upward trend in the projected maximum month average influent organic loading is nearing the plant's organic capacity limit of 39,365 lbs/day of BOD5. In 2022, the City and AECOM submitted to PADEP a Water Quality Management (WQM) Part II Permit Application for the Chemically Enhanced Primary Treatment (CEPT) Project. PADEP issued the Part II Permit to the City on April 28, 2022. This project can increase the plant's organic capacity to 50,000 lbs/day of BOD5. In 2023, the City and AECOM will be submitting to PADEP an Act 537 Plan Update and WQM Part II Permit Application requesting a revision to the influent organic loading capacity of the WWTP. The City has had discussions with PADEP's Planning Section and Permit Section on how to proceed.

3.4 FLOW METER CALIBRATION

In September 2016, the WWTP installed a new Rosemont 8750WA 36" Magnetic Flow Meter in the plant effluent line (Outfall 001). This new meter replaced three Pulsar Open Channel meters. The new effluent meter was calibrated by W. G. Malden. The flow meter's Calibration Reports can be found in Appendix D.

In September 2016, as part of the CSO 004 Relocation Project, four (4) new ISCO Signature Flow Meters with LaserFlow Non-Contact Velocity Sensors were installed at various locations. Locations include the North Influent (Manhole No. 101), the Northeast Trunkline (Manhole No. 402), the North Interceptor (Manhole No. 108), and the South Influent (Manhole No. 7). In addition, a new ADFM Velocity Profiling Flow Meter was installed at the CSO 012 discharge to the Lehigh River. The new meters were installed and calibrated by W. G. Malden. The flow meters' Calibration Reports are attached in Appendix D.

The City's Bureau of Engineering and Sewer Maintenance Bureau uses Hach Flo-Dar flow meters to monitor sewage flows in the collection system. The meters are calibrated before each use or sent back to the manufacturer for repair and factory calibration. Meters are installed at strategic locations in the system to monitor flows for I & I identification. These meters allow real-time monitoring during rainfall events and have provided valuable information.

ATTACHMENT 1

STREET DEPARTMENT ANNUAL REPORT

City of Bethlehem Street Department

Water and Debris

2022 Yearly Report

	Debris	Water
Sweeper #708	497	4,560
Sweeper #713	448	4,720
Sweeper #190	2,100	22,320
Sweeper #717	2306.5	29,280
Flusher #152		451,002
Vac-Truck #154	1,190	322,500
Brine Operations-	4	72,000

Debris Totals- 6,541.5 CY

Water Totals- 906,382 Gallons

DATE	713		GALS	CY	708		GALS	CY	190		GALS	CY	717		GALS	CY	TOTALS			152		154					TOTALS		
November	W	D			W	D			W	D			W	D			GALS	CY	Lbs	W	GALS	W	GALS	D	CY	Lbs	GALS	CY	Lbs
11/1/2022			0	0			0	0			0	0			0	0	0	0			0	1	1500	1	10		1500	10	0
11/2/2022	2	6	160	24	2	8	160	24			0	0	2	8	160	24	480	80			0		0		0		480	80	0
11/3/2022	2	5	160	20	1	7	80	24.5			0	0	2	7	160	24.5	400	69			0		0		0		400	69	0
11/4/2022	2	6	160	24	1	5	80	17.5			0	0	1	8	80	28	320	69.5			0		0		0		320	69.5	0
11/5/2022			0	0			0	0			0	0			0	0	0	0			0		0		0		0	0	0
11/6/2022			0	0			0	0			0	0			0	0	0	0			0		0		0		0	0	0
11/7/2022			0	0			0	0			0	0			0	0	0	0			0		0		0		0	0	0
11/8/2022			0	0			0	0			0	0			0	0	0	0			0		0		0		0	0	0
11/9/2022			0	0			0	0			0	0			0	0	0	0			0		0		0		0	0	0
11/10/2022			0	0			0	0			0	0			0	0	0	0			0		0		0		0	0	0
11/11/2022			0	0			0	0			0	0			0	0	0	0			0		0		0		0	0	0
11/12/2022			0	0			0	0			0	0			0	0	0	0			0		0		0		0	0	0
11/13/2022			0	0			0	0			0	0			0	0	0	0			0		0		0		0	0	0
11/14/2022			0	0			0	0			0	0	1	9	80	31.5	80	31.5			0		0		0		80	31.5	0
11/15/2022			0	0			0	0			0	0	1	7	80	24.5	80	24.5			0		0		0		80	24.5	0
11/16/2022			0	0			0	0			0	0	1	8	80	28	80	28			0		0		0		80	28	0
11/17/2022			0	0			0	0			0	0	1	7	80	24.5	80	24.5			0		0		0		80	24.5	0
11/18/2022			0	0			0	0			0	0	1	7	80	24.5	80	24.5			0		0		0		80	24.5	0
11/19/2022			0	0			0	0			0	0			0	0	0	0			0		0		0		0	0	0
11/20/2022			0	0			0	0			0	0			0	0	0	0			0		0		0		0	0	0
11/21/2022			0	0			0	0			0	0			0	0	0	0			0		0		0		0	0	0
11/22/2022			0	0			0	0			0	0			0	0	0	0			0		0		0		0	0	0
11/23/2022			0	0			0	0			0	0			0	0	0	0			0		0		0		0	0	0
11/24/2022			0	0			0	0			0	0			0	0	0	0			0		0		0		0	0	0
11/25/2022			0	0			0	0			0	0			0	0	0	0			0		0		0		0	0	0
11/26/2022			0	0			0	0			0	0			0	0	0	0			0		0		0		0	0	0
11/27/2022			0	0			0	0			0	0			0	0	0	0			0		0		0		0	0	0
11/28/2022			0	0		4	0	14		4	0	20	1	6	80	21	80	55			0		0		0		80	55	0
11/29/2022			0	0			0	0			6	0	30		6	0	21	0			0		0		0		0	51	0
11/30/2022			0	0			0	0			4	0	20		5	0	17.5	0			0		0		0		0	37.5	0
			0	0			0	0			9	0	45		8	0	28	0			0		0		0		0	73	0
TOTALS			480	68			320	84			0	115			880	301	1680	568	0		0		1500		10	0	3180	578	0
2022 TOTALS			4720	448	0	0	4560	497	0	0	22320	2100	0	0	29280	2308.5	60880	5351.5	178240	0	451002	0	322500	0	1190	376120	526882	6541.5	88901.4

ATTACHMENT 2

CSO PUBLIC NOTICE

Proof of Publication Notice in the *Morning Call*

Under Act No. 587, Approved May 16, 1929 and its amendments

Sold To:

City of Bethlehem WWTP - CU00547695
10 E Church St
Bethlehem, PA 18018-6005

Bill To:

City of Bethlehem WWTP - CU00547695
10 E Church St
Bethlehem, PA 18018-6005


STATE OF PENNSYLVANIA)
COUNTY OF LEHIGH) SS:

JIM FEHER

of THE MORNING CALL, LLC. of the County of Lehigh and State of Pennsylvania, being duly sworn, deposes and says that THE MORNING CALL is a newspaper of general circulation as defined by the aforesaid Act, whose place of business is in the City of Allentown, County of Lehigh and State of Pennsylvania, and that the said newspaper was established in 1888 since which date THE MORNING CALL has regularly issued in said County, and that the printed notice or advertisement attached hereto is exactly the same as was printed and published in regular editions and issues of the said THE MORNING CALL on the following dates, viz.:

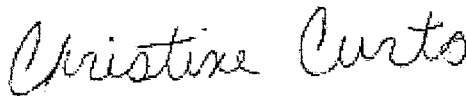
Jan 28, 2022.

Affiant further deposes that he is the designated agent duly authorized by THE MORNING CALL, LLC., a corporation, publisher of said THE MORNING CALL, a newspaper of general circulation, to verify the foregoing statement under oath, and the affiant is not interested in the subject matter of the aforesaid notice or advertisement, and that all allegations in the foregoing statements as to time, place and character of publication are true.

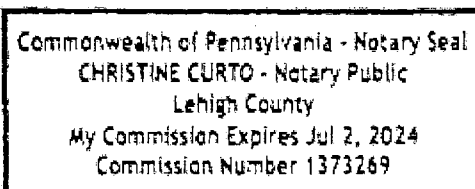


Designated Agent, THE MORNING CALL, LLC.

Sworn to and subscribed before me on this 3rd day of February, 2022



Notary Public



Order # - 7136699

Proof of Publication Notice in the *Morning Call*

PUBLIC NOTICE

The City of Bethlehem Wastewater Treatment Plant (WWTP) is providing PUBLIC NOTICE that it currently operates two (2) Combined Sewer Overflow (CSO) discharge points within its service area. These CSOs have the potential to discharge combined sewage (sanitary sewage mixed with storm water runoff) to the Saucon Creek and Lehigh River during and immediately after major rainfall events. The CSO discharge points are authorized and regulated under the City's National Pollutant Discharge Elimination System (NPDES) Permit issued by the PADEP. They are utilized in major wet weather high flow situations in order to save the WWTP from severe property damage. The CSO discharge points have been clearly marked for identification by the general public. CSO Outfall 003 is located at latitude 40°36'53", longitude 75°20'03" on the Saucon Creek at the WWTP. CSO Outfall 012 is located on the south bank of the Lehigh River upstream of the Saucon Creek. Outfall 012 is located at latitude 40°37'10", longitude 75°20'58".

Please be advised that the public should refrain from contact with the Saucon Creek and the Lehigh River downstream of the CSO discharge points for a period of at least 24 hours after a rainfall event of 2.0 inches or greater.

In the event that an overflow is observed during dry weather conditions, the public is asked to notify the WWTP of the occurrence as soon as possible.

For further information regarding the City's Combined Sewer Overflow Program or to report a dry weather overflow occurrence, please contact the WWTP:

Jack Lawrence, Superintendent
City of Bethlehem
Wastewater Treatment Plant
144 Shimersville Road
Bethlehem, PA 18015
Tele: 610-865-7168
Fax: 610-865-7216
7136699 1/28/22

Order # - 7136699

APPENDIX A

**CITY OF BETHLEHEM
SANITARY SEWER EXTENSION DATA**

PERMITTING V9.0
DATE: 03/14/2023
TIME: 13:02:17

CITY OF BETHLEHEM
PERMIT ACTIVITY REPORT FROM 01/01/22 TO 12/31/22

PAGE NUMBER: 1
MODULE : rp_ytdconstr

SELECTION CRITERIA: cpmpermit.permit_type='SAN CONN'

ACTIVITY/ STATUS	DATE-2/ TYPE	OWNERS NAME PARCEL	DESCRIPTION SITE ADDRESS
22030292 C	03/09/2022 SAN CONN	WEST MARKET STREET PARTNERS LLC 207-004394	INSTALL (2) SEWER LATERALS 30 W MARKET ST
22030381 C	03/11/2022 SAN CONN	KVH LLC 113-009660	SANITARY CONNECTION & ROAD EXCAV 2011 CITY LINE RD
22030567 C	03/16/2022 SAN CONN	1015 PARTNERS LLC 113-010592	SANITARY CONNECTION 1332-1334 GENOA ST
22050810 C	06/14/2022 SAN CONN	CTHL 3 INC 216-022965	SANITARY & WATER CONNECTION 1245 E 7TH ST
22050811 C	06/14/2022 SAN CONN	CTHL 3 INC 216-022979	SANITARY & WATER CONNECTION 1248 E 7TH ST
22050812 C	06/14/2022 SAN CONN	CTHL 3 INC 216-022963	SANITARY & WATER CONNECTION 1249 E 7TH ST
22050813 C	06/14/2022 SAN CONN	CTHL 3 INC 216-022980	SANITARY & WATER CONNECTION 1250 E 7TH ST
22051038 C	05/31/2022 SAN CONN	LOVELY DAY PROPERTIES LLC 205-002735	INSTALL SANITARY SEWER LATERAL E 8TH ST 801-803 ATLANTIC ST
22060878 C	06/28/2022 SAN CONN	CTHL 3 INC 216-022962	SANITARY CONNECTION 1251 E 7TH ST
22060885 C	06/28/2022 SAN CONN	CTHL 3 INC 216-022981	SANITARY CONNECTION 1252 E 7TH ST
22060890 C	06/28/2022 SAN CONN	CTHL 3 INC 216-022961	SANITARY CONNECTION 1257 E 7TH ST
22060892 C	06/28/2022 SAN CONN	CTHL 3 INC 216-022982	SANITARY CONNECTION 1256 E 7TH ST
22070424 C	07/13/2022 SAN CONN	CTHL 3 INC 216-022967	SANITARY CONNECTION 1231 E 7TH ST
22070425 C	07/13/2022 SAN CONN	CTHL 3 INC 216-022966	SANITARY CONNECTION 1239 E 7TH ST
22070426 C	07/13/2022 SAN CONN	CTHL 3 INC 216-022977	SANITARY CONNECTION 1240 E 7TH ST
22070427 C	07/13/2022 SAN CONN	CTHL 3 INC 216-022978	SANITARY CONNECTION 1244 E 7TH ST
22090100 C	09/02/2022 SAN CONN	LEHIGH UNIVERSITY 203-023589	SANITARY SEWER CONNECTION 201 E PACKER AVE

PERMITTING V9.0
DATE: 03/14/2023
TIME: 13:02:17

CITY OF BETHLEHEM
PERMIT ACTIVITY REPORT FROM 01/01/22 TO 12/31/22

PAGE NUMBER: 2
MODULE : rp_ytdconstr

SELECTION CRITERIA: cpmpermit.permit_type='SAN CONN'

ACTIVITY/ STATUS	DATE-2/ TYPE	OWNERS NAME PARCEL	DESCRIPTION SITE ADDRESS
22090514 C	09/14/2022 SAN CONN	STEELE KIRTH W/KAREN L 214-018775	SANITARY CONNECTION 3141 APOLLO DR
22100382 C	10/17/2022 SAN CONN	BETHWORKS RENOVATIONS LLC 204-002649	SANITARY CONNECTION - REPLACE 275' OF MAIN 600 E 3RD ST
22100436 O	11/01/2022 SAN CONN	SCHAFER QUINN/JULIA 214-014928	REPLACE SANITARY LINE IN STREET 674 EDGEBORO BLVD
22100594 C	10/25/2022 SAN CONN	CCAN LLC 216-021764	SANITARY SEWER CONNECTION(ON PRIVATE) 774 HELLERTOWN RD
22110153 E	11/04/2022 SAN CONN	COLLABORATION 3 LLC 203-001852	SANITARY CONNECTION & WATER LINE 30 E 3RD ST
22110354 C	11/15/2022 SAN CONN	250 E BROAD LLC/PD PROPERTY HOLDINGS 207-004064	SANITARY CONNECTION - CONNECTION ON PRIVATE PROP. 250 E BROAD ST
22110535 C	11/22/2022 SAN CONN	250 E BROAD LLC/PD PROPERTY HOLDINGS 207-004064	SANITARY CONNECTION 250 E BROAD ST
22110636 C	11/30/2022 SAN CONN	NEW PIERCE STREET HOLDINGS LLC 204-002490	SANITARY CONNECTION 326 PIERCE ST

GRAND TOTAL 25

Lawrence, Jack J

From: Yandem, Basel
Sent: Tuesday, March 14, 2023 8:45 AM
To: Lawrence, Jack J
Cc: Boscola, Edward J; Herbold, Adam
Subject: RE: 2023-2027 Flow Projections

Hello Jack,

Based on the numbers we have, I would estimate the following:

2023 - (+) 80,000
2024 - (+) 80,000
2025 - (+) 60,000
2026 - (+) 60,000
2027 - (+) 60,000

Let me know if you have any questions.

Thank you .

Regards,
Basel.

From: Lawrence, Jack J <JLawrence@bethlehem-pa.gov>
Sent: Tuesday, March 14, 2023 8:25 AM
To: Yandem, Basel <BYandem@bethlehem-pa.gov>; Herbold, Adam <AHerbold@bethlehem-pa.gov>
Cc: Boscola, Edward J <EBoscola@bethlehem-pa.gov>
Subject: 2023-2027 Flow Projections

Basel:

Please forward the City sanitary flow projections (increase above current baseline) for next 5 yrs (2023-2027) for the annual Chapter 94 Report to PADEP. It is due by March 31.
They are based on projected developments and planning modules.

In 2022, you estimated the following: (see attached email)

2022

Based on the numbers we have, I would estimate the following:

2022 - (+) 80,000
2023 - (+) 80,000
2024 - (+) 60,000
2025 - (+) 60,000
2026 - (+) 60,000

Please discuss with Ed if you have any questions.

Thanks.

Jack Lawrence

Superintendent

Bethlehem Wastewater Treatment Plant

144 Shimersville Road

Bethlehem, PA 18015

610-865-7168

Lawrence, Jack J

From: Rohrbach, Amy B
Sent: Friday, February 24, 2023 2:27 PM
To: Lawrence, Jack J; Yandem, Basel; Herbold, Adam
Subject: RE: 2022 Chapter 94 Report

I'm not aware of any main extensions in 2022 nor am I aware of any planned for 2023.

Amy B. Rohrbach
Project Engineer
City of Bethlehem
Department of Public Works
10 E Church St
Bethlehem, PA 18018
610-865-7040 (office)
610-865-7331 (fax)
arohrbach@bethlehem-pa.gov

From: Lawrence, Jack J <JLawrence@bethlehem-pa.gov>
Sent: Friday, February 24, 2023 2:23 PM
To: Yandem, Basel <BYandem@bethlehem-pa.gov>; Rohrbach, Amy B <ARohrbach@bethlehem-pa.gov>; Herbold, Adam <AHerbold@bethlehem-pa.gov>
Subject: 2022 Chapter 94 Report

Basel, Amy, Adam:

I'm working on the 2022 Annual Wasteload Management Report (Chapter 94). It must be submitted to PADEP by March 31.

As such, please forward the following information:

- List and description of any sewer main extensions during 2022.
- List and description of any sewer main extensions planned for 2023.
- Projected sewer flows for the next five years. Each year - 2023, 2024, 2025, 2026, 2027.
- Act 537 related update. Planned upgrades or replacements.
- Planning Module Summary for 2022.

I attached last year's info as a reference.

Thanks.

Jack Lawrence

SUPERINTENDENT
Bethlehem Wastewater Treatment Plant
144 Shimersville Road
Bethlehem, PA 18015

610-865-7168

jlawrence@bethlehem-pa.gov

APPENDIX B

CONTRIBUTING MUNICIPALITIES' REPORTS



Lehigh County Authority

1053 Spruce Street * P.O. Box 3348 * Allentown, PA 18106-0348

(610)398-2503 * FAX: (610)398-8413 * Email: service@lehighcountyauthority.org

Every drop matters. Every customer counts.

LETTER OF TRANSMITTAL

Date: January 18, 2023

TO: Mr. Jack Lawrence, WWTP Superintendent
City of Bethlehem
144 Shimersville Rd
Bethlehem, PA 18015

FROM: CHARLES VOLK, P.E. , CHIEF CAPITAL WORKS OFFICER

CC:

RE: 2022 WASTELOAD MGMT REPORT REQUEST FOR INFORMATION

☐ For your Information

☐ For Your Comments

☐ For Your Files

☐ For Review & Return to This Office

☐ For Action by You

☒ Per Your Request

REMARKS:

Mr. Lawrence:

Please see attached completed form as requested.

Chuck Volk

2022 SEWER SYSTEM QUESTIONNAIRE

Municipality Name: CITY OF ALLENTOWN / LCA

Date: 1/18/23

Current Allocation: _____ GPD *

Note: If any question is not applicable, please write N/A. Do not leave blank!

A. SEWER SYSTEM DETAILS

1. Connected Hydraulic Loading (Flow): * (GPD or MGD)

<u>Current</u> <u>2022</u>	<u>2023</u>	<u>2024</u>	<u>Projected Flow</u> <u>2025</u>	<u>2026</u>	<u>2027</u>
<u>15,000</u>	<u>15,000</u>	<u>15,000</u>	<u>15,000</u>	<u>15,000</u>	<u>15,000</u>

Number of Actual Connections at the End of 2022: 96

1 Equivalent Dwelling Unit (EDU) = 156 Gallons Per Day

2. Connected Organic Loading (BOD5): * (MG/L or LBS/DAY)

<u>Current</u> <u>2022</u>	<u>2023</u>	<u>2024</u>	<u>Projected BOD5</u> <u>2025</u>	<u>2026</u>	<u>2027</u>
<u>40</u>	<u>40</u>	<u>40</u>	<u>40</u>	<u>40</u>	<u>40</u>

3. Connected Population: *

<u>Current</u> <u>2022</u>	<u>2023</u>	<u>2024</u>	<u>Projected Population</u> <u>2025</u>	<u>2026</u>	<u>2027</u>
<u>240</u>	<u>240</u>	<u>240</u>	<u>240</u>	<u>240</u>	<u>240</u>

4. Total Length of System: * 4,400 Feet

5. Range of Pipe Sizes: *

Smallest: 8 Inches

Largest: 8 Inches

* If estimated, please note.

6. Total Number of Manholes: * 22

7. Construction Material:

Pipes: VCP

Manholes: Brick

8. Combined Sewers:

Location: N/A

Percent of Total System: _____

9. Major Interceptors: N/A

<u>Name</u>	<u>Length (Feet)</u>	<u>Pipe Diameter (Inches)</u>	<u>Pop. Served</u>	<u>Design EDUs</u>	<u>Flow (mgd)</u>

10. Five Year Projections: Major Interceptors * N/A

<u>Name/Segment</u>	<u>Limiting Section Capacity (GPD)</u>	<u>Projected Peak Flows (GPD)</u>					
		<u>Current 2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>

* Attach supporting documentation.

11. Mitigating Measures: N/A

If the projected flow exceeds the limiting section capacity at any time during the five-year period, explain proposed and on-going efforts to correct the potential overload for each instance. Estimate the probable success of these mitigating measures in eliminating the potential overload condition. Use additional sheets if necessary.

B. PUMPING STATIONS *N/A*

1. Description:

<u>Name/Number</u>	<u>Location</u>	Capacity (GPD)		Metered * (Yes/No)	Force Main		<u>Estimated Population</u>
		<u>Existing</u>	<u>Ultimate</u>		<u>Length (Feet)</u>	<u>Diameter (Inches)</u>	

* Attach meter record summaries. Note plans for future pumping station expansion.

2. Five-Year Projections: Pumping Stations *

<u>Name</u>	Capacity (GPD)	<u>Current</u>	<u>Projected Peak Flows (GPD)</u>				
		<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>

* Attach supporting data.

3. Mitigating Measures

If the projected peak flow exceeds the pumping station capacity at any time during the five-year period, explain proposed and on-going efforts to correct the potential overload for each instance. Estimate the probable success of these mitigating measures in eliminating the potential overload condition. Use additional sheets if necessary.

C. METER PITS * N/A

<u>Name/Number</u>	<u>Location</u>	<u>Size/Type</u> **	<u>Sensor</u> ***	<u>Connected Population (est.)</u>	<u>Flows (gpd) Peak/Average</u>

* Attach meter record summaries.

** Weir, flume, pipe, etc.

*** Float, bubbler, sonar, etc.

D. OPERATION AND MAINTENANCE

1. Describe Routine Operation and Maintenance Procedures:

Sewer System: Periodic flushing and manhole inspections

Pump Stations: _____

Meter Pits: _____

2. Known Problem Areas:

<u>Location</u>	<u>Nature of Problem *</u>	<u>Corrective Measures Taken</u>
<u>none</u>		

* Surcharging, line blockage, etc.

E. **SANITARY SEWER EXTENSIONS (2022 ONLY)** * N/A

<u>Name/Area Served</u>	<u>Sewer</u>	<u>Extension</u>	<u>PADEP</u> <u>Code No.</u>	<u>Equivalent Dwelling Units</u>		<u>Flow (gpd) **</u>
	<u>Size</u>	<u>Length</u>		<u>Connected</u>	<u>Total Planned</u>	<u>Current/Design</u>

* Attach plan of sanitary sewer system detailing additions made this year.

** 1 Equivalent Dwelling Unit (EDU) = _____ Gallons Per Day

(If there is a difference between this EDU calculation and that on Page 1, Section A.1., please explain the difference.)

F. **PROPOSED DEVELOPMENTS (Planning Modules)** * N/A

<u>Name/Area Served</u>	<u>PADEP</u> <u>Code No.</u>	<u>Current</u>		<u>Proposed Equivalent Dwelling Units</u>			<u>Flow **</u> <u>(GPD)</u>
		<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	

* Attach plan of sanitary sewer system detailing proposed developments.

** 1 Equivalent Dwelling Unit (EDU) = 156 Gallons Per Day

(If there is a difference between this EDU calculation and that on Page 1, Section A.1., please explain the difference.)

G. CERTIFICATION

Prepared By:

Signature: Charles F. Volk
Name: Charles F. Volk
Title: CCWO
Company: LCA
Address: 1053 Spruce St
Allentown PA 18106

Phone No.: 610-398-2503
E-mail: charles.volk@lehighcounty
Date: 1/18/23 authority.org

Approved By (Municipal Contact):

Signature: _____
Name: _____
Title: _____
Municipality: _____
Address: _____

Phone No.: _____
E-mail: _____
Date: _____

2022 SEWER SYSTEM QUESTIONNAIRE

Municipality Name: Bethlehem Township

Date: February 8, 2023

Current Allocation: 3,000,000 GPD *

Note: If any question is not applicable, please write N/A. Do not leave blank!

A. SEWER SYSTEM DETAILS

1. **Connected Hydraulic Loading (Flow):** * (MGD)

<u>Current</u>			<u>Projected Flow</u>		
<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>
1.909	1.930	1.950	1.975	2.000	2.010

Number of Actual Connections at the End of 2022: 9,011

1 Equivalent Dwelling Unit (EDU) = 250 Gallons Per Day

2. **Connected Organic Loading (BOD5):** * (LBS/DAY)

<u>Current</u>			<u>Projected BOD5</u>		
<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>
3,980	4,024	4,066	4,118	4,170	4,191

*(Estimated based on 250 mg/l times flow in MGD times 8.34)

3. **Connected Population:** *Based on 2020 Census data using 2.55 people per residential connection

<u>Current</u>			<u>Projected Population</u>		
<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>
22,491	22,705	22,910	23,135	23,390	23,500

4. **Total Length of System:** * 718,000 (Est.) Feet

5. **Range of Pipe Sizes:** *

Smallest: 1-1/2 Inches (Force Main)

Largest: 24 Inches (Interceptor)

* If estimated, please note.

6. **Total Number of Manholes:** * 3,211 (Est.)

7. **Construction Material:**

Pipes: VTC (*), AC, PVC, DI

Manholes: Precast Concrete

* All VTC pipe has been lined via CIPP

8. **Combined Sewers:**

Location: N/A

Percent of Total System: 0

9. **Major Interceptors:**

<u>Name</u>	<u>Length (Feet)</u>	<u>Pipe Diameter (Inches)</u>	<u>Pop. Served</u>	<u><i>Design</i> EDUs</u>	<u>Flow (mgd)</u>
Oakland Hills	5,667	12	1,446	1,744	0.145
Ohio Street	6,251	12	2,083	1,744	0.208
Nancy Run	10,940	21	5,715	5,472	0.571
Prospect Park	9,800	24	6,237	10,000	0.578
St. Luke's	4,500	18	4,720	19,360	0.239

10. Five Year Projections: Major Interceptors *

<u>Name/Segment</u>	<u>Limiting Section Capacity (MGD)</u>	<u>Current 2022</u>	<u>2023</u>	<u>Projected Peak Flows (MGD)</u>			
				<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>
Oakland Hills	1.090	0.145	0.360	0.361	0.363	0.364	0.365
Ohio Street	1.090	0.208	0.520	0.521	0.522	0.523	0.524
Nancy Run	3.420	0.571	1.400	1.405	1.410	1.415	1.420
Prospect Park	8.470	0.578	1.460	1.470	1.500	1.525	1.550
St. Luke's	4.848	0.239	0.585	0.590	0.595	0.600	0.610

Current flow is the estimated average daily flow. Projected peak flows are estimated based on projected connected EDUs times 250 gallons per day times 2.5 peaking factor.

11. Mitigating Measures:

If the projected flow exceeds the limiting section capacity at any time during the five-year period, explain proposed and on-going efforts to correct the potential overload for each instance. Estimate the probable success of these mitigating measures in eliminating the potential overload condition. Use additional sheets if necessary.

No current or projected capacity issues during the next 5 years or longer

B. PUMPING STATIONS

1. Description:

<u>Name/Number</u>	<u>Location</u>	<u>Capacity (GPD)</u>		<u>Metered *</u> <u>(Yes/No)</u>	<u>Force Main</u>		<u>Estimated</u> <u>Population</u>
		<u>Existing</u>	<u>Ultimate</u>		<u>Length</u> <u>(Feet)</u>	<u>Diameter</u> <u>(Inches)</u>	
#1	Sculac Rd.	1,900	1,900	Yes	3,000	16	13,560
#2	Hope Road	3,410	3,410	Yes	4,500	12	4,720
#3	Country Club Rd.	0.050	0.050	No	1,800	2-1/2	141
#4	Rt. 191 south of Rt. 22	1,250	1,250	Yes	1,800	8	2,100
#5	Rt. 191 at Santee Mill Rd.	1,900	1,900	Yes	7,000	12	4,098
#6	Greenwood Drive	0.060	0.060	No	250	2-1/2	151
#7	Esquire Drive	0.130	0.130	No	1,050	4	320
#8	Bethman Rd	0.110	0.110	No	1,100	4	201
#9	Township Line Rd.	0.650	0.650	Yes	1,300	6	3,330**
#10	Rt. 191 north of Rt. 22	0.140	0.140	No	1,400	4	210
#11	Church Rd. @ Loyal Lane	0.298	0.298	No	1,600	6	121
#12	Green Pond Road	0.115	0.115	No	800	4	86

Pump Stations 1, 2, 5, and 9 are metered. Meter flows are provided to the City on a quarterly basis. Pump Station 9 is currently under consideration for expansion under the Act 537 Plan Update currently ongoing.

** Flow to Pump Station #9 is all commercial/industrial. Population shown is equivalent population based on average daily flow and 100 gpcd.

Pump Station 11 was only put into service in July 2021. Connected population is estimated.

Pump Station 12 was only put into service in December 2020. Connected population is estimated.

2. Five-Year Projections: Pumping Stations *

Name	Capacity (GPD)	Current	Projected Peak Flows (GPD)				
		2022	2023	2024	2025	2026	2027
#1	1.900	0.513	0.900	1.000	1.100	1.200	1.250
#2	3.400	0.235	0.475	0.500	0.525	0.550	0.600
#3	0.050	0.014	0.030	0.032	0.033	0.034	0.035
#4	1.250	0.285	0.605	0.610	0.615	0.620	0.625
#5	1.900	0.298	0.850	0.855	0.860	0.865	0.870
#6	0.060	0.014	0.029	0.029	0.030	0.030	0.031
#7	0.130	0.031	0.068	0.070	0.072	0.075	0.076
#8	0.110	0.022	0.046	0.048	0.049	0.050	0.050
#9	0.650	0.333	0.500	0.550	0.575	0.600	0.625
#10	0.140	0.021	0.045	0.050	0.075	0.085	0.090
#11	0.300	0.030	0.050	0.060	0.080	0.100	0.125
#12	0.115	0.022	0.030	0.035	0.040	0.045	0.050

* Attach supporting data.

3. Mitigating Measures

If the projected peak flow exceeds the pumping station capacity at any time during the five-year period, explain proposed and on-going efforts to correct the potential overload for each instance. Estimate the probable success of these mitigating measures in eliminating the potential overload condition. Use additional sheets if necessary.

Pump Station #9 is included in the current Act 537 Plan update (to be submitted to DEP later this year) for expansion of pumping capacity and wet well capacity. This will resolve any future needs for that drainage area. It is expected that design will commence in the latter half of 2023 with construction to begin in the second quarter of 2024. Peak flows are not expected to exceed capacity of all other existing stations over the next five years. However, the Township will continue an ongoing televising program to address any apparent infiltration/inflow to reduce any unusual peak demands.

C. METER PITS *

<u>Name/Number</u>	<u>Location</u>	<u>Size/Type</u> **	<u>Sensor</u> ***	<u>Connected Population (est.)</u>	<u>Flows (gpd) Peak/Average</u>
M1A	Johnston Dr.	15"/Pipe	Electronic/Laser	From City	0.835/0.422
M1	Main Street	24"/Pipe	Electronic/Laser	17,200	2.695/1.719
M5	P.S. #5	12" FM	Electronic	3,000	0.765/0.298
M9	P.S. #9	8" FM	Mag Meter	3,300 (see Part B)	0.474/0.333
PS1	P.S. #1	16" FM	Mag Meter	13,560	0.731/0.513
PS2	P.S. #2	12" FM	Mag Meter	4,720	0.391/0.235

* Attach meter record summaries.

** Weir, flume, pipe, etc.

*** Float, bubbler, sonar, etc.

D. OPERATION AND MAINTENANCE

1. Describe Routine Operation and Maintenance Procedures:

Sewer System: Sewer jetting and televising performed on a regular scheduled basis. Manhole rehabilitation
when needed and manhole inserts (to reduce I/I). Sewer line repairs as needed based on televising information. All
new lines are televised prior to acceptance.

Pump Stations: Daily inspection of all pump stations, preventative maintenance in accordance with
manufacturers' recommendations and established procedures. Wet wells are cleaned out approx. every month.

Meter Pits: Weekly downloads of meter data, annual calibration, and routine checks.

2. **Known Problem Areas:**

<u>Location</u>	<u>Nature of Problem *</u>	<u>Corrective Measures Taken</u>
No known problem areas within the sewer system at this time. Occasional blockage of open channel flow meters due to debris, which is removed when meter readings indicate bad data.		

* Surcharging, line blockage, etc.

E. **SANITARY SEWER EXTENSIONS (2022 ONLY) ***

<u>Name/Area Served</u>	<u>Sewer Size</u>	<u>Extension Length</u>	<u>PADEP Code No.</u>	<u>Equivalent Dwelling Units Connected</u>	<u>Dwelling Units Total Planned</u>	<u>Flow (gpd) ** Current/Design</u>
Penn Center 33	8" – 12"	2,633		0	24	0/6,000
Grace Church	8"	1,386		0	7	0/1,800

* Attach plan of sanitary sewer system detailing additions made this year.

** 1 Equivalent Dwelling Unit (EDU) = 250 Gallons Per Day

(If there is a difference between this EDU calculation and that on Page 1, Section A.1., please explain the difference.)

F. PROPOSED DEVELOPMENTS (Planning Modules) *

<u>Flow **</u>	<u>PADEP</u>	<u>Current</u>	<u>Proposed Equivalent Dwelling Units (Total)</u>					
<u>Name/Area Served</u>	<u>Code No.</u>	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>	<u>(GPD)</u>
Windrift (Easton Commons Apts.)		0	10	60	180	200	220	55,000
Falmer Drive Garden Apts.		0	0	10	25	30	30	7,500
Lehigh Valley Trade Center III		0	5	20	20	20	20	5,000
Harveys Corner		0	0	20	25	25	25	6,300
St. Luke's Medical Office Bldg.		0	0	5	5	5	5	1,250
Route 191 Wawa		0	0	6	6	6	6	1,500
Highview Commercial		0	0	5	25	75	96	24,000

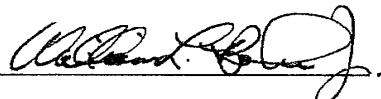
* Attach plan of sanitary sewer system detailing proposed developments.

** 1 Equivalent Dwelling Unit (EDU) = 250 Gallons Per Day


(If there is a difference between this EDU calculation and that on Page 1, Section A.1., please explain the difference.)

G. CERTIFICATION

Prepared By:

Signature: 
Name: William L. Bohner, Jr., P.E.
Title: Asst. Vice President
Company: ARRO Consulting, Inc.
Address: 321 Furnace Street
Suite 200
Birdsboro, PA 19508
Phone No.: 610-495-2102
E-mail: bill.bohner@arroconsulting.com
Date: 2/8/23

Approved By (Municipal Contact):

Signature: 
Name: Steven J. Hunsberger
Title: BTMA Managing Agent
Municipality: Bethlehem Twp.
Address: 3535 Orth Street
Bethlehem, PA 18020
Phone No.: 484-239-1761
E-mail: shunsberger@bethlehemtwp.com
Date: 2/8/23

Industrial User Information Form

Municipality: **Bethlehem Township**_____.

<u>Industrial User</u>	<u>Address</u>	<u>Type of Manufacturing</u>	<u>Flow (GPD)</u>
Fresh Pet	176 N. Commerce Way	On File with City	153,841
Crayola (Hallmark Global Services)	2475 Brodhead Road	On File with City	19,700
Avient	2315 Highland Avenue	On File with City	14,735
BSLW, LLC	9 S. Commerce Way	On File with City	2,229
Piramal Critical Care	3950 Sheldon Circle	On File with City	32,836
St. Luke's Hospital	1872 St. Luke's Blvd.	On File with City	29,119
Steel Eagle LLC (Sharp)	2400 Baglyos Circle	On File with City	1,930
Strong Brews	5000 Township Line Road	On File with City	11,441

2022 SEWER SYSTEM QUESTIONNAIRE

Municipality Name: Fountain Hill Borough

Date: February 1, 2023

Current Allocation: 700,000 **GPD ***
(See attached response)

Note: If any question is not applicable, please write N/A. Do not leave blank!

A. SEWER SYSTEM DETAILS

1. **Connected Hydraulic Loading (Flow): * (GPD or MGD)** (Total includes Eastern Salisbury + some CoB flows)

	<u>Current</u>			<u>Projected Flow</u>		
	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>
Borough Flow:	575,388	575,890	579,220	579,470	579,720	579,970
Total Flow:	708,837	709,300	712,600	712,900	713,200	713,500

Number of Actual Connections at End of 2022 : 1,562 (Fountain Hill) + 514 (Salisbury) + 23 (City)

1 Equivalent Dwelling Unit (EDU) = 297 Gallons Per Day (Based on 2022 average daily flow meter readings.)

2. **Connected Organic Loading (BOD5): * (MG/L or LBS/DAY)** (Calculation includes only Borough connections)

	<u>Current</u>			<u>Projected BOD5</u>		
	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>
	1,150	1,151	1,157	1,157	1,157	1,157

(BOD5 estimated: based on a reported annual average value of 700 PPM from St. Luke's Hospital and an assumed value of 0.17 LBS./DAY BOD5 per equivalent person from all other Borough connections.)

3. **Connected Population: *** (Equivalent Borough population served - based on census data and water meter data)

	<u>Current</u>			<u>Projected Population</u>		
	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>
	4,808	4,813	4,846	4,849	4,851	4,854

4. **Total Length of System: *** 63,666 Feet

5. **Range of Pipe Sizes: ***

Smallest: 8 Inches

Largest: 21 Inches

NOTE: Pipe lengths and manhole count verified during 2021 sewer system TV inspection, Project FH20-20(TV).

* If estimated, please note.

6. **Total Number of Manholes: *** 349

7. **Construction Material:**

Pipes: Majority of pipes are vitrified clay; newer pipes are PVC

Manholes: Majority of manholes are brick; newer manholes are precast concrete

8. **Combined Sewers:**

Location: None

Percent of Total System: 0%

9. **Major Interceptors:**

<u>Name</u>	<u>Length (Feet)</u>	<u>Pipe Diameter (Inches)</u>	<u>Pop. Served</u>	<u>Design EDU's</u>	<u>(Design) Flow (MGD)</u>
Fountain Hill Interceptor	5,040	21	4,851 (Ft Hill)*	10,300 **	6.4
<hr/>					
1,318 (Salisbury Twp)*					
<hr/>					
57 (City of Bethlehem)					
<hr/>					
6,226 (Total)					
<hr/>					

* Population Served is estimated - based on 2020 census value of 2.49 persons per EDU in Borough of Fountain Hill

and 2020 census value of 2.52 persons per EDU in Salisbury Township.

** Based on PA DEP Domestic Wastewater Manual criteria of 250 GPD/person for interceptor design

10. Five Year Projections: Major Interceptors *

<u>Name/Segment</u>	<u>Capacity (GPD)</u> <u>(MGD)</u>	<u>Current</u> <u>2022</u>	<u>2023</u>	<u>Projected Peak Flows (GPD) (MGD)</u>			
				<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>
Fountain Hill Interceptor	6.4	1.77	1.77	1.78	1.78	1.78	1.78
(20" VCP @ 0.68% in Cherokee Street)							
(The peak flow rate is estimated at 2.5 times average daily flow.)							

* Attach supporting documentation.

11. Mitigating Measures:

If the projected flow exceeds the limiting section capacity at any time during the five-year period, explain proposed and on-going efforts to correct the potential overload for each instance. Estimate the probable success of these mitigating measures in eliminating the potential overload condition. Use additional sheets if necessary.

The estimated instantaneous peak flow rate does not exceed the Interceptor's limiting capacity.

During 2022, the Public Works staff routinely cleaned the master meter primary nozzle to reduce the number of days where meter readings are adversely influenced by clogging in the Kennison nozzle.

PUMPING STATIONS

1. Description:

Name/Number	Location	Capacity (GPD)		Metered * (Yes/No)	Length (Feet)	Force Main		Estimated Population
		<u>Existing</u>	<u>Ultimate</u>			<u>Diameter</u> (Inches)		
St. Luke's Area Pump Station		720,000	720,000	Yes	2,860	8		869 **
(Located at 599 Brighton Street)								

* Flow is computed using 500 GPM (based on pressure and ampere observations by manufacturer's field technician 6/24/2022) and the run time meter readings (see attached data). There are no plans for any expansion of this pump station.

** Estimated population served includes approximately 220 in residential and equivalent small office occupancies plus the former Reeb Millwork site on River Road and the portions of the St. Luke's Hospital campus located northeast of Bishopthorpe Street. (See Drainage Basin 2 on the Borough Sanitary Sewer Index Map)

* Attach meter record summaries. Note plans for future pumping station expansion.

2. Five-Year Projections: Pumping Stations *

Name	Capacity (GPD)	Projected Peak Flows (GPD)					
		<u>Current</u> <u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>
St. Luke's PS	720,000	93,500	180,455	180,455	180,455	180,455	180,455

*

* Current average flows are calculated, based on pump run time observations for the 12 months of the year.

Peak flow values are estimated from the run time data at 1.93 times average daily flow (based on current year peak flow rate).

* Attach supporting data.

3. **Mitigating Measures:**

If the projected peak flow exceeds the pumping station capacity at any time during the five-year period, explain proposed and on-going efforts to correct the potential overload for each instance. Estimate the probable success of these mitigating measures in eliminating the potential overload condition. Use additional sheets if necessary.

Projected peak flows do not exceed the capacity of the pump station, which is based on total daily discharge from one pump, at 500 GPM (720,000 GPD).

METER PITS *

<u>Name/Number</u>	<u>Location</u>	<u>Size/Type</u> **	<u>Sensor</u> ***	<u>Connected Population (est.)</u>	<u>Flows (gpd) Peak/Average</u>	
Broadway Meter Pit	MH FH-1	12"	Ultrasonic	6,226	1,770,000	708,837
Kennison Nozzle						

(Population estimate includes Fountain Hill, Salisbury, and City connections draining through the interceptor & meter pit.)

(Peak flow rate is estimated based on 2.5 times average.)

* Attach meter record summaries.

** Weir, flume, pipe, etc.

*** Float, bubbler, sonar, etc.

OPERATION AND MAINTENANCE

1. Describe Routine Operation and Maintenance Procedures:

Sewer System: Borough forces usually clean the sewers annually utilizing a Jet Flush equipped with a root cutter. This work is conducted over 2 to 3 weeks in the Spring or Fall.

Pump Stations: Checked by Borough forces two to three times each week. Borough routine O&M includes: Grease bearings, check packing and float switches, check comminutor, degrease wet well.

All valves exercised quarterly. Wet well pumped down and cleaned in March and October 2022.

Annual maintenance contract with Kappe Assoc. - Re-packed both pumps in June.

Meter Pits: Inspections and cleaning, when necessary, by Borough forces.

Meter calibration was last performed by W G Malden on 8/31/2022. Logger at meter site was replaced in April 2020.

2. Known Problem Areas:

<u>Location</u>	<u>Nature of Problem *</u>	<u>Corrective Measures Taken</u>
Borough wide	Inflow & Infiltration (I&I)	Continued monitoring of system flows.

The Borough awarded a contract for a system-wide inspection of all sewer mains, street laterals, and manholes in late 2020. The inspection work began in March 2021. The results of this inspection are being evaluated for specifying work items in subsequent I&I reduction rehab. projects.

* Surcharging, line blockage, etc.

E. SANITARY SEWER EXTENSIONS (2022 ONLY) *

Name/Area Served	Sewer	Extension	PADEP	Equivalent Dwelling Units		Flow (gpd) **
	Size	Length	Code No.	Connected	Total Planned	Current/Design

NONE

* Attach plan of sanitary sewer system detailing additions made this year.

** 1 Equivalent Dwelling Unit (EDU) = 284 Gallons Per Day

(If there is a difference between this EDU calculation and that on page 1, Section A.1., please explain the difference.)

F. PROPOSED DEVELOPMENTS (Planning Modules) *

Name/Area Served	PADEP	Current	Proposed Equivalent Dwelling Units				Flow **
	Code No.	2022	2023	2024	2025	2026	2027 (GPD)

(See attached table of approved or planned developments)

** Projections of flow from new and future connections are based on 250 GPD/EDU, which reflects conservative values for actual domestic flow when new units connect to the existing sewer mains and do not involve pipe extensions (i.e., new units do not contribute to I&I at the same rate as existing system). For any development proposing extension of the public sewer system the per-unit flow will be analyzed based on the site specific proposal.

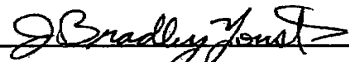
* Attach plan of sanitary sewer system detailing proposed developments.

** 1 Equivalent Dwelling Unit (EDU) = 250 Gallons Per Day

(If there is a difference between this EDU calculation and that on page 1, Section A.1., please explain the difference.)


G. CERTIFICATION

Prepared By:

Signature: 
Name: J. Bradley Youst, P.E.
Title: Borough Engineer, Planning & Zoning
Company: Hanover Engineering Associates, Inc.
Address: 252 Brodhead Rd., Suite 100
Bethlehem, PA 18017-8944

Phone No.: 610-691-5644 ext 1067 fax: 610-691-6968
E-mail: jbyoust@hanovereng.com
Date: February 1, 2023

Approved By (Municipal Contact):

Signature: 
Name: Eric Gratz
Title: Borough Manager
Municipality: Borough of Fountain Hill
Address: 941 Long Street
Fountain Hill, PA 18015-2260

Phone No.: 610-867-0301 fax: 610-867-7153
E-mail: egratz@fhboro.org
Date: 2/1/2023

Industrial User Information Form

Municipality: Fountain Hill Borough

<u>Industrial User</u>	<u>Address</u>	<u>Type of Manufacturing</u>	<u>Flow (GPD)</u>
St. Lukes Hospital	801 Ostrum St	Hospital	68,386
NOTE: Fountain Hill does not keep records of this category of users. The City of Bethlehem administers Industrial Waste			
User permitting. Flow reported above is based on 2022 water meter readings for main hospital and dialysis center.			

2022 Borough of Fountain Hill Sewer System Operations Questionnaire													
Approved or Planned Subdivisions or Connection of Existing Properties with On-lot Systems													
Group	Subdivision/Area Served	PA DEP Code No.	Total Proposed EDUs	Proposed Flow (GPD)	EDUs Connected prior to 1-1-2022	EDUs Added 2022	EDUs Connected as of 12-31-2022	Projected Total Number of EDUs Connected					Future Flow (GPD)
								2023	2024	2025	2026	2027	
A	<u>Approved Developer Projects</u>												
	Sullivan 3-lot Subdivision	N/A	3	750	2	0	2	2	2	3	3	3	250
	Herritage Estates 3-lot Subdivision	N/A	3	750	2	0	2	2	2	2	2	3	250
	Bottom Dollar Food Store Building	N/A	1	250	Store closed 2014 - Divided into 2 leaseholds; Dollar General occupied 2018; Second unit remains vacant.								250
B	<u>Municipal Sewer Extension Projects</u>												
	None planned												
C	<u>Developer Projects in Planning Phase</u>												
	Bennick Subdivision, 1410 Carmen Street	N/A	1	250	0	0	0	0	1	1	1	1	250
	(One lateral installed in 2018 prior to street paving project. Subdivision plan not yet approved.)												
	1336 Russell Ave. Apartment Building	2-39806008-3E	12.3	3,075	0	0	0	0	12.3	12.3	12.3	12.3	3,075
	(Fountain Hill Hose Co. social club closed. Redevelopment plan submitted 2020. Conditionally approved.)												
	940 Cherokee St - Apartment bldg. proposal												
	Owner has inquired; only Sketch Plan submitted to-date.												
D	<u>Miscellaneous Fill In and Conversions</u>												
	835 Delaware Ave. (bldg demo. - open lot)		1	250	0	0	0	0	0	0	1	1	250
	932 Dodson Street (single residence built on an open lot.)		1	250	0	1	1	1	1	1	1	1	0
	Two additional homes on N Bergen Street		2	500	0	0	0	2	2	2	2	2	500
	(might not be connected to the sewer system)												
	960 Broadway - Strip mall - Apartment re-development.												
	Owner has inquired; only Sketch Plan submitted to-date.												
	Other miscellaneous connections					0	0	0	0	0	0	0	
	Borough of Fountain Hill Subtotals:		24.3	6,075	4	1	5	7.0	20.3	21.3	22.3	23.3	4,825
	Net projected increase: EDUs			GPD				2	13	1	1	1	GPD
	Net projected increase: GPD							500	3,325	250	250	250	
E	<u>Salisbury Township Treatment Allocation</u>												
	Miscellaneous Fill In (usually, none)					4							
	Salisbury Township Subtotals:		0			4	0	0	0	0	0	0	0
	(Net annual increase):							0	0	0	0	0	GPD
F	<u>City of Bethlehem Treatment Allocation</u>												
	None known												
	Miscellaneous Fill In (usually, none)					0							
	City of Bethlehem Subtotals:		0			0	0	0	0	0	0	0	0
	(Net annual increase):							0	0	0	0	0	GPD
	TOTAL PLANNED EDUs		24.3			5.0	5.0	7.0	20.3	21.3	22.3	23.3	4,825
	Net projected increase: EDUs					5 (Actual)		2.0	13.3	1.0	1.0	1.0	GPD
	Net projected increase: GPD					1,250		500	3,325	250	250	250	

2022 SEWER SYSTEM QUESTIONNAIRE BOROUGH OF FOUNTAIN HILL

RESPONSE TO QUESTION REGARDING "CURRENT ALLOCATION"

The City of Bethlehem and the Borough of Fountain Hill entered into a Sewer Agreement dated December 19, 1927. This Agreement was superseded by an Agreement dated March 30, 1954, providing for the transportation and treatment of Fountain Hill's sewage through the City's interceptor and treatment works. The 1954 Agreement did not establish flow quantity limitations or treatment allocation. The City later developed allocations for treatment of sewage from various municipalities, including the Borough, in establishing its design basis for the capacity of the City's treatment plant. The allocation for the Borough, as established by the City without specific Agreement or formal approval by the Borough, was 0.625 MGD.

In response to a request by the City to resolve disagreement about the Borough's treatment allocation, in late 2003 the Borough proposed an Amendment to the 1954 Agreement to formally establish the Borough's treatment allocation at 0.700 MGD.

In subsequent City review of that Amendment, the City requested that the document include provisions for the Borough to take reasonable steps to reduce inflow and infiltration in its sewer system in order to reach an ultimate sewer flow of 0.625 MGD no later than ten (10) years from the date of the Amendment. The Borough has begun I&I identification and reduction efforts, and expects to continue with additional efforts to reduce extraneous flows in the Borough's sewer system. However, the proposed modified Amendment was not ratified by the City and the Borough.

On the basis of the Borough's good faith in attempting to resolve the question of its allocation and to reduce I&I in its sewer system, Fountain Hill's treatment allocation is, therefore, shown to be 0.700 MGD at this time.

FOUNTAIN HILL - BROADWAY SEWER FLOW METER DATA - 2022

(From: Public Works Supervisor's field log of meter pit O&M)

Date	Notes
2/17/2022	Flow metering equipment cleaned.
5/3/2022	Flow metering equipment cleaned.
8/31/2022	Flow metering equipment cleaned; metering equipment calibrated.

NOTES:

Flow is continuously monitored and recorded electronically. Annual sewer operations reporting is based on daily flow records obtained periodically by Borough Engineer's download of stored flow data from the field recorder to an office PC. The downloaded daily flow meter readings for the entire calendar year are on file in the Bethlehem Office of Hanover Engineering Associates, Inc., and are available upon request.

The above chart presents an "operator's log" of field maintenance of the flow meter station as tracked by the Public Works Supervisor. This meter pit is located in the middle of Broadway, a high traffic volume arterial roadway, thus making more frequent meter pit inspections and maintenance very difficult.

This meter station includes a Kennison Nozzle with an ultrasonic level sensor connected to a recorder unit. As the flow increases, the outlet nozzle geometry causes the upstream flow depth to rise. The meter & recorder then convert the measured depth to a flow rate. By design, the flow rate is proportional to flow depth. Although these nozzles are well suited to measuring flow of liquids containing sewage solids, the nozzle often accumulates debris, resulting in a reduced waterway area and producing artificially HIGHER flow readings. When the flow is noticed to average above 1.0 MGD for extended periods of time (especially during dry weather, when it should be lower), it serves as an indicator of nozzle blockage. The meter is generally cleaned after extended high flow rates are observed, and thereafter, the flow reverts to normally fluctuating readings in the range of 0.6 to 0.9 MGD. Accordingly, it must be understood that when the meter nozzle is obstructed, the meter OVER-registers flow in the Fountain Hill interceptor.

The City of Bethlehem is currently planning a reconstruction of its Broadway interceptor sewer. The Borough's understanding is that a date for bidding of the reconstruction has not been determined. The Borough has prepared final design for a replacement meter pit, which would be constructed in conjunction with the City's project. The new facility will utilize an open channel ultrasonic flow meter and will be located in a sidewalk area near the municipal boundary for easier and safer access.

The meter was field checked and calibrated by W G Malden on 08/31/2022, under annual maint. contract.

FOUNTAIN HILL - PUMP STATION RUN TIME DATA & FLOW CALCULATIONS - 2022

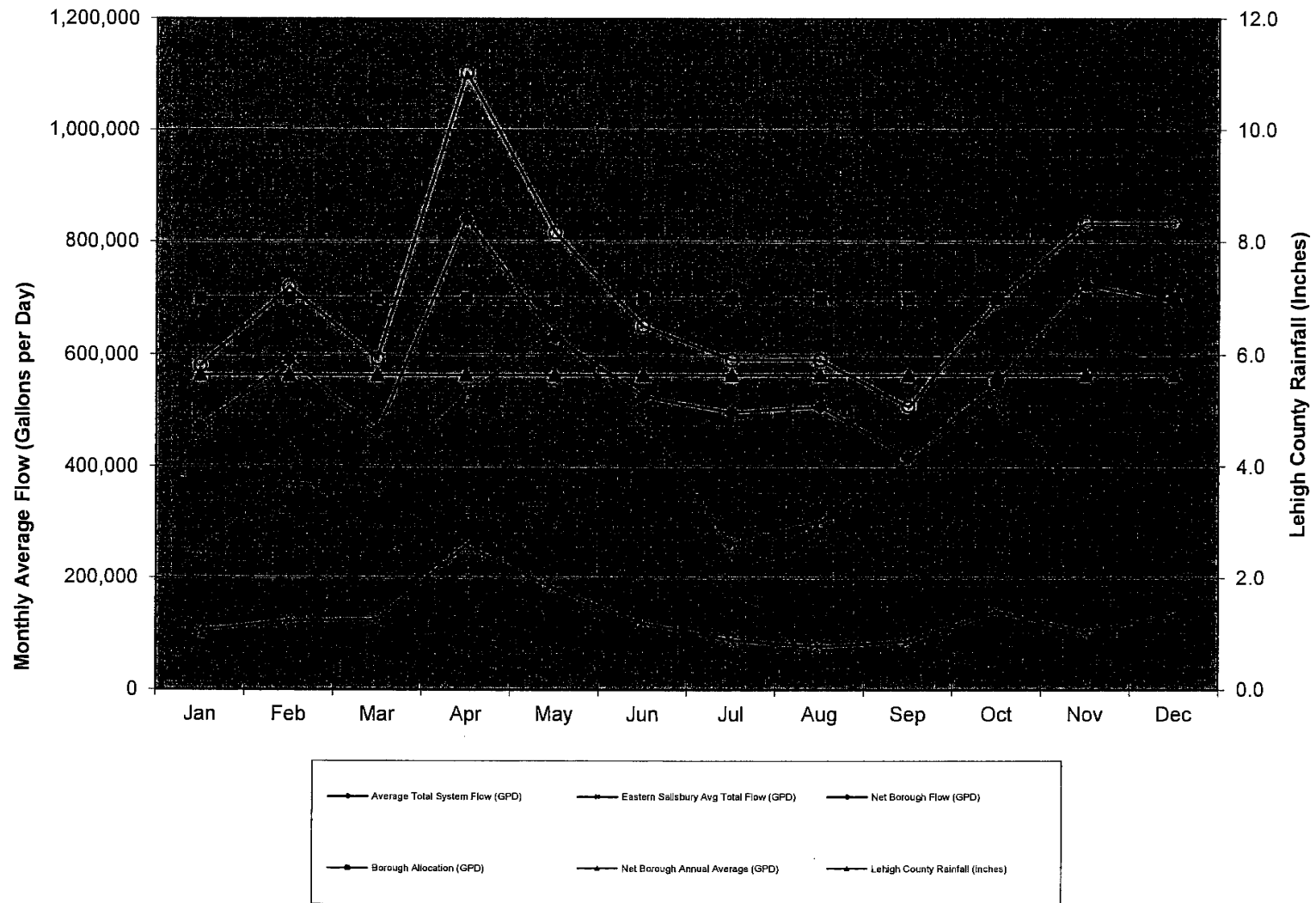
Date	Pump 1 Meter (hours)	Pump 2 Meter (hours)	Days	Pump 1 Run Time (hours)	Pump 1 Gallons Pumped	Pump 1 Average Flow GPD	Pump 2 Run Time (hours)	Pump 2 Gallons Pumped	Pump 2 Average Flow GPD	Total Gallons Pumped	Total Average Flow GPD
12/30/21	11,050.0	1,959.0		Est. flow rate (GPM) =		500	Est. flow rate (GPM) =		500		
01/03/22	11,054.0	1,964.0	4	4	120,000	30,000	5	150,000	37,500	270,000	67,500
01/14/22	11,069.0	1,979.0	11	15	450,000	40,909	15	450,000	40,909	900,000	81,818
01/18/22	11,074.0	1,985.0	4	5	150,000	37,500	6	180,000	45,000	330,000	82,500
01/24/22	11,081.0	1,993.0	6	7	210,000	35,000	8	240,000	40,000	450,000	75,000
01/26/22	11,084.0	1,996.0	2	3	90,000	45,000	3	90,000	45,000	180,000	90,000
01/28/22	11,087.0	1,999.0	2	3	90,000	45,000	3	90,000	45,000	180,000	90,000
01/31/22	11,090.0	2,003.0	3	3	90,000	30,000	4	120,000	40,000	210,000	70,000
02/04/22	11,096.0	2,010.0	4	6	180,000	45,000	7	210,000	52,500	390,000	97,500
02/07/22	11,100.0	2,013.0	3	4	120,000	40,000	3	90,000	30,000	210,000	70,000
02/09/22	11,103.0	2,017.0	2	3	90,000	45,000	4	120,000	60,000	210,000	105,000
02/11/22	11,106.0	2,020.0	2	3	90,000	45,000	3	90,000	45,000	180,000	90,000
02/14/22	11,109.0	2,024.0	3	3	90,000	30,000	4	120,000	40,000	210,000	70,000
02/16/22	11,112.0	2,027.0	2	3	90,000	45,000	3	90,000	45,000	180,000	90,000
02/17/22	11,115.0	2,030.0	1	3	90,000	90,000	3	90,000	90,000	180,000	180,000
02/22/22	11,120.0	2,036.0	5	5	150,000	30,000	6	180,000	36,000	330,000	66,000
02/24/22	11,123.0	2,039.0	2	3	90,000	45,000	3	90,000	45,000	180,000	90,000
02/25/22	11,125.0	2,041.0	1	2	60,000	60,000	2	60,000	60,000	120,000	120,000
02/28/22	11,128.0	2,044.0	3	3	90,000	30,000	3	90,000	30,000	180,000	60,000
03/02/22	11,131.0	2,048.0	2	3	90,000	45,000	4	120,000	60,000	210,000	105,000
03/04/22	11,134.0	2,051.0	2	3	90,000	45,000	3	90,000	45,000	180,000	90,000
03/07/22	11,137.0	2,054.0	3	3	90,000	30,000	3	90,000	30,000	180,000	60,000
03/09/22	11,140.0	2,058.0	2	3	90,000	45,000	4	120,000	60,000	210,000	105,000
03/11/22	11,143.0	2,061.0	2	3	90,000	45,000	3	90,000	45,000	180,000	90,000
03/14/22	11,147.0	2,065.0	3	4	120,000	40,000	4	120,000	40,000	240,000	80,000
03/16/22	11,151.0	2,069.0	2	4	120,000	60,000	4	120,000	60,000	240,000	120,000
03/18/22	11,153.0	2,071.0	2	2	60,000	30,000	2	60,000	30,000	120,000	60,000
03/21/22	11,157.0	2,075.0	3	4	120,000	40,000	4	120,000	40,000	240,000	80,000
03/23/22	11,160.0	2,079.0	2	3	90,000	45,000	4	120,000	60,000	210,000	105,000
03/25/22	11,163.0	2,082.0	2	3	90,000	45,000	3	90,000	45,000	180,000	90,000
03/28/22	11,167.0	2,086.0	3	4	120,000	40,000	4	120,000	40,000	240,000	80,000
03/30/22	11,170.0	2,090.0	2	3	90,000	45,000	4	120,000	60,000	210,000	105,000
04/01/22	11,173.0	2,094.0	2	3	90,000	45,000	4	120,000	60,000	210,000	105,000
04/04/22	11,177.0	2,098.0	3	4	120,000	40,000	4	120,000	40,000	240,000	80,000
04/06/22	11,181.0	2,102.0	2	4	120,000	60,000	4	120,000	60,000	240,000	120,000
04/08/22	11,184.0	2,106.0	2	3	90,000	45,000	4	120,000	60,000	210,000	105,000
04/11/22	11,188.0	2,110.0	3	4	120,000	40,000	4	120,000	40,000	240,000	80,000
04/14/22	11,193.0	2,115.0	3	5	150,000	50,000	5	150,000	50,000	300,000	100,000
04/18/22	11,198.0	2,121.0	4	5	150,000	37,500	6	180,000	45,000	330,000	82,500
04/20/22	11,201.0	2,125.0	2	3	90,000	45,000	4	120,000	60,000	210,000	105,000
04/22/22	11,205.0	2,128.0	2	4	120,000	60,000	3	90,000	45,000	210,000	105,000
04/25/22	11,208.0	2,132.0	3	3	90,000	30,000	4	120,000	40,000	210,000	70,000
04/27/22	11,211.0	2,136.0	2	3	90,000	45,000	4	120,000	60,000	210,000	105,000
04/29/22	11,215.0	2,139.0	2	4	120,000	60,000	3	90,000	45,000	210,000	105,000
05/02/22	11,218.0	2,143.0	3	3	90,000	30,000	4	120,000	40,000	210,000	70,000
05/04/22	11,221.0	2,147.0	2	3	90,000	45,000	4	120,000	60,000	210,000	105,000
05/06/22	11,224.0	2,150.0	2	3	90,000	45,000	3	90,000	45,000	180,000	90,000
05/09/22	11,229.0	2,155.0	3	5	150,000	50,000	5	150,000	50,000	300,000	100,000
05/11/22	11,233.0	2,159.0	2	4	120,000	60,000	4	120,000	60,000	240,000	120,000
05/13/22	11,235.0	2,162.0	2	2	60,000	30,000	3	90,000	45,000	150,000	75,000
05/17/22	11,243.0	2,171.0	4	8	240,000	60,000	9	270,000	67,500	510,000	127,500
05/20/22	11,247.0	2,174.0	3	4	120,000	40,000	3	90,000	30,000	210,000	70,000
05/23/22	11,251.0	2,179.0	3	4	120,000	40,000	5	150,000	50,000	270,000	90,000
05/25/22	11,254.0	2,183.0	2	3	90,000	45,000	4	120,000	60,000	210,000	105,000
05/27/22	11,257.0	2,187.0	2	3	90,000	45,000	4	120,000	60,000	210,000	105,000
05/31/22	11,263.0	2,192.0	4	6	180,000	45,000	5	150,000	37,500	330,000	82,500
06/03/22	11,269.0	2,199.0	3	6	180,000	60,000	7	210,000	70,000	390,000	130,000
06/08/22	11,275.0	2,206.0	5	6	180,000	36,000	7	210,000	42,000	390,000	78,000
06/10/22	11,279.0	2,211.0	2	4	120,000	60,000	5	150,000	75,000	270,000	135,000
06/13/22	11,283.0	2,215.0	3	4	120,000	40,000	4	120,000	40,000	240,000	80,000
06/15/22	11,287.0	2,219.0	2	4	120,000	60,000	4	120,000	60,000	240,000	120,000
06/17/22	11,290.0	2,222.0	2	3	90,000	45,000	3	90,000	45,000	180,000	90,000
06/20/22	11,294.0	2,227.0	3	4	120,000	40,000	5	150,000	50,000	270,000	90,000
06/22/22	11,297.0	2,230.0	2	3	90,000	45,000	3	90,000	45,000	180,000	90,000
06/24/22	11,300.0	2,234.0	2	3	90,000	45,000	4	120,000	60,000	210,000	105,000

FOUNTAIN HILL - PUMP STATION RUN TIME DATA & FLOW CALCULATIONS - 2022

Date	Pump 1 Meter (hours)	Pump 2 Meter (hours)	Days	Pump 1 Run Time (hours)	Pump 1 Gallons Pumped	Pump 1 Average Flow GPD	Pump 2 Run Time (hours)	Pump 2 Gallons Pumped	Pump 2 Average Flow GPD	Total Gallons Pumped	Total Average Flow GPD
06/27/22	11,304.0	2,239.0	3	4	120,000	40,000	5	150,000	50,000	270,000	90,000
06/29/22	11,308.0	2,243.0	2	4	120,000	60,000	4	120,000	60,000	240,000	120,000
07/01/22	11,311.0	2,246.0	2	3	90,000	45,000	3	90,000	45,000	180,000	90,000
07/05/22	11,317.0	2,252.0	4	6	180,000	45,000	6	180,000	45,000	360,000	90,000
07/08/22	11,322.0	2,258.0	3	5	150,000	50,000	6	180,000	60,000	330,000	110,000
07/12/22	11,328.0	2,265.0	4	6	180,000	45,000	7	210,000	52,500	390,000	97,500
07/15/22	11,334.0	2,271.0	3	6	180,000	60,000	6	180,000	60,000	360,000	120,000
07/18/22	11,338.0	2,276.0	3	4	120,000	40,000	5	150,000	50,000	270,000	90,000
07/22/22	11,346.0	2,284.0	4	8	240,000	60,000	8	240,000	60,000	480,000	120,000
07/25/22	11,351.0	2,290.0	3	5	150,000	50,000	6	180,000	60,000	330,000	110,000
07/27/22	11,354.0	2,293.0	2	3	90,000	45,000	3	90,000	45,000	180,000	90,000
07/29/22	11,358.0	2,298.0	2	4	120,000	60,000	5	150,000	75,000	270,000	135,000
08/01/22	11,362.0	2,303.0	3	4	120,000	40,000	5	150,000	50,000	270,000	90,000
08/03/22	11,366.0	2,307.0	2	4	120,000	60,000	4	120,000	60,000	240,000	120,000
08/05/22	11,370.0	2,311.0	2	4	120,000	60,000	4	120,000	60,000	240,000	120,000
08/08/22	11,374.0	2,316.0	3	4	120,000	40,000	5	150,000	50,000	270,000	90,000
08/10/22	11,378.0	2,320.0	2	4	120,000	60,000	4	120,000	60,000	240,000	120,000
08/12/22	11,381.0	2,324.0	2	3	90,000	45,000	4	120,000	60,000	210,000	105,000
08/15/22	11,385.0	2,328.0	3	4	120,000	40,000	4	120,000	40,000	240,000	80,000
08/17/22	11,388.0	2,331.0	2	3	90,000	45,000	3	90,000	45,000	180,000	90,000
08/19/22	11,391.0	2,335.0	2	3	90,000	45,000	4	120,000	60,000	210,000	105,000
08/22/22	11,395.0	2,340.0	3	4	120,000	40,000	5	150,000	50,000	270,000	90,000
08/24/22	11,399.0	2,344.0	2	4	120,000	60,000	4	120,000	60,000	240,000	120,000
08/26/22	11,402.0	2,347.0	2	3	90,000	45,000	3	90,000	45,000	180,000	90,000
08/29/22	11,407.0	2,352.0	3	5	150,000	50,000	5	150,000	50,000	300,000	100,000
08/31/22	11,411.0	2,357.0	2	4	120,000	60,000	5	150,000	75,000	270,000	135,000
09/02/22	11,414.0	2,360.0	2	3	90,000	45,000	3	90,000	45,000	180,000	90,000
09/06/22	11,420.0	2,367.0	4	6	180,000	45,000	7	210,000	52,500	390,000	97,500
09/09/22	11,425.0	2,373.0	3	5	150,000	50,000	6	180,000	60,000	330,000	110,000
09/12/22	11,430.0	2,378.0	3	5	150,000	50,000	5	150,000	50,000	300,000	100,000
09/14/22	11,434.0	2,383.0	2	4	120,000	60,000	5	150,000	75,000	270,000	135,000
09/16/22	11,437.0	2,386.0	2	3	90,000	45,000	3	90,000	45,000	180,000	90,000
09/19/22	11,441.0	2,390.0	3	4	120,000	40,000	4	120,000	40,000	240,000	80,000
09/21/22	11,445.0	2,394.0	2	4	120,000	60,000	4	120,000	60,000	240,000	120,000
09/23/22	11,449.0	2,399.0	2	4	120,000	60,000	5	150,000	75,000	270,000	135,000
09/26/22	11,452.0	2,403.0	3	3	90,000	30,000	4	120,000	40,000	210,000	70,000
09/30/22	11,459.0	2,411.0	4	7	210,000	52,500	8	240,000	60,000	450,000	112,500
10/03/22	11,463.0	2,414.0	3	4	120,000	40,000	3	90,000	30,000	210,000	70,000
10/05/22	11,466.0	2,419.0	2	3	90,000	45,000	5	150,000	75,000	240,000	120,000
10/07/22	11,470.0	2,422.0	2	4	120,000	60,000	3	90,000	45,000	210,000	105,000
10/10/22	11,473.0	2,427.0	3	3	90,000	30,000	5	150,000	50,000	240,000	80,000
10/12/22	11,477.0	2,430.0	2	4	120,000	60,000	3	90,000	45,000	210,000	105,000
10/14/22	11,481.0	2,435.0	2	4	120,000	60,000	5	150,000	75,000	270,000	135,000
10/17/22	11,485.0	2,439.0	3	4	120,000	40,000	4	120,000	40,000	240,000	80,000
10/19/22	11,488.0	2,443.0	2	3	90,000	45,000	4	120,000	60,000	210,000	105,000
10/21/22	11,491.0	2,446.0	2	3	90,000	45,000	3	90,000	45,000	180,000	90,000
10/24/22	11,495.0	2,450.0	3	4	120,000	40,000	4	120,000	40,000	240,000	80,000
10/26/22	11,498.0	2,454.0	2	3	90,000	45,000	4	120,000	60,000	210,000	105,000
10/28/22	11,501.0	2,457.0	2	3	90,000	45,000	3	90,000	45,000	180,000	90,000
10/31/22	11,505.0	2,462.0	3	4	120,000	40,000	5	150,000	50,000	270,000	90,000
11/02/22	11,508.0	2,465.0	2	3	90,000	45,000	3	90,000	45,000	180,000	90,000
11/04/22	11,512.0	2,469.0	2	4	120,000	60,000	4	120,000	60,000	240,000	120,000
11/07/22	11,516.0	2,474.0	3	4	120,000	40,000	5	150,000	50,000	270,000	90,000
11/09/22	11,519.0	2,477.0	2	3	90,000	45,000	3	90,000	45,000	180,000	90,000
11/11/22	11,523.0	2,482.0	2	4	120,000	60,000	5	150,000	75,000	270,000	135,000
11/14/22	11,527.0	2,486.0	3	4	120,000	40,000	4	120,000	40,000	240,000	80,000
11/16/22	11,530.0	2,489.0	2	3	90,000	45,000	3	90,000	45,000	180,000	90,000
11/18/22	11,533.0	2,493.0	2	3	90,000	45,000	4	120,000	60,000	210,000	105,000
11/21/22	11,537.0	2,497.0	3	4	120,000	40,000	4	120,000	40,000	240,000	80,000
11/28/22	11,546.0	2,507.0	7	9	270,000	38,571	10	300,000	42,857	570,000	81,429
11/30/22	11,549.0	2,510.0	2	3	90,000	45,000	3	90,000	45,000	180,000	90,000
12/02/22	11,552.0	2,514.0	2	3	90,000	45,000	4	120,000	60,000	210,000	105,000
12/05/22	11,556.0	2,518.0	3	4	120,000	40,000	4	120,000	40,000	240,000	80,000
12/07/22	11,559.0	2,522.0	2	3	90,000	45,000	4	120,000	60,000	210,000	105,000
12/09/22	11,562.0	2,526.0	2	3	90,000	45,000	4	120,000	60,000	210,000	105,000

FOUNTAIN HILL - PUMP STATION RUN TIME DATA & FLOW CALCULATIONS - 2022											
Date	Pump 1 Meter (hours)	Pump 2 Meter (hours)	Days	Pump 1 Run Time (hours)	Pump 1 Gallons Pumped	Pump 1 Average Flow GPD	Pump 2 Run Time (hours)	Pump 2 Gallons Pumped	Pump 2 Average Flow GPD	Total Gallons Pumped	Total Average Flow GPD
12/12/22	11,566.0	2,530.0	3	4	120,000	40,000	4	120,000	40,000	240,000	80,000
12/14/22	11,569.0	2,533.0	2	3	90,000	45,000	3	90,000	45,000	180,000	90,000
12/16/22	11,573.0	2,537.0	2	4	120,000	60,000	4	120,000	60,000	240,000	120,000
12/19/22	11,576.0	2,541.0	3	3	90,000	30,000	4	120,000	40,000	210,000	70,000
12/27/22	11,587.0	2,553.0	8	11	330,000	41,250	12	360,000	45,000	690,000	86,250
12/30/22	11,591.0	2,558.0	3	4	120,000	40,000	5	150,000	50,000	270,000	90,000
01/03/23	11,596.0	2,563.0	4	5	150,000	37,500	5	150,000	37,500	300,000	75,000
Annual Totals and Average Flow			369	546	16,380,000	44,390	604	18,120,000	49,106	34,500,000	93,496

Fountain Hill Sewer Flow Summary - 2022



2022 SEWER SYSTEM QUESTIONNAIRE

Municipality Name: Freemansburg Borough

Date: February 9, 2023

Current Allocation: 190,800 GPD *

Note: If any question is not applicable, please write N/A. Do not leave blank!

A. SEWER SYSTEM DETAILS

1. Connected Hydraulic Loading (Flow): * (GPD or MGD)

<u>Current</u>			<u>Projected Flow</u>		
<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>
<u>0.152*</u>	<u>0.154</u>	<u>0.156</u>	<u>0.158</u>	<u>0.160</u>	<u>0.162</u>

* (Refer to Bulk Sewer Billings)

Projections based on five connections per year at 140 GPD/connection and a 10,000 gpd future development (assumed)

Number of Actual Connections at the End of 2022: 1,113

1 Equivalent Dwelling Unit (EDU) = 137 Gallons Per Day

2. Connected Organic Loading (BOD5): * (MG/L or LBS/DAY)

<u>Current</u>			<u>Projected BOD5</u>		
<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>
<u>493</u>	<u>494</u>	<u>495</u>	<u>496</u>	<u>497</u>	<u>498</u>

(2) Based on 0.17 pounds per day per person

3. Connected Population: *

<u>Current</u>			<u>Projected Population</u>		
<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>
<u>2,900</u>	<u>2,905</u>	<u>2,910</u>	<u>2,916</u>	<u>2,921</u>	<u>2,926</u>

(3) Based on 2.6 persons per connection

4. Total Length of System: *38,949 _____ Feet

5. Range of Pipe Sizes: *

Smallest: 6 _____ Inches

Largest: 8 _____ Inches

* If estimated, please note.

6. Total Number of Manholes: * 233 _____

7. Construction Material:

Pipes: _____ VCP, CIP, PVC _____

Manholes: _____ Precast concrete, brick _____

8. Combined Sewers:

Location: _____ n/a (none known of) _____

Percent of Total System: _____ Unknown _____

9. Major Interceptors:

<u>Name</u>	<u>Length (Feet)</u>	<u>Pipe Diameter (Inches)</u>	<u>Pop. Served</u>	<u>Design EDUs</u>	<u>Flow (mgd)</u>
-------------	--------------------------	-----------------------------------	--------------------	------------------------	-------------------

There are two major sewer trunk lines running through the Borough that are owned by the City of Bethlehem. The first one, the N.E. trunk line (Nancy Run Interceptor) runs through the Borough of Freemansburg from the northern limits of the Borough at the municipal boundary with the Township of Bethlehem, to the inverted siphon crossing the Lehigh River. The second line, located within Washington Street, is known as the Washington Street sanitary sewer line and runs from the old pump station located on Pembroke Road, northwest of Cambria Street intersection, down Washington Street to MH #14 in the NE trunk line.

10. Five Year Projections: Major Interceptors *

<u>Name/Segment</u>	<u>Limiting Section Capacity (GPD)</u>	<u>Projected Peak Flows (GPD)</u>					
		<u>Current 2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>

The Borough has recently been made aware of a possible 1,000,000 square foot warehouse to be located at 1600 Freemansburg Avenue in the Borough. A projected sewer flow has not been provided to date to the Borough. In addition, a 24 unit apartment complex on Cambria Street is also near completion. The Borough anticipates requesting additional allocation from the City.

* Attach supporting documentation.

11. Mitigating Measures:

If the projected flow exceeds the limiting section capacity at any time during the five-year period, explain proposed and on-going efforts to correct the potential overload for each instance. Estimate the probable success of these mitigating measures in eliminating the potential overload condition. Use additional sheets if necessary.

N/A

B. PUMPING STATIONS

1. Description:

<u>Name/Number</u>	<u>Location</u>	<u>Capacity (GPD)</u>		<u>Metered *</u> <u>(Yes/No)</u>	<u>Force Main</u>		<u>Estimated</u> <u>Population</u>
		<u>Existing</u>	<u>Ultimate</u>		<u>Length</u> <u>(Feet)</u>	<u>Diameter</u> <u>(Inches)</u>	
Maiden Lane	Maiden Lane	432,000	432,000	No	1,320	6" DIP	1,076

The Maiden Lane Pump Station was upgraded in 2018. Upgrades included two (2) new submersible pumps operating on VFD's, a 3-Phase controller and a sewage grinder (Muffin Monster) inside of the wet well for improved effluent discharge to the plant. In addition, the pumps now operate off of a pressure transducer and are controlled through a VFD via graphical user interface control panel. The pump station is observed on a regular basis by the Borough and is on a SCADA system. Refer to Pump Station Maintenance records in the Attachments.

* Attach meter record summaries. Note plans for future pumping station expansion.

2. Five-Year Projections: Pumping Stations *

<u>Name</u>	<u>Capacity</u> <u>(GPD)</u>	<u>Current</u>		<u>Projected Peak Flows (GPD)</u>			
		<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>
Maiden Lane	432,000	358,000	358,500	359,000	359,500	360,000	360,500

* Attach supporting data.

(1) Projections based on one additional connection per year at 200 gpd/connection with a peak factor of 2.5

3. Mitigating Measures

If the projected peak flow exceeds the pumping station capacity at any time during the five-year period, explain proposed and on-going efforts to correct the potential overload for each instance. Estimate the probable success of these mitigating measures in eliminating the potential overload condition. Use additional sheets if necessary.

N/A

C. METER PITS *

<u>Name/Number</u>	<u>Location</u>	<u>Size/Type</u> **	<u>Sensor</u> ***	<u>Connected Population (est.)</u>	<u>Flows (gpd) Peak/Average</u>
None					

* Attach meter record summaries.

** Weir, flume, pipe, etc. *** Float, bubbler, sonar, etc.

D. OPERATION AND MAINTENANCE

1. Describe Routine Operation and Maintenance Procedures:

Sewer System: Clean and inspect a percentage of manholes and sewer lines yearly.

Pump Stations: Refer to the attached Annual Report of O&M for the Maiden Lane Pump Station

Meter Pits: None

2. Known Problem Areas:

<u>Location</u>	<u>Nature of Problem *</u>	<u>Corrective Measures Taken</u>
<u>Note: There was previously a manhole surcharging problem within the Borough located on the City's NE Trunk</u>		
<u>Line involving MH's #413-423 which condition was previously reported to DEP. The City implemented</u>		
<u>interim measures to address the problem and is proceeding with a Long Term Control Plan. No surcharging occurred</u>		
<u>in 2021. Pursuant to an Agreement between the Borough and the City of Bethlehem, the Borough implemented a Plan</u>		
<u>to install sewer backflow valves on properties which reported surcharging problems. That program was previously</u>		
<u>completed and as a result, six backflow valves were installed.</u>		

* Surcharging, line blockage, etc.

E. SANITARY SEWER EXTENSIONS (2022 ONLY) *

<u>Name/Area Served</u>	<u>Sewer Size</u>	<u>Extension Length</u>	<u>PADEP Code No.</u>	<u>Equivalent Dwelling Units Connected</u>	<u>Total Planned</u>	<u>Flow (gpd) ** Current/Design</u>
None						

* Attach plan of sanitary sewer system detailing additions made this year.

** 1 Equivalent Dwelling Unit (EDU) = 137 Gallons Per Day

(If there is a difference between this EDU calculation and that on Page 1, Section A. 1., please explain the difference.)

F. PROPOSED DEVELOPMENTS (Planning Modules) *

<u>Name/Area Served</u>	<u>PADEP Code No.</u>	<u>Current 2022</u>	<u>2023</u>	<u>Proposed Equivalent Dwelling Units</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>	<u>Flow ** (GPD)</u>
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The Borough has been made aware of a potential warehouse/industrial building to be installed at 1600 Freemansburg Avenue. No formal Land Development or Planning Module submission has been made to the Borough and the projected sewer flow has not been submitted by the developer. There is also a new 24 unit housing complex located on Cambria Street anticipated to be on-line in 2023.

* Attach plan of sanitary sewer system detailing proposed developments.

** 1 Equivalent Dwelling Unit (EDU) = 137 Gallons Per Day

(If there is a difference between this EDU calculation and that on Page 1, Section A. 1., please explain the difference.)

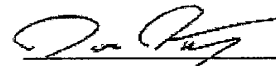
G. CERTIFICATION

Prepared By:

Signature: 
Name: Justin M. Coyle
Title: Borough Engineer
Company: Carroll Engineering Corp.
Address: 949 Easton Road
Warrington, PA

Phone No.: 215-343-5700 ext. 317
E-mail: jcoyle@carrollengineering.com
Date: Feb. 13, 2023

Approved By (Municipal Contact):

Signature: 
Name: Jonathan Itterly
Title: Borough Manager
Municipality: Borough of Freemansburg
Address: 600 Monroe Street
Freemansburg, PA 18017

Phone No.: 610-866-2220
E-mail: manager@boroughoffreemansburg.org
Date:

Industrial User Information Form

Municipality: Freemansburg Borough_____.

<u>Industrial User</u>	<u>Address</u>	<u>Type of Manufacturing</u>	<u>Flow (GPD)</u>
None			



Message Center

Your 2020 annual water quality report is now available! Please go to <https://www.bethlehem-pa.gov/CityOfBethlehem/media/WSRMedia/CCR%20Reports/consumerConfidence2020.pdf> to view the report to learn more about your drinking water. This report contains important information about the source and quality of your drinking water. For translation of the water quality report or to speak with someone about the report please call (610) 865-7000. If you would like a copy of the report mailed to your home, please call (610) 865-7000.

Email us at

custserv@bethlehem-pa.gov

Visit us on the web at

www.bethlehem-pa.gov

During regular business hours call

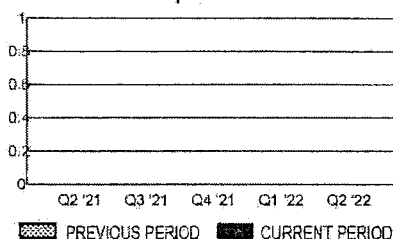
610-865-7070

Emergencies...

Available 24 hours call

610-865-7077

Water Consumption



Customer Name

BOROUGH OF FREEMANSBURG

Billing Date

March 25, 2022

Account Number

036579-00

Service Address

QUARTERLY BULK SEWER BILLING

Due Date

April 14, 2022

Total Amount Due

\$ 31,668.58

Account Summary

Prior Balance

\$ 34,186.94

Payments THANK YOU!

- 34,186.94

Balance forward as of March 25, 2022

\$ 0.00

Current Charges

Consumption Charge 13,311.72000 TG X \$ 2.37900 per TG 31,668.58

Total Bulk Sewer Freemansburg Charges

31,668.58

Total Current Charges

\$ 31,668.58

Total Amount Due \$ 31,668.58

To avoid penalty, please pay Total Amount Due by April 14, 2022.
A fee of \$20.00 will be charged for all returned checks.

RECEIVED

JAN 25 2023

CARROLL ENGINEERING CORP

CEC #16-1124.052

Meter Readings - Dec 17 to Mar 18

Acct #: 036579-00

Service	Previous Read	Present Read	Usage	Units
Bulk Sewer Freemansburg	81045000 Actual	94356000 Actual	13311.7	Thousand Gallons

Bring the entire bill when paying in person. See reverse for information about your bill

Detach at fold and return bottom portion when mailing your payment in the supplied envelope.



Water, Sewer &
Miscellaneous Services

10 East Church Street * Bethlehem, PA 18018-6025

Service Address

QUARTERLY BULK SEWER BILLING

Account Number

036579-00

Due Date

04/14/22

Total Amount Due

\$ 31,668.58

Please allow 5 days for mailing

Amount Enclosed

\$

Make check Payable to: City of Bethlehem

Mail to address on back of stub



190000042187

AUTOSCH 5-DIGIT 18017 C 7 P 2 2316 1 AV 0.423 Sta=23



BOROUGH OF FREEMANSBURG 000
600 MONROE ST
FREEMANSBURG PA 18017-7280



002316



Message Center

Your 2021 annual water quality report is now available! To view the report, please go to <https://www.bethlehem-pa.gov/CityOfBethlehem/media/WSRMedia/CCR%20Reports/consumerConfidence2021.PDF>. This report contains important information about the source and quality of your drinking water. For translation of the water quality report, to speak with someone about the report, or if you would like a copy of the report mailed to your home, please call (610) 865-7000.

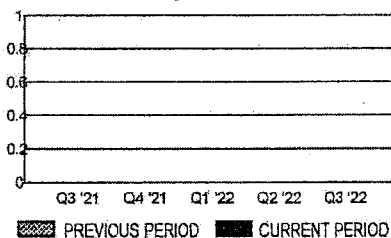
Email us at custserv@bethlehem-pa.gov

Visit us on the web at www.bethlehem-pa.gov

During regular business hours call 610-865-7070

Emergencies...
Available 24 hours call 610-865-7077

Water Consumption



Customer Name
BOROUGH OF FREEMANSBURG
Service Address
QUARTERLY BULK SEWER BILLING

Billing Date
June 24, 2022
Due Date
July 14, 2022

Account Number
036579-00
Total Amount Due
\$ 33,777.64

Account Summary

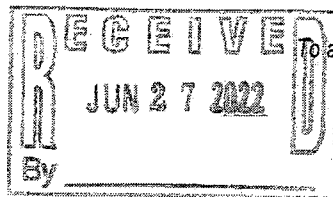
Page 1 of 2

Prior Balance \$ 31,668.58
Payments THANK YOU! - 31,668.58
Balance forward as of June 24, 2022 \$ 0.00

Current Charges

Consumption Charge 14,198.25000 TG X \$ 2.37900 per TG 33,777.64
Total Bulk Sewer Freemansburg Charges 33,777.64
Total Current Charges \$ 33,777.64

Total Amount Due \$ 33,777.64



To avoid penalty, please pay Total Amount Due by July 14, 2022.
A fee of \$20.00 will be charged for all returned checks.

RECEIVED
JAN 25 2023
CARROLL ENGINEERING CORP
CEC #16-1124.052

Meter Readings - Mar 18 to Jun 17

Service	Previous Read	Present Read	Usage	Units
Bulk Sewer Freemansburg	94356000 Actual	108554000 Actual	14198.3	Thousand Gallons

Acct #: 036579-00

Bring the entire bill when paying in person. See reverse for information about your bill

Detach at fold and return bottom portion when mailing your payment in the supplied envelope.



Water, Sewer &
Miscellaneous Services

10 East Church Street * Bethlehem, PA 18018-6025

Service Address

QUARTERLY BULK SEWER BILLING

Account Number

036579-00

Due Date
07/14/22

Total Amount Due
\$ 33,777.64

Please allow 5 days for mailing

Amount Enclosed

\$ 33,777.64

Make check Payable to: **City of Bethlehem**

Mail to address on back of stub

AUTOSCH 5-DIGIT 18017 C 7 P 2 2321 1 AV 0.423 S2h=23



BOROUGH OF FREEMANSBURG 000
600 MONROE ST
FREEMANSBURG PA 18017-7280



190000042187



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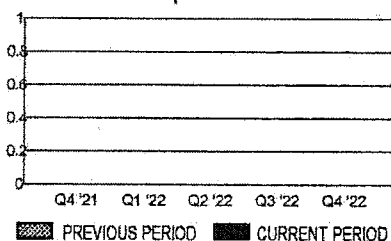
Email us at
custserv@bethlehem-pa.gov

Visit us on the web at
www.bethlehem-pa.gov

During regular business hours call
610-865-7070

Emergencies...
Available 24 hours call
610-865-7077

Water Consumption



Customer Name
BOROUGH OF FREEMANSBURG
Service Address
QUARTERLY BULK SEWER BILLING

Billing Date
September 23, 2022
Account Number
036579-00
Due Date
October 13, 2022
Total Amount Due
\$ 34,335.58

Account Summary

Page 1 of 2

Prior Balance \$ 33,777.64
Payments THANK YOU! - 33,777.64
Balance forward as of September 23, 2022 \$ 0.00

Current Charges

Consumption Charge 14,432.78000 TG X \$ 2.37900 per TG 34,335.58
Total Bulk Sewer Freemansburg Charges 34,335.58
Total Current Charges \$ 34,335.58

Total Amount Due \$ 34,335.58

To avoid penalty, please pay Total Amount Due by October 13, 2022.
A fee of \$20.00 will be charged for all returned checks.

RECEIVED
JAN 25 2023
CARROLL ENGINEERING CORP
CEC #16-1124.052

Meter Readings - Jun 17 to Sep 16

Acct #: 036579-00

Service	Previous Read	Present Read	Usage	Units
Bulk Sewer Freemansburg	108554000 Actual	122986000 Actual	14432.8	Thousand Gallons

Bring the entire bill when paying in person. See reverse for information about your bill

Detach at fold and return bottom portion when mailing your payment in the supplied envelope.



Water, Sewer &
Miscellaneous Services

10 East Church Street * Bethlehem, PA 18018-6025

Service Address

QUARTERLY BULK SEWER BILLING

Account Number

036579-00

Due Date	Total Amount Due
10/13/22	\$ 34,335.58

Please allow 5 days for mailing

Amount Enclosed

\$ 34335.58

Make check Payable to: **City of Bethlehem**

Mail to address on back of stub

AUTOSCH 5-DIGIT 18017 C 7 P 2 2321 1 AV 0.452 Scty=23



BOROUGH OF FREEMANSBURG 000
600 MONROE ST
FREEMANSBURG PA 18017-7280



190000042187



City of Bethlehem Water, Sewer
and Miscellaneous Services
10 East Church Street
Bethlehem, PA 18018-6025

Message Center

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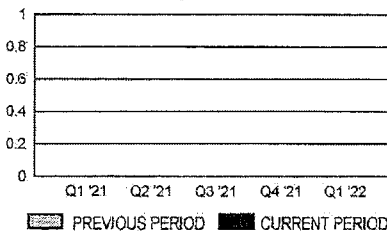
www.bethlehem-pa.gov

During regular business hours call
610-865-7070

Emergencies...

Available 24 hours call
610-865-7077

Water Consumption



Customer Name
BOROUGH OF FREEMANSBURG

Service Address
QUARTERLY BULK SEWER BILLING

Billing Date
December 23, 2022

Due Date
January 12, 2023

Account Number
036579-00

Total Amount Due
\$ 32,123.38

Account Summary

Page 1 of 2

Prior Balance \$ 34,335.58
Payments THANK YOU! - 34,335.58
Balance forward as of December 23, 2022 \$ 0.00

Current Charges

Consumption Charge 13,502.89000 TG X \$ 2.37900 per TG 32,123.38
Total Bulk Sewer Freemansburg Charges 32,123.38
Total Current Charges \$ 32,123.38

Total Amount Due \$ 32,123.38

To avoid penalty, please pay Total Amount Due by January 12, 2023.
A fee of \$20.00 will be charged for all returned checks.

RECEIVED
JAN 25 2023
CARROLL ENGINEERING CORP
CEC #16-1124.052

Meter Readings - Sep 16 to Dec 16

Acct #: 036579-00

Service	Previous Read	Present Read	Usage	Units
Bulk Sewer Freemansburg	122986000 Actual	136488000 Actual	13502.9	Thousand Gallons

Bring the entire bill when paying in person. See reverse for information about your bill

Detach at fold and return bottom portion when mailing your payment in the supplied envelope.



10 East Church Street * Bethlehem, PA 18018-6025

Water, Sewer &
Miscellaneous Services

Service Address
QUARTERLY BULK SEWER BILLING

Account Number
036579-00

Due Date	Total Amount Due
01/12/23	\$ 32,123.38

Please allow 5 days for mailing

Amount Enclosed

\$

Make check Payable to: **City of Bethlehem**

Mail to address on back of stub

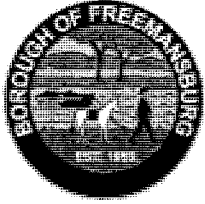
Seq=2171



BOROUGH OF FREEMANSBURG 000
600 MONROE ST
FREEMANSBURG PA 18017-7280



190000042187



Borough of Freemansburg

600 Monroe Street, Freemansburg PA. 18017

Phone: (610)866-2220 Fax: (610)868-2402

Pump Station Report

PUMPS

RECEIVED

FEB 02 2023

CARROLL ENGINEERING CORP

CEC #16-1124.052

Pumps	Total Run Time	Weekly Run Time	Daily Run Time
#1	1041.85	20.04	2.86
#2	960.12	18.46	2.64
Totals	2001.97	38.5	5.5

Pumps Details	Serial #	Hour meter as of 12/31/2021
#1	C1867613	4819.29
#2	C1867615	4613.24
#3	Spare	0

GENERATOR

Hour Meter as of 12/31/2022: 607.3 Hrs.

Hours in Use: 16.5 hrs. (Testing and Emergency Use)

Hours in Use since last Service: 25.3 Hrs. Serviced on 07/21/2021 (582.0 Hrs. at time of service)

Preventative Maintenance and Repairs: Generator Testing Every Monday for 30 min. Coolant and Oil checked weekly.

ALARMS

Total of 4

Type: Power Failure – Level 4

SEWER LINE MAINTENANCE

2,166 linear feet of sewer line was cleaned/flushed and inspected.

Freemansburg Borough Pump Station Log

2022

Date	Time	Description of work / Problems encountered / Personnel on site		
1/3/22	8:21	1= 3777.44	2= 3653.12	Generator Test JR/KR
1/10	9:39	1= 3797.17	2= 3670.73	Generator Test JR/Am
1/14	8:18	1= 3807.95	2= 3680.03	Clean debris JR/Am/KR
1/31	8:13	1= 3828.49	2= 3698.10	Generator Test JR/Am/KR
1/28	9:16	1= 3848.13	2= 3715.37	Generator Test JR/Am
2/4	8:12	1= 3870.14	2= 3734.56	Generator Test JR/Am/KR
2/7	7:53	1= 3879.06	2= 3742.60	Generator Test JR/Am
2/11	8:16	1= 3889.47	2= 3752.07	Clean Debris JR/Am/KR
2/14	8:02	1= 3898.35	2= 3759.77	Generator Test JR/Am
2/18	7:59	1= 3909.85	2= 3769.55	Clean Debris JR/Am/KR
2/22	8:10	1= 3922.02	2= 3780.34	Generator Test JR
2/25	11:08	1= 3930.92	2= 3787.96	General Inspection KR
2/28	8:02	1= 3939.68	2= 3795.41	Generator Test JR/Am
3/4	8:17	1= 3950.98	2= 3804.85	Clean debris JR/Am/KR
3/7	8:19	1= 3959.99	2= 3812.42	Generator Test JR/Am
3/14	8:57	1= 3981.08	2= 3830.23	Generator Test JR/Am
3/18	8:04	1= 3992.13	2= 3839.70	Clean Debris JR/KR
3/21	8:01	1= 4001.18	2= 3847.87	Generator Test JR
3/25	7:43	1= 4012.11	2= 3858.07	Clean Debris JR/KR
3/28	8:10	1= 4023.67	2= 3868.92	Generator Test JR
4/1	8:06	1= 4032.43	2= 3876.83	Clean Debris JR/KR
4/4	8:19	1= 4040.92	2= 3884.73	Generator Test JR
4/8	8:05	1= 4053.81	2= 3896.41	Clean Debris JR/KR
4/11	8:15	1= 4064.17	2= 3904.40	Generator Test JR/DD
4/18	8:29	1= 4082.86	2= 3921.92	Generator Test JR/DD
4/22	7:30	1= 4094.71	2= 3932.21	Remove Debris KR/CS/DD
4/25	8:10	1= 4102.77	2= 3939.55	Generator Test JR/DD
4/29	8:12	1= 4112.94	2= 3949.18	Remove Debris JR/KR
5/6	7:52	1= 4131.54	2= 3967.07	Remove Debris JR/KR
5/9	8:15	1= 4142.09	2= 3976.90	Generator Test JR
5/13	7:30	1= 4152.85	2= 3987.01	Remove Debris

RECEIVED

FEB 02 2023

CARROLL ENGINEERING CORP

CEC #16-1124.052

Freemansburg Borough Pump Station Log

Date	Time	Description of work / Problems encountered / Personnel on site		
5/16	7:36	1= 4161.54	2= 3994.85	Generator Test JR
5/20	7:35	1= 4172.73	2= 4004.80	Remove Debris JR, KR.
5/23	8:18	1= 4181.95	2= 4013.51	Generator Test JR
5/27	7:30	1= 4192.86	2= 4023.23	Remove Debris KR, JR
5/31	7:40	1= 4204.57	2= 4033.87	Generator Test JR
6/3	7:35	1= 4212.93	2= 4041.32	Remove Debris JR/KR
6/10	7:35	1= 4233.75	2= 4060.00	Remove Debris JR/KR
* 11/5 ne	8:09	1= 4236.42	2= 4062.57	Alarm Level 4= Power Failure C, K
6/13	8:08	1= 4242.38	2= 4067.48	Generator Test JR
* 6/14	11:40	1= 4251.00	2= 4076.08	Alarm Level 4= Power Failure JR/CS
6/17	7:44	1= 4253.09	2= 4078.09	Removed Debris JR/KR
* 6/17	= Large Mass of Unknown Material Removed From Bar Screen			
6/20	8:08	1= 4261.30	2= 4086.28	Generator test JR
6/24	9:44	1= 4272.01	2= 4096.90	Remove Debris JR/KR
6/24	Cleaned All Floats and Transducer			Generator Test JR
6/27	8:24	1= 4280.15	2= 4105.32	Remove Debris JR/KR
7/1	7:30	1= 4290.17	2= 4116.01	KR.
7/11	7:45	1= 4317.83	2= 4142.92	Generator Test JR
7/15	7:41	1= 4329.32	2= 4152.94	Remove Debris JR/KR
7/18	7:47	1= 4338.80	2= 4160.99	Generator Test JR
* 7/18	9:32	1= 4341.13	2= 4162.90	Alarm Level 4= Power Failure JR
7/22	7:39	1= 4351.52	2= 4171.73	Remove Debris JR/KR
7/29	7:44	1= 4373.13	2= 4190.93	" " CS/KR
8/2	8:16	1= 4384.73	2= 4202.55	Generator Test JR
8/5	7:29	1= 4392.40	2= 4210.18	Remove Debris
8/8	7:38	1= 4400.58	2= 4218.89	Generator Test JR
8/12	7:32	1= 4410.95	2= 4230.24	Remove Debris
8/19	7:38	1= 4430.83	2= 4248.99	" "
8/26	7:31	1= 4451.73	2= 4265.15	Remove Debris
8/29	8:04	1= 4461.26	2= 4276.53	Generator Test JR
9/2	7:32	1= 4473.04	2= 4287.23	Remove Debris JR/KR



Freemansburg Borough Pump Station Log

Date	Time	Description of work / Problems encountered / Personnel on site		
9/9	7:33	1= 4495.74	2= 4306.95	Remove Debris JR, KR
9/12	8:08	1= 4506.29	2= 4316.32	Generator Test JR
9-16	7:45	1= 4518.64	2= 4326.34	Clean Bar Screen KR.
9/18	8:22	1= 4527.51	2= 4333.95	Generator test JR
9/23	7:32	1= 4538.36	2= 4344.72	Remove Debris JR/KR
9/26	7:56	1= 4547.64	2= 4353.80	Generator Test JR
9/30	7:54	1= 4559.77	2= 4365.44	Remove Debris JR/KR
10/7	7:41	1= 4583.09	2= 4388.81	Remove Debris JR/KR
10/14	7:47	1= 4604.97	2= 4411.35	Remove Debris JR/KR
10/17	7:43	1= 4618.34	2= 4419.81	Generator Test JR
10/21	7:28	1= 4623.08	2= 4428.43	Remove Debris JB
10/24	8:16	1= 4631.25	2= 4436.27	Generator Test JR
10/28	7:50	1= 4641.28	2= 4446.10	Remove Debris JR/KR
10/31	8:14	1= 4649.72	2= 4453.85	Generator Test JR
11/4	7:46	1= 4660.00	2= 4464.68	K.R.
11/5	8:00	1= 4668.42	2= 4471.66	Generator Test JR
11/11	8:58	1= 4679.18	2= 4481.33	Verbatim was Not
11/14	8:13	1= 4688.06	2= 4489.39	Generator test JR ARMED KR.
11/18	7:45	1= 4699.13	2= 4499.74	Remove Debris JR / K.R.
11/21	8:22	1= 4706.80	2= 4507.33	Generator test JR
25 Nov	7:37	1= 4717.08	2= 4517.21	Cleaned Bar Screen KR.
11/28	8:26	1= 4726.12	2= 4525.35	Generator test JR
2 Dec	7:45	1= 4737.01	2= 4535.29	Cleaned Bar Screen, Flood KR
12/5	8:07	1= 4745.37	2= 4543.49	Generator Test JR
5 Dec	7:49	1= 4756.31	2= 4554.42	Generator Test JR / K.R.
12/12	8:15	1= 4764.50	2= 4562.82	Generator test JR/PE
16 Dec	7:40	1= 4775.31	2= 4573.57	Clean debris JR / KR
12/19	8:22	1= 4784.71	2= 4582.19	Generator test JR/PE
22 Dec	7:37	1= 4793.55	2= 4589.67	Remove Debris KR/JR/PE
30 Dec	7:42	1= 4819.29	2= 4573.24	K.R.
1/3	8:12	1= 4833.75	2= 4628.04	Generator test JR/PE

Freemanshire Pump Station Alarm Situations

Date: 11 June Time: 0720

Personnel on site Chuck, Kelly

Weather conditions Mostly Sunny

Alarm code Level 1 2 3 ④ = Power Failure

Note relevant information gen. times, pump times, other.

Initial evaluation /observations

Generator OFF

Actions taken/contacts made (note times)

No Actions Necessary - All Systems

Normal

Re-set system @ 0809 (A.M.) P.M.

Gen. hour meter 598.9 North Pump 4236.42 South Pump 4062.57

1

2

Freemansburg Pump Station Alarm Situations

Date: 6/16 Time: 11:43

Personnel on site JB/CS

Weather conditions Cloudy 70's

Alarm code Level 1 2 3 (4) = Power Failure

Note relevant information gen. times, pump times, other.

Initial evaluation /observations

Generator Running

Actions taken/contacts made (note

times) Disarmed alarm, waited for generator to shut down

Re-set system @ 11:49 A.M. P.M.

Gen. hour meter 599.1 North Pump 4251.00 South Pump 4076.08
1 2

Freemansburg Pump Station Alarm Situations

Date: 7/18 Time: 9:32

Personnel on site JK

Weather conditions Rain

Alarm code Level 1 2 3 (4) = Power Failure

Note relevant information gen. times, pump times, other.

Initial evaluation / observations

Generator OFF

Actions taken/contacts made (note

times) No actions needed, all systems
normal

Re-set system @ 9:36 A.M. (P.M.)

Gen. hour meter 600.4 North Pump 4341.13 South Pump 4160.90

Freemansburg Pump Station Alarm Situations

Date: 10/10 Time: 10:05 pm

Personnel on site Joe

Weather conditions Clear 60's

Alarm code Level 1 2 3 (4)

Note relevant information gen. times, pump times, other.

Initial evaluation /observations

Generator off, all systems
normal

Actions taken/contacts made (note times) reset alarm

Re-set system @ 10:07 A.M. (P.M.)

Gen. hour meter 603.2 North Pump 4382.26 South Pump 4387.98

Date: 1/3/22 Time: 8:23 Weather Cloudy 20's

Initials JR/KR

N= ON Gen Hrs. 3777.44 Pump used to remove debris N S (N/A)

S= ON Gen Hrs. 3653.12 Grease light 1 2 3 4 5 Heavy

Hosed walls Yes (No) Comments _____

Cleaned floats ON OFF LL Comments No

Fuel 64% 64% Water meter 912 Generator hrs. 5908.1 After Test = 5912.0

Emptied debris basket Yes No Comments N/A

Other: Generator Test: Start = 8:29 Normal = 8:39 off = 8:55

Generator Fluids = OK Removed 2 bags of debris

Alarm = OK cleaned metal screen

Re-set @ 8:55

Date: 1/10/22 Time: 9:40 Weather Sunny 20's

Initials JR/Am

N= ON Gen Hrs. 3797.30 Pump used to remove debris N S (N/A)

S= ON Gen Hrs. 3670.73 Grease light 1 2 3 4 5 Heavy

Hosed walls Yes (No) Comments _____

Cleaned floats ON OFF LL Comments No

Fuel 65% 64% Water meter 912 Generator hrs. 5912 After Test = 5917.1

Emptied debris basket Yes No Comments NA

Other: Generator Test: Start = 9:46 Normal = 9:56 off = 10:12

Generator Fluids = OK Removed 3 bags of debris

Alarm = OK cleaned metal screen

Re-set @ 10:12

Date: 1/21/22 Time: 8:14 Weather Cloudy 12°

Initials JR/Am/KR

N= ON Gen Hrs. 3828.69 Pump used to remove debris N S (N/A)

S= ON Gen Hrs. 3698.10 Grease light 1 2 3 4 5 Heavy

Hosed walls Yes (No) Comments _____

Cleaned floats ON OFF LL Comments No

Fuel 65% 63% Water meter 912 Generator hrs. 5917.1 After Test = 5922

Emptied debris basket Yes No Comments N/A

Other: Generator Test: Start = 8:19 Normal = 8:24 off = 8:45

Generator Fluids = OK cleaned metal screen Alarm = OK

Removed 2 bags of debris

Re-set @ 8:45

Date: 1/28 Time: 9:21 Weather Snowy 20's

Initials JR/Am

N= ON Gen Hrs. 3848.13 Pump used to remove debris N S N/A

S= ON Gen Hrs. 3715.37 Grease light 1 2 3 4 5 Heavy

Hosed walls Yes (No) Comments _____

Cleaned floats ON OFF LL Comments NO

Fuel 69 1/2, 64 1/2 Water meter 912 Generator hrs. 592.2 After Test =

Emptied debris basket Yes No Comments N/A

Other: Generator Test: Start=9:23 Normal=9:33 off=9:49

Generator Fluids = OK Removed 3 bags of debris

Cleaned metal screen Alarm = OK

Re-set @ 9:49

Date: 2/4 Time: 8:14 Weather Rain 30's

Initials JR/Am

N= ON Gen Hrs. 3870.14 Pump used to remove debris N S N/A

S= ON Gen Hrs. 3734.60 Grease light 1 2 3 4 5 Heavy

Hosed walls Yes (No) Comments _____

Cleaned floats ON OFF LL Comments NO

Fuel 65 1/2, 60 1/2 Water meter 913 Generator hrs. 592.7 After Test = 593.1

Emptied debris basket Yes No Comments N/A

Other: Generator Test: Start=8:14 Normal=8:29 off=8:45

Generator Fluids = OK Removed 3 bags of debris

Cleaned metal screen Alarm = OK Heavy water flow into well

Re-set @ 8:45

Date: 2/7 Time: 7:54 Weather Cloudy 30's

Initials JR/Am

N= ON Gen Hrs. 3879.06 Pump used to remove debris N S N/A

S= ON Gen Hrs. 3742.60 Grease light 1 2 3 4 5 Heavy

Hosed walls Yes (No) Comments _____

Cleaned floats ON OFF LL Comments N/A

Fuel 64 1/2, 60 1/2 Water meter 913 Generator hrs. 593.1 After Test = 593.5

Emptied debris basket Yes No Comments N/A

Other: Generator Test: Start=7:54 Normal=8:09 off=8:25

Generator Fluids = OK Cleaned Bar Screen Alarm = OK

Removed 2 bags of debris

Re-set @ 8:25

Date: 2/14 Time: 8:04 Weather Sunny 13°

Initials JK/Am

N= ^{OH} Gen Hrs. 3898.35 Pump used to remove debris N S (N/A)

S= ^{OH} Gen Hrs. 3154.77 Grease light 1 2 3 4 5 Heavy

Hosed walls Yes (No) Comments _____

Cleaned floats ON OFF LL Comments NO

Fuel 64% 60% Water meter 914 Generator hrs. 593.5 After test = 594.0

Emptied debris basket Yes No Comments N/A

Other: Generator Test: Start = 8:09 Normal = 8:14 off = 8:35

Generator Fluids = OK Removed 2 bags of debris

Cleaned metal screen Alarm = OK

Re-set @ 8:35

Date: 2/22 Time: 8:11 Weather Cloudy 40°s

Initials JR

N= ^{OH} Gen Hrs. 3922.02 Pump used to remove debris N S (N/A)

S= ^{OH} Gen Hrs. 3780.34 Grease light 1 2 3 4 5 Heavy

Hosed walls Yes (No) Comments _____

Cleaned floats ON OFF LL Comments NO

Fuel 64% 60% Water meter 914 Generator hrs. 594 After Test = 594.3

Emptied debris basket Yes No Comments N/A

Other: Generator Test: Start = 8:14 Normal = 8:24 off = 8:40

Generator Fluids = OK Removed 2 bags of debris

Cleaned metal screen Alarm = OK

Re-set @ 8:40

Date: 2/28 Time: 8:03 Weather Sunny 30°s

Initials JK/Am

N= ^{OH} Gen Hrs. 3931.68 Pump used to remove debris N S (N/A)

S= ^{OH} Gen Hrs. 3795.41 Grease light 1 2 3 4 5 Heavy

Hosed walls Yes No Comments _____

Cleaned floats ON OFF LL Comments NO

Fuel 64% 60% Water meter 914 Generator hrs. 594.3

Emptied debris basket Yes No Comments N/A

Other: Generator Test: Start = 8:00 Normal = 8:10 off = 8:28

Generator Fluids = OK Removed 3 bags of debris

Cleaned metal screen Alarm = OK

Re-set @ 8:28

Date: 3/7 Time: 8:22 Weather Cloudy 10°S

Initials JR/Am

N= ON Gen Hrs. 3959.99 Pump used to remove debris N S (N/A)

S= ON Gen Hrs. 3812.42 Grease light 1 2 3 4 5 Heavy

Hosed walls Yes (No) Comments _____

Cleaned floats ON OFF LL Comments NO

Fuel 10210.58°10 Water meter 914 Generator hrs. 594.3 After Test = 594.7

Emptied debris basket Yes No Comments N/A

Other: Generator Test: Start = 8:25 Normal = 8:35 off = 8:51

Generator Fluids = OK Removed 3 bags of debris

Cleaned metal screen Alarm = OK

Re-set @ 8:51

Date: 3/14 Time: 8:58 Weather Sunny 30°S

Initials JR/Am

N= ON Gen Hrs. 3981.08 Pump used to remove debris N S (N/A)

S= ON Gen Hrs. 3830.23 Grease light 1 2 3 4 5 Heavy

Hosed walls Yes (No) Comments _____

Cleaned floats ON OFF LL Comments NO

Fuel 10210.58°10 Water meter 915 Generator hrs. 594.7 After Test = 595.1

Emptied debris basket Yes No Comments N/A

Other: Generator Test: Start = 9:01 Normal = 9:11 off = 9:27

Generator Fluids = OK Removed 2 bags of debris

Cleaned metal screen Alarm = OK

Re-set @ 9:27

Date: 3/21 Time: 8:02 Weather Sunny 40°S

Initials JR

N= ON Gen Hrs. 4001.18 Pump used to remove debris N S (N/A)

S= ON Gen Hrs. 3847.87 Grease light 1 2 3 4 5 Heavy

Hosed walls Yes (No) Comments _____

Cleaned floats ON OFF LL Comments NO

Fuel 10210.58°10 Water meter 915 Generator hrs. 595.1 After test =

Emptied debris basket Yes No Comments N/A

Other: Generator Test: Start = 8:06 Normal = 8:16 off = 8:32

Generator Fluids = OK Removed 2 bags of debris

Cleaned metal screen Alarm = OK

Re-set @ 8:32

Date: 3/28 Time: 8:10 Weather Sunny 30's

Initials: JK

N= ON Gen Hrs. 4023.67 Pump used to remove debris N S (N/A)

S= ON Gen Hrs. 3846.82 Grease light 1 2 3 4 5 Heavy

Hosed walls Yes (No) Comments _____

Cleaned floats ON OFF LL Comments NO

Fuel 60% 58% Water meter 915 Generator hrs. 591.5 After Test = 595.5

Emptied debris basket Yes No Comments N/A

Other: Generator Test: Start=8:15 Normal=8:25 off=8:41

Generator Fluids=OK Removed 3 bags of debris

Cleaned metal screen Alarm=OK

Re-set @ 8:41

Date: 4/4 Time: 8:21 Weather Sunny 40's

Initials JB

N= ON Gen Hrs. 4040.92 Pump used to remove debris N S (N/A)

S= ON Gen Hrs. 3884.73 Grease light 1 2 3 4 5 Heavy

Hosed walls Yes (No) Comments NO

Cleaned floats ON OFF LL Comments NO

Fuel 58% 56% Water meter 916 Generator hrs. 595.5 After Test = 595.9

Emptied debris basket Yes No Comments N/A

Other: Generator Test: Start=8:25 Normal=8:35 off=8:51

Generator Fluids=OK Removed 2 bags of debris

Cleaned metal screen Alarm=OK

Re-set @ 8:51

Date: 4/11 Time: 8:17 Weather Sunny 40's

Initials JD/DD

N= ON Gen Hrs. 4064.17 Pump used to remove debris N S (N/A)

S= ON Gen Hrs. 3904.40 Grease light 1 2 3 4 5 Heavy

Hosed walls Yes (No) Comments NO

Cleaned floats ON OFF LL Comments NO

Fuel 58% 56% Water meter 916 Generator hrs. 595.9 After Test = 596.3

Emptied debris basket Yes No Comments N/A

Other: Generator Test: Start=8:21 Normal=8:31 off=8:47

Generator Fluids=OK Removed 2 bags of debris

Cleaned metal screen Alarm=OK

Re-set @ 8:47

Date: 4/18 Time: 8:31 Weather Sunny 48's

Initials JR/DD

N= ON Gen Hrs. 4082.86 Pump used to remove debris N S (N/A)

S= ON Gen Hrs. 3921.92 Grease light 1 2 3 4 5 Heavy

Hosed walls Yes (No) Comments _____

Cleaned floats ON OFF LL Comments NO

Fuel 58 1/2, 56 1/2 Water meter 916 Generator hrs. 596.3 After Test = 597.0

Emptied debris basket Yes No Comments N/A

Other: Generator Test: Start = 8:34 Normal = 8:44 off = 9:00

Generator Fluids = OK Removed 2 bags of debris

Cleaned metal screen Alarm = OK

Re-set @ 9:00

Date: 4/25 Time: 8:11 Weather Cloudy 48's

Initials JR/DD

N= ON Gen Hrs. 4102.77 Pump used to remove debris N S (N/A)

S= ON Gen Hrs. 3939.53 Grease light 1 2 3 4 5 Heavy

Hosed walls Yes (No) Comments _____

Cleaned floats ON OFF LL Comments No

Fuel 58 1/2, 56 1/2 Water meter 916 Generator hrs. 597.0 After Test = 597.4

Emptied debris basket Yes No Comments N/A

Other: Generator Test: Start = 8:14 Normal = 8:24 off = 8:40

Generator Fluids = OK Removed bags of debris

Cleaned metal screen Alarm = OK

Re-set @ 8:40

Date: 5/9 Time: 8:16 Weather Sunny 50's

Initials JR

N= ON Gen Hrs. 4142.09 Pump used to remove debris N S (N/A)

S= ON Gen Hrs. 3976.92 Grease light 1 2 3 4 5 Heavy

Hosed walls Yes (No) Comments _____

Cleaned floats ON OFF LL Comments No

Fuel 58 1/2, 51 1/2 Water meter 917 Generator hrs. 597.4 After Test = 597.8

Emptied debris basket Yes No Comments N/A

Other: Generator Test: Start = 8:14 Normal = 8:29 off = 8:45

Generator Fluids = OK Removed 2 bags of debris

Cleaned metal screen Alarm = OK

Re-set @ 8:45

Date: 5/16 Time: 7:37 Weather Sunny 60's

Initials JR

N= ON Gen Hrs. 4161.54 Pump used to remove debris N S (N/A)

S= ON Gen Hrs. 3994.85 Grease light 1 2 3 4 5 Heavy

Hosed walls Yes (No) Comments _____

Cleaned floats ON OFF LL Comments No

Fuel 54 1/2, 50 1/2 Water meter 917 Generator hrs. 597.4 After Test = 598.2

Emptied debris basket Yes No Comments N/A

Other: Generator Test: Start = 7:41 Normal = 7:51 off = 8:07

Generator Fluids = OK Removed 2 bags of debris

Cleaned metal screen Alarm = OK

Re-set @ 8:07

Date: 5/23 Time: 8:19 Weather Sunny 60's

Initials JR

N= ON Gen Hrs. 4181.54 Pump used to remove debris N S (N/A)

S= ON Gen Hrs. 4013.51 Grease light 1 2 3 4 5 Heavy

Hosed walls Yes (No) Comments No

Cleaned floats ON OFF LL Comments No

Fuel 54 1/2, 50 1/2 Water meter 917 Generator hrs. 598.2 After Test =

Emptied debris basket Yes No Comments N/A

Other: Generator Test: Start = 8:25 Normal = 8:35 off = 8:51

Generator Fluids = OK Removed 2 bags of debris

Cleaned metal screen Alarm = OK

Re-set @ 8:51

Date: 5/31 Time: 7:41 Weather Sunny 70's

Initials JR

N= ON Gen Hrs. 4204.57 Pump used to remove debris N S (N/A)

S= ON Gen Hrs. 4033.87 Grease light 1 2 3 4 5 Heavy

Hosed walls Yes (No) Comments _____

Cleaned floats ON OFF LL Comments No

Fuel 52 1/2, 48 1/2 Water meter 917 Generator hrs. 598.2 After Test = 598.6

Emptied debris basket Yes No Comments N/A

Other: Generator Test: Start = 7:44 Normal = 7:54 off = 8:10

Generator Fluids = OK Removed 3 bags of debris

Cleaned metal screen Alarm = OK

Re-set @ 8:10

Date: 6/13 Time: 8:08 Weather: Sunny 70's

Initials JR

N= ON Gen Hrs. 4242.38 Pump used to remove debris N S (N/A)

S= ON Gen Hrs. 4067.98 Grease light 1 2 3 4 5 Heavy

Hosed walls Yes (No) Comments _____

Cleaned floats ON OFF LL Comments NO

Fuel 5216.4810 Water meter 917 Generator hrs. 598.6 After Test = 598.9

Emptied debris basket Yes No Comments _____

Other: Generator Test: Start = 8:11 Normal = 8:21 off = 8:31

Generator Fluids = OK Cleaned 2 bags of debris

Cleaned metal screen Alarm = OK

Re-set @ 8:37

Date: 6/20 Time: 8:03 Weather: Sunny 60's

Initials JR

N= ON Gen Hrs. 4261.30 Pump used to remove debris N S (N/A)

S= ON Gen Hrs. 4086.28 Grease light 1 2 3 4 5 Heavy

Hosed walls Yes (No) Comments _____

Cleaned floats ON OFF LL Comments NO

Fuel 5016.4710 Water meter 917 Generator hrs. 598.9 After Test = 599.1

Emptied debris basket Yes No Comments N/A

Other: Generator Test: Start = 8:05 Normal = 8:15 off = 8:31

Generator Fluids = OK Removed 2 bags of debris

Cleaned metal screen Alarm = OK

Re-set @ 8:31

Date: 6/27 Time: 8:25 Weather: Rain 70's

Initials JR

N= ON Gen Hrs. 4208.15 Pump used to remove debris N S (N/A)

S= ON Gen Hrs. 4105.32 Grease light 1 2 3 4 5 Heavy

Hosed walls Yes (No) Comments _____

Cleaned floats ON OFF LL Comments NO

Fuel 4916.4610 Water meter 917 Generator hrs. 599.1 After Test = 599.5

Emptied debris basket Yes No Comments N/A

Other: Generator Test: Start = 8:28 Normal = 8:38 off = 8:54

Generator Fluids = OK Removed bags of debris

Cleaned bar screen Alarm = OK

Re-set @ 8:54

Date: 7/11 Time: 7:47 Weather Sunny 78°s

Initials JR

N= ON Gen Hrs. 4317.83 Pump used to remove debris N S (N/A)

S= ON Gen Hrs. 4142.92 Grease light 1 2 3 4 5 Heavy

Hosed walls Yes (No) Comments _____

Cleaned floats ON OFF LL Comments NO

Fuel 48% 45% Water meter 917 Generator hrs. 549.5 After test = 544.9

Emptied debris basket Yes No Comments N/A

Other: Generator Test = Start = 7:51 Normal = 8:01 off = 8:17

Generator Fluids = OK Cleaned bags of debris

Cleaned bar screen Alarm = OK

Re-set @ 8:17

Date: 7/18 Time: 7:49 Weather Rain 78°s

Initials JR

N= ON Gen Hrs. 4338.80 Pump used to remove debris N S (N/A)

S= ON Gen Hrs. 4160.99 Grease light 1 2 3 4 5 Heavy

Hosed walls Yes (No) Comments No

Cleaned floats ON OFF LL Comments No

Fuel 48% 45% Water meter 917 Generator hrs. 599.9 After test = 600.4

Emptied debris basket Yes No Comments N/A

Other: Generator Test = Start = 7:51 Normal = 8:01 off = 8:17

Generator Fluids = OK Removed 2 bags of debris

Cleaned bar screen Alarm = OK

Re-set @ 8:17

Date: 8/2 Time: 8:18 Weather Sunny 70°s

Initials JR

N= ON Gen Hrs. 4384.73 Pump used to remove debris N S (N/A)

S= ON Gen Hrs. 4202.55 Grease light 1 2 3 4 5 Heavy

Hosed walls Yes (No) Comments _____

Cleaned floats ON OFF LL Comments NO

Fuel 50% 59% Water meter 917 Generator hrs. 600.4 After test = 600.6

Emptied debris basket Yes No Comments _____

Other: Generator Test = Starts 8:24 Normal = 8:34 off = 8:50

Generator Fluids = OK Removed bags of debris

Cleaned bar screen Alarm = OK

Re-set @ 8:50

Date: 8/8 Time: 7:39 Weather Sunny 80's

Initials JR

N= ON Gen Hrs. 4400.58 Pump used to remove debris N S (N/A)

S= ON Gen Hrs. 4218.89 Grease light 1 2 3 4 5 Heavy

Hosed walls Yes (No) Comments _____

Cleaned floats ON OFF LL Comments NO

Fuel 50% 59% Water meter 917 Generator hrs. 600.6 After test = 601.0

Emptied debris basket Yes No Comments N/A

Other: Generator test: Start = 7:42 Normal = 7:52 off = 8:08

Generator Fluids = OK Removed 2 bags of debris

Cleaned bar screen Alarm = OK

Re-set @ 8:08

Date: 8/29 Time: 8:05 Weather Cloudy 70's

Initials JR

N= ON Gen Hrs. 4461.26 Pump used to remove debris N S (N/A)

S= ON Gen Hrs. 4276.53 Grease light 1 2 3 4 5 Heavy

Hosed walls Yes (No) Comments _____

Cleaned floats ON OFF LL Comments N/A

Fuel 50% 59% Water meter 917 Generator hrs. 601.3 After test = 601.7

Emptied debris basket Yes No Comments N/A

Other: Generator test: Start = 8:07 Normal = 8:17 off = 8:33 After test

Generator Fluids = OK Removed 2 bags of debris

Cleaned bar screen Alarm = OK

Re-set @ 8:33

Date: 9/12 Time: 8:09 Weather Cloudy 70's

Initials JR

N= Gen Hrs. 4506.29 Pump used to remove debris N S (N/A)

S= Gen Hrs. 4316.32 Grease light 1 2 3 4 5 Heavy

Hosed walls Yes (No) Comments _____

Cleaned floats ON OFF LL Comments N/A

Fuel 50% 59% Water meter 917 Generator hrs. 601.7 After Test = 602.1

Emptied debris basket Yes No Comments N/A

Other: Generator test: Start = 8:12 Normal = 8:22 off = 8:38

Generator Fluids = OK Removed 2 bags of debris

Cleaned bar screen Alarm = OK

Re-set @ 8:38

Date: 9/14 Time: 8:24 Weather Cloudy 70's

Initials JR

N= Gen Hrs. 4527.51 Pump used to remove debris N S (N/A)

S= Gen Hrs. 4333.95 Grease light 1 2 3 4 5 Heavy

Hosed walls Yes (No) Comments _____

Cleaned floats ON OFF LL Comments NO

Fuel 50% 59% Water meter 918 Generator hrs. 602.1 After test = 602.5

Emptied debris basket Yes No Comments N/A

Other: Generator test: Start = 8:26 Normal = 8:36 Off = 8:53

Generator Fluids = OK Removed 2 bags of debris

Cleaned bar screen Alarm = OK

Re-set @ 8:52

Date: 9/26 Time: 7:58 Weather Sunny 60's

Initials JR

N= Gen Hrs. 4547.64 Pump used to remove debris N S (N/A)

S= Gen Hrs. 4353.80 Grease light 1 2 3 4 5 Heavy

Hosed walls Yes (No) Comments _____

Cleaned floats ON OFF LL Comments NO

Fuel 50% 58% Water meter 918 Generator hrs. 602.5 After test = 602.8

Emptied debris basket Yes No Comments N/A

Other: Generator test: Start = 8:01 Normal = 8:11 Off = 8:27

Generator Fluids = OK Removed 2 bags of debris

Cleaned bar screen Alarm = OK

Re-set @ 8:27

Date: 10/3 Time: 7:46 Weather Sunny 40's

Initials JR

N= 4553.43 Hrs. ON Gen Pump used to remove debris N S (N/A)

S= Gen Hrs. 4364.32 Grease light 1 2 3 4 5 Heavy

Hosed walls Yes (No) Comments _____

Cleaned floats ON OFF LL Comments NO

Fuel 50% 58% Water meter 918 Generator hrs. 603.0

Emptied debris basket Yes No Comments N/A

Other: Generator test: Start: 7:51 Normal: 8:01 Off: 8:17

Generator Fluids = OK Removed 2 bags of debris

Cleaned bar screen Alarm = OK

Re-set @ 8:17

Date: 10/24 Time: 8:17 Weather Rain 60's

Initials JR

N= Gen Hrs. 41031.25 Pump used to remove debris N S (N/A)

S= Gen Hrs. 4436.37 Grease light 1 2 3 4 5 Heavy

Hosed walls Yes (No) Comments _____

Cleaned floats ON OFF LL Comments NO

Fuel 51°10, 47°10 Water meter 918 Generator hrs. 603.2 After test = 603.7

Emptied debris basket Yes No Comments N/A

Other: Generator test: Start = 8:30 Normal = 8:30 off = 8:46

Generator Fluids = OK Removed 2 bags of debris

Cleaned bar screen Alarm = OK

Re-set @ 8:46

Date: 10/31 Time: 8:15 Weather Sunny 60's

Initials JR

N= Gen Hrs. 4144.72 Pump used to remove debris N S (N/A)

S= Gen Hrs. 4453.85 Grease light 1 2 3 4 5 Heavy

Hosed walls Yes (No) Comments _____

Cleaned floats ON OFF LL Comments NO

Fuel 48°10, 45°10 Water meter 918 Generator hrs. 603.7 After test = 604.1

Emptied debris basket Yes No Comments N/A

Other: Generator Test: Start = 8:15 Normal = 8:28 off = 8:50

Generator Fluids = OK Removed 2 bags of debris

Cleaned bar screen Alarm = OK

Re-set @ 8:50

Date: 11/7 Time: 8:01 Weather Sunny 60's

Initials JR

N= Gen Hrs. 4668.42 Pump used to remove debris N S (N/A)

S= Gen Hrs. 4471.106 Grease light 1 2 3 4 5 Heavy

Hosed walls Yes (No) Comments _____

Cleaned floats ON OFF LL Comments NO

Fuel 50°10, 46°10 Water meter 918 Generator hrs. 604.1 After test = 604.5

Emptied debris basket Yes No Comments N/A

Other: Generator Test: Start = 8:04 Normal = 8:14 off = 8:30

Generator Fluids = OK Removed 2 bags of debris

Cleaned bar screen Alarm = OK

Re-set @ 8:30

Date: 11/14 Time: 8:14 Weather Sunny 30's

Initials JR

N= Gen Hrs. 4688.06 Pump used to remove debris N S (N/A)

S= Gen Hrs. 4489.39 Grease light 1 2 3 4 5 Heavy

Hosed walls Yes (No) Comments _____

Cleaned floats ON OFF LL Comments NO

Fuel 50% 40% Water meter 918 Generator hrs. 604.5 After test = 605.2

Emptied debris basket Yes No Comments N/A

Other: Generator test: Start = 8:17 Normal = 8:37 Off = 8:42

Generator Fluids = OK Removed 2 bags of debris

Cleaned bar screen Alarm = OK

Re-set @ 8:42

Date: 11/21 Time: 8:23 Weather Sunny 20's

Initials JR

N= Gen Hrs. 4706.80 Pump used to remove debris N S (N/A)

S= Gen Hrs. 4507.23 Grease light 1 2 3 4 5 Heavy

Hosed walls Yes (No) Comments _____

Cleaned floats ON OFF LL Comments NO

Fuel 49% 45% Water meter 918 Generator hrs. 605.2 After test = 605.7

Emptied debris basket Yes No Comments N/A

Other: Generator test: Start = 8:27 Normal = 8:37 Off = 8:53

Generator Fluids = OK Removed 2 bags of debris

Cleaned bar screen Alarm = OK

Re-set @ 8:53

Date: 11/28 Time: 8:27 Weather Cloudy 50's

Initials JR

N= Gen Hrs. 4726.12 Pump used to remove debris N S (N/A)

S= Gen Hrs. 4525.35 Grease light 1 2 3 4 5 Heavy

Hosed walls Yes (No) Comments _____

Cleaned floats ON OFF LL Comments NO

Fuel 49% 45% Water meter 918 Generator hrs. 605.7 After test = 606.1

Emptied debris basket Yes No Comments N/A

Other: Generator test: Start = 8:29 Normal = 8:39 Off = 8:55

Generator Fluids = OK Removed 2 bags of debris

Cleaned bar screen Alarm = OK

Re-set @ 8:55

Date: 12/5 Time: 8:03 Weather: Sunny 20's

Initials JR

N= Gen Hrs. 4745.37 Pump used to remove debris N S (N/A)

S= Gen Hrs. 4543.44 Grease light 1 2 3 4 5 Heavy

Hosed walls Yes (No) Comments _____

Cleaned floats ON OFF LL Comments NO

Fuel 47 1/2, 43 1/2 Water meter 918 Generator hrs. 6016.1 After test = 6046.5

Emptied debris basket Yes No Comments N/A

Other: Generator test: Start=8:10 Normal=8:20 off=8:30

Generator Fluids=OK Removed 2 bags of debris

Cleaned bar screen Alarm=OK

Re-set @ 8:30

Date: 12/12 Time: 8:17 Weather: Sunny 30's

Initials JR/PE

N= Gen Hrs. 4764.50 Pump used to remove debris N S (N/A)

S= Gen Hrs. 4562.81 Grease light 1 2 3 4 5 Heavy

Hosed walls Yes (No) Comments _____

Cleaned floats ON OFF LL Comments NO

Fuel 45 1/2, 45 1/2 Water meter 918 Generator hrs. 6066.5 After test = 6066.4

Emptied debris basket Yes No Comments _____

Other: Generator test: Start=8:20 Normal=8:30 off=8:40

Generator Fluids=OK Removed 2 bags of debris

Cleaned bar screen Alarm=OK

Re-set @ 8:40

Date: 12/14 Time: 8:23 Weather: Sunny 30's

Initials JR/PE

N= Gen Hrs. 4784.71 Pump used to remove debris N S (N/A)

S= Gen Hrs. 4552.14 Grease light 1 2 3 4 5 Heavy

Hosed walls Yes (No) Comments _____

Cleaned floats ON OFF LL Comments NO

Fuel 45 1/2, 45 1/2 Water meter 918 Generator hrs. 6066.4 After test = 6077.3

Emptied debris basket Yes No Comments N/A

Other: Gen test: Start=8:26 Normal=8:36 off=8:52

Gen Fluids=OK Removed 2 bags of debris

Cleaned bar screen Alarm=OK

Re-set @ 8:52

Hanover Township

Lehigh County, PA

February 3, 2023

Bethlehem Wastewater
Treatment Plant
144 Shimersville Road
Bethlehem, PA 18015
ATTN: Jack Lawrence, Superintendent

Mr. Lawrence,

Enclosed with this letter is the "2022 Sewer System Questionnaire" from Hanover Township, Lehigh County.

After you review the Report, please contact me at 610-264-1069 if there are any questions or concerns about the information reported.

Thank you,

Josef A. Fragnito

Josef A. Fragnito
Public Works Supervisor
Hanover Township, Lehigh County
2202 Grove Road
Allentown, PA 18109
Office (610) 264-1069
Cell (610) 972-7253
jfragnito@hanleco.org

Enc.

CC: File
Township Manager
Al Kortze, Keystone Engineering

2022 SEWER SYSTEM QUESTIONNAIRE

Municipality Name: Hanover Township, Lehigh County

Date: January 31, 2023

Current Allocation: 230,000 GPD *

Note: If any question is not applicable, please write N/A. Do not leave blank!

A. SEWER SYSTEM DETAILS

1. **Connected Hydraulic Loading (Flow):** * (GPD) *(assuming approx. growth/creep of 2% per year)*

<u>Current</u>		<u>Projected Flow</u>			
<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>
104,563	106,654	108,787	110,963	113,182	115,446

Number of Actual Connections at the End of 2022: 253

1 Equivalent Dwelling Unit (EDU) = 250 Gallons Per Day

2. **Connected Organic Loading (BOD5):** * (LBS/DAY) *(assuming 0.0025 lbs/gallon)*

<u>Current</u>		<u>Projected BOD5</u>			
<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>
261	267	272	277	283	289

3. **Connected Population:** * *(assuming 100 gpd per capita)*

<u>Current</u>		<u>Projected Population</u>			
<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>
1,046	1,067	1,088	1,110	1,132	1,154

4. **Total Length of System:** * 13,559 Feet

5. **Range of Pipe Sizes:** *

Smallest: 6 Inches

Largest: 8 Inches

* If estimated, please note.

6. **Total Number of Manholes:** * 63

7. **Construction Material:**

Pipes: VCP, DIP, PVC

Manholes: Brick, Reinforced Concrete

8. **Combined Sewers:**

Location: none

Percent of Total System: n/a

9. **Major Interceptors:**

<u>Name</u>	<u>Length (Feet)</u>	<u>Pipe Diameter (Inches)</u>	<u>Pop. Served</u>	<u><i>Design</i> EDUs</u>	<u>Flow (mgd)</u>
none					

10. Five Year Projections: Major Interceptors *

<u>Name/Segment</u>	<u>Limiting Section Capacity (GPD)</u>	<u>Current 2022</u>	<u>2023</u>	<u>Projected Peak Flows (GPD)</u>			
				<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>
none							

* Attach supporting documentation.

11. Mitigating Measures:

If the projected flow exceeds the limiting section capacity at any time during the five-year period, explain proposed and on-going efforts to correct the potential overload for each instance. Estimate the probable success of these mitigating measures in eliminating the potential overload condition. Use additional sheets if necessary.

N/A

B. PUMPING STATIONS

1. Description:

<u>Name/Number</u>	<u>Location</u>	<u>Capacity (GPD)</u>		<u>Metered *</u> <u>(Yes/No)</u>	<u>Force Main</u>		<u>Estimated</u> <u>Population</u>
		<u>Existing</u>	<u>Ultimate</u>		<u>Length</u> <u>(Feet)</u>	<u>Diameter</u> <u>(Inches)</u>	
none							

* Attach meter record summaries. Note plans for future pumping station expansion.

2. Five-Year Projections: Pumping Stations *

<u>Name</u>	<u>Capacity</u> <u>(GPD)</u>	<u>Current</u>	<u>Projected Peak Flows (GPD)</u>				
		<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>
N/A							

* Attach supporting data.

3. Mitigating Measures

If the projected peak flow exceeds the pumping station capacity at any time during the five-year period, explain proposed and on-going efforts to correct the potential overload for each instance. Estimate the probable success of these mitigating measures in eliminating the potential overload condition. Use additional sheets if necessary.

N/A

C. METER PITS *

<u>Name/Number</u>	<u>Location</u>	<u>Size/Type</u> **	<u>Sensor</u> ***	<u>Connected Population (est.)</u>	<u>Flows (gpd) Peak/Average</u>
None					

* Attach meter record summaries.

** Weir, flume, pipe, etc.

*** Float, bubbler, sonar, etc.

D. OPERATION AND MAINTENANCE

1. Describe Routine Operation and Maintenance Procedures:

Sewer System: Visual inspection of manholes on a yearly basis. Routine flushing of lines at least once per year. Conduct CCTV review of system every ten years unless there is a problem. Conduct repairs as needed. Conduct inspections and enforce Fats, Oil and Grease (FOG) Ordinance. Ongoing pipe replacement as needed. Visual inspections of system during wet weather events for I & I.

Pump Stations: n/a

Meter Pits: n/a

2. Known Problem Areas:

<u>Location</u>	<u>Nature of Problem *</u>	<u>Corrective Measures Taken</u>
<u>None</u>		

* Surcharging, line blockage, etc.

E. SANITARY SEWER EXTENSIONS (2022 ONLY) *

<u>Name/Area Served</u>	<u>Sewer Size</u>	<u>Extension Length</u>	<u>PADEP Code No.</u>	<u>Equivalent Dwelling Units Connected</u>	<u>Total Planned</u>	<u>Flow (gpd) ** Current/Design</u>
None						

* Attach plan of sanitary sewer system detailing additions made this year.

** 1 Equivalent Dwelling Unit (EDU) = _____ Gallons Per Day

(If there is a difference between this EDU calculation and that on Page 1, Section A. 1., please explain the difference.)

F. PROPOSED DEVELOPMENTS (Planning Modules) *

<u>Name/Area Served</u>	<u>PADEP Code No.</u>	<u>Current 2022</u>	<u>2023</u>	<u>Proposed Equivalent Dwelling Units</u>			<u>2027</u>	<u>Flow ** (GPD)</u>
None				<u>2024</u>	<u>2025</u>	<u>2026</u>		


* Attach plan of sanitary sewer system detailing proposed developments.

** 1 Equivalent Dwelling Unit (EDU) = _____ Gallons Per Day


(If there is a difference between this EDU calculation and that on Page 1, Section A. 1., please explain the difference.)

G. CERTIFICATION

Prepared By:

Signature: 
Name: Timothy A. Miller, P.E.
Title: Project Engineer
Address: 5012 Medical Center Circle
Allentown, PA 18106
Phone No.: 610-395-0971
E-mail: tmiller@kceinc.com
Date: January 31, 2023

Approved By (Municipal Contact):

Signature: 
Name: Melissa Wehr
Title: Township Manager/Zoning Officer
Address: 2202 Grove Road
Allentown, PA 18109
Phone No.: 610-264-1069
E-mail: mwehr@hanleco.org
Date: January 31, 2023

Industrial User Information Form

Municipality: HANOVER TOWNSHIP, LEHIGH COUNTY
NONE

<u>Industrial User</u>	<u>Address</u>	<u>Type of Manufacturing</u>	<u>Flow (GPD)</u>

2022 SEWER SYSTEM QUESTIONNAIRE

Municipality Name: Hanover Township, Northampton County

Date: 2023-02-20

Current Allocation: —GPD* Allocation merged with City's per agreement dated April 6, 2007

Note: If any question is not applicable, please write N/A. Do not leave blank!

A. SEWER SYSTEM DETAILS

1. **Connected Hydraulic Loading (Flow):** * (GPD or MGD)

<u>Current</u> <u>2022</u>	<u>2023</u>	<u>2024</u>	<u>Projected Flow</u> <u>2025</u>	<u>2026</u>	<u>2027</u>
1,801,023	1,816,523	1,822,833	1,847,833	1,897,833	1,922,833

Number of Actual Connections at the End of 2022: _____

1 Equivalent Dwelling Unit (EDU) = 250 **Gallons Per Day**

2. **Connected Organic Loading (BOD5):** * (MG/L or LBS/DAY) (0.4 lb/per person)

<u>Current</u> <u>2022</u>	<u>2023</u>	<u>2024</u>	<u>Projected BOD5</u> <u>2025</u>	<u>2026</u>	<u>2027</u>
5,382	5,402	5,422	5,622	5,822	6,022

3. **Connected Population: ***

<u>Current</u> <u>2022</u>	<u>2023</u>	<u>2024</u>	<u>Projected Population</u> <u>2025</u>	<u>2026</u>	<u>2027</u>
13,456	13,506	13,556	14,056	14,556	15,056

4. **Total Length of System:** * 274,790 Feet

5. **Range of Pipe Sizes:** *

Smallest: 8 Inches

Largest: 21 Inches

* If estimated, please note.

6. **Total Number of Manholes:** * 1,475

7. **Construction Material:**

Pipes: VCP/PVC/DIP/RCP

Manholes: Precast Concrete

8. **Combined Sewers:**

Location: None

Percent of Total System: 0.0%

9. **Major Interceptors:**

<u>Name</u>	<u>Length (Feet)</u>	<u>Pipe Diameter (Inches)</u>	<u>Pop. Served</u>	<u><i>Design</i> EDUs</u>	<u>Flow (mgd) *</u>
Monocacy	219,947	8-21	10,653	7,186	1.796
Muhlenburg	31,031	8-15	1,500	2,576	0.644
Westgate	18,000	8	1,200	800	0.200
Alexander Park	5,812	8	103	160	0.040
Total:	274,790	8-21	13,456		2.680

* Based on 250 gpd/EDU

10. Five Year Projections: Major Interceptors *

<u>Name/Segment</u>	<u>Limiting Section Capacity (GPD)</u>	<u>Current</u>	<u>Projected Peak Flows (GPD)</u>				
		<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>
Monocacy	1,796,316	1,442,490	1,462,300	1,462,300	1,487,300	1,537,300	1,562,300
Muhlenberg	644,000	206,283	206,283	206,283	206,283	206,283	206,283
Westgate	200,000	147,000	147,000	147,000	147,000	147,000	147,000
Alexander Park	40,000	5,250	6,500	7,250	7,250	7,250	7,250
Total:	2,680,316	1,801,023	1,816,523	1,822,833	1,847,833	1,897,833	1,922,833

* Attach supporting documentation.

11. Mitigating Measures:

If the projected flow exceeds the limiting section capacity at any time during the five-year period, explain proposed and on-going efforts to correct the potential overload for each instance. Estimate the probable success of these mitigating measures in eliminating the potential overload condition. Use additional sheets if necessary.

Not applicable

B. PUMPING STATIONS

1. Description:

<u>Name/Number</u>	<u>Location</u>	<u>Capacity (GPD)</u>		<u>Metered *</u> <u>(Yes/No)</u>	<u>Force Main</u>		<u>Estimated</u> <u>Population</u>
		<u>Existing</u>	<u>Ultimate</u>		<u>Length</u> <u>(Feet)</u>	<u>Diameter</u> <u>(Inches)</u>	
Hanoverville Road Pump Station		96,515	96,515	yes	1,320	6"	813*
* Does not include population from Lower Nazareth Township.							

* Attach meter record summaries. Note plans for future pumping station expansion.

2. Five-Year Projections: Pumping Stations *

<u>Name</u>	<u>Capacity</u> <u>(GPD)</u>	<u>Current</u>		<u>Projected Peak Flows (GPD)</u>			
		<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>
Hanoverville Rd. Pump Station	96,515	60,000	75,000	78,300	78,300	78,300	78,300

* Attach supporting data.

3. Mitigating Measures

If the projected peak flow exceeds the pumping station capacity at any time during the five-year period, explain proposed and on-going efforts to correct the potential overload for each instance. Estimate the probable success of these mitigating measures in eliminating the potential overload condition. Use additional sheets if necessary.

Not applicable

C. METER PITS *

<u>Name/Number</u>	<u>Location</u>	<u>Size/Type</u> **	<u>Sensor</u> ***	<u>Connected Population (est.)</u>	<u>Flows (gpd) Peak/Average</u>
None					

* Attach meter record summaries.

** Weir, flume, pipe, etc.

*** Float, bubbler, sonar, etc.

D. OPERATION AND MAINTENANCE

1. Describe Routine Operation and Maintenance Procedures:

Sewer System: The City of Bethlehem maintains the Hanover Township collection system, except for the
Hanoverville Road Pump Station.

Pump Stations: Hanover Township maintains the Pump Station at Hanoverville Road, provides regular inspections
and regular removal of grease build up. The Township continues to monitor the pump station on a
weekly basis.

Meter Pits: Not applicable

2. Known Problem Areas:

<u>Location</u>	<u>Nature of Problem *</u>	<u>Corrective Measures Taken</u>
<u>Hanoverville Road PS</u>	<u>clogging due to "wipes"</u>	<u>Regular cleaning of wet well and pumps.</u>
	<u>high water alarm</u>	<u>Cleaning of pumps and pumps</u>
	<u>usually high run times of pumps</u>	<u>Clean pumps and investigate check valves</u> <u>and replace as necessary.</u>

* Surcharging, line blockage, etc.

E. SANITARY SEWER EXTENSIONS (2022 ONLY) *

<u>Name/Area Served</u>	<u>Sewer Size</u>	<u>Extension Length</u>	<u>PADEP Code No.</u>	<u>Equivalent Dwelling Units Connected</u>	<u>Total Planned</u>	<u>Flow (gpd) ** Current/Design</u>
None						

* Attach plan of sanitary sewer system detailing additions made this year.

** 1 Equivalent Dwelling Unit (EDU) = 250 Gallons Per Day

(If there is a difference between this EDU calculation and that on Page 1, Section A.1., please explain the difference.)

F. PROPOSED DEVELOPMENTS (Planning Modules) *

<u>Name/Area Served</u>	<u>PADEP Code No.</u>	<u>Current 2022</u>	<u>2023</u>	<u>Proposed Equivalent Dwelling Units</u>			<u>2027</u>	<u>Flow ** (GPD)</u>
LVCC II	2-48920-043-03	39.5	2	2	2	2	2	13,500
Dewire Estates	2-48920-057-3	3	5	3	0	0	0	2,750
HCC II	2-48920-044-3	308	20	32	13.2	0	0	83,000 + 10,000
(w/Traditions of America) The addition of 10,000 gpd is for HCC II, Lot 2, which is the Guardian Office Building.								
Hanover Township Senior Living	2-48920072-3E	0	51	0	0	0	0	12,768
Advance Health Care	2-48920074-3E	0	24	0	0	0	0	6,100

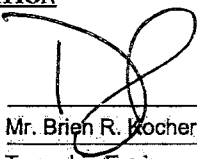
* Attach plan of sanitary sewer system detailing proposed developments.

** 1 Equivalent Dwelling Unit (EDU) = 250 Gallons Per Day

(If there is a difference between this EDU calculation and that on Page 1, Section A.1., please explain the difference.)

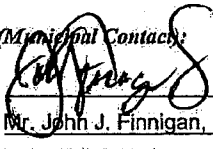
G. CERTIFICATION

Prepared By:

Signature: 
Name: Mr. Brian R. Kocher, PE
Title: Township Engineer
Company: Hanover Engineering Associates, Inc.
Address: 252 Brodhead Road, Suite 100
Bethlehem, PA 18018-8944

Phone No.: 610.691.5644
E-mail: bkocher@hanovereng.com
Date: 2-21-2023

Approved By (Municipal Contact):

Signature: 
Name: Mr. John J. Finnigan, Jr.
Title: Township Manager
Municipality: Hanover Township
Address: 3630 Jacksonville Road
Bethlehem, PA 18017

Phone No.: 610.866.1140
E-mail: jfinnigan@hanovertwp-nc.org
Date: 2/21/23

Industrial User Information Form

Municipality: Hanover Township, Northampton County

<u>Industrial User</u>	<u>Address</u>	<u>Type of Manufacturing</u>	<u>Flow (GPD)</u>
The City of Bethlehem maintains the files on all Industrial Users in Hanover Township, Northampton County, PA.			

2022 SEWER SYSTEM QUESTIONNAIRE

Municipality Name: Hellertown Borough Authority

Date: 2/17/23

Current Allocation: 802,000 GPD *

Note: If any question is not applicable, please write N/A. Do not leave blank!

A. SEWER SYSTEM DETAILS

1. Connected Hydraulic Loading (Flow): * (GPD or MGD)

<u>Current</u> <u>2022</u>	<u>2023</u>	<u>2024</u>	<u>Projected Flow</u> <u>2025</u>	<u>2026</u>	<u>2027</u>
<u>0.550</u>	<u>0.550</u>	<u>0.570</u>	<u>0.570</u>	<u>0.585</u>	<u>0.585</u>

Number of Actual Connections at the End of 2022: 2546

1 Equivalent Dwelling Unit (EDU) = 228 Gallons Per Day

2. Connected Organic Loading (BOD5): * (MG/L or LBS/DAY)

<u>Current</u> <u>2022</u>	<u>2023</u>	<u>2024</u>	<u>Projected BOD5</u> <u>2025</u>	<u>2026</u>	<u>2027</u>
<u>N/A</u>					

3. Connected Population: *

<u>Current</u> <u>2022</u>	<u>2023</u>	<u>2024</u>	<u>Projected Population</u> <u>2025</u>	<u>2026</u>	<u>2027</u>
<u>5920</u>	<u>5920</u>	<u>5980</u>	<u>6010</u>	<u>6090</u>	<u>6200</u>

4. Total Length of System: * 116,160 Feet

5. Range of Pipe Sizes: *

Smallest: 4 Inches
Largest: 16 Inches

* If estimated, please note.

6. Total Number of Manholes: * 551

7. Construction Material:

Pipes: VCP, Concrete, PVC
Manholes: Concrete Precast

8. Combined Sewers:

Location: N/A
Percent of Total System: _____

9. Major Interceptors:

<u>Name</u>	<u>Length</u> <u>(Feet)</u>	<u>Pipe</u> <u>Diameter (Inches)</u>	<u>Pop. Served</u>	<u>Design</u> <u>EDUs</u>	<u>Flow (mgd)</u>
<u>N/A</u>					

10. Five Year Projections: Major Interceptors *

<u>Name/Segment</u>	<u>Limiting Section Capacity (GPD)</u>	<u>Projected Peak Flows (GPD)</u>					
		<u>Current 2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>
	N/A						

* Attach supporting documentation.

11. Mitigating Measures:

If the projected flow exceeds the limiting section capacity at any time during the five-year period, explain proposed and on-going efforts to correct the potential overload for each instance. Estimate the probable success of these mitigating measures in eliminating the potential overload condition. Use additional sheets if necessary.

B. PUMPING STATIONS

1. Description:

<u>Name/Number</u>	<u>Location</u>	<u>Capacity (GPD)</u>		<u>Metered *</u> <u>(Yes/No)</u>	<u>Force Main</u>		<u>Estimated</u> <u>Population</u>
		<u>Existing</u>	<u>Ultimate</u>		<u>Length</u> <u>(Feet)</u>	<u>Diameter</u> <u>(Inches)</u>	
Springhill	Main St.	432,000	432,000	No	80	4	24 commercial
Cherry Ln.	Cherry Ln.	432,000	432,000	No	675	4	~130

* Attach meter record summaries. Note plans for future pumping station expansion.

2. Five-Year Projections: Pumping Stations *

<u>Name</u>	<u>Capacity</u> <u>(GPD)</u>	<u>Current</u>	<u>Projected Peak Flows (GPD)</u>				
		<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>
N/A							

* Attach supporting data.

3. Mitigating Measures

If the projected peak flow exceeds the pumping station capacity at any time during the five-year period, explain proposed and on-going efforts to correct the potential overload for each instance. Estimate the probable success of these mitigating measures in eliminating the potential overload condition. Use additional sheets if necessary.

C. METER PITS *

<u>Name/Number</u>	<u>Location</u>	<u>Size/Type **</u>	<u>Sensor ***</u>	<u>Connected Population (est.)</u>	<u>Flows (gpd) Peak/Average</u>
MH 11A	Clausen St.	10"	Flodlar	1300	350,000 / 135,000
MH 45C	Saucon Creek	16"	Flodlar	4550	900,000 / 600,000

* Attach meter record summaries.

** Weir, flume, pipe, etc.

*** Float, bubbler, sonar, etc.

D. OPERATION AND MAINTENANCE

1. Describe Routine Operation and Maintenance Procedures:

Sewer System: CCTV, Jetting, Root Cutting, Grouting, Grease Removal

Pump Stations: Daily Inspections, Bi-Weekly Cleaning, Enzyme Treatment

Meter Pits: Remote Reading, Calibrating

2. Known Problem Areas:

<u>Location</u>	<u>Nature of Problem *</u>	<u>Corrective Measures Taken</u>
<u>Root Intrusion</u>	<u>Trees</u>	<u>Root Cutting</u>
<u>Grease</u>	<u>Commercial Property</u>	<u>Jetting</u>

* Surcharging, line blockage, etc.

E. SANITARY SEWER EXTENSIONS (2022 ONLY) *

<u>Name/Area Served</u>	<u>Sewer Size</u>	<u>Extension Length</u>	<u>PADEP Code No.</u>	<u>Equivalent Dwelling Units Connected</u>	<u>Total Planned</u>	<u>Flow (gpd) ** Current/Design</u>
N/A						

* Attach plan of sanitary sewer system detailing additions made this year.

** 1 Equivalent Dwelling Unit (EDU) = _____ Gallons Per Day

(If there is a difference between this EDU calculation and that on Page 1, Section A.1., please explain the difference.)

F. PROPOSED DEVELOPMENTS (Planning Modules) *

<u>Name/Area Served</u>	<u>PADEP Code No.</u>	<u>Current</u> <u>2022</u>	<u>2023</u>	<u>Proposed Equivalent Dwelling Units</u>			<u>2027</u>	<u>Flow **</u> <u>(GPD)</u>
Silvercreek		0	37	50	50	30	0	Unknown
- No construction yet - Anticipate completion of 37 by end of 2023 - some flow in end of 2023								

* Attach plan of sanitary sewer system detailing proposed developments.

** 1 Equivalent Dwelling Unit (EDU) = _____ Gallons Per Day

(If there is a difference between this EDU calculation and that on Page 1, Section A.1., please explain the difference.)

G. CERTIFICATION

Prepared By:

Signature: _____

Name: _____

Title: _____

Company: _____

Address: _____

Phone No.: _____

E-mail: _____

Date: _____

LSW
Lauren Softeto
Administrator
Hilltown Borough Authority
501 Dunham St.
Hilltown, PA 18055
610-836-8051
lsofteto@hilltownwater.org
2/17/25

Approved By (Municipal Contact):

Signature: _____

Name: _____

Title: _____

Municipality: _____

Address: _____

Phone No.: _____

E-mail: _____

Date: _____

Industrial User Information Form

Municipality: Hellertown Borough Authority.

<u>Industrial User</u>	<u>Address</u>	<u>Type of Manufacturing</u>	<u>Flow (GPD)</u>
N/A			

2022 SEWER SYSTEM QUESTIONNAIRE

Municipality Name: Lower Nazareth Township (To Bethlehem WWTP)

Date: 3/06/2023

Current Allocation: 230,000 GPD *

Note: If any question is not applicable, please write N/A. Do not leave blank!

A. SEWER SYSTEM DETAILS

1. Connected Hydraulic Loading (Flow): * (GPD)

<u>Current</u>		<u>Projected Flow</u>			
<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>
16,750 (10,041 ¹)	18,750	19,250	19,750	20,250	20,750

¹: Average daily flow rate as recorded at Hanoverville Road meter.

Number of Actual Connections at the End of 2022: 67 EDU

1 Equivalent Dwelling Unit (EDU) = 250 Gallons Per Day

2. Connected Organic Loading (BOD5): * (mg/L or lb/day)

<u>Current</u>		<u>Projected BOD5</u>			
<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>
N/A	N/A	N/A	N/A	N/A	N/A

3. **Connected Population: * 2.8 persons/EDU**

<u>Current</u>			<u>Projected Population</u>		
<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>
188	210	216	222	228	234

4. **Total Length of System: *5,975 Feet**

5. **Range of Pipe Sizes: Low Pressure Sewer System (LPSS)**

Smallest: 2 Inches

Largest: 3 Inches

6. **Total Number of Manholes: 1**

7. **Construction Material:**

Pipes: HDPE

Manholes: Concrete

8. **Combined Sewers: N/A**

Location: _____

Percent of Total System: _____

9. **Major Interceptors: N/A**

<u>Name</u>	<u>Length (Feet)</u>	<u>Pipe Diameter (Inches)</u>	<u>Pop. Served</u>	<u><i>Design</i> EDUs</u>	<u>Flow (mgd)</u>

10. Five Year Projections: Major Interceptors * N/A

<u>Name/Segment</u>	<u>Limiting Section Capacity (GPD)</u>	<u>Projected Peak Flows (GPD)</u>					
		<u>Current 2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>

* Attach supporting documentation.

11. Mitigating Measures:

If the projected flow exceeds the limiting section capacity at any time during the five-year period, explain proposed and on-going efforts to correct the potential overload for each instance. Estimate the probable success of these mitigating measures in eliminating the potential overload condition. Use additional sheets if necessary.

N/A

B. PUMPING STATIONS N/A

1. Description:

<u>Name/Number</u>	<u>Location</u>	<u>Capacity (GPD)</u>		<u>Metered *</u> <u>(Yes/No)</u>	<u>Force Main</u>		<u>Estimated</u> <u>Population</u>
		<u>Existing</u>	<u>Ultimate</u>		<u>Length</u> <u>(Feet)</u>	<u>Diameter</u> <u>(Inches)</u>	
N/A							

* Attach meter record summaries. Note plans for future pumping station expansion.

2. Five-Year Projections: Pumping Stations *

<u>Name</u>	<u>Capacity</u> <u>(GPD)</u>	<u>Current</u>	<u>Projected Peak Flows (GPD)</u>				
		<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>
N/A							

* Attach supporting data.

3. Mitigating Measures

If the projected peak flow exceeds the pumping station capacity at any time during the five-year period, explain proposed and on-going efforts to correct the potential overload for each instance. Estimate the probable success of these mitigating measures in eliminating the potential overload condition. Use additional sheets if necessary.

N/A

C. METER PITS *

<u>Name/Number</u>	<u>Location</u>	<u>Size/Type</u> **	<u>Sensor</u> ***	<u>Connected Population (est.)</u>	<u>Flows (gpd) Peak/Average</u>
Hanoverville Rd	Hanoverville/ Twp Line	4 inch/MAG	magnetic	188	24,366 / 10,041

* Attach meter record summaries.

** Weir, flume, pipe, etc.

*** Float, bubbler, sonar, etc.

D. OPERATION AND MAINTENANCE

1. Describe Routine Operation and Maintenance Procedures:

Sewer System: Low Pressure Sewer System maintained by the City of Bethlehem

Pump Stations: None

Meter Pits: Meter read remotely

2. Known Problem Areas: NONE

<u>Location</u>	<u>Nature of Problem *</u>	<u>Corrective Measures Taken</u>
-----------------	----------------------------	----------------------------------

_____	_____	_____
-------	-------	-------

_____	_____	_____
-------	-------	-------

_____	_____	_____
-------	-------	-------

_____	_____	_____
-------	-------	-------

_____	_____	_____
-------	-------	-------

* Surcharging, line blockage, etc.

E. SANITARY SEWER EXTENSIONS (2022 ONLY) *

<u>Name/Area Served</u>	<u>Sewer Size</u>	<u>Extension Length</u>	<u>PADEP Code No.</u>	<u>Equivalent Dwelling Units Connected</u>	<u>Total Planned</u>	<u>Flow (gpd) ** Current/Design</u>
NONE						

* Attach plan of sanitary sewer system detailing additions made this year.

** 1 Equivalent Dwelling Unit (EDU) = 250 Gallons Per Day

(If there is a difference between this EDU calculation and that on Page 1, Section A. 1., please explain the difference.)

F. PROPOSED DEVELOPMENTS (Planning Modules) *

<u>Name/Area Served</u>	<u>PADEP Code No.</u>	<u>Current 2022</u>	<u>2023</u>	<u>Proposed Equivalent Dwelling Units</u>			<u>2027</u>	<u>Flow ** (GPD)</u>
				<u>2024</u>	<u>2025</u>	<u>2026</u>		
Hanoverville Rd	2-48923126-3M	67	75	77	79	81	83	Total 20,750

* Attach plan of sanitary sewer system detailing proposed developments.

** 1 Equivalent Dwelling Unit (EDU) = 250 Gallons Per Day

(If there is a difference between this EDU calculation and that on Page 1, Section A. 1., please explain the difference.)

G. CERTIFICATION

Prepared By:

Signature: _____

Name: Benjamin Kutz, P.E.

Title: Project Engineer

Company: Gilmore & Associates, Inc.

Address: 5100 Tilghman St, Suite 150

Allentown, PA 18104

Phone No.: 610-366-8064

E-mail: bkutz@gilmore-assoc.com

Date: _____

Approved By (Municipal Contact):

Signature: _____

Name: Lori Stauffer

Title: Manager

Municipality: Lower Nazareth Twp.

Address: 623 Municipal Drive

Nazareth, PA 18064

Phone No.: 610-759-7434

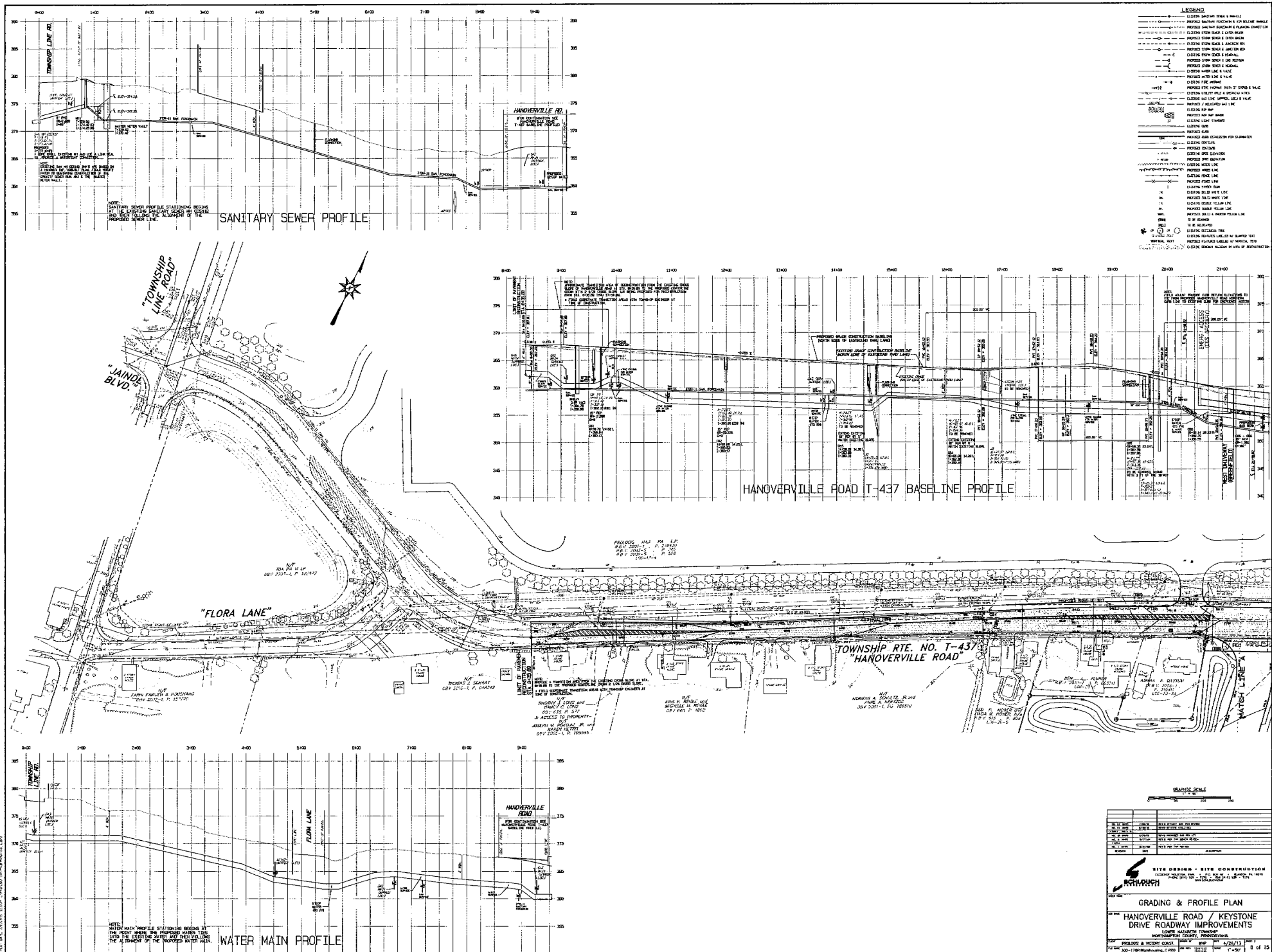
E-mail: LStauffer@lowernazareth.com

Date: _____

Industrial User Information Form

Municipality: **Lower Nazareth Township**

<u>Industrial User</u>	<u>Address</u>	<u>Type of Manufacturing</u>	<u>Flow (GPD)</u>
NONE			



2022 SEWER SYSTEM QUESTIONNAIRE

Municipality Name: Lower Saucon Township

Date: February 13, 2023

Current Allocation: 664,875 GPD *
(See attached response)

Note: If any question is not applicable, please write N/A. Do not leave blank!

A. SEWER SYSTEM DETAILS

1. **Connected Hydraulic Loading (Flow): * (GPD or MGD)** (Total includes L Saucon Twp + some COB flows)

	<u>Current</u>			<u>Projected Flow</u>		
	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>
LS Twp. ONLY:	238,751	238,800	240,100	241,600	249,400	255,700
Total Flow:	275,034	275,000	276,300	277,800	285,600	291,900

Number of Actual Connections at End of 2022 : 2,034 (Lower Saucon Township) + 423 (City)

1 Equivalent Dwelling Unit (EDU) = 112 Gallons Per Day (Based on 2022 average daily flow meter readings.)
(250 GPD/EDU is used for planning purposes)

2. **Connected Organic Loading (BOD5): * (~~MG/L~~ or LBS/DAY)** (Calculation includes only Township connections)

	<u>Current</u>			<u>Projected BOD5</u>		
	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>
	899	899	901	904	918	929

(BOD5 estimated: based on 0.17 LBS. BOD5 per person per day)

3. **Connected Population: *** (Equivalent population served - based on census data and water meter data)

	<u>Current</u>			<u>Projected Population</u>		
	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>
LS Twp. ONLY:	5,288	5,288	5,301	5,317	5,398	5,463
Total Population:	6,388	6,388	6,401	6,417	6,497	6,562

4. **Total Length of System: *** 149,370 Feet

5. **Range of Pipe Sizes: ***

Smallest: 1-1/2 Inches (Creekside - Low pressure force main)

Largest: 18 Inches * If estimated, please note.

6. **Total Number of Manholes: *** 725

7. **Construction Material:**

Pipes: PVC & DIP (Gravity) PVC & HDPE (Force Mains)

Manholes: Precast Concrete

8. **Combined Sewers:**

Location: None

Percent of Total System: 0%

9. **Major Interceptors:**

<u>Name</u>	<u>Length (Feet)</u>	<u>Pipe Diameter (Inches)</u>	<u>Pop. Served</u>	<u>Design EDU's</u>	<u>Flow (MGD)</u>
Black River Interceptor	14,500	18	4,943 (L S Twp)	3,420 **	2.22
			1,100 (City of Beth.)		
			6,043 (Total)		

* Population estimated - based on 2020 census value of 2.6 persons per EDU in Lower Saucon Township

** Based on PA DEP Domestic Wastewater Manual criteria of 250 GPD/person for interceptor design

10. Five Year Projections: Major Interceptors *

<u>Name/Segment</u>	<u>Limiting</u> <u>Section</u> <u>Capacity (GPD)</u> <u>(MGD)</u>	<u>Current</u> <u>2022</u>	<u>2023</u>	<u>Projected Peak Flows (GPD) (MGD)</u>			
				<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>
Black River (MH 6-7)	2.22	0.851	1.031	1.036	1.042	1.071	1.095

* The 2022 peak flow day was Apr. 8, 2022, during a 2.3-inch rain event preceded by 5 rain days in the previous week.

That day's interceptor flow was 3.31 times the 2022 annual average. Second to that was 2/4/22, a 1.6-inch rain event w/ frozen ground.

Future projections are based on a projected peak factor of 3.75, which should be very conservative for most years.

* Attach supporting documentation.

11. Mitigating Measures:

If the projected flow exceeds the limiting section capacity at any time during the five-year period, explain proposed and on-going efforts to correct the potential overload for each instance. Estimate the probable success of these mitigating measures in eliminating the potential overload condition. Use additional sheets if necessary.

B. PUMPING STATIONS

1. Description:

Name/Number	Location	Capacity (GPD)		Metered * (Yes/No)	Length (Feet)	Force Main Diameter (Inches)	Estimated Population
		<u>Existing</u>	<u>Ultimate</u>				
#1	Skibo Road PS	96,000	432,000	Yes *	1,070	Two @ 4"	411
(Located on north side of Skibo Road, 200 feet west of Saucon Creek Bridge - Capacity was upgraded in 2015)							
#2	Creekside Interim PS	28,800	31,680	Yes *	1,000	1-1/2	120
(Located at intersection of PA 412 and Springtown Hill Road)							(Equivalent)
It is expected that this station will be replaced with a new, permanent Creekside Pump Station in 2024.							

* Attach meter record summaries. Note plans for future pumping station expansion.

2. Five-Year Projections: Pumping Stations *

Name	Capacity (GPD)	<u>Current</u>	Projected Peak Flows (GPD)				
		<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>
#1 - Skibo Rd PS	96,000 (AVG)	22,480 *	22,480	22,480	35,700	35,700	35,700
	432,000 (Peak)	79,762 *	44,960	44,960	71,400	71,400	71,400
#2 - Creekside Interim PS	28,800 (AVG)	6,326 **	6,330	6,330	**	**	**
	31,680 (Peak)	10,566 **	12,660	12,660	**	**	**

* Current average and peak daily flow based on operators' logs and site visits, typically 2-4 times per week.

** Interim pump station is to be decommissioned when the permanent Creekside Area P.S. is built. Anticipated in 2023.

* Attach supporting data.

3. Mitigating Measures:

If the projected peak flow exceeds the pumping station capacity at any time during the five-year period, explain proposed and on-going efforts to correct the potential overload for each instance. Estimate the probable success of these mitigating measures in eliminating the potential overload condition. Use additional sheets if necessary.

C. METER PITS

Name/Number	Location	Size/Type **	Sensor ***	Connected Population (est.)	Flows (gpd) Peak/Average	
Saucon Creek	MH 3	18" pipe	Ultrasonic/Radar	6,042	851,406	257,485
Moravia Street	MH 803A	8" pipe *	Ultrasonic/Radar	346	23,675	11,636

Daily flow data tabulations for the MH-3 and Moravia Street meters are attached to this questionnaire.

* Palmer Bowlus Flume Insert located in manhole channel.

* Attach meter record summaries.

** Weir, flume, pipe, etc.

*** Float, bubbler, sonar, etc.

D. OPERATION AND MAINTENANCE

1. Describe Routine Operation and Maintenance Procedures:

Sewer System: Periodic inspection of sewer line corridor & easements; TV inspection at trouble spots;
quarterly jetting and flushing of trouble spots. Clearing debris, grease, etc. from the
90-degree channel (Manhole 160) upstream of the Skibo Rd PS.

Pump Stations: #1 Visual inspection & cleaning of strainer basket 3 times weekly; cleaning of vacuum bulbs
and degreasing monthly; service ventilation and pumps every 3 months.

#2 Visual inspect & wash wet well weekly; pump out monthly. Re-fill Bio-Farm as needed.

Meter Pits: Inspect and replace battery monthly; clean quarterly.

2. Known Problem Areas:

<u>Location</u>	<u>Nature of Problem *</u>	<u>Corrective Measures Taken</u>
PS #2	Debris; Grease build-up	Installed removable basket screen; Installed Bio-Farm; service regularly
PS #2	Occasional high level alarm	Influent rate occasionally exceeds capacity. Wet well, MH's & sewers are deep enough to prevent overflows or lateral backups.
Saucon Valley Square & Yianni's Taverna Restaurant	Grease build-up	Inspect & jet clean sewers semi-annually; Installed pre-treatment in downstream MH
MH 489A	Low flow, sedimentation @ MH	Inspect & flush quarterly

* Surcharging, line blockage, etc.

E. SANITARY SEWER EXTENSIONS (2022 ONLY) *

Name/Area Served	Sewer <u>Size</u>	Extension <u>Length</u>	PADEP <u>Code No.</u>	<u>Equivalent Dwelling Units</u>		<u>Flow (gpd) **</u>
				<u>Connected</u>	<u>Total Planned</u>	<u>Current/Design</u>

None

* Attach plan of sanitary sewer system detailing additions made this year.

** 1 Equivalent Dwelling Unit (EDU) = 250 Gallons Per Day

(If there is a difference between this EDU calculation and that on page 1, Section A.1., please explain the difference.)

F. PROPOSED DEVELOPMENTS (Planning Modules) *

Name/Area Served	<u>PADEP</u> <u>Code No.</u>	<u>Current</u> <u>2022</u>	<u>2023</u>	<u>Proposed Equivalent Dwelling Units</u>			<u>2027</u>	<u>Flow **</u> <u>(GPD)</u>
				<u>2024</u>	<u>2025</u>	<u>2026</u>		

(See attached table of approved or planned developments)

** 250 GPD/EDU is used for planning purposes. Actual 2022 flow per EDU served by the Lower Saucon Authority sewer system

was approximately 112 GPD/EDU. On the peak day, Apr. 8, 2022, the total daily flow was equivalent to approximately

347 GPD/EDU. This peak flow occurred during a wet weather event of approx. 2.6" rainfall in Spring, which was preceded by

a week with 5 rain days. Peak-to-Average Flow Factor = 3.1

* Attach plan of sanitary sewer system detailing proposed developments.

** 1 Equivalent Dwelling Unit (EDU) = 250 Gallons Per Day

(If there is a difference between this EDU calculation and that on page 1, Section A.1., please explain the difference.)

G. CERTIFICATION

Prepared By:

Signature: J. Bradley Youst

Name: J. Bradley Youst, P.E.

Title: Lower Saucon Authority Engineer

Company: Hanover Engineering Associates, Inc.

Address: 252 Brodhead Rd., Suite 100

Bethlehem, PA 18017-8944

Phone No.: 610-691-5644 fax: 610-691-6968

E-mail: jbyoust@hanovereng.com

Date: Feb. 14, 2023

Approved By (Municipal Contact):

Signature: W. G. Ross

Name: William G. Ross

Title: Administrator

Municipality: Lower Saucon Authority

Address: 3706 Old Philadelphia Pike

Bethlehem, PA 18015-5426

Phone No.: 610-317-3212 fax: 610-317-3216

E-mail: administrator@lowersauconauthority.org

Date: 2/14/2023

Industrial User Information Form

Municipality: Lower Saucon Township

<u>Industrial User</u>	<u>Address</u>	<u>Type of Manufacturing</u>	<u>Flow (GPD)</u>
NONE			

2022 Lower Saucon Authority Sewer System Operations Questionnaire													
Approved or Planned Subdivisions or Connection of Existing Properties with On-lot Systems													
Group	Subdivision/Area Served	PA DEP Code No.	Total Proposed EDUs	Proposed Flow (GPD)	EDUs Connected prior to 1-1-2022	EDUs Added 2022	EDUs Connected as of 12-31-2022	Projected Total Number of EDUs Connected					Future Flow (GPD)
								2023	2024	2025	2026	2027	
A	<u>Approved Developer Projects</u>												
	Pheasant Run II	2-48924-032-3	39	9,750	37	0	37	37	37	38	38	39	500
	O'Brien Tract	2-48924-039-3	27	6,750	26	0	26	26	26	27	27	27	250
	Glen Meadow Subdivision	2-48924-099-3	4	1,000	2	1	3	3	3	4	4	4	250
	Greenwood Court	2-48924-109-3	8	2000	7	0	7	8	8	8	8	8	250
	Case Subdivision - S. end of North Drive	Approved	2	500	1	0	1	0	1	1	1	2	250
	Creekside Marketplace - Retail (Interim transportation via HBA system)	Part II - 4802404	56	14,000	46	0	46	46	46	46	46	46	2,500
B	<u>Municipal Sewer Extension Projects</u>												
	Meadows Rd Area (Clarence, Viola, etc.)	N/A	43	10,750	36	0	36	37	37	38	38	39	1,750
	Applebutter Road	N/A	15	3,750	0	0	0	0	1	1	2	2	3,750
C	<u>Developer Projects in Planning Phase</u>												
	Tarrantino Property - Seidersville Road	Single Lot	1	250	0	0	0	0	1	1	1	1	250
	Motorcar Paint Protection, Old Phila. Pike	2 Apts. & Shop	5	1250	0	5	5	3	3	3	3	3	0
	Martin 3-Lot Subdivision - Hickory Hill Rd.	TBD	3	750	0	0	0	1	2	3	3	3	750
	John's Place	N/A	2	500	0	1	1	1	2	3	3	3	250
D	<u>Miscellaneous Fill In</u>												
	3759 Old Philadelphia Pike - fire; demolished in 2015		-2										
					32	0	32	32	32	32	32	32	8,000
E	<u>Leithsville Study Area (FUTURE)</u>	Existing EDUs	Growth and Fill-in										
	Hellertown Park Area	80	10	22,500	0	0	0	0	0	0	0	0	22,500
	Mary Ellen Convalescent Home (Weston)	30	22	13,000	0	0	0	0	0	0	30	52	13,000
	Polk Valley Road (Not Including Twp Park)	8	48	14,000	0	0	0	0	0	0	0	0	14,000
	Meadows Rd (along Creekside force main)												
	Creekside PS Service Area Sub-Totals	118	80	49,500									49,500
	(Final extent of service area and anticipated connection dates not yet known.)												
	Lower Saucon Township Subtotals:		401	100,250	187		194	194	199	205	236	261	51,750
	(Net annual increase):			GPD		7		0	5	6	31	25	GPD
F	<u>City of Bethlehem Treatment Allocation</u>	DEP Code	Proposed EDUs										
	All previously approved projects built out												
	No new projects pending												
	City of Bethlehem Subtotals:		0	0	0		0	0	0	0	0	0	0
	(Net annual increase):					0		0	0	0	0	0	GPD
	TOTAL PLANNED EDUs (or GALLONS)		401	100,250			194	194	199	205	236	261	51,750
	Net projected increase: EDUs					7		0	5	6	31	25	GPD
	Net projected increase: GPD					1,750		0	1,250	1,500	7,750	6,250	

2022 SEWER SYSTEM QUESTIONNAIRE LOWER SAUCON TOWNSHIP

RESPONSE TO QUESTION REGARDING "CURRENT ALLOCATION"

The City of Bethlehem and Lower Saucon Township entered into a Sewer Service Agreement on July 1, 1975. This Sewer Service Agreement provided that the City of Bethlehem would accept and treat wastewater flows from Lower Saucon Township up to a rate of 654,900 gallons per day (0.6549 MGD). This Agreement was based upon a City of Bethlehem Treatment Plant capacity rating of 15.5 MGD.

The Township's capacity was adjusted by a three-party Wastewater Treatment Plant Allocation Agreement dated February 10, 1999, between the City of Bethlehem, Hellertown Borough Authority, and Lower Saucon Township. That agreement called for a transfer of 0.008975 MGD of treatment capacity from Hellertown to Lower Saucon Township to accommodate increased flows from a proposed expansion at the Saucon Valley School District Herman Campus.

A subsequent Amendment No. 1 to that three-party Wastewater Treatment Plant Allocation Agreement, dated May 21, 2003, called for an additional transfer of 0.001000 MGD from Hellertown's reserve to the Township. This amendment clarified the computation of each municipality's treatment allocation as being based on a WWTP capacity of 15.5 MGD.

0.654900	MGD Original 1975 Allocation
0.008975	MGD Increase, 1999
+ 0.001000	MGD Increase, 2003
<hr/> 0.664875	MGD Current Allocation

Lower Saucon Township's treatment allocation is, therefore, computed to be 0.664875 MGD, based on a WWTP capacity of 15.5 MGD. If the plant rating is subsequently increased, this value could be subject to change in accordance with the terms of the 1975 Sewer Service Agreement.

SKIBO ROAD PUMP STATION RUN TIME DATA & FLOW CALCULATIONS - 2022

Date	Pump 1 Meter (hours)	Pump 2 Meter (hours)	Days	Pump 1 Run Time (hours)	Pump 1 Gallons Pumped	Pump 1 Average Flow GPD	Pump 2 Run Time (hours)	Pump 2 Gallons Pumped	Pump 2 Average Flow GPD	Total Gallons Pumped	Total Average Flow GPD
12/31/21 8:38	1,563.30	1,624.90									
1/4/22 8:40	1,566.60	1,627.90	4.00	3.30	58,410	14,597	3.00	53,100	13,270	111,510	27,868
1/6/22 10:32	1,567.10	1,629.50	2.08	0.50	8,850	4,259	1.60	28,320	13,630	37,170	17,889
1/10/22 8:23	1,570.80	1,632.30	3.91	3.70	65,490	16,748	2.80	49,560	12,674	115,050	29,421
1/12/22 8:56	1,572.30	1,633.30	2.02	1.50	26,550	13,125	1.00	17,700	8,750	44,250	21,874
1/14/22 9:03	1,573.70	1,634.90	2.00	1.40	24,780	12,360	1.60	28,320	14,126	53,100	26,486
1/17/22 8:42	1,575.90	1,636.90	2.99	2.20	38,940	13,043	2.00	35,400	11,858	74,340	24,901
1/21/22 13:48	1,579.00	1,640.00	4.21	3.10	54,870	13,026	3.10	54,870	13,026	109,740	26,051
1/24/22 13:44	1,581.00	1,642.30	3.00	2.00	35,400	11,811	2.30	40,710	13,583	76,110	25,394
1/26/22 10:09	1,582.30	1,643.60	1.85	1.30	23,010	12,433	1.30	23,010	12,433	46,020	24,866
1/28/22 9:05	1,583.50	1,644.90	1.96	1.20	21,240	10,861	1.30	23,010	11,766	44,250	22,628
2/2/22 8:47	1,587.10	1,648.10	4.99	3.60	63,720	12,776	3.20	56,640	11,356	120,360	24,132
2/4/22 9:30	1,588.80	1,649.60	2.03	1.70	30,090	14,824	1.50	26,550	13,080	56,640	27,903
2/7/22 8:30	1,590.80	1,651.80	2.96	2.00	35,400	11,966	2.20	38,940	13,163	74,340	25,129
2/11/22 8:30	1,593.10	1,654.60	4.00	2.30	40,710	10,177	2.80	49,560	12,390	90,270	22,567
2/14/22 8:30	1,595.20	1,656.50	3.00	2.10	37,170	12,390	1.90	33,630	11,210	70,800	23,600
2/16/22 13:00	1,596.70	1,658.00	2.19	1.50	26,550	12,137	1.50	26,550	12,137	53,100	24,274
2/18/22 11:20	1,598.10	1,659.20	1.93	1.40	24,780	12,836	1.20	21,240	11,002	46,020	23,838
2/21/22 9:42	1,599.70	1,661.20	2.93	1.60	28,320	9,659	2.00	35,400	12,074	63,720	21,733
2/23/22 9:31	1,601.20	1,662.50	1.99	1.50	26,550	13,326	1.30	23,010	11,549	49,560	24,875
2/28/22 13:00	1,604.90	1,665.90	5.15	3.70	65,490	12,729	3.40	60,180	11,696	125,670	24,425
3/4/22 9:36	1,607.20	1,668.00	3.86	2.30	40,710	10,551	2.10	37,170	9,634	77,880	20,185
--- One page of 2022 flow meter field log data is missing from LSA files. ---											
5/13/22 10:14	1,654.80	1,711.80	70.03	47.60	842,520	12,031	43.80	775,260	11,071	1,617,780	23,102
5/27/22 9:48	1,664.00	1,720.30	13.98	9.20	162,840	11,646	8.50	150,450	10,760	313,290	22,407
6/2/22 14:03	1,668.20	1,723.90	6.18	4.20	74,340	12,035	3.60	63,720	10,316	138,060	22,350
6/9/22 15:20	1,672.50	1,728.70	7.05	4.30	76,110	10,790	4.80	84,960	12,045	161,070	22,836
6/16/22 13:20	1,677.20	1,732.80	6.92	4.70	83,190	12,027	4.10	72,570	10,492	155,760	22,520
6/23/22 12:00	1,680.60	1,737.30	6.94	3.40	60,180	8,666	4.50	79,650	11,470	139,830	20,136
6/28/22 8:30	1,680.90	1,742.60	4.85	0.30	5,310	1,094	5.30	93,810	19,326	99,120	20,420
6/30/22 8:30	1,682.00	1,743.70	2.00	1.10	19,470	9,735	1.10	19,470	9,735	38,940	19,470
7/4/22 10:10	1,684.40	1,745.90	4.07	2.40	42,480	10,439	2.20	38,940	9,569	81,420	20,008
7/7/22 10:12	1,686.10	1,747.80	3.00	1.70	30,090	10,025	1.90	33,630	11,205	63,720	21,230
7/11/22 7:52	1,688.50	1,750.00	3.90	2.40	42,480	10,885	2.20	38,940	9,978	81,420	20,862
7/14/22 12:15	1,690.60	1,751.90	3.18	2.10	37,170	11,679	1.90	33,630	10,567	70,800	22,246
7/18/22 8:49	1,692.70	1,754.20	3.86	2.10	37,170	9,637	2.30	40,710	10,555	77,880	20,192
7/19/22 12:00	1,693.20	1,755.00	1.13	0.50	8,850	7,814	0.80	14,160	12,502	23,010	20,315
7/21/22 11:47	1,694.50	1,756.10	1.99	1.30	23,010	11,557	1.10	19,470	9,779	42,480	21,336
7/28/22 9:13	1,698.80	1,760.10	6.89	4.30	76,110	11,042	4.00	70,800	10,271	146,910	21,313
8/4/22 13:25	1,702.50	1,764.40	7.18	3.70	65,490	9,128	4.30	76,110	10,608	141,600	19,735
8/8/22 8:45	1,703.50	1,767.70	3.81	1.00	17,700	4,651	3.30	58,410	15,349	76,110	20,000
8/11/22 12:20	1,705.40	1,769.80	3.15	1.90	33,630	10,679	2.10	37,170	11,803	70,800	22,481
8/22/22 10:47	1,711.20	1,775.70	10.94	5.80	102,660	9,388	5.90	104,430	9,550	207,090	18,938
8/25/22 13:52	1,713.20	1,777.30	3.13	2.00	35,400	11,315	1.60	28,320	9,052	63,720	20,368
8/29/22 14:47	1,715.30	1,779.40	4.04	2.10	37,170	9,205	2.10	37,170	9,205	74,340	18,409
9/1/22 11:00	1,716.50	1,781.20	2.84	1.20	21,240	7,473	1.80	31,860	11,209	53,100	18,682
9/16/22 11:45	1,725.20	1,789.20	15.03	8.70	153,990	10,245	8.00	141,600	9,420	295,590	19,665
9/23/22 9:47	1,728.90	1,792.90	6.92	3.70	65,490	9,467	3.70	65,490	9,467	130,980	18,933
9/26/22 13:15	1,730.50	1,794.60	3.14	1.60	28,320	9,006	1.70	30,090	9,569	58,410	18,576
9/30/22 8:40	1,732.30	1,796.60	3.81	1.80	31,860	8,364	2.00	35,400	9,294	67,260	17,658
10/6/22 14:50	1,736.10	1,800.00	6.26	3.80	67,260	10,750	3.40	60,180	9,618	127,440	20,368
10/7/22 11:11	1,736.50	1,800.50	0.85	0.40	7,080	8,350	0.50	8,850	10,437	15,930	18,787
10/14/22 10:00	1,740.60	1,804.30	6.95	4.10	72,570	10,441	3.80	67,260	9,677	139,830	20,117
10/17/22 8:40	1,742.20	1,805.90	2.94	1.60	28,320	9,618	1.60	28,320	9,618	56,640	19,236
10/21/22 8:40	1,744.40	1,808.10	4.00	2.20	38,940	9,735	2.20	38,940	9,735	77,880	19,470
10/26/22 10:47	1,747.20	1,811.00	5.09	2.80	49,560	9,740	2.90	51,330	10,088	100,890	19,828
10/28/22 12:25	1,748.40	1,812.10	2.07	1.20	21,240	10,271	1.10	19,470	9,415	40,710	19,685
10/31/22 10:24	1,750.60	1,815.40	2.92	2.20	38,940	13,354	3.30	58,410	20,031	97,350	33,385
11/4/22 10:13	1,752.70	1,817.60	3.99	2.10	37,170	9,310	2.20	38,940	9,754	76,110	19,064
11/7/22 8:02	1,754.70	1,821.40	2.91	2.00	35,400	12,169	3.80	67,260	23,121	102,660	35,290
11/9/22 8:36	1,755.80	1,822.50	2.02	1.10	19,470	9,621	1.10	19,470	9,621	38,940	19,243

SKIBO ROAD PUMP STATION RUN TIME DATA & FLOW CALCULATIONS - 2022

Date	Pump 1 Meter (hours)	Pump 2 Meter (hours)	Days	Pump 1 Run Time (hours)	Pump 1 Gallons Pumped	Pump 1 Average Flow GPD	Pump 2 Run Time (hours)	Pump 2 Gallons Pumped	Pump 2 Average Flow GPD	Total Gallons Pumped	Total Average Flow GPD
11/11/22 8:00	1,757.50	1,829.70	1.98	1.70	30,090	15,235	7.20	127,440	64,527	157,530	79,762
---- Pump #2 Prime Failure - High Pump #2 runtime artificially inflates computed average flow. ----											
11/16/22 8:30	1,759.00	1,834.00	5.02	1.50	26,550	5,288	4.30	76,110	15,159	102,660	20,447
11/18/22 10:20	1,760.20	1,835.10	2.08	1.20	21,240	10,229	1.10	19,470	9,377	40,710	19,606
11/21/22 9:21	1,761.90	1,837.00	2.96	1.70	30,090	10,169	1.90	33,630	11,365	63,720	21,534
11/23/22 9:30	1,763.20	1,838.20	2.01	1.30	23,010	11,469	1.20	21,240	10,587	44,250	22,056
11/28/22 8:40	1,766.90	1,841.50	4.97	3.70	65,490	13,190	3.30	58,410	11,764	123,900	24,953
11/30/22 8:11	1,768.30	1,842.80	1.98	1.40	24,780	12,516	1.30	23,010	11,622	47,790	24,138
12/2/22 8:30	1,769.40	1,844.10	2.01	1.10	19,470	9,671	1.30	23,010	11,430	42,480	21,101
12/5/22 8:40	1,771.30	1,846.00	3.01	1.90	33,630	11,184	1.90	33,630	11,184	67,260	22,368
12/7/22 8:49	1,772.70	1,847.30	2.01	1.40	24,780	12,351	1.30	23,010	11,469	47,790	23,821
12/9/22 8:00	1,773.80	1,848.40	1.97	1.10	19,470	9,903	1.10	19,470	9,903	38,940	19,807
12/12/22 10:06	1,776.00	1,850.30	3.09	2.20	38,940	12,612	1.90	33,630	10,892	72,570	23,504
12/14/22 9:37	1,777.30	1,851.50	1.98	1.30	23,010	11,622	1.20	21,240	10,728	44,250	22,350
12/16/22 10:00	1,778.60	1,852.90	2.02	1.30	23,010	11,414	1.40	24,780	12,292	47,790	23,706
12/18/22 10:00	1,780.50	1,855.10	2.00	1.90	33,630	16,815	2.20	38,940	19,470	72,570	36,285
12/21/22 9:42	1,781.80	1,856.50	2.99	1.30	23,010	7,702	1.40	24,780	8,295	47,790	15,997
12/23/22 8:23	1,783.30	1,857.80	1.95	1.50	26,550	13,649	1.30	23,010	11,829	49,560	25,479
12/28/22 9:00	1,787.30	1,861.50	5.03	4.00	70,800	14,088	3.70	65,490	13,031	136,290	27,119
12/30/22 8:40	1,788.80	1,862.90	1.99	1.50	26,550	13,368	1.40	24,780	12,477	51,330	25,844
Grand Totals			364.00	226	3,991,350	10,965	238	4,212,600	11,573	8,203,950	22,538

CREEKSIDE PUMP STATION RUN TIME DATA & FLOW CALCULATIONS - 2022

Date	Pump 1 Meter (hours)	Pump 2 Meter (hours)	Days	Pump 1 Run Time (hours)	Pump 1 Gallons Pumped	Pump 1 Average Flow GPD	Pump 2 Run Time (hours)	Pump 2 Gallons Pumped	Pump 2 Average Flow GPD	Total Gallons Pumped	Total Average Flow GPD
1/17/22 9:00	16,088.76	18,667.72									
1/19/22 10:25	16,088.77	18,674.46	2.06	0.01	12	6	6.74	8,088	3,928	8,100	3,934
1/20/22 9:46	16,088.82	18,677.76	0.97	0.05	60	62	3.3	3,960	4,070	4,020	4,132
1/28/22 8:26	16,101.83	18,699.57	7.94	13.01	15,612	1,965	21.81	26,172	3,294	41,784	5,260
2/2/22 9:02	16,113.79	18,704.36	5.02	11.96	14,352	2,856	4.79	5,748	1,144	20,100	4,000
2/11/22 8:46	16,132.48	18,718.47	8.99	18.69	22,428	2,495	14.11	16,932	1,884	39,360	4,379
2/18/22 13:12	16,148.83	18,730.46	7.18	16.35	19,620	2,731	11.99	14,388	2,003	34,008	4,733
3/4/22 9:46	16,178.13	18,757.17	13.86	29.3	35,160	2,537	26.71	32,052	2,313	67,212	4,850
3/11/22 9:21	16,196.49	18,771.95	6.98	18.36	22,032	3,155	14.78	17,736	2,540	39,768	5,695
3/18/22 13:02	16,214.50	18,787.01	7.15	18.01	21,612	3,021	15.06	18,072	2,526	39,684	5,548
3/21/22 13:35	16,228.52	18,798.64	3.02	14.02	16,824	5,565	11.63	13,956	4,617	30,780	10,182
3/25/22 8:19	16,237.91	18,805.33	3.78	9.39	11,268	2,981	6.69	8,028	2,123	19,296	5,104
4/1/22 9:30	16,251.23	18,817.91	7.05	13.32	15,984	2,267	12.58	15,096	2,141	31,080	4,409
4/8/22 9:22	16,265.96	18,832.32	6.99	14.73	17,676	2,527	14.41	17,292	2,472	34,968	4,999
4/29/22 11:00	16,308.10	18,871.37	21.07	42.14	50,568	2,400	39.05	46,860	2,224	97,428	4,624
5/13/22 8:31	16,338.98	18,898.71	13.90	30.88	37,056	2,667	27.34	32,808	2,361	69,864	5,027
5/20/22 8:33	16,360.82	18,915.27	7.00	21.84	26,208	3,743	16.56	19,872	2,838	46,080	6,582
5/27/22 8:44	16,377.73	18,934.98	7.01	16.91	20,292	2,896	19.71	23,652	3,375	43,944	6,271
6/2/22 13:50	16,394.16	18,949.74	6.21	16.43	19,716	3,174	14.76	17,712	2,851	37,428	6,025
6/9/22 14:20	16,412.76	18,967.41	7.02	18.6	22,320	3,179	17.67	21,204	3,020	43,524	6,199
6/16/22 10:57	16,428.46	18,982.10	6.86	15.7	18,840	2,747	14.69	17,628	2,570	36,468	5,317
6/30/22 8:00	16,464.28	19,015.82	13.88	35.82	42,984	3,097	33.72	40,464	2,916	83,448	6,013
7/7/22 9:36	16,482.71	19,032.21	7.07	18.43	22,116	3,130	16.39	19,668	2,783	41,784	5,913
7/18/22 11:59	16,514.06	19,059.78	11.10	31.35	37,620	3,389	27.57	33,084	2,981	70,704	6,370
7/28/22 9:00	16,555.89	19,084.21	9.88	41.83	50,196	5,083	24.43	29,316	2,969	79,512	8,051
8/11/22 11:18	16,629.04	19,128.48	14.10	73.15	87,780	6,227	44.27	53,124	3,769	140,904	9,996
8/22/22 14:12	16,679.82	19,160.72	11.12	50.78	60,936	5,479	32.24	38,688	3,479	99,624	8,958
9/16/22 9:31	16,774.24	19,246.61	24.80	94.42	113,304	4,568	85.89	103,068	4,155	216,372	8,723
9/23/22 10:00	16,781.99	19,282.71	7.02	7.75	9,300	1,325	36.1	43,320	6,171	52,620	7,496
10/14/22 9:30	16,793.07	19,372.63	20.98	11.08	13,296	634	89.92	107,904	5,143	121,200	5,777
10/20/22 9:00	16,813.57	19,386.26	5.98	20.5	24,600	4,114	13.63	16,356	2,735	40,956	6,850
10/21/22 10:30	16,817.14	19,388.96	1.06	3.57	4,284	4,032	2.7	3,240	3,049	7,524	7,081
11/4/22 8:52	16,867.94	19,421.40	13.93	50.8	60,960	4,376	32.44	38,928	2,794	99,888	7,170
11/11/22 10:15	16,904.53	19,446.95	7.06	36.59	43,908	6,221	25.55	30,660	4,344	74,568	10,566
11/14/22 8:19	16,915.57	19,454.21	2.92	11.04	13,248	4,538	7.26	8,712	2,984	21,960	7,522
11/16/22 8:40	16,920.83	19,457.21	2.01	5.26	6,312	3,133	3	3,600	1,787	9,912	4,920
11/18/22 9:53	16,926.97	19,461.54	2.05	6.14	7,368	3,593	4.33	5,196	2,534	12,564	6,127
11/21/22 9:38	16,935.35	19,467.07	2.99	8.38	10,056	3,364	5.53	6,636	2,220	16,692	5,583
11/23/22 9:56	16,941.39	19,470.80	2.01	6.04	7,248	3,601	3.73	4,476	2,224	11,724	5,826
11/28/22 8:07	16,955.73	19,479.83	4.92	14.34	17,208	3,495	9.03	10,836	2,201	28,044	5,695
11/30/22 8:20	16,961.13	19,483.30	2.01	5.4	6,480	3,225	3.47	4,164	2,073	10,644	5,298
12/2/22 8:40	16,966.65	19,486.87	2.01	5.52	6,624	3,289	3.57	4,284	2,127	10,908	5,416
12/5/22 8:49	16,975.85	19,493.45	3.01	9.2	11,040	3,672	6.58	7,896	2,627	18,936	6,299
12/6/22 11:15	16,978.74	19,495.53	1.10	2.89	3,468	3,149	2.08	2,496	2,266	5,964	5,415
12/7/22 9:11	16,981.38	19,497.20	0.91	2.64	3,168	3,467	1.67	2,004	2,193	5,172	5,659
12/9/22 8:30	16,987.38	19,501.60	1.97	6	7,200	3,652	4.4	5,280	2,678	12,480	6,330
12/12/22 10:15	16,996.15	19,507.85	3.07	8.77	10,524	3,425	6.25	7,500	2,441	18,024	5,865
12/14/22 9:16	17,001.69	19,511.48	1.96	5.54	6,648	3,394	3.63	4,356	2,224	11,004	5,617
12/16/22 10:00	17,007.43	19,515.08	2.03	5.74	6,888	3,392	3.6	4,320	2,127	11,208	5,520
12/19/22 8:40	17,016.74	19,520.60	2.94	9.31	11,172	3,794	5.52	6,624	2,250	17,796	6,044
12/21/22 9:20	17,022.35	19,524.02	2.03	5.61	6,732	3,320	3.42	4,104	2,024	10,836	5,344
12/23/22 8:30	17,028.84	19,525.38	1.97	6.49	7,788	3,963	1.36	1,632	830	9,420	4,793
12/28/22 8:50	17,040.64	19,536.20	5.01	11.8	14,160	2,824	10.82	12,984	2,590	27,144	5,414
12/30/22 8:35	17,045.69	19,540.00	1.97	6.49	7,788	3,963	1.36	1,632	830	9,420	4,793
Grand Totals			346.96	958	1,150,044	3,315	870	1,043,808	3,008	2,193,852	6,323

SEWER FLOW CALCULATOR

MH3
Q1 2022

MH3
Q2 2022

MH3
Q3 2022

MH3
Q4 2022

RAIN EVENT	JAN	FEB	MAR	Q1 SUMMARY	APR	MAY	JUN	Q2 SUMMARY	JUL	AUG	SEP	Q3 SUMMARY	OCT	NOV	DEC	Q4 SUMMARY
1	21554.74	21443.53	21537.37													
2	21554.74	21443.53	21537.37													
3	21554.74	21443.53	21537.37													
4	21554.74	21443.53	21537.37													
5	21554.74	21443.53	21537.37													
6	21554.74	21443.53	21537.37													
7	21554.74	21443.53	21537.37													
8	21554.74	21443.53	21537.37													
9	21554.74	21443.53	21537.37													
10	21554.74	21443.53	21537.37													
11	21554.74	21443.53	21537.37													
12	21554.74	21443.53	21537.37													
13	21554.74	21443.53	21537.37													
14	21554.74	21443.53	21537.37													
15	21554.74	21443.53	21537.37													
16	21554.74	21443.53	21537.37													
17	21554.74	21443.53	21537.37													
18	21554.74	21443.53	21537.37													
19	21554.74	21443.53	21537.37													
20	21554.74	21443.53	21537.37													
21	21554.74	21443.53	21537.37													
22	21554.74	21443.53	21537.37													
23	21554.74	21443.53	21537.37													
24	21554.74	21443.53	21537.37													
25	21554.74	21443.53	21537.37													
26	21554.74	21443.53	21537.37													
27	21554.74	21443.53	21537.37													
28	21554.74	21443.53	21537.37													
29	21554.74	21443.53	21537.37													
30	21554.74	21443.53	21537.37													
31	21554.74	21443.53	21537.37													
TOTAL FLOW - VALID READS	7,274,334	7,267,117	7,126,511	21,667,962	9,462,164	8,355,533	7,646,173	25,463,870	7,116,288	7,276,317	7,048,605	21,544,812	8,595,464	7,561,084	5,185,957	26,288,538
# DAYS (VALID READS)	31	28	31	90	30	31	30	91	31	31	30	92	31	30	31	92
AVG FLOW PER DAY (ESTIMATED)	234,657	259,540	232,807	240,643	315,072	272,824	254,839	280,141	232,822	234,660	234,950	234,660	277,402	252,030	167,292	277,854
TOTAL DAYS IN MONTH OR QUARTER	31	28	31	90	30	31	30	91	31	31	30	92	31	30	31	92
FLOW FOR MONTH BASED ON AVG X TOTAL	7,274,334	7,267,117	7,126,511		9,462,164	8,355,533	7,646,173		7,116,288	7,276,317	7,048,605		8,595,464	7,561,084	5,185,957	
TOTAL FLOW ESTIMATE FOR QUARTER				21,667,962				25,463,870				21,544,812				26,288,538
MAXIMUM TOTAL DAILY FLOW (OVER 24 HR)	282,652	345,451	251,276		351,456	305,477	246,349		248,212	265,363	267,602		347,782	307,573	480,697	
MINIMUM TOTAL DAILY FLOW (OVER 24 HR)	167,753	183,530	133,252		174,177	134,244	138,832		164,529	160,067	231,444		164,529	160,067	231,444	
AVERAGE DAILY FLOW	234,657	259,540	232,807		315,072	272,824	254,839		232,822	234,660	234,950		277,402	252,030	167,292	

SEWER FLOW CALCULATOR

MORAVIA ST.
Q1 2022

MORAVIA ST.
Q2 2022

MORAVIA ST.
Q3 2022

MORAVIA ST.
Q4 2022

Q1 2022																
	JAN	FEB	MAR	Q1 SUMMARY	APR	MAY	JUN	Q2 SUMMARY	JUL	AUG	SEP	Q3 SUMMARY	OCT	NOV	DEC	Q4 SUMMARY
RAIN EVENT	1	2	3		4	5	6		7	8	9		10	11	12	
1	1421.80	1203.53	903.15		1137.54	1200.84	1007.47		1107.23	1187.36	1185.53		1202.34	1420.37	1420.37	
2	1421.80	1203.53	903.15		1137.54	1200.84	1007.47		1107.23	1187.36	1185.53		1202.34	1420.37	1420.37	
3	1421.80	1203.53	903.15		1137.54	1200.84	1007.47		1107.23	1187.36	1185.53		1202.34	1420.37	1420.37	
4	1421.80	1203.53	903.15		1137.54	1200.84	1007.47		1107.23	1187.36	1185.53		1202.34	1420.37	1420.37	
5	1421.80	1203.53	903.15		1137.54	1200.84	1007.47		1107.23	1187.36	1185.53		1202.34	1420.37	1420.37	
6	1421.80	1203.53	903.15		1137.54	1200.84	1007.47		1107.23	1187.36	1185.53		1202.34	1420.37	1420.37	
7	1421.80	1203.53	903.15		1137.54	1200.84	1007.47		1107.23	1187.36	1185.53		1202.34	1420.37	1420.37	
8	1421.80	1203.53	903.15		1137.54	1200.84	1007.47		1107.23	1187.36	1185.53		1202.34	1420.37	1420.37	
9	1421.80	1203.53	903.15		1137.54	1200.84	1007.47		1107.23	1187.36	1185.53		1202.34	1420.37	1420.37	
10	1421.80	1203.53	903.15		1137.54	1200.84	1007.47		1107.23	1187.36	1185.53		1202.34	1420.37	1420.37	
11	1421.80	1203.53	903.15		1137.54	1200.84	1007.47		1107.23	1187.36	1185.53		1202.34	1420.37	1420.37	
12	1421.80	1203.53	903.15		1137.54	1200.84	1007.47		1107.23	1187.36	1185.53		1202.34	1420.37	1420.37	
13	1421.80	1203.53	903.15		1137.54	1200.84	1007.47		1107.23	1187.36	1185.53		1202.34	1420.37	1420.37	
14	1421.80	1203.53	903.15		1137.54	1200.84	1007.47		1107.23	1187.36	1185.53		1202.34	1420.37	1420.37	
15	1421.80	1203.53	903.15		1137.54	1200.84	1007.47		1107.23	1187.36	1185.53		1202.34	1420.37	1420.37	
16	1421.80	1203.53	903.15		1137.54	1200.84	1007.47		1107.23	1187.36	1185.53		1202.34	1420.37	1420.37	
17	1421.80	1203.53	903.15		1137.54	1200.84	1007.47		1107.23	1187.36	1185.53		1202.34	1420.37	1420.37	
18	1421.80	1203.53	903.15		1137.54	1200.84	1007.47		1107.23	1187.36	1185.53		1202.34	1420.37	1420.37	
19	1421.80	1203.53	903.15		1137.54	1200.84	1007.47		1107.23	1187.36	1185.53		1202.34	1420.37	1420.37	
20	1421.80	1203.53	903.15		1137.54	1200.84	1007.47		1107.23	1187.36	1185.53		1202.34	1420.37	1420.37	
21	1421.80	1203.53	903.15		1137.54	1200.84	1007.47		1107.23	1187.36	1185.53		1202.34	1420.37	1420.37	
22	1421.80	1203.53	903.15		1137.54	1200.84	1007.47		1107.23	1187.36	1185.53		1202.34	1420.37	1420.37	
23	1421.80	1203.53	903.15		1137.54	1200.84	1007.47		1107.23	1187.36	1185.53		1202.34	1420.37	1420.37	
24	1421.80	1203.53	903.15		1137.54	1200.84	1007.47		1107.23	1187.36	1185.53		1202.34	1420.37	1420.37	
25	1421.80	1203.53	903.15		1137.54	1200.84	1007.47		1107.23	1187.36	1185.53		1202.34	1420.37	1420.37	
26	1421.80	1203.53	903.15		1137.54	1200.84	1007.47		1107.23	1187.36	1185.53		1202.34	1420.37	1420.37	
27	1421.80	1203.53	903.15		1137.54	1200.84	1007.47		1107.23	1187.36	1185.53		1202.34	1420.37	1420.37	
28	1421.80	1203.53	903.15		1137.54	1200.84	1007.47		1107.23	1187.36	1185.53		1202.34	1420.37	1420.37	
29	1421.80	1203.53	903.15		1137.54	1200.84	1007.47		1107.23	1187.36	1185.53		1202.34	1420.37	1420.37	
30	1421.80	1203.53	903.15		1137.54	1200.84	1007.47		1107.23	1187.36	1185.53		1202.34	1420.37	1420.37	
31	1421.80	1203.53	903.15		1137.54	1200.84	1007.47		1107.23	1187.36	1185.53		1202.34	1420.37	1420.37	
TOTAL FLOW - VALID READS																
	392,618	290,435	340,647	1,013,599	370,400	346,376	338,430	1,055,307	333,165	342,595	341,439	1,017,199	392,618	373,018	394,393	1,160,464
# DAYS (VALID READS)																
	31	28	31	90	30	31	30	91	31	31	30	92	31	30	31	92
AVG FLOW PER DAY (ESTIMATED)																
	12,339	10,373	11,021	11,262	12,347	11,164	11,281	11,597	10,747	11,087	11,381	11,064	12,679	12,434	12,723	12,674
TOTAL DAYS IN MONTH OR QUARTER																
	31	28	31	90	30	31	30	91	31	31	30	92	31	30	31	92
FLOW FOR MONTH BASED ON AVG X TOTAL																
	392,618	290,435	340,647		370,400	346,376	338,430		333,165	342,595	341,439		392,618	373,018	394,393	
TOTAL FLOW ESTIMATE FOR QUARTER																
				1,013,599				1,055,307				1,017,199				1,160,464
MAXIMUM DAILY FLOW																
	18,231	18,070	16,218		23,476	14,338	16,748		13,467	13,711	15,832		17,967	16,340	16,902	
MINIMUM DAILY FLOW																
	11,223	7,166	9,443		9,562	7,166	9,443		9,561	10,211	9,496		10,994	11,123	10,890	
AVERAGE DAILY FLOW																
	12,339	10,373	11,021		12,347	11,164	11,281		10,747	11,087	11,381		12,679	12,434	12,723	

2022 SEWER SYSTEM QUESTIONNAIRE **(City of Bethlehem)**

Municipality Name: Palmer Township, Northampton County, PA

Date: 2/28/2023

Current Allocation: ** GPD *

**Palmer Twp. Uses a portion of the Bethlehem Twp. Allocation in the
City of Bethlehem WWTP through various inter-municipal
agreements between Palmer Twp. and Bethlehem Twp.

Note: If any question is not applicable, please write N/A. Do not leave blank!

A. SEWER SYSTEM DETAILS

1. Connected Hydraulic Loading (Flow): * (GPD or MGD)

<u>Current</u>			<u>Projected Flow</u>		
<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>
18,864	18,864	19,025	19,025	19,025	19,025

Number of Actual Connections at the End of 2022: 117

1 Equivalent Dwelling Unit (EDU) = 161 Gallons Per Day

2. Connected Organic Loading (BOD5): * (MG/L or LBS/DAY)

<u>Current</u>			<u>Projected BOD5</u>		
<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>
31	31	32	32	32	32

3. **Connected Population: ***

<u>Current</u>	<u>Projected Population</u>				
<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>
291	291	294	294	294	294

4. **Total Length of System: *** 5,600 Feet

5. **Range of Pipe Sizes: ***

Smallest: 8 Inches

Largest: 8 Inches

* If estimated, please note.

6. **Total Number of Manholes: *** 23

7. **Construction Material:**

Pipes: PVC

Manholes: N/A

8. **Combined Sewers:**

Location: N/A

Percent of Total System: N/A

9. **Major Interceptors:**

<u>Name</u>	<u>Length</u> <u>(Feet)</u>	<u>Pipe</u> <u>Diameter (Inches)</u>	<u>Pop. Served</u>	<u><i>Design</i></u> <u>EDUs</u>	<u>Flow (mgd)</u>
<u>N/A</u>					

10. Five Year Projections: Major Interceptors *

<u>Name/Segment</u>	<u>Limiting Section Capacity (GPD)</u>	<u>Current</u>	<u>Projected Peak Flows (GPD)</u>				
		<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>
N/A							

* Attach supporting documentation.

11. Mitigating Measures:

If the projected flow exceeds the limiting section capacity at any time during the five-year period, explain proposed and on-going efforts to correct the potential overload for each instance. Estimate the probable success of these mitigating measures in eliminating the potential overload condition. Use additional sheets if necessary.

No hydraulic overloads are projected within the next five (5) years.

B. PUMPING STATIONS

1. Description:

<u>Name/Number</u>	<u>Location</u>	<u>Capacity (GPD)</u>		<u>Metered *</u> <u>(Yes/No)</u>	<u>Force Main</u>		<u>Estimated</u> <u>Population</u>
		<u>Existing</u>	<u>Ultimate</u>		<u>Length</u> <u>(Feet)</u>	<u>Diameter</u> <u>(Inches)</u>	
N/A							

* Attach meter record summaries. Note plans for future pumping station expansion.

2. Five-Year Projections: Pumping Stations *

<u>Name</u>	<u>Capacity</u> <u>(GPD)</u>	<u>Current</u>	<u>Projected Peak Flows (GPD)</u>				
		<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>
N/A							

* Attach supporting data.

3. Mitigating Measures

If the projected peak flow exceeds the pumping station capacity at any time during the five-year period, explain proposed and on-going efforts to correct the potential overload for each instance. Estimate the probable success of these mitigating measures in eliminating the potential overload condition. Use additional sheets if necessary.

N/A

C. METER PITS *

<u>Name/Number</u>	<u>Location</u>	<u>Size/Type</u> **	<u>Sensor</u> ***	<u>Connected Population (est.)</u>	<u>Flows (gpd) Peak/Average</u>
N/A					

* Attach meter record summaries.

** Weir, flume, pipe, etc.

*** Float, bubbler, sonar, etc.

D. OPERATION AND MAINTENANCE

1. Describe Routine Operation and Maintenance Procedures:

Sewer System: Palmer Township personnel routinely flush sewer mains in areas that have a greater potential for conveyance issues and respond to blockages as needed.

Pump Stations: N/A

Meter Pits: N/A

2. Known Problem Areas:

Location

Nature of Problem *

Corrective Measures Taken

N/A

* Surcharging, line blockage, etc.

Active F.O.G. program is in place to mitigate and control fats oils and greases.

E. SANITARY SEWER EXTENSIONS (2022 ONLY) *

<u>Name/Area Served</u>	<u>Sewer Size</u>	<u>Extension Length</u>	<u>PADEP Code No.</u>	<u>Equivalent Dwelling Units Connected</u>	<u>Total Planned</u>	<u>Flow (gpd) ** Current/Design</u>
N/A						

* Attach plan of sanitary sewer system detailing additions made this year.

** 1 Equivalent Dwelling Unit (EDU) = N/A Gallons Per Day

(If there is a difference between this EDU calculation and that on Page 1, Section A.1., please explain the difference.)

F. PROPOSED DEVELOPMENTS (Planning Modules) *


<u>Name/Area Served</u>	<u>PADEP Code No.</u>	<u>Current</u> <u>2022</u>	<u>2023</u>	<u>Proposed Equivalent Dwelling Units</u> <u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>	<u>Flow **</u> <u>(GPD)</u>

* Attach plan of sanitary sewer system detailing proposed developments.


** 1 Equivalent Dwelling Unit (EDU) = 250 Gallons Per Day

G. CERTIFICATION

Prepared By:

Signature: 
Name: Mary B. Peters
Title: Project Manager
Company: Entech Engineering
Address: 239 S. Mountain Blvd.
Suite 300, Mountain Top
Pa. 18707
Phone No.: (800) 825-1372
E-mail: MPeters@entecheng.com
Date: 03/08/2023

Approved By (Municipal Contact):

Signature: 
Name: Robert Williams
Title: Township Manager
Municipality: Palmer Township
Address: 3 Weller Place
Palmer, PA
18045
Phone No.: 610-253-7191
E-mail: rwilliams@palmertwp.com
Date: 03/08/2023

Industrial User Information Form

Municipality:_____.

<u>Industrial User</u>	<u>Address</u>	<u>Type of Manufacturing</u>	<u>Flow (GPD)</u>



Township of Salisbury

LEHIGH COUNTY, PA

March 2, 2023

Mr. Jack Lawrence
Superintendent
Bethlehem Wastewater Treatment Plant
144 Shimersville Road
Bethlehem, PA 18015

Re: Salisbury Township
Sanitary Sewerage System
2022 Chapter 94 Report

Dear Mr. Lawrence:

Enclosed please find one copy of the 2022 City of Bethlehem Chapter 94 Sewer System Questionnaire and two copies of the 2022 Chapter 94 Plan for the above-referenced project. If you have any questions or require additional information, please contact our office.

Sincerely yours,

A handwritten signature in black ink, appearing to read "James Levernier", followed by a horizontal line.

James Levernier
Director of Public Works

2022 SEWER SYSTEM QUESTIONNAIRE

Municipality Name: Township of Salisbury

Date: 3/2/23

Current Allocation: 225.000 GPD *

Note: If any question is not applicable, please write N/A. Do not leave blank!

A. SEWER SYSTEM DETAILS

1. Connected Hydraulic Loading (Flow): * (GPD or MGD)

<u>Current</u>			<u>Projected Flow</u>		
<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>
127,243	127,820	128,413	129,016	129,623	130,232

Number of Actual Connections at the End of 2022: 514

1 Equivalent Dwelling Unit (EDU) = 2.45 Gallons Per Day

2. Connected Organic Loading (BOD5): * (MG/L or LBS/DAY)

<u>Current</u>			<u>Projected BOD5</u>		
<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>
271.2	272.3	273.3	274.4	275.4	276.5

3. Connected Population: *

<u>Current</u>			<u>Projected Population</u>		
<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>
1550	1556	1562	1568	1574	1580

4. Total Length of System: * 39,640 + Feet

5. Range of Pipe Sizes: *

Smallest: 4 Inches

Largest: 12 Inches

* If estimated, please note.

6. Total Number of Manholes: * 161+

7. Construction Material:

4" PVC

Pipes: 8" cast iron, ductile iron, vitrified clay and 12" cast iron cement lined, vitrified clay

Manholes: Precast concrete

8. Combined Sewers:

Location: None

Percent of Total System:

9. Major Interceptors:

<u>Name</u>	<u>Length (Feet)</u>	<u>Pipe Diameter (Inches)</u>	<u>Pop. Served</u>	<u>Design EDUs</u>	<u>Flow (mgd)</u>
N/A					

10. Five Year Projections: Major Interceptors *

<u>Name/Segment</u>	<u>Limiting Section Capacity (GPD)</u>	<u>Projected Peak Flows (GPD)</u>					
		<u>Current 2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>
N/A							

* Attach supporting documentation.

11. Mitigating Measures:

If the projected flow exceeds the limiting section capacity at any time during the five-year period, explain proposed and on-going efforts to correct the potential overload for each instance. Estimate the probable success of these mitigating measures in eliminating the potential overload condition. Use additional sheets if necessary.

No known overloads. Recording of flows through the sewer meter station are reviewed weekly

to identify significant changes in the normal trend, especially changes that may occur during and after rainfall events.

B. PUMPING STATIONS

1. Description:

<u>Name/Number</u>	<u>Location</u>	<u>Capacity (GPD)</u>		<u>Metered *</u> <u>(Yes/No)</u>	<u>Force Main</u>		<u>Estimated</u> <u>Population</u>
		<u>Existing</u>	<u>Ultimate</u>		<u>Length</u> <u>(Feet)</u>	<u>Diameter</u> <u>(Inches)</u>	
No. 3	Cardinal Drive	90,000	90,000	No	903	4"	172
No. 5	Riverside Drive	288,000	288,000	No	3,708	8"	300

* Attach meter record summaries. Note plans for future pumping station expansion.

2. Five-Year Projections: Pumping Stations *

<u>Name</u>	<u>Capacity</u> <u>(GPD)</u>	<u>Current</u>		<u>Projected Peak Flows (GPD)</u>			
		<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>
No. 3	90,000	17,077	17,077	17,077	17,077	17,077	17,077
No. 5	288,000	2,174	2,185	2,196	2,207	2,218	2,229

Pump stations are not metered. Projected peak flows for pump station #3 are based on the ratio of the estimated population in pump station #3's service area to the estimated population of the entire service area of Fountain Hill Meter Station, and the flows are recorded at the Fountain Hill Meter Station. Projected peak flows for pump station #5 are based on water consumption records of customers within the service area. *Projections include a 0.5% per year population increase.

* Attach supporting data.

3. Mitigating Measures

If the projected peak flow exceeds the pumping station capacity at any time during the five-year period, explain proposed and on-going efforts to correct the potential overload for each instance. Estimate the probable success of these mitigating measures in eliminating the potential overload condition. Use additional sheets if necessary.

N/A

C. METER PITS *

<u>Name/Number</u>	<u>Location</u>	<u>Size/Type</u> **	<u>Sensor</u> ***	<u>Connected Population (est.)</u>	<u>Flows (gpd) Peak/Average</u>
Salisbury Township/Fountain Hill Borough				1,249	125,569
Fountain Hill Boundary North of Broadway	10" Palmer-Bowlus Sonar				

* Attach meter record summaries.

** Weir, flume, pipe, etc.

*** Float, bubbler, sonar, etc.

D. OPERATION AND MAINTENANCE

1. Describe Routine Operation and Maintenance Procedures:

Sewer System: Flushed annually and as needed.

Pump Stations: Checked three times per week. Flushed and cleaned quarterly.

Meter Pits: Monitored daily by Tele Logger and pits cleaned quarterly.

2. Known Problem Areas:

Location

Nature of Problem *

Corrective Measures Taken

N/A

* Surcharging, line blockage, etc.

E. SANITARY SEWER EXTENSIONS (2022 ONLY) *

<u>Name/Area Served</u>	<u>Sewer</u>	<u>Extension</u>	<u>PADEP</u> <u>Code No.</u>	<u>Equivalent Dwelling Units</u>		<u>Flow (gpd) **</u>
	<u>Size</u>	<u>Length</u>		<u>Connected</u>	<u>Total Planned</u>	<u>Current/Design</u>
N/A						

* Attach plan of sanitary sewer system detailing additions made this year.

** 1 Equivalent Dwelling Unit (EDU) = _____ Gallons Per Day

(If there is a difference between this EDU calculation and that on Page 1, Section A.1., please explain the difference.)

F. PROPOSED DEVELOPMENTS (Planning Modules) *

<u>Name/Area Served</u>	<u>PADEP</u> <u>Code No.</u>	<u>Current</u>	<u>Proposed Equivalent Dwelling Units</u>				<u>Flow **</u> <u>(GPD)</u>
		<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	
N/A							

* Attach plan of sanitary sewer system detailing proposed developments.

** 1 Equivalent Dwelling Unit (EDU) = _____ Gallons Per Day

(If there is a difference between this EDU calculation and that on Page 1, Section A.1., please explain the difference.)

G. CERTIFICATION

Prepared By:

Signature: _____

Name: James Levernier

Title: Director of Public Works

Company: Township of Salisbury

Address: 3000 S. Pike Avenue

Allentown, PA 18103

Phone No.: 610-797-4000

E-mail: jlevernier@salisburytownship.org

Date: March 2, 2023

Approved By (Municipal Contact):

Signature: 

Name: JAMES LEVERNIER

Title: DIRECTOR OF PUBLIC WORKS

Municipality: SALISBURY TOWNSHIP

Address: 2900 S. PIKE AVE

ALLENTOWN PA 18103

Phone No.: 610-797-4000

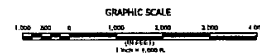
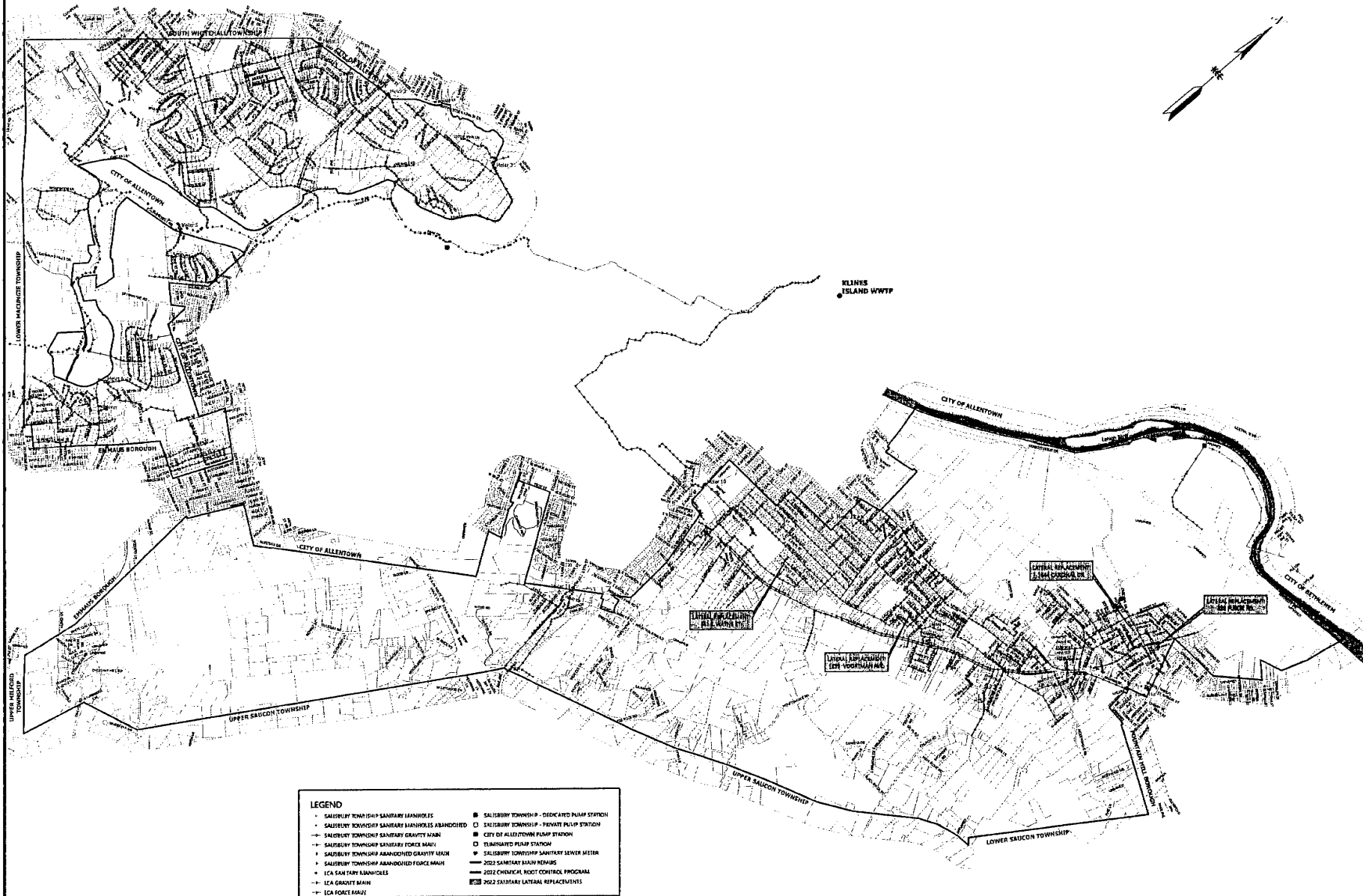
E-mail: jlevernier@salisburytownship.org

Date: 3/7/23

Industrial User Information Form

Municipality: _____.

<u>Industrial User</u>	<u>Address</u>	<u>Type of Manufacturing</u>	<u>Flow (GPD)</u>



KEYSTONE CONSULTING ENGINEERS, INC.
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 East Office: Bethlehem, West Office: Kresgeville
 www.KCEINC.com



DEP CHAPTER 94 INFORMATION FOR YEAR 2022

TOWNSHIP

CITY

DESIGNED BY: CEN

CHECKED BY: JRS

DATE: 08-20-2023

SCALE: 1" = 100'

SHEET: 1 of 1

SALISBURY TOWNSHIP

SALISBURY TOWNSHIP

LEHIGH COUNTY, PENNSYLVANIA

APPENDIX C

**MUNICIPAL INDUSTRIAL PRETREATMENT PROGRAM
REPORT**



CITY OF BETHLEHEM

10 East Church Street, Bethlehem, Pennsylvania 18018-6025

Department of Water and Sewer Resources

www.bethlehem-pa.gov

Phone: 610-865-7169

Fax: 610-865-7216

March 15, 2023

Certified Mail No. 7019 2280 0002 2999 4109

Attn: U.S. EPA Region 3 Pretreatment [3WD41]
Four Penn Center
1600 John F Kennedy Blvd
Philadelphia, PA 19103-2852

Re: Pretreatment Annual Report, City of Bethlehem

To whom it may concern:

Enclosed you will find the certification sheet and SNC publication for the City of Bethlehem, PA's 2022 Pretreatment Annual Report.

Please contact me at 610-865-7169 or kgreiser@bethlehem-pa.gov if you have any questions about the report.

Sincerely,

Kenneth Greiser
MIPP/QC Coordinator

Enclosures

cc: D. Beatty

Proof of Publication Notice in the *Morning Call*

Under Act No. 587, Approved May 16, 1929 and its amendments

Sold To:

CITY OF BETHLEHEM - CU00161932
10 E Church St
Bethlehem, PA 18018

Bill To:

CITY OF BETHLEHEM - CU00161932
10 E Church St
Bethlehem, PA 18018

STATE OF PENNSYLVANIA)
COUNTY OF LEHIGH) SS:

Timothy Titus

of THE MORNING CALL, LLC. of the County of Lehigh and State of Pennsylvania, being duly sworn, deposes and says that THE MORNING CALL is a newspaper of general circulation as defined by the aforesaid Act, whose place of business is in the City of Allentown, County of Lehigh and State of Pennsylvania, and that the said newspaper was established in 1888 since which date THE MORNING CALL has regularly issued in said County, and that the printed notice or advertisement attached hereto is exactly the same as was printed and published in regular editions and issues of the said THE MORNING CALL on the following dates, viz.:

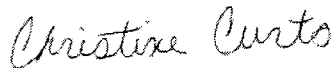
Feb 11, 2023.

Affiant further deposes that he is the designated agent duly authorized by THE MORNING CALL, LLC., a corporation, publisher of said THE MORNING CALL, a newspaper of general circulation, to verify the foregoing statement under oath, and the affiant is not interested in the subject matter of the aforesaid notice or advertisement, and that all allegations in the foregoing statements as to time, place and character of publication are true.

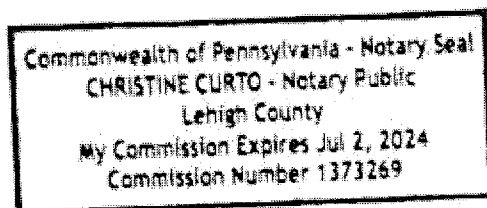


Designated Agent, THE MORNING CALL, LLC.

Sworn to and subscribed before me on this 12 day of February, 2023



Notary Public



Order # - 7377230

Proof of Publication Notice in the *Morning Call*

PUBLIC NOTICE

The City of Bethlehem, PA, pursuant to the requirements of the USEPA General Pretreatment Regulations 40CFR Part 403.8(f)(2)(viii), hereby publishes PUBLIC NOTICE of industrial users who have been determined to be in significant noncompliance with the City's Industrial Pretreatment Program requirements at any time during the previous twelve months ending December 31, 2022.

INDUSTRIAL USER

MacIntosh Linen and Uniform Rental
Pando International LLC
Piramal Critical Care, Inc.
Strong Brews LLC

In addition to this PUBLIC NOTICE, industrial users in significant noncompliance have received a Notification of Violation/Order for Compliance and may face additional enforcement actions including civil and/or criminal penalties as set forth in the City of Bethlehem's Industrial Waste Regulations Article 923.99.
7377230 2/11/23

Order # - 7377230

EPA Region 3

Industrial Pretreatment Program

Annual Report of POTW Implementation

Last Updated: 11-18-2022

Disclaimer

This model is intended to be used as a tool to submit the Pretreatment Annual Report of the EPA Region 3 Industrial Pretreatment Program. All other uses are strictly prohibited. Unless specified otherwise, enter data for the reporting year.

Accept

Exit

Disclaimer accepted on 3/3/2023 10:26:32 AM by UserKGreiser

Facility Name: City of Bethlehem Wastewater Treatment Plant
Permit Number: PA0026042
Reporting Period: 2022
POTW Name: City of Bethlehem

Press Ctrl-h to return to this sheet from any other sheet

POTW

Program Information

Attachments

POTW Contacts

Implementation

Resources

A

E

POTW Information

Enforcement

Hauled Waste

B

F

Compliance

Pass/INTF

C

G

D

H

Send Copies To

Submittal and Certification

/// End of Sheet

Facility Name: City of Bethlehem Wastewater Treatment Plant
Permit Number: PA0026042
Reporting Period: 2022
POTW Name: City of Bethlehem

[Return to Home](#)

Reporting Period

January 1 to December 31 of year	2022
----------------------------------	------

POTW Contacts

Control Authority Name	City of Bethlehem
NPDES Permit No	PA0026042
Permit Issuance Date	12/1/2008
Permit Expiration Date	11/30/2013
Facility Name	City of Bethlehem Wastewater Treatment Plant
Facility Address1	144 Shimersville Rd
Facility Address2	
Facility City	Bethlehem
Facility County	PA
Facility State	18015-9528
Facility Zip	

Pretreatment Contact(s) - List all Pretreatment Personnel

	Name	Title	Email
01	Kenneth Greiser	MIPP/QC Coordinator	KGreiser@bethlehem-pa.gov
02	Diane Beatty	Quality Manager	DBeatty@bethlehem-pa.gov
03	Thomas Brauchle	MIPP Technician	TBrauchle@bethlehem-pa.gov
04	Ryan Hengstenberger	MIPP Technician	RHengstenberger@bethlehem-pa.gov
05	Edward Boscola	Director, Water & Sewer Resources	EBoscola@bethlehem-pa.gov
06			

Permit Signatory	Edward Boscola
Permit Signatory Title	Director, Water & Sewer Resources
Contact Phone	610-865-7207
Contact Email	EBoscola@bethlehem-pa.gov
POTW Site Address	144 Shimersville Rd Bethlehem, PA 18015-9528

Additional Information

--

Facility Name: City of Bethlehem Wastewater Treatment Plant
 Permit Number: PA0026042
 Reporting Period: 2022
 POTW Name: City of Bethlehem

[Return to Home](#)

POTW Information

NPDES Effluent Violations?	Yes	Parameter(s)	Ammonia, TSS
Date of Violations	Ammonia: January - October; TSS: March - April		
Cause of NPDES permit violations?	Ammonia: Due to insufficient nitrification. Additional ammonia loading from dewatered		
Sludge Disposal Method 1	LAND APPLICATION		
Sludge Disposal Method 2			
Sludge Disposal Method 3			
Highest Treatment Level	Advanced		

Treatment Types

Primary Clarification?	Yes	Lagoon?	No
Secondary Clarification?	Yes	Anaerobic Digestion?	Yes
Activated Sludge?	Yes	Aerobic Digestion?	No
Trickling Filter?	Yes	Chlorination?	Yes
Oxidation Ditch?	No	Dechlorination?	No
Biotowers?	No	UV Disinfection?	No
Rotating Biological Contacts?	No	BNR?	No
Other?	Centerfuge		

POTW Design Flow (mgd)	20
POTW Actual Flow (mgd)	10.9
Total SIU Flow (mgd)	1.3
% Industrial Flow	12 %
POTW Organic (BOD) Design Capacity (lbs/day)	39365
POTW TSS Design Capacity (lbs/day)	31025
POTW Ammonia (NH3) Design Capacity (lbs/day)	
Actual or Estimated total Flow for Commercial (Non-SIU) Dischargers (mgd)	

Additional Information

--

Facility Name: City of Bethlehem Wastewater Treatment Plant
 Permit Number: PA0026042
 Reporting Period: 2022
 POTW Name: City of Bethlehem

[Return to Home](#)

Program Implementation

Number of Permitted Industrial Users as of December 31

CIUs	13	
Total SIUs	38	includes CIUs + SIUs
Other Permitted IUs	0	
Zero-Discharge CIUs	0	
Permitted Zero-Discharge CIUs	0	
Middle-Tier CIUs	0	
Non-Significant CIUs	0	

SIUs with No/Expired Permit as of December 31	0
SIUs with Administratively Extended Permits >180 Days	0
Number of SIUs with current control mechanisms	0
Number of NSCIUs that have violated any pretreatment standard	0

Number of SIUs in significant non-compliance (SNC) as of December 31

	CIUs	Non Categorical SIUs	Total SIUs
SNC Self-monitoring	1	1	2
SNC Reporting	0	1	1
SNC PT Standards	0	0	0
SNC Prohibitions	0	0	0
SNC Compliance Schedule	0	0	0
SNC Pass Through/Interference	0	1	1
SNC Other SNC Violations	0	0	0

Number of SIUs in significant non-compliance (SNC) at any time	4
Number of non-SIUs in significant non-compliance (SNC) at any time	0
Number of SIUs in SNC during the previous calendar year	1
SNC during the July to December period	2

# Permitted Non-SIUs With Unknown Compliance Status	0
# SIUs With Unknown Compliance Status	0
Does the ERP include escalating enforcement actions for SNC	Yes

	CIUs	Non Categorical SIUs	Total SIUs
Number of SIUs with compliance schedule as of December 31	0	0	0

Additional Information

Facility Name: City of Bethlehem Wastewater Treatment Plant
 Permit Number: PA0026042
 Reporting Period: 2022
 POTW Name: City of Bethlehem

[Return to Home](#)

Enforcement Actions

	Non-SIUs	SIUs	CIUs
Number of NOVs	0	23	6
Number of Formal Enforcement Actions	0	2	0
Number of different IUs with Formal Enforcement Actions	0	2	0
Number of SIUs on formal compliance schedule	0	1	0

Formal actions at any time during the reporting year including Administrative Orders, show cause hearings, out-of-court settlements that are formal settlements, termination of service, formal compliance schedules, penalty actions EXCEPT civil or criminal suits.

	Civil	Criminal	Total
Number of suits filed against SIUs	0	0	0

	Non-SIUs	SIUs
Number of Different IUs From Whom Penalties Were Collected		6
Total Penalties Collected		\$ 15,000

Number of IUs Published As Being In SNC Please complete Attachment B

Additional Information

17 notices of noncompliance - 14 to SIUs, 3 to CIUs. 12 notices of violation all with fines - 9 to SIUs, 3 to CIUs.

Facility Name: City of Bethlehem Wastewater Treatment
Permit Number: PA0026042
Reporting Period: 2022
POTW Name: City of Bethlehem

[Return to Home](#)

Compliance Monitoring

	Non-SIU	SIU
Number of individual permits issued	0	10
Number of general permits issued	0	0
Number of inspections in the reporting year	0	38

Overview description of Non-SIU inspections

Number of SIUs not inspected during the reporting year

0

Number of SIUs that submitted required Self-Monitoring Reports

37

Number of SIUs not sampled during the reporting year

1

Number of SIUs in SNC With Self-Monitoring Requirements That Were Not Inspected or Sampled

0

Additional Information

Straight Arrow Products, Inc's permit was closed on March 31, 2022. Straight Arrow did not produce any industrial wastewater at any p

Facility Name: City of Bethlehem Wastew
Permit Number: PA0026042
Reporting Period: 2022
POTW Name: City of Bethlehem

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Program Implementation - Resources

Number of Pretreatment FTEs	3
Significant Changes (+/- 20%) to The POTW's Pretreatment Program Budget or Staffing?	No
Source of Budget	Surcharge, Fines
Total Pretreatment Program Budget	\$ 562,322

Number of Jurisdictions Covered By Pretreatment Program	11
Adequate delegation in each jurisdiction?	Yes
Miscellaneous Developments and Special Initiatives?	Yes

The City of Bethlehem continues to participate in the Pretreatment Information Exchange (PIX) group as a board member with other regulatory staff from Allentown, Easton, Upper Saucon, and various area industrial representatives. PIX is a 503(c) non-profit organization established in 2005.

Additional Information

The City of Bethlehem's IPP program budget is intertwined with the city's WWTP Laboratory budget. The amount

Facility Name: City of Bethlehem Wastewater Treatment Plant
Permit Number: PA0026042
Reporting Period: 2022
POTW Name: City of Bethlehem

[Return to Home](#)

Program Implementation - Hauled Waste

Does the POTW receive any discharges of

Receive Groundwater From Hydrocarbon Cleanup Site?	No
Receive Hauled Septage (Domestic Only)?	Yes
Receive Hauled Waste From Industrial Sources?	No
Receive Hauled Waste From Commercial Sources?	No
Receive Hauled Categorical Waste?	No
Receive Hauled Grease Interceptor/Trap Waste?	No
Receive Landfill Leachate?	Yes
Receive CERCLA Cleanup Wastes?	No
Receive Hazardous (RCRA) Waste?	No
RV Dump Stations in Service Area?	No
Receive Other Unique Waste?	No
Receive Oil & Gas Waste from Stripper wells?	No

As defined at 40 CFR Part 261 and delivered by truck, rail or dedicated pipeline

If you accept any trucked or hauled waste, indicate all of the following that apply to your POTW

Legal Authority To Control Hauled Waste?	Yes
POTW Issues Permits For Hauled Wastes?	Yes
POTW Has A Designated Disposal Site For Hauled Wastes?	Yes
POTW Controls Access At The Designated Disposal Station?	Yes
POTW Uses A Manifest System To Track/Control Hauled Wastes?	Yes
POTW Believes That Illegal Dumping May Be Occurring In Its Jurisdiction?	No

What parameter if any do you surcharge

Surcharge for BOD?	Yes
Surcharge for TSS?	Yes
Surcharge for Oil and Grease?	No
Surcharge for Flow?	Yes
Surcharge for Ammonia?	Yes
Surcharge for COD?	Yes
Surcharge for TKN?	No
Surcharge for Other Parameters?	No

Additional Information

We receive domestic septage from 3 septic hauling companies. Total gallons received per month - January: 12,1

Facility Name: City of Bethlehem Wastew:
Permit Number: PA0026042
Reporting Period: 2022
POTW Name: City of Bethlehem

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Program Implementation - Pass/INTF

Instances Of Interference At The POTW?	Yes
Instances Of Pass Through At The POTW?	No

Receive Notification Of The Discharge Of Any Hazardous Waste?	Yes
---	-----

If so, names of IUs

01	Pando Internation LLC
02	Ungerer & Company
03	
04	
05	
06	
07	
08	
09	
10	
11	

Additional Information

On 5/13/2022 there was a dry weather sanitary sewer overflow at one of the city's

Facility Name: City of Bethlehem Westwastewater Treatment Plant
 Parcel Number: F4068041
 Registered Parcel: 3024
 NTM Number: City of Bethlehem

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Attachment A: List of CILs/SILs

[illegible]

Additional Information (e.g. Permit cover age changes compared to the previous reporting year)

Facility Name: City of Bethlehem Wastewater Tr
Permit Number: PA0026042
Reporting Period: 2022
POTW Name: City of Bethlehem

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Attachment B: Copy of Newspaper Notice of SNC

Provide a copy of the newspaper notice identifying all IUs which were in SNC during the reporting period. The notice must show the name of the paper and the date of publication.

Copy of Newspaper Notice of SNC submitted?

Yes

Additional Information

/ End of Sheet

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Attachment C: Description of Each Incidence of Pass Through or Interference

Provide a description of each incidence of Pass Through or Interference at the wastewater treatment plant or collection system during the year, the cause if determined, and any actions taken by the POTW in response to the Pass Through or Interference.

Description of Pass Through/Interference

01	On 5/13/2022 there was a dry weather sanitary sewer overflow at one of the city's pump stations. The
02	overflow was caused by a viscous material that damaged the pumps in the pump station. The city
03	determined that Pando International LLC was the most likely source of this viscous material. We
04	issued a cease & desist order to stop them from discharging industrial wastewater while the city
05	continued its investigation. The issue at the pump station did not reoccur once Pando stopped
06	discharging their industrial wastewater.
07	
08	
09	
10	
11	

Additional Information

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Facility Name: City of Bethlehem
Permit Number: PA0026042
Reporting Period: 2022
POTW Name: City of Bethlehem

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Attachment D: Description of Significant Change in Program Funding/Staffing

An explanation of any significant decrease (20% or greater) in pretreatment funding or staffing of the POTW's Pretreatment Program.

Description of Significant Change in Program Funding/Staffing

--

Facility Name: City of Bethlehem Wastewater Treatment
Permit Number: PA0026042
Reporting Period: 2022
POTW Name: City of Bethlehem

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Attachment E1: Permitted Industrial Users (part 1 of 2)

Provide a printout or listing of all permitted non-SIUs

	Permitted Non-SIUs	Address	County	Jurisdiction	SIC Code	NAICS Code	Rationale for permitting these non-SIUs
01							
02							
03							
04							
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

Additional Information

End of Sheet

Facility Name: City of Bethlehem Wastewater Treatment Plant
Permit Number: PA0026042
Reporting Period: 2022
POTW Name: City of Bethlehem

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Attachment E2: Permitted Industrial Users (part 2 of 2)

Provide a printout or listing of all SIUs covered by a General Permit

	SIUs covered by a General Permit	Justification Criteria
01		
02		
03		
04		
05		
06		
07		
08		
09		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		

[Add more rows](#)

Additional Information

--

Facility Name: City of Bethlehem Wastewater Treatment Plant
 Permit Number: PA0026042
 Reporting Period: 2022
 POTW Name: City of Bethlehem

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Attachment F: IUs in SNC During the Reporting Period

For those IUs in SNC during the Reporting Period

	IU Name	Reason for SNC	Date of Enforcement Action	Type of Enforcement Action	Parameter(s) Violated	Date in Compliance	Penalties Assessed	Penalties Collected	Quarters In SNC	In SNC during PRP?
01	Macintosh Linen and Uniform	TRC violation for oil & grease during the 1/1/2022 to 6/30/2022 and 4/1/2022 to 9/30/2022 reporting periods.	8/1/2022	Notice of violatio	Oil & Grease	6/21/2022	Yes	Yes	2	No
02	Pando International LLC	On 5/13/2022 there was a dry weather sanitary sewer overflow at one of the city's pump stations. The overflow was caused by a viscous material that damaged the pumps in the pump station. The city determined that Pando International LLC was the most likely source of this viscous material. We issued a cease & desist order to stop them from discharging industrial wastewater while the city continued its investigation. The issue at the pump station did not reoccur once Pando stopped discharging their industrial wastewater. The cease & desist order had conditions that Pando International LLC had to meet to be allowed to start discharging its industrial wastewater again. Instead of meeting these requirements, Pando International LLC decided to dismantle their pretreatment system and are hauling their industrial wastewater offsite. The cease & desist order will remain in effect until Pando International LLC either meets the requirements listed in the order or their permit expires.	6/14/2022	Cease & Desist C	None	Ongoing	Yes	Yes	3	No
03	Piramal Critical Care, Inc.	TRC violations for chloroform, diethylamine, and methyl chloride.	2/21/2023	Notice of Nonco	Chloroform, diethylar	2/2/2023	No	No	1	No
04	Strong Brews LLC	Failure to submit required report within 45 days.	4/11/2022	Notice of Nonco	None	10/26/2022	No	No	1	No
05										
06										
07										
08										
09										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										

Additional Information

Facility Name: City of Bethlehem Wastewater Treatment Plant
Permit Number: PA0026042
Reporting Period: 2022
POTW Name: City of Bethlehem

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Attachment G: Modification History

	Type of Modification	Description of Modification	Date of PN	Approval
01				
02				
03				
04				
05				
06				
07				
08				
09				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				

Expected Modifications

--

Facility Name: City of Bethlehem Wastewater Treatment Plant
Permit Number: PA0026042
Reporting Period: 2022
POTW Name: City of Bethlehem

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Attachment H: Influent/Effluent and Biosolids Monitoring

Influent Monitoring Results Submitted or Attached?	Yes	Includes priority pollutant scan where applicable
Effluent Monitoring Results Submitted or Attached?	Yes	
Biosolids Monitoring Results Submitted or Attached?	Yes	Includes priority pollutant scan where applicable

Additional Information

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Email File to EPA Region 3

The signature certification page must be printed, signed, and sent in hard copy to US EPA Region 3 at the address below. The QR code must be visible.

**Attn: U.S. EPA Region 3 Pretreatment [3WD41]
Four Penn Center
1600 John F Kennedy Blvd
Philadelphia, PA 19103-2852**

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Facility Name: City of Bethlehem Wastewater Treatment Plant; Permit Number: PA0026042; Reporting



Authorized Signatory Official

03/28/2023

Date

Print or type name and title

Note: The Signatory Official is the person authorized by the POTW to sign the Annual Report (see 40 CFR Section 403.12(m)).

The following documents may be attached to the email or hard copies can be mailed to US EPA Region 3

1. A copy of the newspaper notice identifying all IUs which were in SNC during the reporting period. The notice must show the name of the paper and the date of publication.
2. The results of all influent monitoring results that were performed as required in the Pretreatment section of your state issued NPDES permit. The results must include the name of the pollutant, measured concentration, analytical method used, detection limit, date
3. The results of all effluent monitoring results from the monitoring required by the Pretreatment section of your state issued NPDES permit. Provide monitoring results for those pollutants that were reported above the detection limit. The results must include the
4. The results of all monitoring results for biosolids (sludge) monitoring for any pollutants listed in 40 CFR Part 122, Appendix D, Table II, III, and V. This is for final sludge to disposal only. This monitoring may have been required by your state issued NPDES permit, or a

Time Stamp:

User Stamp:

[illegible]

[illegible]

[illegible]

APPENDIX D

FLOW METER CALIBRATION REPORTS

WG Malden

P.O. BOX 196, EAST EARL, PA 17519
PHONE: (717) 768-0800 FAX: (717) 768-0802

*** SERVICE REPORT ***

BETHLEHEM, CITY OF
144 SHIMERSVILLE ROAD, RD #5
BETHLEHEM, PA 18015

SERVICE DATE: JANUARY 06, 2022 SERVICE CONTRACT: QUARTERLY (Q1)
LOCATION: SOUTH METER
METER #: C8771 AA

PRIMARY: 36
MAXIMUM CAPACITY: 10 MGD
METER: TELEDYNE ISCO MODEL #: SIGNATURE SERIAL #: 215D02431
RECORDER: PLC MODEL #: N/A SERIAL #: N/A

*** WORK PERFORMED ***

METER CALIBRATION	ERROR: -0.03 INCHES	TOLERANCE: ± 0.125 INCHES
METHOD: LEVEL MEASUREMENTS AND VELOCITY CHECKS		
RECORDER CALIBRATION	ERROR: 0%, 0%, 0%	TOLERANCE: ± 1.000 %
CHECKED AT: 0%, 50%, 100%		
TOTALIZER CALIBRATION	ERROR: 0	TOLERANCE: ± 1.000 %
CHECKED AT: OPERATING VALUE		

*** TECHNICIAN COMMENTS ***

PERFORMED QUARTERLY CALIBRATION
VERIFIED TOTALIZER (PASSED)
NO ADJUSTMENT NEEDED
LEFT EQUIPMENT OPERATING PROPERLY

SERVICE REPRESENTATIVE(S): PATRICK MCNALLY

WG Malden

P.O. BOX 196, EAST EARL, PA 17519
PHONE: (717) 768-0800 FAX: (717) 768-0802

*** SERVICE REPORT ***

BETHLEHEM, CITY OF
144 SHIMERSVILLE ROAD, RD #5
BETHLEHEM, PA 18015

SERVICE DATE: JANUARY 06, 2022 **SERVICE CONTRACT:** QUARTERLY (Q1)

LOCATION: 101

METER #: C8771 AB

PRIMARY: 66

MAXIMUM CAPACITY: 60 MGD

METER: TELEDYNE ISCO

RECORDER: PLC

MODEL #: SIGNATURE

MODEL #: N/A

SERIAL #: 215M01452

SERIAL #: N/A

*** WORK PERFORMED ***

METER CALIBRATION

ERROR: -0.15 INCHES

TOLERANCE: ± 0.125 INCHES

METHOD: LEVEL MEASUREMENTS AND VELOCITY CHECKS

RECORDER CALIBRATION

ERROR: 0%, 0%, 0%

TOLERANCE: ± 1.000 %

CHECKED AT: 0%, 50%, 100%

TOTALIZER CALIBRATION

ERROR: 0

TOLERANCE: ± 1.000 %

CHECKED AT: OPERATING VALUE

*** TECHNICIAN COMMENTS ***

PERFORMED QUARTERLY CALIBRATION
VERIFIED TOTALIZER (PASSED)
TESTED 4-20MA LOOP
NO ADJUSTMENT NEEDED
LEFT EQUIPMENT OPERATING PROPERLY

SERVICE REPRESENTATIVE(S): BOB HEINE, PATRICK MCNALLY

WG Malden

P.O. BOX 196, EAST EARL, PA 17519
PHONE: (717) 768-0800 FAX: (717) 768-0802

*** SERVICE REPORT ***

BETHLEHEM, CITY OF
144 SHIMERSVILLE ROAD, RD #5
BETHLEHEM, PA 18015

SERVICE DATE: JANUARY 06, 2022 **SERVICE CONTRACT:** QUARTERLY (Q1)

LOCATION: 108

METER #: C8771 AC

PRIMARY: 66

MAXIMUM CAPACITY: 60 MGD

METER: TELEDYNE ISCO

RECORDER: PLC

MODEL #: SIGNATURE

MODEL #: N/A

SERIAL #: 215E01258

SERIAL #: N/A

*** WORK PERFORMED ***

METER CALIBRATION

ERROR: 0.10 INCHES

TOLERANCE: ± 0.125 INCHES

METHOD: LEVEL MEASUREMENTS AND VELOCITY CHECKS

RECORDER CALIBRATION

ERROR: 0%, 0%, 0%

TOLERANCE: ± 1.000 %

CHECKED AT: 0%, 50%, 100%

TOTALIZER CALIBRATION

ERROR: 0

TOLERANCE: ± 1.000 %

CHECKED AT: OPERATING VALUE

*** TECHNICIAN COMMENTS ***

PERFORMED QUARTERLY CALIBRATION
VERIFIED TOTALIZER (PASSED)
TESTED 4-20MA LOOP
NO ADJUSTMENT NEEDED
LEFT EQUIPMENT OPERATING PROPERLY

SERVICE REPRESENTATIVE(S): BOB HEINE, PATRICK MCNALLY

WG Malden

P.O. BOX 196, EAST EARL, PA 17519
PHONE: (717) 768-0800 FAX: (717) 768-0802

*** SERVICE REPORT ***

BETHLEHEM, CITY OF
144 SHIMERSVILLE ROAD, RD #5
BETHLEHEM, PA 18015

SERVICE DATE: JANUARY 06, 2022 **SERVICE CONTRACT:** QUARTERLY (Q1)
LOCATION: CSO METER
METER #: C8771 AD

PRIMARY: 48		
MAXIMUM CAPACITY: 40 MGD		
METER: TELEDYNE ISCO	MODEL #: 4250	SERIAL #: 215A00068
RECORDER: PLC	MODEL #: N/A	SERIAL #: N/A

*** WORK PERFORMED ***

METER CALIBRATION	ERROR: -0.17 INCHES	TOLERANCE: ± 0.125 INCHES
METHOD: LEVEL MEASUREMENTS AND VELOCITY CHECKS		
RECORDER CALIBRATION	ERROR: 0%, 0%, 0%	TOLERANCE: $\pm 1\%$
CHECKED AT: 0%, 50%, 100%		
TOTALIZER CALIBRATION	ERROR: 0	TOLERANCE: $\pm 1\%$
CHECKED AT: OPERATING VALUE		

*** TECHNICIAN COMMENTS ***

PERFORMED QUARTERLY CALIBRATION
ADJUSTED EQUIPMENT
LEFT EQUIPMENT OPERATING PROPERLY

SERVICE REPRESENTATIVE(S): BOB HEINE, PATRICK MCNALLY

WG Malden

P.O. BOX 196, EAST EARL, PA 17519
PHONE: (717) 768-0800 FAX: (717) 768-0802

*** SERVICE REPORT ***

BETHLEHEM, CITY OF
144 SHIMERSVILLE ROAD, RD #5
BETHLEHEM, PA 18015

SERVICE DATE: JANUARY 06, 2022 **SERVICE CONTRACT:** QUARTERLY (Q1)
LOCATION: FREEMANSBURG 402
METER #: C8771 AE

PRIMARY: 35		
MAXIMUM CAPACITY: 10 MGD		
METER: TELEDYNE ISCO	MODEL #: SIGNATURE	SERIAL #: 215C02251
RECORDER: PLC	MODEL #: N/A	SERIAL #: N/A

*** WORK PERFORMED ***

METER CALIBRATION	ERROR: -0.10 INCHES	TOLERANCE: ± 0.125 INCHES
METHOD: LEVEL MEASUREMENTS AND VELOCITY CHECKS		
RECORDER CALIBRATION	ERROR: 0%, 0%, 0%	TOLERANCE: ± 1.000 %
CHECKED AT: 0%, 50%, 100%		
TOTALIZER CALIBRATION	ERROR: 0	TOLERANCE: ± 1.000 %
CHECKED AT: OPERATING VALUE		

*** TECHNICIAN COMMENTS ***

PERFORMED QUARTERLY CALIBRATION
VERIFIED TOTALIZER (PASSED)
TESTED 4-20MA LOOP
NO ADJUSTMENT NEEDED
LEFT EQUIPMENT OPERATING PROPERLY

SERVICE REPRESENTATIVE(S): BOB HEINE, PATRICK MCNALLY

WG Malden

P.O. BOX 196, EAST EARL, PA 17519
PHONE: (717) 768-0800 FAX: (717) 768-0802

*** SERVICE REPORT ***

BETHLEHEM, CITY OF
144 SHIMERSVILLE ROAD, RD #5
BETHLEHEM, PA 18015

SERVICE DATE: APRIL 04, 2022 **SERVICE CONTRACT:** QUARTERLY (Q1)
LOCATION: SOUTH METER
METER #: C8771 AA

PRIMARY: 36		
MAXIMUM CAPACITY: 10 MGD		
METER: TELEDYNE ISCO	MODEL #: SIGNATURE	SERIAL #: 215D02431
RECORDER: PLC	MODEL #: N/A	SERIAL #: N/A

*** WORK PERFORMED ***

METER CALIBRATION	ERROR: 0.0 INCHES	TOLERANCE: ± 0.125 INCHES
METHOD: LEVEL MEASUREMENTS AND VELOCITY CHECKS		
RECORDER CALIBRATION	ERROR: 0%, 0%, 0%	TOLERANCE: ± 1.000 %
CHECKED AT: 0%, 50%, 100%		
TOTALIZER CALIBRATION	ERROR: 0	TOLERANCE: ± 1.000 %
CHECKED AT: OPERATING VALUE		

*** TECHNICIAN COMMENTS ***

PERFORMED QUARTERLY CALIBRATION
VERIFIED TOTALIZER (PASSED)
NO ADJUSTMENT NEEDED
LEFT EQUIPMENT OPERATING PROPERLY

SERVICE REPRESENTATIVE(S): PATRICK MCNALLY, BOB HEINE

WG Malden

P.O. BOX 196, EAST EARL, PA 17519
PHONE: (717) 768-0800 FAX: (717) 768-0802

*** SERVICE REPORT ***

BETHLEHEM, CITY OF
144 SHIMERSVILLE ROAD, RD #5
BETHLEHEM, PA 18015

SERVICE DATE: APRIL 04, 2022 **SERVICE CONTRACT:** QUARTERLY (Q1)

LOCATION: 101

METER #: C8771 AB

PRIMARY: 66

MAXIMUM CAPACITY: 60 MGD

METER: TELEDYNE ISCO

RECORDER: PLC

MODEL #: SIGNATURE

MODEL #: N/A

SERIAL #: 215M01452

SERIAL #: N/A

*** WORK PERFORMED ***

METER CALIBRATION

ERROR: 0.25 INCHES

TOLERANCE: ± 0.125 INCHES

METHOD: LEVEL MEASUREMENTS AND VELOCITY CHECKS

RECORDER CALIBRATION

ERROR: 0%, 0%, 0%

TOLERANCE: ± 1.000 %

CHECKED AT: 0%, 50%, 100%

TOTALIZER CALIBRATION

ERROR: 0

TOLERANCE: ± 1.000 %

CHECKED AT: OPERATING VALUE

*** TECHNICIAN COMMENTS ***

PERFORMED QUARTERLY CALIBRATION
ADJUSTED EQUIPMENT
LEFT EQUIPMENT OPERATING PROPERLY

SERVICE REPRESENTATIVE(S): BOB HEINE, PATRICK MCNALLY

WG Malden

P.O. BOX 196, EAST EARL, PA 17519
PHONE: (717) 768-0800 FAX: (717) 768-0802

*** SERVICE REPORT ***

BETHLEHEM, CITY OF
144 SHIMERSVILLE ROAD, RD #5
BETHLEHEM, PA 18015

SERVICE DATE: APRIL 04, 2022 **SERVICE CONTRACT:** QUARTERLY (Q1)

LOCATION: 108

METER #: C8771 AC

PRIMARY: 66

MAXIMUM CAPACITY: 60 MGD

METER: TELEDYNE ISCO

RECORDER: PLC

MODEL #: SIGNATURE

MODEL #: N/A

SERIAL #: 215E01258

SERIAL #: N/A

*** WORK PERFORMED ***

METER CALIBRATION

ERROR: 0 INCHES

TOLERANCE: ± 0.125 INCHES

METHOD: LEVEL MEASUREMENTS AND VELOCITY CHECKS

RECORDER CALIBRATION

ERROR: 0%, 0%, 0%

TOLERANCE: ± 1.000 %

CHECKED AT: 0%, 50%, 100%

TOTALIZER CALIBRATION

ERROR: 0

TOLERANCE: ± 1.000 %

CHECKED AT: OPERATING VALUE

*** TECHNICIAN COMMENTS ***

PERFORMED QUARTERLY CALIBRATION
NO ADJUSTMENT NEEDED
LEFT EQUIPMENT OPERATING PROPERLY

SERVICE REPRESENTATIVE(S): BOB HEINE, PATRICK MCNALLY

WG Malden

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*** SERVICE REPORT ***

BETHLEHEM, CITY OF
144 SHIMERSVILLE ROAD, RD #5
BETHLEHEM, PA 18015

SERVICE DATE: APRIL 04, 2022 **SERVICE CONTRACT:** QUARTERLY (Q1)
LOCATION: CSO METER
METER #: C8771 AD

PRIMARY: 48
MAXIMUM CAPACITY: 40 MGD
METER: TELEDYNE ISCO **MODEL #:** 4250 **SERIAL #:** 215A00068
RECORDER: PLC **MODEL #:** N/A **SERIAL #:** N/A

*** WORK PERFORMED ***

METER CALIBRATION	ERROR: 0 INCHES	TOLERANCE: ± 0.125 INCHES
METHOD: LEVEL MEASUREMENTS AND VELOCITY CHECKS		
RECORDER CALIBRATION	ERROR: 0%, 0%, 0%	TOLERANCE: $\pm 1\%$
CHECKED AT: 0%, 50%, 100%		
TOTALIZER CALIBRATION	ERROR: 0	TOLERANCE: $\pm 1\%$
CHECKED AT: OPERATING VALUE		

*** TECHNICIAN COMMENTS ***

PERFORMED QUARTERLY CALIBRATION
NO ADJUSTMENT NEEDED
LEFT EQUIPMENT OPERATING PROPERLY

SERVICE REPRESENTATIVE(S): BOB HEINE, PATRICK MCNALLY

WG Malden

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*** SERVICE REPORT ***

BETHLEHEM, CITY OF
144 SHIMERSVILLE ROAD, RD #5
BETHLEHEM, PA 18015

SERVICE DATE: APRIL 04, 2022 **SERVICE CONTRACT:** QUARTERLY (Q1)
LOCATION: FREEMANSBURG 402
METER #: C8771 AE

PRIMARY: 35		
MAXIMUM CAPACITY: 10 MGD		
METER: TELEDYNE ISCO	MODEL #: SIGNATURE	SERIAL #: 215C02251
RECORDER: PLC	MODEL #: N/A	SERIAL #: N/A

*** WORK PERFORMED ***

METER CALIBRATION	ERROR: 0.60 INCHES	TOLERANCE: ± 0.125 INCHES
METHOD: LEVEL MEASUREMENTS AND VELOCITY CHECKS		
RECORDER CALIBRATION	ERROR: 0%, 0%, 0%	TOLERANCE: ± 1.000 %
CHECKED AT: 0%, 50%, 100%		
TOTALIZER CALIBRATION	ERROR: 0	TOLERANCE: ± 1.000 %
CHECKED AT: OPERATING VALUE		

*** TECHNICIAN COMMENTS ***

PERFORMED QUARTERLY CALIBRATION
ADJUSTED EQUIPMENT
LEFT EQUIPMENT OPERATING PROPERLY

SERVICE REPRESENTATIVE(S): BOB HEINE, PATRICK MCNALLY

WG Malden

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*** SERVICE REPORT ***

BETHLEHEM, CITY OF
144 SHIMERSVILLE ROAD, RD #5
BETHLEHEM, PA 18015

SERVICE DATE: JULY 11, 2022 **SERVICE CONTRACT:** QUARTERLY (Q1)
LOCATION: SOUTH METER
METER #: C8771 AA

PRIMARY: 36		
MAXIMUM CAPACITY: 10 MGD		
METER: TELEDYNE ISCO	MODEL #: SIGNATURE	SERIAL #: 215D02431
RECORDER: PLC	MODEL #: N/A	SERIAL #: N/A

*** WORK PERFORMED ***

METER CALIBRATION	ERROR: 0 INCHES	TOLERANCE: ± 0.125 INCHES
METHOD: LEVEL MEASUREMENTS AND VELOCITY CHECKS		
RECORDER CALIBRATION	ERROR: 0%, 0%, 0%	TOLERANCE: ± 1.000 %
CHECKED AT: 0%, 50%, 100%		
TOTALIZER CALIBRATION	ERROR: 0	TOLERANCE: ± 1.000 %
CHECKED AT: OPERATING VALUE		

*** TECHNICIAN COMMENTS ***

PERFORMED QUARTERLY CALIBRATION
NO ADJUSTMENT NEEDED
CHANGED DESICCANT
LEFT EQUIPMENT OPERATING PROPERLY

SERVICE REPRESENTATIVE(S): BOB HEINE, BOB HEINE

WG Malden

P.O. BOX 196, EAST EARL, PA 17519
PHONE: (717) 768-0800 FAX: (717) 768-0802

*** SERVICE REPORT ***

BETHLEHEM, CITY OF
144 SHIMERSVILLE ROAD, RD #5
BETHLEHEM, PA 18015

SERVICE DATE: JULY 11, 2022 SERVICE CONTRACT: QUARTERLY (Q1)

LOCATION: 101

METER #: C8771 AB

PRIMARY: 66

MAXIMUM CAPACITY: 60 MGD

METER: TELEDYNE ISCO

RECORDER: PLC

MODEL #: SIGNATURE

MODEL #: N/A

SERIAL #: 215M01452

SERIAL #: N/A

*** WORK PERFORMED ***

METER CALIBRATION

ERROR: 0 INCHES

TOLERANCE: ± 0.125 INCHES

METHOD: LEVEL MEASUREMENTS AND VELOCITY CHECKS

RECORDER CALIBRATION

ERROR: 0%, 0%, 0%

TOLERANCE: ± 1.000 %

CHECKED AT: 0%, 50%, 100%

TOTALIZER CALIBRATION

ERROR: 0

TOLERANCE: ± 1.000 %

CHECKED AT: OPERATING VALUE

*** TECHNICIAN COMMENTS ***

PERFORMED QUARTERLY CALIBRATION
NO ADJUSTMENT NEEDED
LEFT EQUIPMENT OPERATING PROPERLY
CHANGED DESICCANT

SERVICE REPRESENTATIVE(S): BOB HEINE, PATRICK MCNALLY

WG Malden

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*** SERVICE REPORT ***

BETHLEHEM, CITY OF
144 SHIMERSVILLE ROAD, RD #5
BETHLEHEM, PA 18015

SERVICE DATE: JULY 11, 2022 **SERVICE CONTRACT:** QUARTERLY (Q1)
LOCATION: 108
METER #: C8771 AC

PRIMARY: 66		
MAXIMUM CAPACITY: 60 MGD		
METER: TELEDYNE ISCO	MODEL #: SIGNATURE	SERIAL #: 215E01258
RECORDER: PLC	MODEL #: N/A	SERIAL #: N/A

*** WORK PERFORMED ***

METER CALIBRATION	ERROR: 0 INCHES	TOLERANCE: ± 0.125 INCHES
METHOD: LEVEL MEASUREMENTS AND VELOCITY CHECKS		
RECORDER CALIBRATION	ERROR: 0%, 0%, 0%	TOLERANCE: ± 1.000 %
CHECKED AT: 0%, 50%, 100%		
TOTALIZER CALIBRATION	ERROR: 0	TOLERANCE: ± 1.000 %
CHECKED AT: OPERATING VALUE		

*** TECHNICIAN COMMENTS ***

PERFORMED QUARTERLY CALIBRATION
NO ADJUSTMENT NEEDED
CHANGED DESICCANT
LEFT EQUIPMENT OPERATING PROPERLY

SERVICE REPRESENTATIVE(S): BOB HEINE, PATRICK MCNALLY

WG Malden

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*** SERVICE REPORT ***

BETHLEHEM, CITY OF
144 SHIMERSVILLE ROAD, RD #5
BETHLEHEM, PA 18015

SERVICE DATE: JULY 11, 2022 **SERVICE CONTRACT:** QUARTERLY (Q1)
LOCATION: CSO METER
METER #: C8771 AD

PRIMARY: 48		
MAXIMUM CAPACITY: 40 MGD		
METER: TELEDYNE ISCO	MODEL #: 4250	SERIAL #: 215A00068
RECORDER: PLC	MODEL #: N/A	SERIAL #: N/A

*** WORK PERFORMED ***

METER CALIBRATION	ERROR: 0 INCHES	TOLERANCE: ± 0.125 INCHES
METHOD: LEVEL MEASUREMENTS AND VELOCITY CHECKS		
RECORDER CALIBRATION	ERROR: 0%, 0%, 0%	TOLERANCE: ± 1.000 %
CHECKED AT: 0%, 50%, 100%		
TOTALIZER CALIBRATION	ERROR: 0	TOLERANCE: ± 1.000 %
CHECKED AT: OPERATING VALUE		

*** TECHNICIAN COMMENTS ***

PERFORMED QUARTERLY CALIBRATION
NO ADJUSTMENT NEEDED
CHANGED DESICCANT
LEFT EQUIPMENT OPERATING PROPERLY

SERVICE REPRESENTATIVE(S): BOB HEINE, PATRICK MCNALLY

WG Malden

P.O. BOX 196, EAST EARL, PA 17519
PHONE: (717) 768-0800 FAX: (717) 768-0802

*** SERVICE REPORT ***

BETHLEHEM, CITY OF
144 SHIMERSVILLE ROAD, RD #5
BETHLEHEM, PA 18015

SERVICE DATE: JULY 11, 2022 **SERVICE CONTRACT:** QUARTERLY (Q1)
LOCATION: FREEMANSBURG 402
METER #: C8771 AE

PRIMARY: 35		
MAXIMUM CAPACITY: 10 MGD		
METER: TELEDYNE ISCO	MODEL #: SIGNATURE	SERIAL #: 215C02251
RECORDER: PLC	MODEL #: N/A	SERIAL #: N/A

*** WORK PERFORMED ***

METER CALIBRATION	ERROR: 0.00 INCHES	TOLERANCE: ± 0.125 INCHES
METHOD: LEVEL MEASUREMENTS AND VELOCITY CHECKS		
RECORDER CALIBRATION	ERROR: 0%, 0%, 0%	TOLERANCE: ± 1.000 %
CHECKED AT: 0%, 50%, 100%		
TOTALIZER CALIBRATION	ERROR: 0	TOLERANCE: ± 1.000 %
CHECKED AT: OPERATING VALUE		

*** TECHNICIAN COMMENTS ***

PERFORMED QUARTERLY CALIBRATION
FOUND LASER WIRE WAS TAKEN DOWNSTREAM.
PERFORMED CONFINED SPACE ENTRY.
COULD NOT RELEASE WIRE FROM SLUDGE-BALL.
CUT WIRES AS PER DAVE AND LET GO DOWNSTREAM.
RE-WIRED, REINSTALLED AND CALIBRATED LASER
ADJUSTED EQUIPMENT
LEFT EQUIPMENT OPERATING PROPERLY

SERVICE REPRESENTATIVE(S): PATRICK MCNALLY, BOB HEINE

WG Malden

P.O. BOX 196, EAST EARL, PA 17519
PHONE: (717) 768-0800 FAX: (717) 768-0802

*** SERVICE REPORT ***

BETHLEHEM, CITY OF
144 SHIMERSVILLE ROAD, RD #5
BETHLEHEM, PA 18015

SERVICE DATE: JULY 11, 2022 **SERVICE CONTRACT:** ANNUAL (A7)
LOCATION: EFFLUENT
METER #: C8771 AG

PRIMARY: 36
MAXIMUM CAPACITY: 70 MGD
METER: ROSEMOUNT

MODEL #: 8750 WA
12ESR1A1FT5B360CAAN
MODEL #: N/A

SERIAL #: 0017411

RECORDER: PLC

SERIAL #: N/A

*** WORK PERFORMED ***

METER CALIBRATION
METHOD: SIMULATED INPUTS

ERROR: 0 %

TOLERANCE: ±1.000 %

RECORDER CALIBRATION
CHECKED AT: 0%, 50%, 100%

ERROR: 0%, 0%, 0%

TOLERANCE: ±1.000 %

TOTALIZER CALIBRATION
CHECKED AT: 0%, 50%, 100%

ERROR: 0%

TOLERANCE: ±1.000 %

*** TECHNICIAN COMMENTS ***

PERFORMED ANNUAL CALIBRATION
NO ADJUSTMENT NEEDED
LEFT EQUIPMENT OPERATING PROPERLY

SERVICE REPRESENTATIVE(S): BOB HEINE, PATRICK MCNALLY

WG Malden

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*** SERVICE REPORT ***

BETHLEHEM, CITY OF
144 SHIMERSVILLE ROAD, RD #5
BETHLEHEM, PA 18015

SERVICE DATE: OCTOBER 12, 2022 **SERVICE CONTRACT:** QUARTERLY (Q1)
LOCATION: SOUTH METER
METER #: C8771 AA

PRIMARY: 36		
MAXIMUM CAPACITY: 10 MGD		
METER: TELEDYNE ISCO	MODEL #: SIGNATURE	SERIAL #: 215D02431
RECORDER: PLC	MODEL #: N/A	SERIAL #: N/A

*** WORK PERFORMED ***

METER CALIBRATION	ERROR: 0.07 INCHES	TOLERANCE: ± 0.125 INCHES
METHOD: LEVEL MEASUREMENTS AND VELOCITY CHECKS		
RECORDER CALIBRATION	ERROR: 0%, 0%, 0%	TOLERANCE: ± 1.000 %
CHECKED AT: 0%, 50%, 100%		
TOTALIZER CALIBRATION	ERROR: 0	TOLERANCE: ± 1.000 %
CHECKED AT: OPERATING VALUE		

*** TECHNICIAN COMMENTS ***

PERFORMED QUARTERLY CALIBRATION
VERIFIED TOTALIZER (PASSED)
NO ADJUSTMENT NEEDED
CHANGED DESICCANT
LEFT EQUIPMENT OPERATING PROPERLY

SERVICE REPRESENTATIVE(S): BOB HEINE, KYLE RANKIN

WG Malden

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*** SERVICE REPORT ***

BETHLEHEM, CITY OF
144 SHIMERSVILLE ROAD, RD #5
BETHLEHEM, PA 18015

SERVICE DATE: OCTOBER 12, 2022 **SERVICE CONTRACT:** QUARTERLY (Q1)

LOCATION: 101

METER #: C8771 AB

PRIMARY: 66

MAXIMUM CAPACITY: 60 MGD

METER: TELEDYNE ISCO

RECORDER: PLC

MODEL #: SIGNATURE

MODEL #: N/A

SERIAL #: 215M01452

SERIAL #: N/A

*** WORK PERFORMED ***

METER CALIBRATION

ERROR: 0 INCHES

TOLERANCE: ± 0.125 INCHES

METHOD: LEVEL MEASUREMENTS AND VELOCITY CHECKS

RECORDER CALIBRATION

ERROR: 0%, 0%, 0%

TOLERANCE: ± 1.000 %

CHECKED AT: 0%, 50%, 100%

TOTALIZER CALIBRATION

ERROR: 0

TOLERANCE: ± 1.000 %

CHECKED AT: OPERATING VALUE

*** TECHNICIAN COMMENTS ***

PERFORMED QUARTERLY CALIBRATION
VERIFIED TOTALIZER (PASSED)
CHANGED DESICCANT
NO ADJUSTMENT NEEDED
LEFT EQUIPMENT OPERATING PROPERLY

SERVICE REPRESENTATIVE(S): BOB HEINE, KYLE RANKIN

WG Malden

P.O. BOX 196, EAST EARL, PA 17519
PHONE: (717) 768-0800 FAX: (717) 768-0802

*** SERVICE REPORT ***

BETHLEHEM, CITY OF
144 SHIMERSVILLE ROAD, RD #5
BETHLEHEM, PA 18015

SERVICE DATE: OCTOBER 12, 2022 **SERVICE CONTRACT:** QUARTERLY (Q1)

LOCATION: 108

METER #: C8771 AC

PRIMARY: 66

MAXIMUM CAPACITY: 60 MGD

METER: TELEDYNE ISCO

RECORDER: PLC

MODEL #: SIGNATURE

MODEL #: N/A

SERIAL #: 215E01258

SERIAL #: N/A

*** WORK PERFORMED ***

METER CALIBRATION

ERROR: 0.05 INCHES

TOLERANCE: ± 0.125 INCHES

METHOD: LEVEL MEASUREMENTS AND VELOCITY CHECKS

RECORDER CALIBRATION

ERROR: 0%, 0%, 0%

TOLERANCE: ± 1.000 %

CHECKED AT: 0%, 50%, 100%

TOTALIZER CALIBRATION

ERROR: 0

TOLERANCE: ± 1.000 %

CHECKED AT: OPERATING VALUE

*** TECHNICIAN COMMENTS ***

PERFORMED QUARTERLY CALIBRATION
VERIFIED TOTALIZER (PASSED)
NO ADJUSTMENT NEEDED
CHANGED DESICCANT
REPLACED KEYPAD
LEFT EQUIPMENT OPERATING PROPERLY

SERVICE REPRESENTATIVE(S): BOB HEINE, KYLE RANKIN

WG Malden

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*** SERVICE REPORT ***

BETHLEHEM, CITY OF
144 SHIMERSVILLE ROAD, RD #5
BETHLEHEM, PA 18015

SERVICE DATE: OCTOBER 12, 2022 **SERVICE CONTRACT:** QUARTERLY (Q1)

LOCATION: CSO METER

METER #: C8771 AD

PRIMARY: 48

MAXIMUM CAPACITY: 40 MGD

METER: TELEDYNE ISCO

MODEL #: 4250

SERIAL #: 215A00068

RECORDER: PLC

MODEL #: N/A

SERIAL #: N/A

*** WORK PERFORMED ***

METER CALIBRATION

ERROR: -0.34 INCHES

TOLERANCE: ± 0.125 INCHES

METHOD: LEVEL MEASUREMENTS AND VELOCITY CHECKS

RECORDER CALIBRATION

ERROR: 0%, 0%, 0%

TOLERANCE: ± 1.000 %

CHECKED AT: 0%, 50%, 100%

TOTALIZER CALIBRATION

ERROR: 0

TOLERANCE: ± 1.000 %

CHECKED AT: OPERATING VALUE

*** TECHNICIAN COMMENTS ***

PERFORMED QUARTERLY CALIBRATION
ADJUSTED EQUIPMENT
VERIFIED TOTALIZER (PASSED)
CHANGED DESICCANT
LEFT EQUIPMENT OPERATING PROPERLY

SERVICE REPRESENTATIVE(S): BOB HEINE, KYLE RANKIN

WG Malden

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*** SERVICE REPORT ***

BETHLEHEM, CITY OF
144 SHIMERSVILLE ROAD, RD #5
BETHLEHEM, PA 18015

SERVICE DATE: OCTOBER 12, 2022 **SERVICE CONTRACT:** QUARTERLY (Q1)
LOCATION: FREEMANSBURG 402
METER #: C8771 AE

PRIMARY: 35		
MAXIMUM CAPACITY: 10 MGD		
METER: TELEDYNE ISCO	MODEL #: SIGNATURE	SERIAL #: 215C02251
RECORDER: PLC	MODEL #: N/A	SERIAL #: N/A

*** WORK PERFORMED ***

METER CALIBRATION	ERROR: -0.02 INCHES	TOLERANCE: ± 0.125 INCHES
METHOD: LEVEL MEASUREMENTS AND VELOCITY CHECKS		
RECORDER CALIBRATION	ERROR: 0%, 0%, 0%	TOLERANCE: ± 1.000 %
CHECKED AT: 0%, 50%, 100%		
TOTALIZER CALIBRATION	ERROR: 0	TOLERANCE: ± 1.000 %
CHECKED AT: OPERATING VALUE		

*** TECHNICIAN COMMENTS ***

PERFORMED QUARTERLY CALIBRATION
VERIFIED TOTALIZER (PASSED)
NO ADJUSTMENT NEEDED
LEFT EQUIPMENT OPERATING PROPERLY
CHANGED DESICCANT

SERVICE REPRESENTATIVE(S): BOB HEINE, KYLE RANKIN

WG Malden

P.O. BOX 196, EAST EARL, PA 17519
PHONE: (717) 768-0800 FAX: (717) 768-0802

*** SERVICE REPORT ***

BETHLEHEM, CITY OF
144 SHIMERSVILLE ROAD, RD #5
BETHLEHEM, PA 18015

SERVICE DATE: NOVEMBER 14, 2022 **SERVICE CONTRACT:** QUARTERLY (Q1)
LOCATION: 101
METER #: C8771 AB

PRIMARY: 66		
MAXIMUM CAPACITY: 60 MGD		
METER: TELEDYNE ISCO	MODEL #: SIGNATURE	SERIAL #: 215M01452
RECORDER: PLC	MODEL #: N/A	SERIAL #: N/A

*** WORK PERFORMED ***

METER CALIBRATION	ERROR: INCHES	TOLERANCE: ± 0.125 INCHES
METHOD: LEVEL MEASUREMENTS AND VELOCITY CHECKS		
RECORDER CALIBRATION	ERROR: 0%, 0%, 0%	TOLERANCE: ± 1.000 %
CHECKED AT: 0%, 50%, 100%		
TOTALIZER CALIBRATION	ERROR: 0	TOLERANCE: ± 1.000 %
CHECKED AT: OPERATING VALUE		

*** TECHNICIAN COMMENTS ***

REQUESTED SERVICE
LASER METER NOT WORKING
REMOVED AREA VELOCITY FLOOD SENSOR.
INSTALLED NEW FIRMWARE IN LASER SENSOR AND METER.
REBOOTED AND REPROGRAMMED METER.
CLEANED LASER LENS INSIDE AND OUT
CALIBRATED METER
LEFT EQUIPMENT OPERATING PROPERLY

SERVICE REPRESENTATIVE(S): BOB HEINE, PATRICK MCNALLY

Appendix C

NPDES Permit PA0026042-Amendment No. 1 (A-1)



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER SUPPLY AND WASTEWATER MANAGEMENT

**AUTHORIZATION TO DISCHARGE UNDER THE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
DISCHARGE REQUIREMENTS FOR PUBLICLY OWNED
TREATMENT WORKS (POTWs)**

**NPDES PERMIT NO: PA-0026042
Amendment No. 1**

In compliance with the provisions of the Clean Water Act, 33 U.S.C. Section 1251 *et seq.* ("the Act") and Pennsylvania's Clean Streams Law, as amended, 35 P.S. Section 691.1 *et seq.*,

**City of Bethlehem
10 East Church Street
Bethlehem, PA 18018**

is authorized to discharge from a facility known as **City of Bethlehem Wastewater Treatment Plant** located at **144 Shimersville Road, Bethlehem, PA 18015**, to the **Lehigh River and Saucon Creek** in Watershed **2C** in accordance with effluent limitations, monitoring requirements and other conditions set forth in Parts A, B and C hereof.

THIS PERMIT SHALL BECOME EFFECTIVE ON JANUARY 1, 2013

THIS PERMIT SHALL EXPIRE AT MIDNIGHT ON NOVEMBER 30, 2013

The authority granted by this permit is subject to the following further qualifications:

1. If there is a conflict between the application, its supporting documents and/or amendments and the terms and conditions of this permit, the terms and conditions shall apply.
2. Failure to comply with the terms, conditions or effluent limitations of this permit is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application. 40 CFR 122.41(a)
3. A complete application for renewal of this permit, or notice of intent to cease discharging by the expiration date, must be submitted to DEP at least 180 days prior to the above expiration date (unless permission has been granted by DEP for submission at a later date), using the appropriate NPDES permit application form. 40 CFR 122.41(b), 122.21(d)

In the event that a timely and complete application for renewal has been submitted and DEP is unable, through no fault of the permittee, to reissue the permit before the above expiration date, the terms and conditions of this permit, including submission of the Discharge Monitoring Reports (DMRs), will be automatically continued and will remain fully effective and enforceable against the discharger until DEP takes final action on the pending permit application. 25 Pa. Code 92.9.

4. This NPDES permit does not constitute authorization to construct or make modifications to wastewater treatment facilities necessary to meet the terms and conditions of this permit.

DATE PERMIT ISSUED NOVEMBER 10, 2008

ISSUED BY /s/

DATE PERMIT AMENDMENT ISSUED DECEMBER 12, 2012

**Michael J. Brunamonti, P.E.
Clean Water Program Manager
Northeast Regional Office**

PART A - EFFLUENT LIMITATIONS, MONITORING, RECORDKEEPING AND REPORTING REQUIREMENTS

I. For Outfall 001, Latitude 40°37'11", Longitude 75°20'12", River Mile Index , Stream Code 03335

which receives wastewater from Publicly Owned Treatment Works (POTWs)

- a. The permittee is authorized to discharge during the period from December 1, 2008 through November 30, 2013.
- b. Based on the anticipated wastewater characteristics and flows described in the permit application and its supporting documents and/or amendments, the following effluent limitations and monitoring requirements apply (see also Additional Requirements, Footnotes and Supplemental Information).

Discharge Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) ⁽¹⁾		Concentrations (mg/L)				Minimum ⁽³⁾ Measurement Frequency	Required Sample Type
	Monthly Average	Weekly Average	Minimum	Monthly Average	Weekly Average	Instantaneous Maximum ⁽²⁾		
Flow							Continuous	Recording Instrumentation
CBOD ₅	4,170	6,672		25	40	50	Daily	24 Hr. Comp.
Total Suspended Solids	5,004	7,506		30	45	60	Daily	24 Hr. Comp.
NH ₃ -N (5/1 to 10/31)	834			5.0		10.0	Daily	24 Hr. Comp.
NH ₃ -N (11/1 to 4/30)	2,502			15.0		30.0	Daily	24 Hr. Comp.
pH			6.0 to 9.0 Standard Units at All Times				Daily	Grab
Fecal Coliform (5/1 to 9/30)				200/100 ml		**	Daily	Grab
Fecal Coliform (10/1 to 4/30)				2000/100 ml			Daily	Grab
Total Residual Chlorine				0.50		1.20	1/Shift	Grab

**Not greater than 1000/100 ml in more than 10% of the samples tested.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):

Outfall 001

PART A - EFFLUENT LIMITATIONS, MONITORING, RECORDKEEPING AND REPORTING REQUIREMENTS

- I. For Outfall 003, Latitude 40°36'53", Longitude 75°20'03", River Mile Index _____, Stream Code 03345
which receives wastewater from Combined sewer overflow discharge to Saucon Creek
- a. The permittee is authorized to discharge during the period from December 1, 2008 through November 30, 2013.
- b. Based on the anticipated wastewater characteristics and flows described in the permit application and its supporting documents and/or amendments, the following effluent limitations and monitoring requirements apply (see also Additional Requirements, Footnotes and Supplemental Information).

Discharge Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) ⁽¹⁾		Concentrations (mg/L)				Minimum ⁽³⁾ Measurement Frequency	Required Sample Type
	Monthly Average	Weekly Average	Minimum	Monthly Average	Weekly Average	Instantaneous Maximum ⁽²⁾		
Flow							Continuous	Recording Instrumentation
CBOD ₅				Monitor and Report			Daily*	Grab
Total Suspended Solids				Monitor and Report			Daily*	Grab
Fecal Coliform				Monitor and Report			Daily	Grab
pH			Monitor and Report			Monitor/Report	Daily	Grab
	Note: Discharge is authorized only as a result of stormwater entering the sewer system during wet weather periods.							

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):

Outfall 003 – 36" South Interceptor overflow to Saucon Creek.

*One Grab sample shall be taken during each hour of discharge, composited daily and analyzed for the parameters listed above.

PART A - EFFLUENT LIMITATIONS, MONITORING, RECORDKEEPING AND REPORTING REQUIREMENTS

- I. For Outfall 004, Latitude 40°37'05", Longitude 75°20'04", River Mile Index _____, Stream Code 03345
which receives wastewater from Combined sewer overflow discharge to Saucon Creek
- a. The permittee is authorized to discharge during the period from December 1, 2008 through Date of activation of CSO 012.
- b. Based on the anticipated wastewater characteristics and flows described in the permit application and its supporting documents and/or amendments, the following effluent limitations and monitoring requirements apply (see also Additional Requirements, Footnotes and Supplemental Information).

Discharge Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) ⁽¹⁾		Concentrations (mg/L)				Minimum ⁽³⁾ Measurement Frequency	Required Sample Type
	Monthly Average	Weekly Average	Minimum	Monthly Average	Weekly Average	Instantaneous Maximum ⁽²⁾		
Flow							Continuous	Recording Instrumentation
CBOD ₅				Monitor and Report			Daily*	Grab
Total Suspended Solids				Monitor and Report			Daily*	Grab
Fecal Coliform				Monitor and Report			Daily	Grab
pH			Monitor and Report			Monitor/Report	Daily	Grab
	Note: Discharge is authorized only as a result of stormwater entering the sewer system during wet weather periods.							

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):

Outfall 004 – 48" North Interceptor overflow to Saucon Creek.

*One Grab sample shall be taken during each hour of discharge, composited daily and analyzed for the parameters listed above.

PART A - EFFLUENT LIMITATIONS, MONITORING, RECORDKEEPING AND REPORTING REQUIREMENTS

I. For Outfall 006, Latitude 40°37'06", Longitude 75°20'02", River Mile Index _____, Stream Code 03345

which receives wastewater from Treatment plant emergency outfall

- a. The permittee is authorized to discharge during the period from December 1, 2008 through November 30, 2013.
- b. Based on the anticipated wastewater characteristics and flows described in the permit application and its supporting documents and/or amendments, the following effluent limitations and monitoring requirements apply (see also Additional Requirements, Footnotes and Supplemental Information).

Discharge Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) ⁽¹⁾		Concentrations (mg/L)				Minimum ⁽³⁾ Measurement Frequency	Required Sample Type
	Monthly Average	Weekly Average	Minimum	Monthly Average	Weekly Average	Instantaneous Maximum ⁽²⁾		
Flow							Continuous	Recording Instrumentation
CBOD ₅				25	40	50	Daily*	Grab
Total Suspended Solids				30	45	60	Daily*	Grab
NH ₃ -N (5/1 to 10/31)				5.0		10.0	Daily*	Grab
NH ₃ -N (11/1 to 4/30)				15.0		30.0	Daily*	Grab
Fecal Coliform (5/1 to 9/30)				200/100 ml		**	Daily	Grab
Fecal Coliform (10/1 to 4/30)				2000/100 ml			Daily	Grab
PH			6.0 to 9.0 Standard Units at All Times				Daily	Grab
Total Residual Chlorine				0.50		1.20	Daily	Grab

**Not greater than 1000/100 ml in more than 10% of the samples tested.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):

Outfall 006 – Plant Effluent Emergency discharge to Saucon Creek.

*One Grab sample shall be taken during each hour of discharge, composited daily and analyzed for the parameters listed above.

PART A - EFFLUENT LIMITATIONS, MONITORING, RECORDKEEPING AND REPORTING REQUIREMENTS

007 40°37'14" 75°20'02"
008 40°37'22" 75°20'02"
009 40°37'30" 75°20'02"
010 40°36'38" 75°20'02"

I. For Outfall 011, Latitude 40°36'46", Longitude 75°20'02", River Mile Index _____, Stream Code 03345

which receives wastewater from Stormwater outfall

- a. The permittee is authorized to discharge during the period from December 1, 2008 through November 30, 2013.
- b. Based on the anticipated wastewater characteristics and flows described in the permit application and its supporting documents and/or amendments, the following effluent limitations and monitoring requirements apply (see also Additional Requirements, Footnotes and Supplemental Information).

Discharge Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) ⁽¹⁾		Concentrations (mg/L)				Minimum ⁽³⁾ Measurement Frequency	Required Sample Type
	Monthly Average	Weekly Average	Minimum	Monthly Average	Weekly Average	Instantaneous Maximum ⁽²⁾		
CBOD ₅					Report		1/Year	Grab
Chemical Oxygen Demand					Report		1/Year	Grab
Oil and Grease					Report		1/Year	Grab
PH					Report		1/Year	Grab
Total Suspended Solids					Report		1/Year	Grab
Total Kjeldahl Nitrogen					Report		1/Year	Grab
Total Phosphorus					Report		1/Year	Grab
Iron Dissolved					Report		1/Year	Grab

Permittee has the option to perform an annual inspection of facilities in lieu of annual monitoring.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): 007, 008, 009, 010 & 011

PART A - EFFLUENT LIMITATIONS, MONITORING, RECORDKEEPING AND REPORTING REQUIREMENTS

- I. For Outfall 012, Latitude 40°37'10", Longitude 75°20'58", River Mile Index _____, Stream Code 03335
- which receives wastewater from Combined sewer overflow discharge to Lehigh River
- a. The permittee is authorized to discharge during the period from Date of activation of CSO 012 through November 30, 2013.
- b. Based on the anticipated wastewater characteristics and flows described in the permit application and its supporting documents and/or amendments, the following effluent limitations and monitoring requirements apply (see also Additional Requirements, Footnotes and Supplemental Information).

Discharge Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) ⁽¹⁾		Concentrations (mg/L)				Minimum ⁽³⁾ Measurement Frequency	Required Sample Type
	Monthly Average	Weekly Average	Minimum	Monthly Average	Weekly Average	Instantaneous Maximum ⁽²⁾		
Flow							Continuous	Recording Instrumentation
CBOD ₅				Monitor and Report			Daily*	Grab
Total Suspended Solids				Monitor and Report			Daily*	Grab
Fecal Coliform				Monitor and Report			Daily	Grab
pH			Monitor and Report			Monitor/Report	Daily	Grab
	Note: Discharge is authorized only as a result of stormwater entering the sewer system during wet weather periods.							

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):

Outfall 012 – Dual 36" North Interceptor overflow to Lehigh River.

*One Grab sample shall be taken during each hour of discharge, composited daily and analyzed for the parameters listed above.

SEWER SYSTEM WITH COMBINED SEWER OVERFLOWS

Sewer System with Combined Sewer Overflows

Point sources (listed below) serve as combined sewer reliefs necessitated by storm water entering the sewer system and exceeding the hydraulic capacity of the sewers and/or the treatment plant, and are permitted to discharge only for such reason. There are at this time no specific effluent limitations on these discharges. Each discharge shall be monitored for cause, frequency, duration and quantity of flow. This data to be reported monthly as an attachment to the Discharge Monitoring Report (DMR) form. This permit may be reopened to incorporate the requirements of the statewide combined sewer overflow permitting strategy by the Commonwealth of Pennsylvania and approved by EPA Region III in accordance with the National Combined Sewer Overflow Control Strategy.

<u>POINT SOURCE</u>	<u>LATITUDE</u>	<u>LONGITUDE</u>	<u>RECEIVING STREAM</u>
Outfall 003	40° 36' 53"	75° 20' 03"	Saucon Creek
Outfall 004	40° 37' 05"	75° 20' 04"	Saucon Creek
Outfall 012	40° 37' 10"	75° 20' 58"	Lehigh River

The discharge from CSO Outfall 004 is authorized until such time that its relocation to Outfall 012 is complete.

PART A - EFFLUENT LIMITATIONS, MONITORING, RECORDKEEPING AND REPORTING REQUIREMENTS (Con't)

C. Additional Requirements for Outfall 001

1. All discharges of floating materials, oil, grease, scum, foam, sheen and substances which produce color, tastes, odors, turbidity or settle to form deposits shall be controlled to levels which will not be inimical or harmful to the water uses to be protected or to human, animal, plant or aquatic life. 25 Pa. Code 92.51(6)
2. Except as otherwise specified in this permit, the 30-day average percent removal for carbonaceous biochemical oxygen demand and total suspended solids shall not be less than 85 percent. 40 CFR 133.102
3. Effective disinfection to control disease producing organisms from the period of May 1 to September 30 shall be the production of an effluent which will contain a concentration not greater than 200/100 ml of fecal coliform colonies as a geometric mean, nor greater than 1,000/100 ml of these colonies in more than 10 percent of the samples tested. 25 Pa Code 92.2c (b)(2)

Footnotes

- ⁽¹⁾ When sampling to determine compliance with mass effluent limitations, the discharge flow at the time of sampling must be measured and recorded.
- ⁽²⁾ The Instantaneous Maximum Discharge Limitations are for compliance use by DEP only. Do not report instantaneous maximums on DMRs or supplemental DMRs unless specifically required on those forms to do so.
- ⁽³⁾ This is the minimum number of sampling events required. Permittees are encouraged, and it may be advantageous in demonstrating compliance, to perform more than the minimum number of sampling events.

Supplemental Information

If the permit requires reporting of average weekly limitations please follow the following guideline. If the "maximum average concentration" and the "maximum average mass loading" does not occur within the same week, both the highest weekly average concentration and the highest weekly average mass load should be reported, regardless of whether they both occur during the same calendar week.

II. DEFINITIONS

At Outfall (XXX) means a sampling location in outfall line XXX below the last point at which wastes are added to outfall line (XXX), or where otherwise specified.

Average refers to the use of an arithmetic mean, unless otherwise specified in this permit. 40 CFR 122.41(l) (4) (iii)

Best Management Practices (BMPs) means schedules of activities, prohibitions of practices, maintenance procedures and other management practices to prevent or reduce the pollution to surface waters of the Commonwealth. BMPs also include treatment requirements, operating procedures and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. 40 CFR 122.2

Bypass means the intentional diversion of waste streams from any portion of a treatment facility. 40 CFR 122.41(m) (1) (i)

Clean Water Act means the Federal Water Pollution Control Act, as amended. (33 U.S.C.A. §§1251 to 1387).

Composite Sample (for all except GC/MS volatile organic analysis) means a combination of individual samples (at least eight for a 24-hour period or four for an 8-hour period) of at least 100 milliliters (mL) each obtained at spaced time intervals during the compositing period. The composite must be flow-proportional; either the volume of each individual sample is proportional to discharge flow rates, or the sampling interval is proportional to the flow rates over the time period used to produce the composite. EPA Form 2C

Composite Sample (for GC/MS volatile organic analysis) consists of at least four aliquots or grab samples collected during the sampling event (not necessarily flow proportioned). The samples must be combined in the laboratory immediately before analysis and then one analysis is performed. EPA Form 2C

Daily Average Temperature means the average of all temperature measurements made, or the mean value plot of the record of a continuous automated temperature recording instrument, either during a calendar day or during the operating day if flows are of a shorter duration.

Daily Discharge means the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the "daily discharge" is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the "daily discharge" is calculated as the average measurement of the pollutant over the day. 25 Pa. Code 92.1 and 40 CFR 122.2

Daily Maximum Discharge Limitation means the highest allowable "daily discharge."

Discharge Monitoring Report (DMR) means the DEP or EPA supplied form(s) for the reporting of self-monitoring results by the permittee. 40 CFR 122.2

Estimated Flow means any method of liquid volume measurement based on a technical evaluation of the sources contributing to the discharge including, but not limited to, pump capabilities, water meters and batch discharge volumes.

Geometric Mean means the average of a set of n sample results given by the nth root of their product.

Grab Sample means an individual sample of at least 100 mL collected at a randomly selected time over a period not to exceed 15 minutes. EPA Form 2C

Hazardous Substance means any substance designated under 40 CFR Part 116 pursuant to Section 311 of the Clean Water Act. 40 CFR 122.2

Immersion Stabilization (i-s) means a calibrated device is immersed in the wastewater until the reading is stabilized.

Indirect Discharger means a person who discharges sewage, industrial waste or other pollutants into a treatment works. 25 Pa. Code 92.1

Industrial User means a non-domestic discharger introducing pollutants to a Publicly Owned Treatment Works (POTW). 25 Pa. Code 92.1

Maximum Any Time or Instantaneous Maximum means the level not to be exceeded at any time in any grab sample. 25 Pa. Code 92.1

Measured Flow means any method of liquid volume measurement, the accuracy of which has been previously demonstrated in engineering practice, or for which a relationship to absolute volume has been obtained.

Monthly Average Discharge Limitation means the highest allowable average of "daily discharges" over a calendar month, calculated as the sum of all "daily discharges" measured during a calendar month divided by the number of "daily discharges" measured during that month.

Municipality means a city, town, borough, country, parish, district, association or other public body created by or pursuant to State law and having jurisdiction over disposal of sewage, industrial wastes, or other wastes, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under §1288 of the Clean Water Act.

Publicly Owned Treatment Works (POTW) means a treatment works as defined by §212. of the Clean Water Act, owned by a municipality. The definition includes any devices and systems used in the storage, treatment, recycling and reclamation of municipal sewage or industrial wastes of a liquid nature. It also includes sewers, pipes or other conveyances if they convey wastewater to a POTW providing treatment. 25 Pa Code 92.1 and 40 CFR 122.2

Severe Property Damage means substantial physical damage to property, damage to the treatment facilities that causes them to become inoperable, or substantial and permanent loss of natural resources that can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production. 40 CFR 122.41(m) (ii)

Stormwater means the runoff from precipitation, snow melt runoff, and surface runoff and drainage. 40 CFR 122.26(b) (13)

Stormwater Associated With Industrial Activity means the discharge from any conveyance which is used for collecting and conveying stormwater and which is directly related to manufacturing, processing or raw materials storage areas as defined at 40 CFR §122.26(b)(14).

Toxic Pollutant means those pollutants, or combinations of pollutants, including disease-causing agents, which after discharge and upon exposure, ingestion, inhalation or assimilation into any organism, either directly from the environment or indirectly by ingestion through food chains may, on the basis of information available to DEP cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions, including malfunctions in reproduction, or physical deformations in these organisms or their offspring. 25 Pa. Code 92.1

Weekly Average Discharge Limitation means the highest allowable average of "daily discharges" over a calendar week, calculated as the sum of all "daily discharges" measured during a calendar week divided by the number of "daily discharges" measured during that week.

III. SELF-MONITORING, REPORTING AND RECORDKEEPING

A. Representative Sampling 40 CFR 122.41(j) (1)

1. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

2. Records Retention 40 CFR 122.41(j) (2)

Except for records of monitoring information required by this permit related to the permittee's sludge use and disposal activities which shall be retained for a period of at least 5 years, all records of monitoring activities and results (including all original strip chart recordings for continuous monitoring instrumentation and calibration and maintenance records), copies of all reports required by this permit, and records of all data used to complete the application for this permit shall be retained by the permittee for 3 years from the date of the sample measurement, report or application. The 3-year period shall be extended as requested by DEP or the EPA Regional Administrator.

3. Recording of Results 40 CFR 122.41(j) (3)

For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information:

- a. The exact place, date and time of sampling or measurements.
- b. The person(s) who performed the sampling or measurements.
- c. The date(s) the analyses were performed.
- d. The person(s) who performed the analyses.
- e. The analytical techniques or methods used; and the associated detection level.
- f. The results of such analyses.

4. Test Procedures 40 CFR 122.41(j) (4)

Facilities that test or analyze environmental samples used to demonstrate compliance with this permit shall be in compliance with laboratory accreditation requirements of Act 90 of 2002 (27 Pa. C.S. §§4101-4113), relating to environmental laboratory accreditation. Unless otherwise specified in this permit, the test procedures for the analysis of pollutants shall be those approved under 40 CFR Part 136 (or in the case of sludge use or disposal, approved under 40 CFR Part 136, unless otherwise specified in 40 CFR Part 503 or Subpart J of 25 Pa. Code Chapter 271), or alternate test procedures approved pursuant to those parts, unless other test procedures have been specified in this permit.

5. Quality/Assurance/Control

In an effort to assure accurate self-monitoring analyses results:

- a. The permittee, or its designated laboratory, shall participate in the periodic scheduled quality assurance inspections conducted by DEP and EPA. 40 CFR 122.41(e), 122.41(i) (3)
- b. The permittee, or its designated laboratory, shall develop and implement a program to assure the quality and accurateness of the analyses performed to satisfy the requirements of this permit, in accordance with 40 CFR Part 136. 40 CFR 122.4(j) (4)

B. Reporting of Monitoring Results

1. The permittee shall effectively monitor the operation and efficiency of all wastewater treatment and control facilities, and the quantity and quality of the discharge(s) as specified in this permit. 40 CFR 122.41(e)
2. Unless instructed otherwise in PART C of this permit, a properly completed DMR must be received by the following address es within 28 days after the end of each monthly report period 40 CFR 122.41(l)(4)(i):

Department of Environmental Protection
Clean Water Program
Northeast Regional Office
2 Public Square
Wilkes-Barre, PA 18701-1915

NPDES Enforcement Branch (3WP42)
Office of Permits & Enforcement
Water Protection Division
US EPA – Region III
1650 Arch Street
Philadelphia, PA 19103-2029

3. The completed DMR Form shall be signed and certified either by the following applicable person, as defined in 25 Pa. Code § 92.23 and 40 CFR 122.22(a), or by that person's duly authorized representative, as defined in 40 CFR §122.22(b):
 - For a corporation - by a principal executive officer of at least the level of vice president, or an authorized representative, if the representative is responsible for the overall operation of the facility from which the discharge described in the NPDES form originates.
 - For a partnership or sole proprietorship - by a general partner or the proprietor, respectively.
 - For a municipality, state, federal or other public agency - by a principal executive officer or ranking elected official.

If signed by a person other than the above, written notification of delegation of DMR signatory authority must be submitted to DEP in advance of or along with the relevant DMR form.

4. If the permittee monitors any pollutant, using analytical methods described in PART A III.A.4. herein, more frequently than the permit requires, the results of this monitoring shall be incorporated, as appropriate, into the calculations used to report self-monitoring data on the DMR.

C. Reporting Requirements

1. Planned Changes - The permittee shall give notice to DEP as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required when:
 - a. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR §122.29(b).
 - b. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in this permit, nor to notification requirements under 40 CFR §122.42(a) (1).
 - c. The alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan.
2. Anticipated Noncompliance

The permittee shall give advance notice to DEP of any planned changes in the permitted facility or activity that may result in noncompliance with permit requirements. 40 CFR 122.41(d)(i)

3. Unanticipated Noncompliance or Potential Pollution Reporting
 - a. Immediate Reporting - The permittee shall report incidents causing or threatening pollution in accordance with the requirements of 25 Pa. Code Section 91.33. These requirements include, but are not limited to, the following obligations. The permittee shall immediately notify the Department and, if reasonably possible to do so, to notify known downstream users of the waters of any accident or other activity or incident which would endanger downstream users of the waters of the Commonwealth or would otherwise result in pollution or create a danger of pollution of the waters of the Commonwealth. Such notice shall include the location and nature of the danger. The permittee shall immediately take or cause to be taken steps necessary to prevent injury to property and downstream users of the waters from pollution or a danger of pollution and, in addition, within 15 days from the incident, shall remove the residual substances contained thereon or therein from the ground and from the affected waters of this Commonwealth to the extent required by applicable law.
 - b. The permittee shall report any noncompliance which may endanger health or the environment in accordance with the requirements of 40 CFR 122.41(l) (6). These requirements include, but are not limited to, the following obligations:

- (i) 24 Hour Reporting - The permittee shall orally report any noncompliance with this permit which may endanger health or the environment within 24 hours from the time the permittee becomes aware of the circumstances. The following shall be included as information which must be reported within 24 hours under this paragraph:
 - (1) Any unanticipated bypass which exceeds any effluent limitation in the permit;
 - (2) Any upset which exceeds any effluent limitation in the permit; and
 - (3) Violation of the maximum daily discharge limitation for any of the pollutants listed in the permit as being subject to the 24-hour reporting requirement. Note see 40 CFR 122.44(g)
- (ii) Written Report - A written submission shall also be provided within 5 days of the time the permittee becomes aware of any noncompliance which may endanger health or the environment. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.
- (iii) Waiver of Written Report - DEP may waive the written report on a case-by-case basis if the associated oral report has been received within 24 hours from the time the permittee becomes aware of the circumstances which may endanger health or the environment. Unless such a waiver is expressly granted by the Department, the permittee shall submit a written report in accordance with this paragraph. 40 CFR 122.41(l)(6)(iii).

4. Other Noncompliance

The permittee shall report all instances of noncompliance not reported under paragraph C.3 of this section or specific requirements of compliance schedules, at the time DMRs are submitted. The reports shall contain the information listed in paragraph C.3.b. (ii) of this section. 40 CFR 122.41(l)(7)

PART B

I. MANAGEMENT REQUIREMENTS

A. Compliance Schedules 25 Pa. Code 92.55 and 40 CFR 122.47(a)

1. The permittee shall achieve compliance with the terms and conditions of this permit within the time frames specified in this permit.
2. The permittee shall submit reports of compliance or noncompliance, or progress reports as applicable, for any interim and final requirements contained in this permit. Such reports shall be submitted no later than 14 days following the applicable schedule date or compliance deadline. 40 CFR 122.47(a) (4)

B. Permit Modification, Termination, or Revocation and Reissuance

1. This permit may be modified, terminated, or revoked and reissued during its term in accordance with Title 25 Pa. Code 92.51(2) and 40 CFR 122.41(f)
2. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition. 40 CFR 122.41(f)
3. In the absence of DEP action to modify or revoke and reissue this permit, the permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants within the time specified in the regulations that establish those standards or prohibitions. 40 CFR 122.41(a) (1)

C. Duty to Provide Information

1. The permittee shall furnish to DEP, within a reasonable time, any information which DEP may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. 40 CFR 122.41(h)
2. The permittee shall furnish to DEP, upon request, copies of records required to be kept by this permit. 25 Pa. Code 92.51(3)(ii) and 40 CFR 122.41(h)
3. Other Information - Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to DEP, it shall promptly submit the correct and complete facts or information. 40 CFR 122.41(l) (8)
4. The permittee shall provide the following information in the annual Municipal Wasteload Management Report, required under the provisions of Title 25 Pa. Code Chapter 94 unless a more stringent time period is required by law, regulation or permit condition in which case the more stringent time period will apply.
 - a. A new introduction of pollutants into the POTW from an indirect discharger which would be subject to Sections 301 and 306 of the Clean Water Act if it were directly discharging pollutants. 40 CFR 122.41(b) (1)
 - b. A substantial change in the volume or character of pollutants being introduced into the POTW by an indirect discharger introducing pollutants into the POTW at the time of issuance of this permit. 40 CFR 122.42(b) (2)
 - c. Information on the quality and quantity of the effluent introduced into the POTW by an industrial user or an indirect discharger and the anticipated impact of the change in the quality and quantity of effluent to be discharged from the POTW. 40 CFR 122.42(b)(3)

- d. The identity of the industrial users served by the POTW which are subject to pretreatment standards adopted under Section 307(b) of the Clean Water Act; the POTW shall also specify the total volume of discharge and estimate concentration of each pollutant discharged into the POTW by the industrial user. 25 Pa. Code 92.53(c)
- e. The POTW shall require all industrial users subject to pretreatment standards adopted under Section 307(b) of the Clean Water Act to comply with the reporting requirements of Sections 204(b), 307, and 308 of the Clean Water Act and regulations thereunder. 25 Pa. Code 92.53(c)

D. Proper Operation and Maintenance

1. The permittee shall employ operator's certified in compliance the Water and Wastewater Systems Operators Certification Act (63 P.S. §§1001-1015.1).
2. The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the terms and conditions of this permit. Proper operation and maintenance includes, but is not limited to, adequate laboratory controls including appropriate quality assurance procedures. This provision also includes the operation of backup or auxiliary facilities or similar systems that are installed by the permittee, only when necessary to achieve compliance with the terms and conditions of this permit. 40 CFR 122.41 (e)

E. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or prevent any discharge, sludge use or disposal in violation of this permit that has a reasonable likelihood of adversely affecting human health or the environment. 40 CFR 122.41(d)

F. Bypassing

1. Bypassing Not Exceeding Permit Limitations - The permittee may allow a bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the reporting and notification requirements of Part A.III.C.4. (Other Noncompliance). 40 CFR 122.41(m) (2)
2. Other Bypassing - In all other situations, bypassing is prohibited and DEP may take enforcement action against the permittee for bypass unless:
 - a. A bypass is unavoidable to prevent loss of life, personal injury or "severe property damage." 40 CFR 122.41(m) (4) (i) (A)
 - b. There are no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate backup equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance. 40 CFR 122.41(m) (4) (i) (B)
 - c. The permittee submitted the necessary notice required in F.4.a. and b. below. 40 CFR 122.41(m) (4) (i) (C)
3. DEP may approve an anticipated bypass, after considering its adverse effects, if DEP determines that it will meet the conditions listed in F.2. above. 40 CFR 122.41(m) (4) (i) (C)
4. Notice
 - a. Anticipated Bypass – If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible, at least 10 days before the bypass.
 - b. Unanticipated Bypass – The permittee shall submit notice of an unanticipated bypass causing or threatening pollution as required in PART A III.C.3 (Unanticipated Noncompliance or Potential Pollution Reporting and 24 Hour Reporting) and other unanticipated bypass as required in C.4. (Other Noncompliance).

II. PENALTIES AND LIABILITY

A. Violations of Permit Conditions

Any person violating Sections 301, 302, 306, 307, 308, 318 or 405 of the Clean Water Act or any permit condition or limitation implementing such sections in a permit issued under Section 402 of the Act is subject to civil, administrative and/or criminal penalties as set forth in 40 CFR §122.41(a)(2).

Any person or municipality, who violates any provision of this permit; any rule, regulation or order of DEP; or any condition or limitation of any permit issued pursuant to the Clean Streams Law, is subject to criminal and/or civil penalties as set forth in Sections 602, 603 and 605 of the Clean Streams Law.

B. Falsifying Information

The Clean Water Act provides that any person who does any of the following:

- Falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit, or
- Knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit (including monitoring reports or reports of compliance or noncompliance), shall, upon conviction, be punished by a fine and/or imprisonment as set forth in 18 Pa.C.S.A § 4904 and 40 CFR §122.41(j)(5) and (k)(2).

C. Liability

Nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance pursuant to Section 309 of the Clean Water Act or Sections 602, 603 or 605 of the Clean Streams Law.

Nothing in this permit shall be construed to preclude the institution of any legal action or to relieve the permittee from any responsibilities, liabilities or penalties to which the permittee is or may be subject to under the Clean Water Act and the Clean Streams Law.

D. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for the permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit. 40 CFR 122.41(c)

III. OTHER RESPONSIBILITIES

A. Right of Entry

Pursuant to Sections 5(b) and 305 of Pennsylvania's Clean Streams Law, and Title 25 Pa. Code Chapter 92 and 40 CFR §122.41(i), the permittee shall allow authorized representatives of DEP and EPA, upon the presentation of credentials and other documents as may be required by law:

1. To enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit; 25 Pa. Code 92.51(3)(i) and 40 CFR 122.41(i) (1)
2. To have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit; 25 Pa. Code 92.51(3)(ii) and 40 CFR 122.41(i) (2)
3. To inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices or operations regulated or required under this permit; and 40 CFR 122.41(i)(3)

4. To sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Clean Water Act or the Clean Streams Law, any substances or parameters at any location. 40 CFR 122.41(i) (4)

B. Transfer of Permits

1. Transfers by modification. Except as provided in paragraph 2 of this section, a permit may be transferred by the permittee to a new owner or operator only if this permit has been modified or revoked and reissued, or a minor modification made to identify the new permittee and incorporate such other requirements as may be necessary under the Clean Water Act. 40 CFR 122.61(a)
2. Automatic transfers. As an alternative to transfers under paragraph 1 of this section, any NPDES permit may be automatically transferred to a new permittee if:
 - a. The current permittee notifies DEP at least 30 days in advance of the proposed transfer date in paragraph 2.b. of this section; 25 Pa. Code 92.71a(1) and 40 CFR 122.61(b)(1)
 - b. The notice includes the appropriate DEP transfer form signed by the existing and new permittees containing a specific date for transfer of permit responsibility, coverage and liability between them; and 25 Pa. Code 92.71a(ii) and 40 CFR 122.61(b)(2)
 - c. If DEP does not notify the existing permittee and the proposed new permittee of its intent to modify or revoke and reissue this permit, the transfer is effective on the date specified in the agreement mentioned in paragraph 2.b. of this section. 25 Pa. Code 92.71a(3) and 40 CFR 122.61(b) (3)
3. In the event DEP does not approve transfer of this permit, the new owner or controller must submit a new permit application.

C. Property Rights

The issuance of this permit does not convey any property rights of any sort, or any exclusive privilege. 40 CFR 122.41(g)

D. Duty to Reapply

If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit. 40 CFR 122.21(d)

E. Other Laws

The issuance of this permit does not authorize any injury to persons or property or invasion of other private rights, or any infringement of state or local law or regulations.

PART C

I. OTHER REQUIREMENTS

SPECIAL CONDITIONS

ONE: For reporting purposes on the Discharge Monitoring Report, the term "average weekly" shall mean the highest average weekly value observed during the monthly monitoring period.

TWO: No storm water from pavements, area ways, roofs, foundation drains or other sources shall be admitted to the separate sanitary sewers associated with the herein approved discharge.

THREE: The approval herein given is specifically made contingent upon the permittee acquiring all necessary property rights by easement or otherwise, providing for the satisfactory construction, operation, maintenance and replacement of all sewers or sewerage structures associated with the herein approved discharge in, along, or across private property, with full rights of ingress, egress and regress.

FOUR: If, in the opinion of the Department, these works are not so operated or if by reason of change in the character of wastes or increased load upon the works, or changed use or condition of the receiving body of water, or otherwise, the said effluent ceases to be satisfactory or the sewerage facilities shall have created public nuisance, then upon notice by the Department, the right herein granted to discharge such effluent shall cease and become null and void unless within the time specified by the Department, the permittee shall adopt such remedial measures as will produce an effluent which, in the opinion of the Department, will be satisfactory for discharge into the said receiving body of water.

FIVE: Analysis for Carbonaceous Biochemical Oxygen Demand (CBOD5) shall be done in accordance with methods specified in the current edition of Standard Methods for the Examination of Water and Wastewater.

SIX: Collected screenings, slurries, sludges, and other solids shall be handled and disposed of in compliance with 25 Pa. Code, Chapters 75, and in a manner equivalent to the requirements indicated in Chapters 271, 273, 275, 283, and 285 (related to permits and requirements for landfilling, land application, incineration, and storage of sewage sludge), Federal Regulation 40 CFR 257, Pennsylvania Clean Streams Law, Pennsylvania Solid Waste Management Act of 1980, and the Federal Clean Water Act and its amendments.

The permittee is responsible to obtain or assure that contracted agents have all necessary permits and approvals for the handling, storage, transport, and disposal of solid waste materials generated as a result of wastewater treatment.

SEVEN: The effluent limitations for Outfall 001 were determined using design annual average effluent discharge rate of 20.0 MGD.

EIGHT: Requirements Applicable To Stormwater Outfalls

A. Prohibition of Non-stormwater Discharges

1. Except as provided in A.2, all discharges to stormwater outfalls 007 to 011 shall be composed entirely of non-polluting stormwater.
2. The following non-polluting water discharges may be authorized, provided the discharge is in compliance with D.2.b: discharges from fire fighting activities; fire hydrant flushings, potable water sources including waterline flushings, irrigation drainage, lawn watering, routine external building washdown which does not use detergents or other compounds, pavement washwaters where spills or leaks of toxic or hazardous materials have not occurred (unless all spilled material has been removed) and where detergents are not used, air conditioning condensate, springs, uncontaminated groundwater, and foundation or footing drains where flows are not contaminated with process materials such as solvents.

B. Spills

This permit does not authorize the discharge of any polluting substances resulting from an on-site spill. Such spills shall be controlled through proper implementation of a PPC Plan as stated in Section D below.

- C. This permit does not authorize the discharge of any polluting substances resulting from an on-site spill. Such spills shall be controlled through proper implementation of a PPC Plan as stated in Section D below.

D. Preparedness, Prevention and Contingency Plans

1. Development of Plan

Operators of facilities shall have developed a Preparedness, Prevention and Contingency (PPC) Plan in accordance with 25 Pa. Code § 91.34 and the "Guidelines for the Development and Implementation of Environmental Emergency Response Plans". The PPC Plan shall identify potential sources of pollution that may reasonably be expected to affect the quality of stormwater discharges from the facility. In addition, the PPC Plan shall describe the BMPs that are to be used to reduce the pollutants in stormwater discharges at the facility ensuring compliance with the terms and conditions of this permit.

2. Non-stormwater Discharges

- a. The PPC Plan shall contain a certification that the discharge has been tested or evaluated for the presence of non-stormwater discharges. The certification shall include the identification of potential significant sources of non-storm water at the site, a description of the results of any test and/or evaluation for the presence of non-stormwater discharges, the evaluation criteria or testing methods used, the date of any testing and/or evaluation, and the on-site drainage points that were directly observed during the test. Such certification may not be feasible if the facility operating the stormwater discharge does not have access to an outfall, manhole, or other point of access to the ultimate conduit that receives the discharge. In such cases, the source identification section of the PPC Plan shall indicate why the certification was not feasible. A discharger that is unable to provide the certification must notify the Department within 180 days of the effective date of this permit.
- b. Except for flows from fire fighting activities, sources of non-storm water listed in A.2. (authorized non-stormwater discharges) that are combined with stormwater discharges must be identified in the plan. The plan shall identify and ensure the implementation of appropriate pollution prevention measures for the non-stormwater component(s) of the discharge.

3. Comprehensive Site Compliance Evaluations and Record Keeping

Qualified personnel shall conduct site compliance evaluations at least once a year. Such evaluations shall include:

- a. Visual inspection and evaluation of areas contributing to a stormwater discharge for evidence of, or the potential for, pollutants entering the drainage system. Measures to reduce pollutant loadings shall be evaluated to determine whether they are adequate and properly implemented in accordance with the terms of the permit or whether additional control measures are needed. Structural stormwater management measures, sediment and erosion control measures, and other structural pollution prevention measures identified in the plan shall be observed to ensure that they are operating correctly. A visual inspection of equipment needed to implement the plan, such as spill response equipment, shall be made.
- b. Based on the results of the inspection, the description of potential pollutant sources identified in the PPC plan, and pollution prevention measures and controls identified in the plan shall be revised as appropriate within 15 days of such inspection and shall provide for implementation of any changes to the plan in a timely manner, but in no case more than 90 days after the inspection.

- c. A report summarizing the scope of the inspection, using the DEP's Annual Inspection Form shall be completed and made available upon request and retained as part of the PPC Plan for at least one year after coverage under this permit terminates.

E. Stormwater Management Best Management Practices(BMPs)

The permittee shall implement at least the following BMPs:

1. Manage sludge in accordance with all applicable permit requirements.
2. Store chemicals in secure areas on impervious surfaces away from storm drains.
3. Consider routing stormwater contaminated within the treatment facility to the treatment facility or cover exposed materials (i.e., from the following areas: grit, screenings and other solids handling, storage or disposal areas; sludge drying beds; dried sludge piles; compost piles; septage or hauled waste receiving station).
4. Efficiently use pesticides for weed control; where practicable investigate use of the least toxic pesticides; do not apply during windy conditions.

F. Stormwater Sampling and Reporting

1. If stormwater samples are required by this permit, they shall be collected as grab samples during the first 30 minutes but no later than 1 hour after the discharge resulting from a storm event that occurs at least 72 hours from the previously measurable storm event.
2. When the discharger is unable to collect samples due to adverse climatic conditions, the discharger must submit, in lieu of sampling data, a description of why samples could not be collected, including available documentation of the event. This sampling waiver may not be used more than once during a two-year period.
3. Stormwater monitoring results shall be summarized on a DMR form and the Department's "Additional Information for the Reporting of Storm Water Monitoring" form.
4. When a facility has two or more outfalls that may reasonably be believed to discharge substantially identical effluents, based on a consideration of features and activities within the area drained by the outfall, the permittee may sample one such outfall and report that the quantitative data also applies to the substantially identical outfalls.

NINE: PERMIT CONDITION FOR THE OPERATION AND IMPLEMENTATION OF A PRETREATMENT PROGRAM

- (a) General Requirement - The permittee shall operate, and implement an industrial pretreatment program in accordance with the federal Clean Water Act, the Pennsylvania Clean Streams Law, and the federal regulations at 40 CFR Section 403. The program shall also be implemented in accordance with the pretreatment program and any modifications thereto submitted by the permittee and approved by the Approval Authority.
- (b) Annual Report and Other Requirements - The permittee shall submit an Annual Report by March 31 of each year to DEP and EPA that describes the permittee's pretreatment activities for the previous calendar year. The Annual Report shall include a description of pretreatment activities in all municipalities from which wastewater is received at the permittee's POTW. The submission to DEP shall be incorporated into the permittee's Annual Municipal Wasteload Management Report required by 25 Pa. Code Chapter 94 of the Department's Rules and Regulations. In addition, the permittee shall meet all of the conditions specified below whether or not they relate to the Annual Report:
 1. Control Mechanism Issuance - The Annual Report shall contain a summary of Significant Industrial User (SIU) control mechanism issuance, including a list of issuance and expiration dates for each SIU;

2. Sampling and Inspection - The Annual Report shall contain a summary of the number and type of inspections and sampling of SIUs by the permittee, including a list of all SIUs either not sampled or not inspected, and the reason that the sampling and/or inspection was not conducted;
 3. Industrial User Compliance and POTW Enforcement - The Annual Report shall contain a summary of the number and type of violations of pretreatment standards and requirements, local limits, and any other pretreatment obligations, and the actions taken by the permittee to obtain compliance, including civil penalty assessments and actions for injunctive relief. The report shall state whether each SIU was in significant noncompliance, as that term is defined in 40 CFR Section 403.8(f)(2)(viii);
 4. Industrial Listing - The Annual Report shall contain an updated industrial listing showing all current SIUs and the categorical standard, if any, applicable to each;
 5. Summary of POTW Operations - The Annual Report shall contain a summary of any interference, pass-through, or permit violations by the POTW which may be attributed to industrial users, and actions taken to address these events. The summary shall also include sampling and analysis of treatment plant influent, effluent, and sludge for toxic and incompatible pollutants. The summary shall also include an analysis of any trends in such data since pretreatment program approval;
 6. Pretreatment Program Changes - The Annual Report shall contain a summary of any changes to the approved program and the date of submission to the Approval Authority;
 7. Monitoring - The permittee shall conduct monitoring at its treatment plant that, at a minimum, includes quarterly influent, effluent, and sludge analysis for all local limit parameters, and an annual priority pollutant scan for influent and sludge.
- (c) Notification of Pass-Through or Interference - The permittee shall notify DEP, in writing, of any instance of pass-through or interference related to an industrial discharge from an IU into the POTW. The notification shall be attached to the discharge monitoring report submitted to EPA and DEP and shall describe the incident, including the date, time, length, cause (including responsible user if known), and the steps taken by the permittee and IU (if identified) to address the incident. A copy of the notification shall also be sent to the EPA at the address provided below.
- (d) Changes to Pretreatment Program - DEP and EPA may require the permittee to submit for approval changes to its pretreatment program if any one or more of the following conditions is present:
1. The program is not implemented in accordance with 40 CFR Part 403;
 2. Problems such as interference, pass-through or sludge contamination develop or continue;
 3. Federal, State, or local requirements change;
 4. Changes are needed to assure protection of waters of the Commonwealth.
- (e) Procedure for Pretreatment Program Changes - Upon submittal by the permittee, and notice of approval by the Approval Authority to the permittee of any changes to the permittee's approved pretreatment program, such changes are effective and binding upon the permittee. The Department may, in its discretion, pursuant to Chapter 92 or by Department Order, modify this permit during its term to include such changes. Any such permit changes shall be considered minor modifications to the permit.
- (f) Correspondence - The Approval Authority shall be EPA at the following address:

Pretreatment Coordinator (3WP41)
U.S. Environmental Protection Agency
1650 Arch Street
Philadelphia, PA 19103

Copies of all correspondence and reports dealing with this program shall be sent to:

Department of Environmental Protection
Northeast Regional Office
Clean Water Program - Operations Section
2 Public Square
Wilkes-Barre, PA 18701-1915

TEN: WETT Special Condition

The Permittee shall conduct Chronic Whole Effluent Toxicity Testing within the final 18 months of this permit cycle, according to Federal Regulation 40 CFR § 122.21(j)(5). The results shall be submitted with their next NPDES Permit application. The appropriate biomonitoring protocol for the testing can be obtained from the PA DEP Central Office at the following address:

PA Department of Environmental Protection
Bureau of Point and Nonpoint Source Management
Division of Wastewater Management
Rachel Carson State Office Building, 11th Floor
P.O. Box 8774
Harrisburg, PA 17105-8774
Telephone: 717-783-2940

ELEVEN: Requirements for Combined Sewer Overflows

I. MANAGEMENT AND CONTROL OF COMBINED SEWER OVERFLOWS

Combined sewer overflows (CSOs) are allowed to discharge only in compliance with this permit when flows in combined sewer systems exceed the conveyance or treatment capacities of the system during or immediately after wet weather periods. Overflows that occur without an accompanying precipitation event or snow-melt are termed "dry weather overflows" and are prohibited. CSOs are point source discharges that must be provided with control measures in accordance with the Federal Clean Water Act and the 1994 National CSO Policy.

The point source discharge locations (outfalls) specifically identified in the application submitted by the permittee serve as known combined sewer overflow locations on the permittee sewer system.

A. CONTINUED IMPLEMENTATION OF TECHNOLOGY-BASED NINE MINIMUM CONTROLS

Upon issuance of this permit, the permittee shall continue the implementation of the NMCs, demonstrate system wide compliance with the NMCs and submit discharge monitoring reports and annual reports to the Department with appropriate documentation. The permittee's NMC documentation report is incorporated in this permit.

The Department will use the EPA guidance document entitled "Guidance For Nine Minimum Controls" (EPA 832-B-95-003), dated May 1995, and specific comments provided during review of the NMC documentation reports to determine continued compliance with the CSO permit requirements.

B. IMPLEMENTATION OF WATER QUALITY-BASED LONG TERM CONTROL PLAN (LTCP)

The long term goal of the LTCP requirements in this permit is to achieve compliance with the state water quality standards upon completion of the LTCP implementation. Until completion of the implementation, the CSO discharge(s) shall comply with the performance standards of the selected CSO controls, when installed, and shall comply with the water quality standards found in Chapter 93, Section 93.6(b). When sufficient CSO-related information and data are available to develop water quality-based effluent limitations, the permit should be revised, as appropriate, to reflect the new effluent limitations.

Upon issuance of this permit, the permittee shall continue the implementation of the approved LTCP, demonstrate system-wide compliance with the LTCP's installed alternatives and submit with the Annual Report referenced in paragraph C.2 below, annual progress reports on implementation.

The permittee shall continue to implement its approved long term control plan (LTCP). The LTCP, at a minimum, shall incorporate the following requirements:

1. Continued implementation of the nine minimum controls;
2. Protection of sensitive areas (recreation areas, public water supply, unique ecological habitat, etc.);
3. Characterization, monitoring and modeling of overflows and assessment of water quality impacts;
4. Evaluation and selection of control alternative - presumptive or demonstrative approach;
5. Public participation in LTCP plan development and implementation;
6. Implementation schedule and financing plan for selected control options;
7. Maximizing treatment at the existing POTW treatment plant;
8. Post-construction monitoring program plan; and
9. CSO System Operational Plan.

The LTCP is described in the EPA's guidance document entitled "Guidance For Long Term Control Plan" (EPA 832-B-95-002), dated September 1995. Using a compliance monitoring program, the permittee shall periodically review the effectiveness of the LTCP and propose any changes or revisions to the LTCP to the Department for review and approval before its implementation.

The permittee shall implement, inspect and effectively operate and maintain the CSO controls identified in the approved LTCP. The interim implementation schedule for the short term controls shall be in accordance with the approved LTCP. The final implementation of the LTCP is expected to exceed the life of the current five year permit and shall be consistent with the approved LTCP or where applicable a CO&A or other enforcement mechanism.

C. MONITORING AND REPORTING REQUIREMENTS

1. Discharge Monitoring Report for Combined Sewer Overflows (DMR for CSOs)

The permittee shall record data on CSO discharges in the format specified in the Department's DMR for CSOs attached to this permit. The data shall be submitted to the appropriate regional office of the Department 28 days following a month in which one or more CSO discharges occurred. For CSOs that are part of a permitted POTW, the DMR for CSOs must be submitted with the Permittee's regular DMR. Copies of the DMRs for CSOs must be retained at the STP site for at least five (5) years.

2. Annual CSO Status Report

On March 31 of each year, an Annual CSO Status Report shall be submitted to the Department with the annual "Municipal Wasteload Management Report" required by 25 Pa. Code Chapter 94, Section 94.12. For a satellite CSO system, a copy of the annual report shall also be provided to the POTW providing treatment for its wastewater.

- i. The Annual CSO Status Report shall:
 - a. Provide a summary of the frequency, duration and volume of the CSO discharges for the past calendar year;
 - b. Provide the operational status of overflow points;

- c. Provide an identification of known in-stream water quality impacts, their causes, and their effects on downstream water uses;
 - d. Summarize all actions taken to implement the NMCs and the LTCP and their effectiveness; and
 - e. Evaluate and provide a progress report on implementing any necessary revisions to the NMC and LTCP.
- ii. Specifically, the following CSO-related information shall be included in the report:
- a. Rain gauge data - total inches (to the nearest 0.01 inch) that caused each CSO discharge being reported in the supplemental DMR for CSOs.
 - b. Inspections and maintenance
 - Total number of permittee/owner inspections conducted during the period of the report (reported by drainage system).
 - A list of blockages (if any) corrected or other interceptor maintenance performed, including location, date and time discovered, date and time corrected, and any discharges to the stream observed and/or suspected to have occurred.
 - c. Dry weather overflows

Dry weather CSO discharges are prohibited. Immediate telephone notification to DEP of such discharge is required in accordance with 25 Pa. Code, Section 91.33. Indicate location, date and time discovered, date and time corrected/ceased, and action(s) taken to prevent their reoccurrence. A plan to correct this condition and schedule to implement the plan must be submitted with the DMR for CSOs.
 - d. Wet weather overflows
 - For all locations that have automatic level monitoring of the regulators, report all exceedances of the overflow level during the period of the report, including location, date, time, and duration of wet weather overflows.
 - For all locations at which flows in the interceptors can be controlled by throttling and/or pumping, report all instances when the overflow level was reached or the gates were lowered. For each instance, provide the location, date, time, and duration of the overflow.

D. AREA-WIDE PLANNING/PARTICIPATION REQUIREMENT

Where applicable, the permittee shall cooperate with and participate in any interconnected CSO system's NMCs and LTCP activities being developed and/or carried out by the operator(s) of these systems, and shall participate in implementing applicable portions of the approved NMC and LTCP for these systems.

E. PERMIT REOPENER CLAUSE

The Department reserves the right to modify, revoke and reissue this permit as provided pursuant to 40 CFR 122.62 and 124.5 for the reasons set forth in 25 Pa. Code Section 92.51(2) and for the following reasons:

1. To include new or revised conditions developed to comply with any State or Federal law or regulation that addresses CSOs and that is adopted or promulgated subsequent to the effective date of this permit.
2. To include new or revised conditions if new information indicates that CSO controls imposed under the permit have failed to ensure the attainment of State Water Quality Standards.

3. To include new or revised conditions based on new information resulting from implementation of the LTCP or other plans or data.

F. COMBINED SEWER OVERFLOW COMPLIANCE SCHEDULE

The permittee shall complete the above CSO activities in accordance with the following compliance schedule:

<u>Schedule Activity Description</u>	<u>Compliance Due Date</u>
Continue Implementation of the NMC	Permit effective date
Continue Implementation of the LTCP	Permit effective date
Submit Annual CSO Status Report to Department with Chapter 94 Report	March 31 of each year
Submit DMR for CSOs (Attachment 4)	Within 28 days of the end of a month

TWELVE: Unless otherwise authorized under Part B of this permit, any discharge from any point other than a permitted treatment outfall or permitted combined sewer system is prohibited. See e.g. Section 301(b)(1)(B) & (C); 40 CFR 122.44 & 133.102 (relating to limitations, standards and permit conditions; and secondary treatment). In the event there is a prohibited discharge from a sewer conveyance system, report every such discharge to the Department within 24 hours of the discharge and on your monthly Discharge Monitoring Report (DMR) in the Remarks block. Indicate the date of discharge, action taken and volume of discharge. (40 CFR 122.41(l)(6) & (7) (relating to reporting requirements).

THIRTEEN: ANNUAL FEE

Permittees shall pay an annual fee in accordance with 25 Pa. Code § 92a.62. Annual fee amounts are specified in the following schedule and are due on each anniversary of the effective date of the most recent new or reissued permit. All flows identified in the schedule are annual average design flows. (25 Pa. Code 92a.62)

Small Flow Treatment Facility (SRSTP and SFTF)	\$0
Minor Sewage Facility < 0.05 MGD (million gallons per day)	\$250
Minor Sewage Facility ≥ 0.05 and < 1 MGD	\$500
Minor Sewage Facility with CSO (Combined Sewer Overflow)	\$750
Major Sewage Facility ≥ 1 and < 5 MGD	\$1,250
Major Sewage Facility ≥ 5 MGD	\$2,500
Major Sewage Facility with CSO	\$5,000

As of the effective date of this permit, the facility covered by the permit is classified in the following fee category:
Major Sewage Facility with CSO.

Invoices for annual fees will be mailed to permittees approximately three months prior to the due date. In the event that an invoice is not received, the permittee is nonetheless responsible for payment. Throughout a five year permit term, permittees will pay four annual fees followed by a permit renewal application fee in the last year of permit coverage. Permittees may contact the DEP at 717-787-6744 with questions related to annual fees.

Payment for annual fees shall be remitted to DEP at the address below by the anniversary date. Checks should be made payable to the Commonwealth of Pennsylvania.

PA Department of Environmental Protection
Bureau of Point and Non-Point Source Management
Re: Chapter 92a Annual Fee
P.O. Box 8466
Harrisburg, PA 17105-8466

FOURTEEN: The permittee shall notify the Department in writing 60 days in advance of when it projects the relocated CSO Outfall (012) will be placed into service.

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if different)

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

DISCHARGE MONITORING REPORT (DMR)

Form Approved.
OMB No. 2040-0004
Approval expires 9-30-85

NAME City of Bethlehem
ADDRESS 10 East Church Street
Bethlehem, PA 18018

PA-0026042 A-1
PERMIT NUMBER

001
DISCHARGE NUMBER


Permit Effective Date: January 1, 2013

Permit Expiration Date: November 30, 2013

FACILITY Bethlehem STP Outfall
LOCATION City of Bethlehem, Northampton County

MONITORING PERIOD							
YEAR	MO	DAY		YEAR	MO	DAY	
			FROM				TO
(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)	

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING (46-53) (54-61)			(4 Card Only) QUANTITY OR CONCENTRATION (38-45) (46-53) (54-61)				NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)					
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS								
Flow	SAMPLE MEASUREMENT			Mgd	*****	*****	*****	*****								
	PERMIT REQUIREMENT	Report 30 Day Avg	Report Daily Max		*****	*****	*****			Continuous	Recording Instr.					
CBOD ₅	SAMPLE MEASUREMENT			Lbs/	*****			Mg/L								
	PERMIT REQUIREMENT	4,170 30 Day Avg	6,672 Weekly Avg.	Day	*****	25 30 Day Avg	40 Avg. Weekly			Daily	Comp - 24 Hr.					
Total Suspended Solids	SAMPLE MEASUREMENT			Lbs/	*****			Mg/L								
	PERMIT REQUIREMENT	5,004 30 Day Avg	7,506 Weekly Avg.	Day	*****	30 30 Day Avg	45 Avg. Weekly			Daily	Comp - 24 Hr.					
Nitrogen-Ammonia (Total as N) (May 1 to Oct. 31)	SAMPLE MEASUREMENT		*****	Lbs/	*****		*****	Mg/L								
	PERMIT REQUIREMENT	834 30 Day Avg	*****	Day	*****	5.0 30 Day Avg	*****			Daily	Comp - 24 Hr.					
Nitrogen-Ammonia (Total as N) (Nov. 1 to Apr. 30)	SAMPLE MEASUREMENT		*****	Lbs/	*****		*****	Mg/L								
	PERMIT REQUIREMENT	2,502 30 Day Avg	*****	Day	*****	15.0 30 Day Avg	*****			Daily	Comp - 24 Hr.					
pH	SAMPLE MEASUREMENT	*****	*****	***		*****		Std. Units								
	PERMIT REQUIREMENT	*****	*****	***	6.0 Minimum	*****	9.0 Maximum			Daily	Grab					
(Continued on Page 2)	SAMPLE MEASUREMENT															
	PERMIT REQUIREMENT															
NAME/TITLE PRINCIPAL EXECUTIVE OFFICER		I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED INFORMATION IS TRUE, ACCURATE AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT. SEE 18 USC §1001 AND 33 USC §1319 (Penalties under these statutes may include fines up to \$10,000 and or maximum imprisonment of between 6 months and 5 years.)				TELEPHONE			DATE							
TYPED OR PRINTED						SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT			AREA CODE	NUMBER	YEAR	MO	DAY			

COMMENT AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

PERMITTEE NAME/ADDRESS (Include
Facility Name/Location if different)

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

DISCHARGE MONITORING REPORT (DMR)

(2-16)

(17-19)

Form Approved.
OMB No. 2040-0004
Approval expires 9-30-85

NAME City of Bethlehem
ADDRESS 10 East Church Street
Bethlehem, PA 18018

PA-0026042 A-1
PERMIT NUMBER

001
DISCHARGE NUMBER

Permit Effective Date: January 1, 2013

Permit Expiration Date: November 30, 2013

FACILITY Bethlehem STP Outfall
LOCATION City of Bethlehem, Northampton County

FROM

TO

MONITORING PERIOD							
YEAR	MO	DAY		YEAR	MO	DAY	

(20-21)

(22-23)

(24-25)

(26-27)

(28-29)

(30-31)

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) (46-53)	QUANTITY OR LOADING (54-61)			(4 Card Only) (38-45)	QUANTITY OR CONCENTRATION (46-53) (54-61)			NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)					
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS									
Fecal Coliform (May 1 To Sept. 30)	SAMPLE MEASUREMENT	*****	*****	***	*****		*****	#/ 100 ml									
	PERMIT REQUIREMENT	*****	*****		*****	200 30 Day Geo	*****			Daily	Grab						
Fecal Coliform (Oct. 1 To Apr. 30)	SAMPLE MEASUREMENT	*****	*****	***	*****		*****	#/ 100 ml									
	PERMIT REQUIREMENT	*****	*****		*****	2,000 30 Day Geo	*****			Daily	Grab						
Total Residual Chlorine	SAMPLE MEASUREMENT	*****	*****	***	*****		*****	Mg/L									
	PERMIT REQUIREMENT	*****	*****		*****	0.5 30 Day Avg	*****			1/Shift	Grab						
	SAMPLE MEASUREMENT																
	PERMIT REQUIREMENT																
	SAMPLE MEASUREMENT																
	PERMIT REQUIREMENT																
	SAMPLE MEASUREMENT																
	PERMIT REQUIREMENT																
	SAMPLE MEASUREMENT																
	PERMIT REQUIREMENT																
	SAMPLE MEASUREMENT																
	PERMIT REQUIREMENT																
NAME/TITLE PRINCIPAL EXECUTIVE OFFICER		I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED INFORMATION IS TRUE, ACCURATE AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT. SEE 18 USC §1001 AND 33 USC §1319 (Penalties under these statutes may include fines up to \$10,000 and or maximum imprisonment of between 6 months and 5 years.)					TELEPHONE		DATE								
TYPED OR PRINTED							SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA CODE	NUMBER	YEAR	MO	DAY					

COMMENT AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if different)

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

DISCHARGE MONITORING REPORT (DMR)

Form Approved.
OMB No. 2040-0004
Approval expires 9-30-85

NAME City of Bethlehem
ADDRESS 10 East Church Street
Bethlehem, PA 18018

PA-0026042 A-1
PERMIT NUMBER

003
DISCHARGE NUMBER

Permit Effective Date: January 1, 2013

Permit Expiration Date: November 30, 2013

FACILITY Combined Sewer Overflow Outfall
LOCATION City of Bethlehem, Northampton County

FROM

TO

MONITORING PERIOD							
YEAR	MO	DAY		YEAR	MO	DAY	
(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)	

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) (46-53)	QUANTITY OR LOADING (54-61)			(4 Card Only) (38-45)	QUANTITY OR CONCENTRATION (46-53) (54-61)			NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)						
		AVERAGE	MAXIMUM	UNITS		MINIMUM	AVERAGE	MAXIMUM	UNITS									
Flow	SAMPLE MEASUREMENT			Mgd		*****	*****	*****										
	PERMIT REQUIREMENT	Report 30 Day Avg	Report Daily Max			*****	*****	*****	*****		Continuous	Recording Instr.						
CBOD ₅	SAMPLE MEASUREMENT	*****	*****	***		*****		*****										
	PERMIT REQUIREMENT	*****	*****			*****	Mon. & Rep. 30 Day Avg	*****	Mg/L		Daily	Grab						
Total Suspended Solids	SAMPLE MEASUREMENT	*****	*****	***		*****		*****										
	PERMIT REQUIREMENT	*****	*****			*****	Mon. & Rep. 30 Day Avg	*****	Mg/L		Daily	Grab						
Fecal Coliform	SAMPLE MEASUREMENT	*****	*****	***		*****		*****										
	PERMIT REQUIREMENT	*****	*****			*****	Mon. & Rep. 30 Day Avg	*****	#/100 ML		Daily	Grab						
pH	SAMPLE MEASUREMENT	*****	*****	***			*****											
	PERMIT REQUIREMENT	*****	*****			Mon. & Rep. Inst. Min.	*****	Mon. & Rep. Inst. Max.	Std. Units		Daily	Grab						
	SAMPLE MEASUREMENT																	
	PERMIT REQUIREMENT																	
	SAMPLE MEASUREMENT																	
	PERMIT REQUIREMENT																	
NAME/TITLE PRINCIPAL EXECUTIVE OFFICER		I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED INFORMATION IS TRUE, ACCURATE AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT. SEE 18 USC §1001 AND 33 USC §1319 (Penalties under these statutes may include fines up to \$10,000 and or maximum imprisonment of between 6 months and 5 years.)					TELEPHONE			DATE								
TYPED OR PRINTED							SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT			AREA CODE	NUMBER	YEAR	MO	DAY				

COMMENT AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if different)

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
DISCHARGE MONITORING REPORT (DMR)

Form Approved.
OMB No. 2040-0004
Approval expires 9-30-85

NAME City of Bethlehem
ADDRESS 10 East Church Street
Bethlehem, PA 18018

PA-0026042 A-1
PERMIT NUMBER

004
DISCHARGE NUMBER

Permit Effective Date: January 1, 2013

Permit Expiration Date: November 30, 2013

FACILITY Combined Sewer Overflow Outfall
LOCATION City of Bethlehem, Northampton County

MONITORING PERIOD							
YEAR			MO			DAY	
FROM			TO				
(20-21)			(22-23)			(24-25)	
(26-27)			(28-29)			(30-31)	

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		QUANTITY OR LOADING (54-61)			QUANTITY OR CONCENTRATION (54-61)			NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)		
		AVERAGE (46-53)	MAXIMUM (54-61)	UNITS	MINIMUM (38-45)	AVERAGE (46-53)	MAXIMUM (54-61)					
Flow	SAMPLE MEASUREMENT			Mgd	*****	*****	*****					
	PERMIT REQUIREMENT	Report 30 Day Avg	Report Daily Max		*****	*****	*****	****	Continuous	Recording Instr.		
CBOD ₅	SAMPLE MEASUREMENT	*****	*****	***	*****		*****					
	PERMIT REQUIREMENT	*****	*****		*****	Mon. & Rep. 30 Day Avg	*****	Mg/L	Daily	Grab		
Total Suspended Solids	SAMPLE MEASUREMENT	*****	*****	***	*****		*****					
	PERMIT REQUIREMENT	*****	*****		*****	Mon. & Rep. 30 Day Avg	*****	Mg/L	Daily	Grab		
Fecal Coliform	SAMPLE MEASUREMENT	*****	*****	***	*****		*****					
	PERMIT REQUIREMENT	*****	*****		*****	Mon. & Rep. 30 Day Avg	*****	#/100 ML	Daily	Grab		
pH	SAMPLE MEASUREMENT	*****	*****	***		*****						
	PERMIT REQUIREMENT	*****	*****		Mon. & Rep. Inst. Min.	*****	Mon. & Rep. Inst. Max.	Std. Units	Daily	Grab		
	SAMPLE MEASUREMENT											
	PERMIT REQUIREMENT											
	SAMPLE MEASUREMENT											
	PERMIT REQUIREMENT											
NAME/TITLE PRINCIPAL EXECUTIVE OFFICER		I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED INFORMATION IS TRUE, ACCURATE AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT. SEE 18 USC §1001 AND 33 USC §1319 (Penalties under these statutes may include fines up to \$10,000 and or maximum imprisonment of between 6 months and 5 years.)				SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT		TELEPHONE		DATE		
TYPED OR PRINTED								AREA CODE		NUMBER		YEAR

COMMENT AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if different)

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
DISCHARGE MONITORING REPORT (DMR)

Form Approved.
OMB No. 2040-0004
Approval expires 9-30-85

NAME City of Bethlehem
ADDRESS 10 East Church Street
Bethlehem, PA 18018

PA-0026042 A-1
PERMIT NUMBER

006
DISCHARGE NUMBER

Permit Effective Date: January 1, 2013

Permit Expiration Date: November 30, 2013

FACILITY Treatment Plant Emergency Outfall
LOCATION City of Bethlehem, Northampton County

MONITORING PERIOD							
YEAR			MO			DAY	

FROM TO

(20-21)		(22-23)		(24-25)		(26-27)		(28-29)		(30-31)	
YEAR		MO		DAY		YEAR		MO		DAY	

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		QUANTITY OR LOADING (54-61)			QUANTITY OR CONCENTRATION (54-61)			UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
		AVERAGE (46-53)	MAXIMUM (54-61)	UNITS	MINIMUM (38-45)	AVERAGE (46-53)	MAXIMUM (54-61)				
Flow	SAMPLE MEASUREMENT				*****	*****	*****				
	PERMIT REQUIREMENT	Report 30 Day Avg	Report Daily Max	Mgd	*****	*****	*****	*****		Continuous	Recording Instr.
CBOD ₅	SAMPLE MEASUREMENT	*****	*****		*****						
	PERMIT REQUIREMENT	*****	*****	***	*****	25 30 Day Avg	40 Avg. Weekly	Mg/L		Daily	Grab
Total Suspended Solids	SAMPLE MEASUREMENT	*****	*****		*****						
	PERMIT REQUIREMENT	*****	*****	***	*****	30 30 Day Avg	45 Avg. Weekly	Mg/L		Daily	Grab
Nitrogen-Ammonia (Total as N) (5/1 to 10/31)	SAMPLE MEASUREMENT	*****	*****		*****		*****				
	PERMIT REQUIREMENT	*****	*****	***	*****	5.0 30 Day Avg	*****	Mg/L		Daily	Grab
Nitrogen-Ammonia (Total as N) (11/1 to 4/30)	SAMPLE MEASUREMENT	*****	*****		*****		*****				
	PERMIT REQUIREMENT	*****	*****	***	*****	15.0 30 Day Avg	*****	Mg/l		Daily	Grab
Fecal Coliform (May 1 to September 30)	SAMPLE MEASUREMENT	*****	*****		*****		*****				
	PERMIT REQUIREMENT	*****	*****	***	*****	200 30 Day Geo	*****	#/100 ML		Daily	Grab
Fecal Coliform (October 1 to April 30)	SAMPLE MEASUREMENT	*****	*****		*****		*****				
	PERMIT REQUIREMENT	*****	*****	***	*****	2000 30 Day Geo	*****	#/100 ML		Daily	Grab
NAME/TITLE PRINCIPAL EXECUTIVE OFFICER		I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED INFORMATION IS TRUE, ACCURATE AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT. SEE 18 USC §1001 AND 33 USC §1319 (Penalties under these statutes may include fines up to \$10,000 and or maximum imprisonment of between 6 months and 5 years.)					TELEPHONE		DATE		
TYPED OR PRINTED							SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT		AREA CODE	NUMBER	YEAR

COMMENT AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if different)

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
DISCHARGE MONITORING REPORT (DMR)

Form Approved.
OMB No. 2040-0004
Approval expires 9-30-85

NAME City of Bethlehem
ADDRESS 10 East Church Street
Bethlehem, PA 18018

PA-0026042 A-1
PERMIT NUMBER

006
DISCHARGE NUMBER

Permit Effective Date: January 1, 2013

Permit Expiration Date: November 30, 2013

FACILITY Treatment Plant Emergency Outfall
LOCATION City of Bethlehem, Northampton County

MONITORING PERIOD							
FROM			TO				
YEAR	MO	DAY	YEAR	MO	DAY		
(20-21)	(22-23)	(24-25)	(26-27)	(28-29)	(30-31)		

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		QUANTITY OR LOADING (54-61)			QUANTITY OR CONCENTRATION (46-53) (54-61)			UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)		
		AVERAGE (46-53)	MAXIMUM	UNITS	MINIMUM (38-45)	AVERAGE	MAXIMUM						
Total Residual Chlorine	SAMPLE MEASUREMENT	*****	*****	***	*****		*****	Mg/L					
	PERMIT REQUIREMENT	*****	*****		*****	0.5 30 Day Avg.	*****			Daily	Grab		
pH	SAMPLE MEASUREMENT	*****	*****	***		*****		Std. Units					
	PERMIT REQUIREMENT	*****	*****		6.0 Instant. Min.	*****	9.0 Instant. Max.			Daily	Grab		
	SAMPLE MEASUREMENT												
	PERMIT REQUIREMENT												
	SAMPLE MEASUREMENT												
	PERMIT REQUIREMENT												
	SAMPLE MEASUREMENT												
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	SAMPLE MEASUREMENT												
	PERMIT REQUIREMENT												
	SAMPLE MEASUREMENT												
	PERMIT REQUIREMENT												
NAME/TITLE PRINCIPAL EXECUTIVE OFFICER		I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED INFORMATION IS TRUE, ACCURATE AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT. SEE 18 USC §1001 AND 33 USC §1319 (Penalties under these statutes may include fines up to \$10,000 and or maximum imprisonment of between 6 months and 5 years.)				SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT			TELEPHONE		DATE		
TYPED OR PRINTED													

COMMENT AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if different)

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
DISCHARGE MONITORING REPORT (DMR)

Form Approved.
OMB No. 2040-0004
Approval expires 6-30-88

NAME City of Bethlehem
ADDRESS 10 East Church Street
Bethlehem, PA 18018

PA-0026042 A-1
PERMIT NUMBER

007
DISCHARGE NUMBER

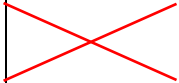
Permit Effective Date: January 1, 2013

Permit Expiration Date: November 30, 2013

FACILITY Stormwater Outfall
LOCATION City of Bethlehem, Northampton County

MONITORING PERIOD							
YEAR	MO	DAY	TO	YEAR	MO	DAY	

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING (46-53) (54-61)			(4 Card Only) QUALITY OR CONCENTRATION (46-53) (54-61)			NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)					
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM								
C-Biochemical Oxygen Demand (5-Day)	SAMPLE MEASUREMENT	xxxxx	xxxxx	xxx	xxxxx	xxxxx		MG/L							
	PERMIT REQUIREMENT	xxxxx	xxxxx		xxxxx	xxxxx	REPORT Daily Max.		1 Per Year	1 Grab					
Chemical Oxygen Demand	SAMPLE MEASUREMENT	xxxxx	xxxxx	xxx	xxxxx	xxxxx		MG/L							
	PERMIT REQUIREMENT	xxxxx	xxxxx		xxxxx	xxxxx	REPORT Daily Max.		1 Per Year	1 Grab					
Oil and Grease	SAMPLE MEASUREMENT	xxxxx	xxxxx	xxx	xxxxx	xxxxx		MG/L							
	PERMIT REQUIREMENT	xxxxx	xxxxx		xxxxx	xxxxx	REPORT Daily Max.		1 Per Year	1 Grab					
pH	SAMPLE MEASUREMENT	xxxxx	xxxxx	xxx	xxxxx	xxxxx		Std. Unit							
	PERMIT REQUIREMENT	xxxxx	xxxxx		xxxxx	xxxxx	REPORT Daily Max.		1 Per Year	1 Grab					
Total Suspended Solids (TSS)	SAMPLE MEASUREMENT	xxxxx	xxxxx	xxx	xxxxx	xxxxx		MG/L							
	PERMIT REQUIREMENT	xxxxx	xxxxx		xxxxx	xxxxx	REPORT Daily Max.		1 Per Year	1 Grab					
Total Kjeldahl Nitrogen (TKN)	SAMPLE MEASUREMENT	xxxxx	xxxxx	xxx	xxxxx	xxxxx		MG/L							
	PERMIT REQUIREMENT	xxxxx	xxxxx		xxxxx	xxxxx	REPORT Daily Max.		1 Per Year	1 Grab					
Total Phosphorus	SAMPLE MEASUREMENT	xxxxx	xxxxx	xxx	xxxxx	xxxxx		MG/L							
	PERMIT REQUIREMENT	xxxxx	xxxxx		xxxxx	xxxxx	REPORT Daily Max.		1 Per Year	1 Grab					
Iron (Dissolved)	SAMPLE MEASUREMENT	xxxxx	xxxxx	xxx	xxxxx	xxxxx		MG/L							
	PERMIT REQUIREMENT	xxxxx	xxxxx		xxxxx	xxxxx	REPORT Daily Max.		1 Per Year	1 Grab					
NAME/TITLE PRINCIPAL EXECUTIVE OFFICER		I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED INFORMATION IS TRUE, ACCURATE AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT. SEE 18 USC §1001 AND 33 USC §1319 (Penalties under these statutes may include fines up to \$10,000 and or maximum imprisonment of between 6 months and 5 years.)				TELEPHONE		DATE							
TYPED OR PRINTED						SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT		AREA CODE	NUMBER	YEAR MO DAY					

COMMENT AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

Permittee has the option to perform an annual inspection of the facilities in lieu of annual monitoring.

PERMITTEE NAME/ADDRESS (Include
Facility Name/Location if different)

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

DISCHARGE MONITORING REPORT (DMR)

Form Approved.
OMB No. 2040-0004
Approval expires 6-30-88

NAME City of Bethlehem
ADDRESS 10 East Church Street
Bethlehem, PA 18018

PA-0026042 A-1
PERMIT NUMBER

008
DISCHARGE NUMBER

Permit Effective Date: January 1, 2013

Permit Expiration Date: November 30, 2013


FACILITY Stormwater Outfall
LOCATION City of Bethlehem, Northampton County

FROM

MONITORING PERIOD						
YEAR	MO	DAY		YEAR	MO	DAY
			TO			

(20-21) (22-23) (24-25) (26-27) (28-29) (30-31)

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		QUANTITY OR LOADING (54-61)			QUALITY OR CONCENTRATION (54-61)			NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)						
		AVERAGE (46-53)	MAXIMUM (54-61)	UNITS	MINIMUM (38-45)	AVERAGE (46-53)	MAXIMUM (54-61)									
C-Biochemical Oxygen Demand (5-Day)	SAMPLE MEASUREMENT	xxxxx	xxxxx	xxx	xxxxx	xxxxx										
	PERMIT REQUIREMENT	xxxxx	xxxxx		xxxxx	xxxxx	REPORT Daily Max.		1 Per Year	1 Grab						
Chemical Oxygen Demand	SAMPLE MEASUREMENT	xxxxx	xxxxx	xxx	xxxxx	xxxxx										
	PERMIT REQUIREMENT	xxxxx	xxxxx		xxxxx	xxxxx	REPORT Daily Max.		1 Per Year	1 Grab						
Oil and Grease	SAMPLE MEASUREMENT	xxxxx	xxxxx	xxx	xxxxx	xxxxx										
	PERMIT REQUIREMENT	xxxxx	xxxxx		xxxxx	xxxxx	REPORT Daily Max.		1 Per Year	1 Grab						
pH	SAMPLE MEASUREMENT	xxxxx	xxxxx	xxx	xxxxx	xxxxx										
	PERMIT REQUIREMENT	xxxxx	xxxxx		xxxxx	xxxxx	REPORT Daily Max.	Std. Unit	1 Per Year	1 Grab						
Total Suspended Solids (TSS)	SAMPLE MEASUREMENT	xxxxx	xxxxx	xxx	xxxxx	xxxxx										
	PERMIT REQUIREMENT	xxxxx	xxxxx		xxxxx	xxxxx	REPORT Daily Max.		1 Per Year	1 Grab						
Total Kjeldahl Nitrogen (TKN)	SAMPLE MEASUREMENT	xxxxx	xxxxx	xxx	xxxxx	xxxxx										
	PERMIT REQUIREMENT	xxxxx	xxxxx		xxxxx	xxxxx	REPORT Daily Max.		1 Per Year	1 Grab						
Total Phosphorus	SAMPLE MEASUREMENT	xxxxx	xxxxx	xxx	xxxxx	xxxxx										
	PERMIT REQUIREMENT	xxxxx	xxxxx		xxxxx	xxxxx	REPORT Daily Max.		1 Per Year	1 Grab						
Iron (Dissolved)	SAMPLE MEASUREMENT	xxxxx	xxxxx	xxx	xxxxx	xxxxx										
	PERMIT REQUIREMENT	xxxxx	xxxxx		xxxxx	xxxxx	REPORT Daily Max.		1 Per Year	1 Grab						
NAME/TITLE PRINCIPAL EXECUTIVE OFFICER		I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED INFORMATION IS TRUE, ACCURATE AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT. SEE 18 USC §1001 AND 33 USC §1319 (Penalties under these statutes may include fines up to \$10,000 and or maximum imprisonment of between 6 months and 5 years.)					TELEPHONE		DATE							
TYPED OR PRINTED							SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA CODE	NUMBER	YEAR	MO	DAY				

COMMENT AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

Permittee has the option to perform an annual inspection of the facilities in lieu of annual monitoring.

PERMITTEE NAME/ADDRESS (Include
Facility Name/Location if different)

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

DISCHARGE MONITORING REPORT (DMR)

Form Approved.
OMB No. 2040-0004
Approval expires 6-30-88

NAME City of Bethlehem
ADDRESS 10 East Church Street
Bethlehem, PA 18018

PA-0026042 A-1
PERMIT NUMBER

009
DISCHARGE NUMBER

Permit Effective Date: January 1, 2013

Permit Expiration Date: November 30, 2013

FACILITY Stormwater Outfall
LOCATION City of Bethlehem, Northampton County


MONITORING PERIOD						
YEAR	MO	DAY		YEAR	MO	DAY

FROM

TO

(20-21) (22-23) (24-25) (26-27) (28-29) (30-31)

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		QUANTITY OR LOADING (54-61)			QUALITY OR CONCENTRATION (54-61)			NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)						
		AVERAGE (46-53)	MAXIMUM (54-61)	UNITS	MINIMUM (38-45)	AVERAGE (46-53)	MAXIMUM (54-61)									
C-Biochemical Oxygen Demand (5-Day)	SAMPLE MEASUREMENT	XXXXX	XXXXX	XXX	XXXXX	XXXXX		MG/L								
	PERMIT REQUIREMENT	XXXXX	XXXXX		XXXXX	XXXXX	REPORT Daily Max.									
Chemical Oxygen Demand	SAMPLE MEASUREMENT	XXXXX	XXXXX	XXX	XXXXX	XXXXX		MG/L								
	PERMIT REQUIREMENT	XXXXX	XXXXX		XXXXX	XXXXX	REPORT Daily Max.									
Oil and Grease	SAMPLE MEASUREMENT	XXXXX	XXXXX	XXX	XXXXX	XXXXX		MG/L								
	PERMIT REQUIREMENT	XXXXX	XXXXX		XXXXX	XXXXX	REPORT Daily Max.									
pH	SAMPLE MEASUREMENT	XXXXX	XXXXX	XXX	XXXXX	XXXXX		Std. Unit								
	PERMIT REQUIREMENT	XXXXX	XXXXX		XXXXX	XXXXX	REPORT Daily Max.									
Total Suspended Solids (TSS)	SAMPLE MEASUREMENT	XXXXX	XXXXX	XXX	XXXXX	XXXXX		MG/L								
	PERMIT REQUIREMENT	XXXXX	XXXXX		XXXXX	XXXXX	REPORT Daily Max.									
Total Kjeldahl Nitrogen (TKN)	SAMPLE MEASUREMENT	XXXXX	XXXXX	XXX	XXXXX	XXXXX		MG/L								
	PERMIT REQUIREMENT	XXXXX	XXXXX		XXXXX	XXXXX	REPORT Daily Max.									
Total Phosphorus	SAMPLE MEASUREMENT	XXXXX	XXXXX	XXX	XXXXX	XXXXX		MG/L								
	PERMIT REQUIREMENT	XXXXX	XXXXX		XXXXX	XXXXX	REPORT Daily Max.									
Iron (Dissolved)	SAMPLE MEASUREMENT	XXXXX	XXXXX	XXX	XXXXX	XXXXX		MG/L								
	PERMIT REQUIREMENT	XXXXX	XXXXX		XXXXX	XXXXX	REPORT Daily Max.									
NAME/TITLE PRINCIPAL EXECUTIVE OFFICER		I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED INFORMATION IS TRUE, ACCURATE AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT. SEE 18 USC §1001 AND 33 USC §1319 (Penalties under these statutes may include fines up to \$10,000 and or maximum imprisonment of between 6 months and 5 years.)					TELEPHONE		DATE							
TYPED OR PRINTED							SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA CODE	NUMBER	YEAR	MO	DAY				

COMMENT AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

Permittee has the option to perform an annual inspection of the facilities in lieu of annual monitoring.

PERMITTEE NAME/ADDRESS (Include
Facility Name/Location if different)

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

DISCHARGE MONITORING REPORT (DMR)

Form Approved.
OMB No. 2040-0004
Approval expires 6-30-88

NAME City of Bethlehem
ADDRESS 10 East Church Street
Bethlehem, PA 18018

PA-0026042 A-1
PERMIT NUMBER

010
DISCHARGE NUMBER

Permit Effective Date: January 1, 2013

Permit Expiration Date: November 30, 2013


FACILITY Stormwater Outfall
LOCATION City of Bethlehem, Northampton County

FROM

MONITORING PERIOD						
YEAR	MO	DAY		YEAR	MO	DAY
			TO			

(20-21) (22-23) (24-25) (26-27) (28-29) (30-31)

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		QUANTITY OR LOADING (54-61)			QUALITY OR CONCENTRATION (54-61)			NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)						
		AVERAGE (46-53)	MAXIMUM (54-61)	UNITS	MINIMUM (38-45)	AVERAGE (46-53)	MAXIMUM (54-61)									
C-Biochemical Oxygen Demand (5-Day)	SAMPLE MEASUREMENT	xxxxx	xxxxx	xxx	xxxxx	xxxxx		MG/L	1 Per Year	1 Grab						
	PERMIT REQUIREMENT	xxxxx	xxxxx		xxxxx	REPORT Daily Max.										
Chemical Oxygen Demand	SAMPLE MEASUREMENT	xxxxx	xxxxx	xxx	xxxxx	xxxxx		MG/L	1 Per Year	1 Grab						
	PERMIT REQUIREMENT	xxxxx	xxxxx		xxxxx	REPORT Daily Max.										
Oil and Grease	SAMPLE MEASUREMENT	xxxxx	xxxxx	xxx	xxxxx	xxxxx		MG/L	1 Per Year	1 Grab						
	PERMIT REQUIREMENT	xxxxx	xxxxx		xxxxx	REPORT Daily Max.										
pH	SAMPLE MEASUREMENT	xxxxx	xxxxx	xxx	xxxxx	xxxxx		Std. Unit	1 Per Year	1 Grab						
	PERMIT REQUIREMENT	xxxxx	xxxxx		xxxxx	REPORT Daily Max.										
Total Suspended Solids (TSS)	SAMPLE MEASUREMENT	xxxxx	xxxxx	xxx	xxxxx	xxxxx		MG/L	1 Per Year	1 Grab						
	PERMIT REQUIREMENT	xxxxx	xxxxx		xxxxx	REPORT Daily Max.										
Total Kjeldahl Nitrogen (TKN)	SAMPLE MEASUREMENT	xxxxx	xxxxx	xxx	xxxxx	xxxxx		MG/L	1 Per Year	1 Grab						
	PERMIT REQUIREMENT	xxxxx	xxxxx		xxxxx	REPORT Daily Max.										
Total Phosphorus	SAMPLE MEASUREMENT	xxxxx	xxxxx	xxx	xxxxx	xxxxx		MG/L	1 Per Year	1 Grab						
	PERMIT REQUIREMENT	xxxxx	xxxxx		xxxxx	REPORT Daily Max.										
Iron (Dissolved)	SAMPLE MEASUREMENT	xxxxx	xxxxx	xxx	xxxxx	xxxxx		MG/L	1 Per Year	1 Grab						
	PERMIT REQUIREMENT	xxxxx	xxxxx		xxxxx	REPORT Daily Max.										
NAME/TITLE PRINCIPAL EXECUTIVE OFFICER		I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED INFORMATION IS TRUE, ACCURATE AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT. SEE 18 USC §1001 AND 33 USC §1319 (Penalties under these statutes may include fines up to \$10,000 and or maximum imprisonment of between 6 months and 5 years.)					TELEPHONE		DATE							
TYPED OR PRINTED							SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA CODE	NUMBER	YEAR	MO	DAY				

COMMENT AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

Permittee has the option to perform an annual inspection of the facilities in lieu of annual monitoring.

PERMITTEE NAME/ADDRESS (Include
Facility Name/Location if different)

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

DISCHARGE MONITORING REPORT (DMR)

Form Approved.
OMB No. 2040-0004
Approval expires 6-30-88

NAME City of Bethlehem
ADDRESS 10 East Church Street
Bethlehem, PA 18018

PA-0026042 A-1
PERMIT NUMBER

011
DISCHARGE NUMBER

Permit Effective Date: January 1, 2013

Permit Expiration Date: November 30, 2013

FACILITY Stormwater Outfall
LOCATION City of Bethlehem, Northampton County


MONITORING PERIOD						
YEAR	MO	DAY		YEAR	MO	DAY

FROM

TO

(20-21) (22-23) (24-25) (26-27) (28-29) (30-31)

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		QUANTITY OR LOADING (54-61)			QUALITY OR CONCENTRATION (54-61)			NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)						
		AVERAGE (46-53)	MAXIMUM (54-61)	UNITS (54-61)	MINIMUM (38-45)	AVERAGE (46-53)	MAXIMUM (54-61)									
C-Biochemical Oxygen Demand (5-Day)	SAMPLE MEASUREMENT	xxxxx	xxxxx	xxx	xxxxx	xxxxx										
	PERMIT REQUIREMENT	xxxxx	xxxxx		xxxxx	xxxxx	REPORT Daily Max.		1 Per Year	1 Grab						
Chemical Oxygen Demand	SAMPLE MEASUREMENT	xxxxx	xxxxx	xxx	xxxxx	xxxxx										
	PERMIT REQUIREMENT	xxxxx	xxxxx		xxxxx	xxxxx	REPORT Daily Max.		1 Per Year	1 Grab						
Oil and Grease	SAMPLE MEASUREMENT	xxxxx	xxxxx	xxx	xxxxx	xxxxx										
	PERMIT REQUIREMENT	xxxxx	xxxxx		xxxxx	xxxxx	REPORT Daily Max.		1 Per Year	1 Grab						
pH	SAMPLE MEASUREMENT	xxxxx	xxxxx	xxx	xxxxx	xxxxx										
	PERMIT REQUIREMENT	xxxxx	xxxxx		xxxxx	xxxxx	REPORT Daily Max.	Std. Unit	1 Per Year	1 Grab						
Total Suspended Solids (TSS)	SAMPLE MEASUREMENT	xxxxx	xxxxx	xxx	xxxxx	xxxxx										
	PERMIT REQUIREMENT	xxxxx	xxxxx		xxxxx	xxxxx	REPORT Daily Max.		1 Per Year	1 Grab						
Total Kjeldahl Nitrogen (TKN)	SAMPLE MEASUREMENT	xxxxx	xxxxx	xxx	xxxxx	xxxxx										
	PERMIT REQUIREMENT	xxxxx	xxxxx		xxxxx	xxxxx	REPORT Daily Max.		1 Per Year	1 Grab						
Total Phosphorus	SAMPLE MEASUREMENT	xxxxx	xxxxx	xxx	xxxxx	xxxxx										
	PERMIT REQUIREMENT	xxxxx	xxxxx		xxxxx	xxxxx	REPORT Daily Max.		1 Per Year	1 Grab						
Iron (Dissolved)	SAMPLE MEASUREMENT	xxxxx	xxxxx	xxx	xxxxx	xxxxx										
	PERMIT REQUIREMENT	xxxxx	xxxxx		xxxxx	xxxxx	REPORT Daily Max.		1 Per Year	1 Grab						
NAME/TITLE PRINCIPAL EXECUTIVE OFFICER		I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED INFORMATION IS TRUE, ACCURATE AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT. SEE 18 USC §1001 AND 33 USC §1319 (Penalties under these statutes may include fines up to \$10,000 and or maximum imprisonment of between 6 months and 5 years.)					TELEPHONE		DATE							
TYPED OR PRINTED							SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA CODE	NUMBER	YEAR	MO	DAY				

COMMENT AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

Permittee has the option to perform an annual inspection of the facilities in lieu of annual monitoring.

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if different)

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
DISCHARGE MONITORING REPORT (DMR)

Form Approved.
OMB No. 2040-0004
Approval expires 9-30-85

NAME City of Bethlehem
ADDRESS 10 East Church Street
Bethlehem, PA 18018

PA-0026042 A-1
PERMIT NUMBER

012
DISCHARGE NUMBER

Permit Effective Date: January 1, 2013

Permit Expiration Date: November 30, 2013

FACILITY Combined Sewer Overflow Outfall
LOCATION City of Bethlehem, Northampton County

MONITORING PERIOD							
YEAR			MO			DAY	
FROM			TO				
(20-21)			(22-23)			(24-25)	
(26-27)			(28-29)			(30-31)	

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		QUANTITY OR LOADING (54-61)			QUANTITY OR CONCENTRATION (54-61)			NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)		
		AVERAGE (46-53)	MAXIMUM (54-61)	UNITS	MINIMUM (38-45)	AVERAGE (46-53)	MAXIMUM (54-61)					
Flow	SAMPLE MEASUREMENT			Mgd	*****	*****	*****					
	PERMIT REQUIREMENT	Report 30 Day Avg	Report Daily Max		*****	*****	*****	****	Continuous	Recording Instr.		
CBOD ₅	SAMPLE MEASUREMENT	*****	*****	***	*****		*****					
	PERMIT REQUIREMENT	*****	*****		*****	Mon. & Rep. 30 Day Avg	*****	Mg/L	Daily	Grab		
Total Suspended Solids	SAMPLE MEASUREMENT	*****	*****	***	*****		*****					
	PERMIT REQUIREMENT	*****	*****		*****	Mon. & Rep. 30 Day Avg	*****	Mg/L	Daily	Grab		
Fecal Coliform	SAMPLE MEASUREMENT	*****	*****	***	*****		*****					
	PERMIT REQUIREMENT	*****	*****		*****	Mon. & Rep. 30 Day Avg	*****	#/100 ML	Daily	Grab		
pH	SAMPLE MEASUREMENT	*****	*****	***		*****						
	PERMIT REQUIREMENT	*****	*****		Mon. & Rep. Inst. Min.	*****	Mon. & Rep. Inst. Max.	Std. Units	Daily	Grab		
	SAMPLE MEASUREMENT											
	PERMIT REQUIREMENT											
	SAMPLE MEASUREMENT											
	PERMIT REQUIREMENT											
NAME/TITLE PRINCIPAL EXECUTIVE OFFICER		I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED INFORMATION IS TRUE, ACCURATE AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT. SEE 18 USC §1001 AND 33 USC §1319 (Penalties under these statutes may include fines up to \$10,000 and or maximum imprisonment of between 6 months and 5 years.)				SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT		TELEPHONE		DATE		
TYPED OR PRINTED								AREA CODE		NUMBER		YEAR

COMMENT AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

Discharge Monitoring Report (DMR) for Combined Sewer Overflows

Outfall No. _____ Month: _____

Overflow Location: _____ Prepared By: _____

Permittee Name _____ Signature/Date: _____

County _____ Title/Position: _____

Municipality _____ NPDES # _____

[illegible]

Use one report form each month for each monitored overflow point; use separate sheets for additional comments or narrative explanations.

*Identify the method used to determine overflow volumes, (for example, 10 MG C):

O = Observed duration and rate of flow to approximate overflow volume.

C = Calculated overflow volume utilizing a model or empirical analysis.

M = Measured overflow volume from data collected by a calibrated flow monitor.

Appendix D

Aerial Photograph of Existing WWTP



- | | | | | |
|---------------------------|------------------------------|----------------------|--------------------------|---------------------------|
| 1 Screening, Grit Removal | 2 Raw Sewage Pump Station | 3 Primary Clarifiers | 4 Aeration Tanks | 5 Intermediate Clarifiers |
| 6 Pump Station No.1 | 7 Trickling Filters | 8 Final Clarifiers | 9 Chlorine Contact Tanks | 10 Effluent Pump Station |
| 11 Sludge Thickener | 12 Sludge Thickener Building | 13 Digesters | 14 Dewatering Building | |

Appendix E

WQM Permit No. 4818402-Amendment No. 1 (A-1)



WATER QUALITY MANAGEMENT PERMIT

A. PERMITTEE (Name and Address): City of Bethlehem 10 East Church Street Bethlehem, PA 18018		CLIENT ID#: 74720		B. PROJECT/FACILITY (Name): City of Bethlehem WWTP	
C. LOCATION (Municipality, County): Bethlehem City, Northampton County				SITE ID#: 443353	
D. This permit/amendment approves the construction/modification/operation of sewage facilities consisting of: Installation of chemically enhanced primary treatment at the WWTP. Components of the new system include: <ul style="list-style-type: none">- 12,500-gallon bulk Polyaluminum Chloride storage tank and feed pumps/piping- Rail-mounted chemical induction mixing pump at control box #1- Two 275-gallon liquid 30% charge anionic polymer storage totes and feed pumps/piping- New polymer building- New concrete pad, spill containment wall and sump pumps- Emergency eyewash and shower in outdoor shed- Upgrades to the process control system					
Pump Stations: _____ Design Capacity: _____ GPM		Manure Storage: Volume: _____ MG Freeboard: _____ inches		Sewage Treatment Facility: Annual Average Flow: <u>20.0</u> MGD Design Hydraulic Capacity: <u>20.0</u> MGD Design Organic Capacity: <u>39,365</u> lbs/day	
E. APPROVAL GRANTED BY THIS PERMIT IS SUBJECT TO THE FOLLOWING: <ol style="list-style-type: none">1. Amendments: All construction, operations and procedures shall be in accordance with the Water Quality Management Permit Amendment application dated March 4, 2022 and its supporting documentation and addendums dated N/A, which are hereby made a part of this amendment. Except for any herein approved modifications, all terms, conditions, supporting documentation and addendums approved under Water Quality Management Permit No. 4818402 dated November 30, 2018 shall remain in effect.2. Permit Conditions Relating to Sewerage are attached and made part of this permit.3. Special Condition A is attached and made part of this permit.					
F. THE AUTHORITY GRANTED BY THIS PERMIT IS SUBJECT TO THE FOLLOWING FURTHER QUALIFICATIONS: <ol style="list-style-type: none">1. If there is a conflict between the application or its supporting documents and amendments and the attached conditions, the attached conditions shall apply.2. Failure to comply with the rules and regulations of DEP or with the terms or conditions of this permit shall void the authority given to the permittee by the issuance of this permit.3. This permit is issued pursuant to the Clean Streams Law Act of June 22, 1937, P.L. 1987, as amended 35 P.S. §691.1 <i>et seq.</i> Issuance of this permit shall not relieve the permittee of any responsibility under any other law.					
PERMIT ISSUED: <u>April 28, 2022</u>		BY: <u><i>B R Patel</i></u> Bharat Patel, P.E. TITLE: Environmental Program Manager Northeast Regional Office			



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF POINT AND NON-POINT SOURCE MANAGEMENT

PERMIT CONDITIONS RELATING TO SEWERAGE
For use in Water Quality Management Permits

(Check boxes that apply)

General

- ☒ 1. The Department of Environmental Protection (DEP) considers the licensed Professional Engineer whose seal is affixed to the design documents to be fully responsible for the adequacy of all aspects of the facility design.
- ☒ 2. The permittee shall adopt and enforce an ordinance requiring the abandonment of privies, cesspools or similar receptacles for human waste and onlot sewage disposal systems on the premises of occupied structures accessible to public sewers. All such structures must be connected to the public sewers.
- ☒ 3. The outfall sewer or drain shall be extended to the low water mark of the receiving body of water. Where necessary to ensure proper mixing and waste assimilation, an outfall sewer or drain may be extended with appurtenances below the low water mark and into the bed of a navigable stream provided that the permittee has secured an easement, right-of-way, license or lease from DEP in accordance with Section 15 of the Dam Safety and Encroachments Act, the Act of November 26, 1978, P.L. 1375, as amended.
- ☒ 4. The approval is specifically made contingent on the permittee acquiring all necessary property rights, by easement or otherwise, providing for the satisfactory construction, operation, maintenance and replacement of all sewers or sewerage structures in, along or across private property with full rights of ingress, egress and regress.
- ☒ 5. When construction of the approved sewerage facilities is completed and before they are placed in operation, the permittee shall notify DEP in writing so that a DEP representative may inspect the facilities.
- ☒ 6. The approval of the plans, and the authority granted in this permit, if not specifically extended, shall cease and be null and void 5 years from the issuance date of this permit unless construction or modification of the facilities covered by this permit has begun on or before the fifth anniversary of the permit date.
- ☒ 7. If, at any time, the sewerage facilities covered by this permit create a public nuisance, including but not limited to, causing malodors or causing environmental harm to waters of the Commonwealth, DEP may require the permittee to adopt appropriate remedial measures to abate the nuisance or harm.
- ☒ 8. If, after the issuance of this permit, DEP approves a municipal sewage facilities official plan or an amendment to an official plan under Act 537 (Pennsylvania Sewage Facilities Act, the Act of January 24, 1966, P.L. 1535 as amended) in which sewage from the herein approved facilities will be treated and disposed of at other planned facilities, the permittee shall, upon notification from the municipality or DEP, provide for the conveyance of its sewage to the planned facilities, abandon use and decommission the herein approved facilities including the proper disposal of solids, and notify DEP accordingly. The permittee shall adhere to schedules in the approved official plan, amendments to the plan, or other agreements between the permittee and municipality. This permit shall then, upon notice from DEP, terminate and become null and void and shall be relinquished to DEP.
- ☒ 9. This permit does not relieve the permittee of its obligations to comply with all federal, interstate, state or local laws, ordinances and regulations applicable to the sewerage facilities.
- ☒ 10. This permit does not give any real or personal property rights or grant any exclusive privileges, nor shall it be construed to grant or confirm any right, easement or interest in, on, to or over any lands which belong to the Commonwealth.
- ☒ 11. The authority granted by this permit is subject to all effluent requirements, monitoring requirements and other conditions as set forth in the NPDES Permit and all subsequent amendments and renewals. No discharge is authorized from these facilities unless approved by an NPDES Permit.

Construction

- ☒ 12. This permit is issued under the authorization of The Clean Streams Law and 25 Pa. Code Chapter 91. The permittee shall obtain all necessary permits, approvals and/or registrations under 25 Pa. Code Chapters 102, 105 and 106 prior to commencing construction of the facilities authorized by this permit, as applicable. The permittee should contact the DEP office that issued this permit if there are any questions concerning the applicability of additional permits.


- ☒ 13. The facilities shall be constructed under the supervision of a Pennsylvania licensed Professional Engineer in accordance with the approved reports, plans and specifications.
- ☒ 14. A Pennsylvania licensed Professional Engineer shall certify that construction of the permitted facilities was completed in accordance with the application and design plans submitted to DEP, using the "Post Construction Certification" form (3800-PM-WSFR0179a). It is the permittee's responsibility to ensure that a Professional Engineer is on-site to provide the necessary oversight and/or inspections to certify the facilities. The certification must be submitted to DEP before the facility is placed in operation. As-built drawings, photographs (if available) and a description of all deviations from the application and design plans must be submitted to DEP within 30 days of certification.
- ☒ 15. Manhole inverts shall be formed to facilitate the flow of the sewage and to prevent the stranding of sewage solids. The manhole structure shall be built to prevent undue infiltration, entrance of street wash or grit and provide safe access to facilitate manhole maintenance activities.
- ☐ 16. The local Waterways Conservation Officer of the Pennsylvania Fish and Boat Commission (PFBC) shall be notified when the construction of any stream crossing and/or outfall is started and completed. A written permit must be secured from the PFBC if the use of explosives in any waterways is required and the permittee shall notify the local Waterways Conservation Officer when explosives are to be used.

Operation and Maintenance

- ☒ 17. The permittee shall maintain records of "as-built" plans showing all the treatment facilities as actually constructed together with facility operation and maintenance (O&M) manuals and any other relevant information that may be required. Upon request, the "as-built" plans and O&M manuals shall be filed with DEP.
- ☒ 18. The sewers shall have adequate foundation support as soil conditions require. Trenches shall be back-filled to ensure that sewers will have proper structural stability, with minimum settling and adequate protection against breakage. Concrete used in connection with these sewers shall be protected from damage by water, freezing, drying or other harmful conditions until cured.
- ☒ 19. Stormwater from roofs, foundation drains, basement drains or other sources shall not be admitted directly to the sanitary sewers.
- ☒ 20. The approved sewers shall be maintained in good condition, kept free of deposits by flushing or other cleaning methods and repaired when necessary.
- ☒ 21. The sewerage facilities shall be properly operated and maintained to perform as designed.
- ☒ 22. The attention of the permittee is called to the highly explosive nature of certain gases generated by the digestion of sewage solids when these gases are mixed in proper proportions with air and to the highly toxic character of certain gases arising from such digestion or from sewage in poorly ventilated compartments or sewers. Therefore, at all places throughout the sewerage facilities where hazard of fire, explosion or danger from toxic gases may occur, the permittee shall post conspicuous permanent and legible warnings. The permittee shall instruct all employees concerning the aforesaid hazards, first aid and emergency methods of meeting such hazards and shall make all necessary equipment and material accessible.
- ☒ 23. An operator certified in accordance with the Water and Wastewater Systems Operator Certification Act of February 21, 2002, 63 P.S. §§1001, *et seq.* shall operate the sewage treatment plant.
- ☒ 24. The permittee shall properly control any industrial waste discharged into its sewerage system by regulating the rate and quality of such discharge, requiring necessary pretreatment and excluding industrial waste, if necessary, to protect the integrity or operation of the permittee's sewerage system.
- ☒ 25. There shall be no physical connection between a public water supply system and a sewer or appurtenance to it which would permit the passage of any sewage or polluted water into the potable water supply. No water pipe shall pass through or come in contact with any part of a sewer manhole.
- ☒ 26. All connections to the approved sanitary sewers must be in accordance with the official Act 537 Plan and, if applicable, a corrective action plan as contained in the approved Title 25 Pa. Code Chapter 94 Municipal Wasteload Management Annual Report.
- ☒ 27. Collected screenings, slurries, sludge and other solids shall be handled and disposed of in compliance with Title 25 Pa. Code Chapters 271, 273, 275, 283 and 285 (related to permits and requirements for land filling, land application, incineration and storage of sewage sludge), Federal Regulations 40 CFR 257 and the Federal Clean Water Act and its amendments.



**WATER QUALITY MANAGEMENT
POST CONSTRUCTION CERTIFICATION**

PERMITTEE IDENTIFIER	
Permittee	City of Bethlehem
Municipality	Bethlehem City
County	Northampton
WQM Permit No.	<u>4818402 A-1</u>
Facility Type	Sewage
CERTIFICATION	
<p>This certification must be completed and returned to the permits section of the DEP's regional office issuing the WQM permit within 30 days of completion of the project and received by DEP prior to operation, and if requested, as-built drawings, photographs (if available) and a discussion of any DEP-approved deviations from the design plans during construction.</p>	
<p>I, being a Registered Professional Engineer in Pennsylvania, do hereby certify to the best of my knowledge and belief, based upon personal observation and interviews, that the above facility approved under the Water Quality Management Permit has been constructed in accordance with the plans, specifications and modifications approved by DEP.</p>	
Construction Completion Date (MM/DD/YYYY): _____	
	Professional Engineer
	Name _____ (Please Print or Type)
	Signature
	Date
	License Expiration Date
	Firm or Agency
	Telephone
	Permittee or Authorized Representative
	Name _____ (Please Print or Type)
	Signature
	Title
	Telephone

Appendix F

Notice of Violation Response



CITY OF BETHLEHEM

10 East Church Street, Bethlehem, Pennsylvania 18018-6025

Department of Water and Sewer Resources

www.bethlehem-pa.gov

Phone: 610-865-7207

Fax: 610-865-7331

December 20, 2021

VIA CERTIFIED MAIL

Mr. Christian S. Harding
Water Quality Specialist
Clean Water Program
PADEP – Northeast Regional Office
Bethlehem District Office
4530 Bath Pike
Bethlehem, PA 18017-9074

RE: Notice of Violation – December 6, 2021
City of Bethlehem WWTP
NPDES Permit No. PA0026042
City of Bethlehem, Northampton County

Dear Mr. Harding:

The City is in receipt of PADEP's Notice of Violation, dated December 6, 2021, for exceeding effluent parameter limitations set forth in NPDES Permit No. PA0026042. PADEP requested a response indicating the cause of the non-compliances as well as the steps that will be or have been taken in order to ensure future compliance.

The following is an accounting of the violations which, for the purpose of clarity and brevity, have been grouped together by common timeframes and causes and effects, followed by a discussion of planned corrective actions.

2018

September 2018 – Ammonia-Nitrogen

The cause of the exceedances was insufficient nitrification in the activated sludge system. The East Intermediate Clarifier was out-of-service due to extensive mechanical failures. Due to the reduction in clarifier surface area, the biosolids inventory in the activated sludge system had to be reduced to prevent biosolids washout, which resulted in a reduction in the nitrification rate. Plant operations (MLSS concentration, RAS/WAS rates, and digester feed rates) were adjusted based on the need to temporarily reduce the biosolids inventory, and bio-augmentation was started to minimize the reduction in nitrification rate. The East IC was placed back in-service on September 21 and a return to compliance occurred due to the ability to increase the biosolids inventory resulting in an increased nitrification rate.

2019

February 2019 – Ammonia-Nitrogen

The cause of the exceedance was insufficient nitrification in the activated sludge system. There was extreme cold weather minimizing the activity of the nitrifying organisms which reduced the rate of nitrification. Compounding the issue of reduced nitrification rate due to extreme cold temperatures, there was also additional ammonia loading from the centrate produced by the centrifuge dewatering operation. In response to these issues, plant operations (MLSS concentration, /WAS rates) were adjusted and bio-augmentation with psychrophilic (cold-resistant) microorganisms and nitrifying organisms were added to the aeration tanks. A return to compliance occurred in March.

2020

February 2020 – Ammonia-Nitrogen

March 2020 – Ammonia-Nitrogen

April 2020 – Ammonia-Nitrogen

May 2020 – Ammonia-Nitrogen

The cause of the exceedances was insufficient nitrification in the activated sludge system. Also, there was additional ammonia loading from the dewatering operation (centrate). On February 2, the West Intermediate Clarifier was taken out-of-service due to a catastrophic mechanical drive failure. Due to the reduction in clarifier surface area, the biosolids inventory in the activated sludge system had to be reduced to prevent biosolids washout, which resulted in a reduction in the nitrification rate. Plant operations (MLSS concentration, WAS/RAS rates, digester feed/centrifuge rates) were adjusted based on the need to reduce the biosolids inventory in the activated sludge system which increased the centrate produced by the dewatering operation. Bio-augmentation with nitrifying bacteria was started to help minimize the reduction in nitrification rate. The City ordered a new DBS drive unit (\$85,000) and paid an extra \$17,000 premium for an expedited delivery. The West IC was placed back in-service on May 8 and a return to compliance occurred due to the ability to increase the biosolids inventory resulting in an increase in the nitrification rate.

2021

May 2021 – Ammonia-Nitrogen

June 2021 – Ammonia-Nitrogen

The cause of the exceedance was insufficient nitrification in the activated sludge system during the transition from winter to summer operating modes. There was extended cold weather minimizing the activity of the nitrifying organisms which reduced the rate of nitrification. Compounding this issue as was additional ammonia loading from the dewatering operation (centrate) due to the backlog of solids. Plant operations (MLSS concentration, WAS/RAS rates, digester feed/centrifuge rates) were adjusted as the plant was transition into the summer operating mode.)

July 2021 – Ammonia-Nitrogen

August 2021 – Ammonia-Nitrogen

September 2021 – Ammonia-Nitrogen

October 2021 – Ammonia-Nitrogen

The cause of the exceedances was insufficient nitrification in the activated sludge system. There was additional ammonia loading from the dewatering operation (centrate) due to the backlog of solids. The West Intermediate Clarifier was taken out-of-service on July 27 for a major re-build/upgrade. Due to the reduction in clarifier surface area, the biosolids inventory in the activated sludge system had to be reduced to prevent biosolids washout, which resulted in a reduced nitrification rate. Compounding this problem, during this time period, there were several major wet-weather events from tropical storms resulting in extended CSO-related in-plant bypasses. In addition in August, there were 5 days of major electrical testing that required the WWTP to utilize temporary generators for power and required several daily plant shutdowns. All of these caused significant operational and nitrification issues. Plant operations (MLSS concentration, WAS/RAS rates, digester feed/centrifuge rates) were adjusted. Bioaugmentation with nitrifiers was added to help minimize the reduction in nitrification rate. The West IC Settling Tank Improvement Project was completed, and the West IC was placed back in-service on December 1 thus enabling an increase in the activated sludge system biosolids inventory and thereby an increase in nitrification rate.

August 2021 – Fecal Coliform

September 2, 2021 – Total Residual Chlorine

See the above paragraph for the causes of the exceedances. All of the above factors caused significant operational issues resulting in a significant increase in chlorine demand. The automated chlorination system and chlorine probe could not respond quickly enough due to these fluctuations.

Corrective Action Plan

Please note that the vast majority of the violations (17 out of 20) were caused by unforeseen mechanical failures of the Intermediate Clarifiers. These caused significant operational and nitrification issues as previously described. To address these failures, the West Intermediate Clarifier was taken out-of-service on July 27, 2021 for a major re-build/upgrade; the Settling Tank Improvement Project (\$1,250,000). It was placed back in-service on December 1, 2021.

In addition to the aforementioned short-term corrective actions that were taken to address each occurrence of non-compliance, the City is implementing the following corrective actions to ensure future compliance with the NPDES Permit:

- Bioaugmentation – During cold weather conditions, daily addition of Toler-X cold-resistant organisms to the activated sludge system with additional nitrifying organisms as needed.
- Activated Sludge System Monitoring – Hach process monitoring probes were installed throughout the aeration basin in 2018. These included three dissolved oxygen probes, two nitrate probes and one each ammonia, pH and ORP probes. In 2022, Total

Suspended Solids probes for improved RAS/WAS control will be installed. These instruments offer real-time monitoring and will allow for more timely and effective operational changes.

- An additional \$1,250,000 has been budgeted for 2022 for the same major re-build/upgrade for the East Intermediate Clarifier. We anticipate improved performance with the recently upgraded West Intermediate Clarifier during this forecasted outage to make the improvements and an overall improved solids removal process once both newly retrofitted intermediate clarifiers return to service.
- Chemically Enhanced Primary Treatment (CEPT) – AECOM, the City’s engineering consultant for wastewater treatment processes, completed a “Chemically Enhanced Primary Treatment Preliminary Design Memo” in December 2020. CEPT will be used to improve the performance of the Primary Clarifiers’ settling by adding a coagulant (Polyaluminum Chloride) and polymer to increase flocculation and enhance primary settling. The resultant reduction in BOD and TSS loading to the downstream biological process will enhance the nitrification stability of the plant and work in concert with the prior modification of the conventional aeration process to a Modified Ludzack-Ettinger (MLE) arrangement. This enhanced nitrification should help address the additional ammonia loading from the dewatering operation (centrate). In 2022, the City has budgeted \$1,200,000 for completion of final CEPT design and construction. An estimated timeline for installation of the CEPT system is as follows:
 - 60% Design – December 2021
 - Part II WQM Permit Application Submission – February 2022
 - Final Design – March 2022
 - Construction Bid Award – July 2022
 - Start Construction – August 2022
 - End Construction – March 2023
- Aeration Demand and MLE Evaluation – AECOM, the City’s engineering consultant, completed an “Aeration Demand and MLE Evaluation Design Memo” in January 2021. The memo identified potential upgrades to the aeration basin to improve nitrification. The aeration basin oxygen demand was determined and the use of submerged diffusers (e.g. fine bubble) was evaluated to develop an optimum MLE configuration. An additional \$100,000 has been budgeted for 2022 for the continued study and preliminary design with modifications to be determined following implementation of the CEPT project. The combination of CEPT and the upgraded MLE configuration, in lieu of centrate side-stream treatment, is the recommended solution to address nitrification issues due to the additional ammonia loading from the dewatering operation.

For reference, enclosed are copies of the notification letters from the City that indicated the cause of each non-compliance as well as the steps taken to address each. These were previously submitted to PADEP at the time of each occurrence.

Please do not hesitate to contact me at 610-865-7207 should you have any questions or comments.

Sincerely,

A handwritten signature in black ink, reading "Edward J. Boscola", enclosed in a thin black rectangular border.

Edward J. Boscola, PE
Director - Water and Sewer Resources
City of Bethlehem

Cc: P. Musinski, PADEP
T. Bradley, Kleinfelder
C. Curran, AECOM
J. Lawrence
File

Appendix G

City of Bethlehem WWTP Capacity Analysis Current vs. CEPT

City of Bethlehem WWTP Capacity Analysis Utilizing Chemically Enhanced Primary Treatment

Prepared for:

City of Bethlehem, PA

Prepared by:

AECOM
1700 Market Street
Philadelphia, PA 19103
aecom.com

April 2023

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APPENDICES

APPENDIX A – MODEL CONFIGURATION WITH CEPT

1. Introduction

1.1 Background

The City of Bethlehem (City) Wastewater Treatment Plant (WWTP) has a permitted hydraulic capacity of 20 million-gallons-per-day (mgd) and an organic design capacity of 39,365 lbs/day of BOD₅. The City has had concerns that increases in influent organic concentrations have made the organic loading the limiting factor at the plant, effectively capping the allowable flow to the facility below the permitted capacity of 20 mgd. As part of a phased plan to restore plant capacity, AECOM recommended Chemically Enhanced Primary Treatment (CEPT) as an interim Phase 1 process improvement.

CEPT, is a rather simple approach that is used to improve the performance of primary settling, both in terms of BOD and TSS removal. CEPT adds a coagulant, such as alum, ferric chloride (ferric) or polyaluminum chloride (PAC), and a small amount of polymer to increase flocculation and make the settling process faster and more efficient than conventional primary settling. This approach can reduce both TSS and BOD₅ load into the activated sludge process. This improved primary effluent quality is also beneficial during wet weather operational mode at the WWTP when primary effluent is diverted around the activated sludge process to prevent a hydraulic overload.

It should be noted that the City is in the process of implementing CEPT to address ammonia violations. As of the writing of this report a Part II Permit has been issued and construction is underway with substantial completion expected by January 2024.

Need for CEPT

CEPT will improve the City's wet weather treatment strategy. The addition of CEPT would enhance primary settling during wet weather and improve the quality of the primary effluent sent directly to final clarification and disinfection.

An additional benefit of improving primary solids removal efficiency is that this will allow the plant to accept higher influent BOD than the current design basis of 39,365 lbs/d while maintaining the loading to the secondary process within its capacity. Reducing organic and solids loading to the secondary process decreases waste activated sludge (WAS) production and increases solids residence time (SRT) at similar Mixed Liquor Suspended Solids (MLSS) levels which would improve nitrification stability. The WWTP has struggled with ammonia compliance during cold weather periods and CEPT is one of several methods recommended by AECOM to improve nitrification throughout the year.

2. Loading Sensitivity Analysis

2.1 Sensitivity Analysis Basis

To project the anticipated capacity improvements that CEPT provides, a series of sensitivity analyses were performed to project the response of the plant to increases in organic loading utilizing CEPT to project anticipated performance once the CEPT system comes on-line.

During the development of a previous Technical Memorandum¹, a Biowin model was developed and tuned to evaluate several process options. This modeling used as a baseline plant data from the period of July 2019 through June 2020. Because plant data from 2021 and 2022, particularly as it pertains to aeration influent characteristics, is considered atypical due to construction related activities, the previous data set was expanded to include all of 2019 and 2020. A comparison of the previous (7/19-6/20) data set to the expanded data set (1/19-12/20) revealed very close (+/- 10%) agreement. As a result, the previously tuned model was used for this analysis.

Table – 1: Comparison of Data Used for Model Tuning vs Expanded Data Set

Parameter	7/1/19 – 6/30/20	1/1/19 – 12/31/20	% Difference
Flow, mgd	10.8	11.7	8%
Influent cBOD Loading, lbs/d	26,750	28,310	6%
Concentration, mg/l	297	290	-2%
Influent TSS Loading, lbs/d	26,135	27,590	6%
Concentration, mg/l	293	283	-4%
Influent NH ₃ -N Loading, lbs/d	2,460	2,400	-3%
Concentration, mg/l	27.3	24.6	-10%

Several process parameters were varied to accomplish this analysis. The plant has historically run at a MLSS value of approximately 2,000 mg/l, which corresponds to an SRT of approximately 5.4 days. For some of the configurations, it was necessary to raise MLSS levels to as high as 2,800 mg/l to achieve the same SRT and/or achieve stable nitrification, but in no cases were simulations above 2,800 mg/l considered successful.

¹ "City of Bethlehem WWTP Aeration Demand and MLE Evaluation Design Evaluation Memo", AECOM, 2021

For all the simulations, RAS and internal recycle (IR) rates were held at current full-scale levels. In terms of anoxic zone allocation, the first half of the first tank was assumed to be under anoxic conditions.

In comparison to the BOD and TSS removal rates historically seen in primary treatment at the WWTP (35 and 55 percent respectively), the BOD and TSS removal rates were increased to at 45 and 75 percent, respectively, to reflect operation with the addition of CEPT. These were conservatively “rounded down” from the 50% and 80% removals seen during the 2020 CEPT bench testing.

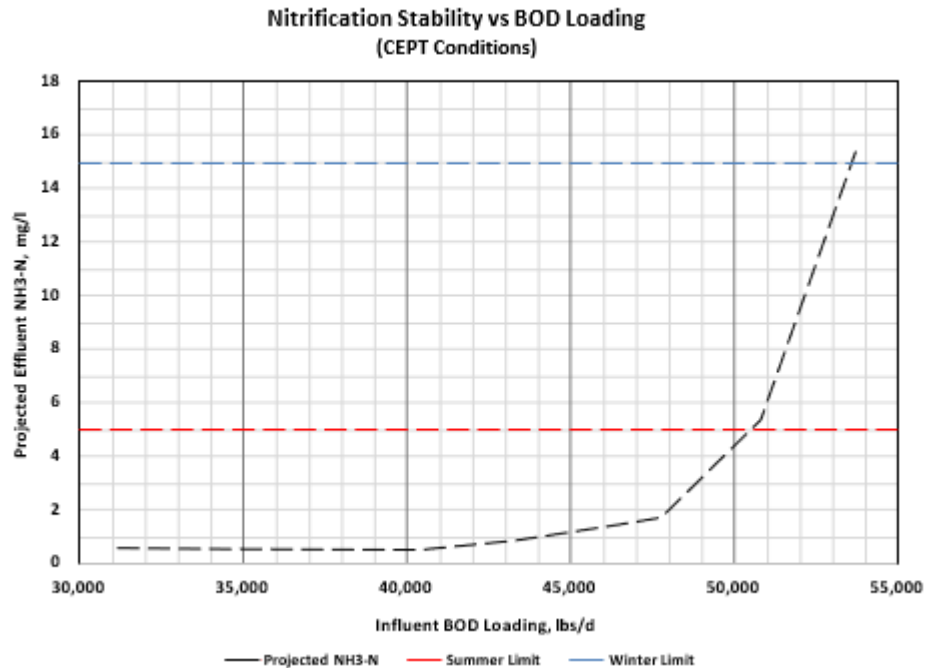
Because stable nitrification was used as the measure of the ability of the WWTP to absorb additional loading, all models were run at an assumed wastewater temperature of 12°C, which is considered a conservative condition to simulate nitrification stability.

2.2 Sensitivity Analysis Results

Over the past five calendar years, BOD loadings at the WWTP have averaged approximately 33,500 lbs/d. Because the previously tuned Biowin model used a baseline of approximately 31,200 lbs/d, this was used as the starting point for the sensitivity analyses. BOD loadings were increased incrementally and the impact on final effluent ammonia (NH₃-N) concentrations was studied. All other constituent influent loadings (i.e. – TKN, TP, TSS, VSS, etc.) were increased proportionally with the BOD.

The results are shown below in Figure – 1. The response curve is what is typically seen in these types of sensitivity analyses, with little to no impact to effluent quality initially, then a slight rise, and then a breaking point where effluent NH₃-N level increase dramatically in response to load increases. This is illustrative of the increase in load impacting solids wasting, and in turn impacting solids retention time (SRT) to the point where nitrifying organisms are being removed from the system faster than they are being replaced by growth. Bearing in mind that the modeling was done at winter temperature conditions, the summer effluent limit is not exceeded until approximately 50,000 lbs/d. While the winter limit is not exceeded until approximately 53,000 lbs/d, AECOM would recommend that anything above 50,000 lbs/d represents a region of instability that should be avoided. This assumes the primary clarifiers are working as designed and that there are no solids upsets resulting in elevated recycle loads.

Figure – 1



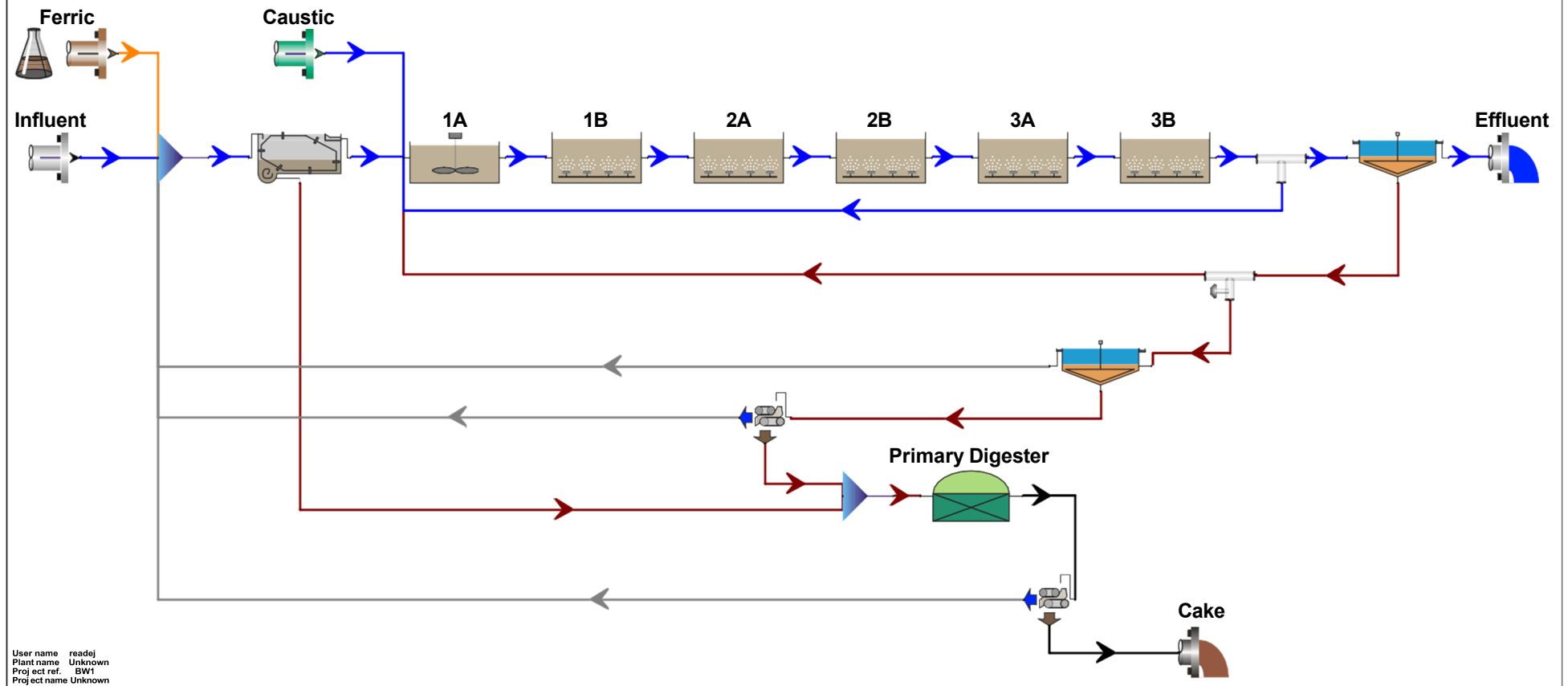
2.3 Discussion of Results/Conclusion

The results of the analysis support the conclusion that implementing CEPT at the Bethlehem WWTP increases the allowable influent BOD loading to 50,000 lbs/d by removing more BOD in Primary Treatment before it gets to the biological process.

This analysis focused on the impacts of implementing CEPT on the ability of the biological process to respond to increases in influent BOD loading. It has been shown that by improving the BOD removal in the upstream primary treatment process through the utilization of CEPT, additional influent BOD can be received without overloading the secondary treatment biology.

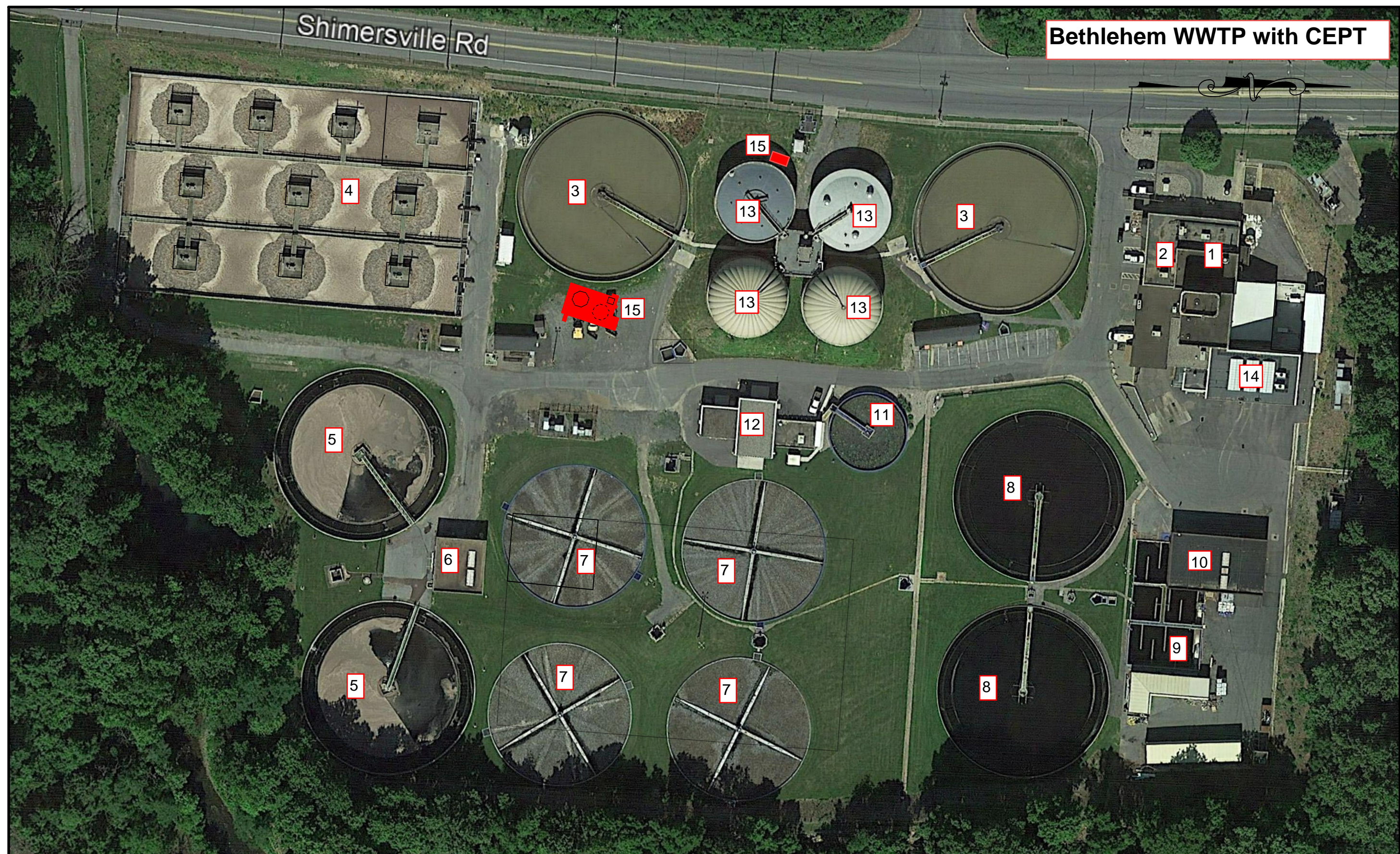
APPENDIX A

MODEL CONFIGURATION WITH CEPT



Appendix H

Aerial Photograph of Existing WWTP with CEPT System



- | | | | | |
|---------------------------|------------------------------|----------------------|--------------------------|---------------------------|
| 1 Screening, Grit Removal | 2 Raw Sewage Pump Station | 3 Primary Clarifiers | 4 Aeration Tanks | 5 Intermediate Clarifiers |
| 6 Pump Station No.1 | 7 Trickling Filters | 8 Final Clarifiers | 9 Chlorine Contact Tanks | 10 Effluent Pump Station |
| 11 Sludge Thickener | 12 Sludge Thickener Building | 13 Digesters | 14 Dewatering Building | 15 CEPT System |