
EXHIBIT E1

2018 CHAPTER 94 REPORT TO DEP
FOR EASTERN SERVICE AREA



CHAPTER 94 MUNICIPAL WASTELOAD MANAGEMENT ANNUAL REPORT

For Calendar Year: 2018

- ☐ Permittee is owner and/or operator of a POTW or other sewage treatment facility
- ☒ Permittee is owner and/or operator of a collection system tributary to a POTW not owned/operated by permittee

GENERAL INFORMATION

Permittee Name:	DELCORA	Permit No.:	PA
Mailing Address:	P.O. Box 999	Effective Date:	
City, State, Zip:	Chester, PA 19016-0999	Expiration Date:	
Contact Person:	Charles Hurst, P.E.	Renewal Due Date:	
Title:	Director of Engineering	Municipality:	Chester City
Phone:	610-876-5523 X 297	County:	Delaware
Email:	hurstc@delcora.org	Consultant Name:	Roger W. Lehman, P.E.

CHAPTER 94 REPORT COMPONENTS

1. Attach to this report a line graph depicting the monthly average flows (expressed in MGD) for each month for the past 5 years and projecting the flows for the next 5 years. The graph must also include a line depicting the hydraulic design capacity per the WQM permit. (25 Pa. Code § 94.12(a)(1))

Check the appropriate boxes:

- ☒ Line graph for flows attached (**Attached Report, Appendix B**)
- ☐ DEP Chapter 94 Spreadsheet used (**Attachment**)
- ☒ Section 1 is not applicable (report is for a collection system).

2. Attach to this report a line graph depicting the monthly average organic loads (express as lbs BOD5/day) for each month for the past 5 years and projecting the organic loads for the next 5 years. The graph must also include a line depicting the organic design capacity of the treatment plant per the WQM permit. (25 Pa. Code § 94.12(a)(2))

Check the appropriate boxes:

- ☒ Line graph for organic loads attached (**Attached Report, Appendix B**)
- ☐ DEP Chapter 94 Spreadsheet used (**Attachment**)
- ☒ Section 2 is not applicable (report is for a collection system).

3. If the DEP Chapter 94 Spreadsheet was not used to determine projections, discuss the basis for the hydraulic and organic projections. In all cases, include a description of the time needed to expand the plant to meet the load projections, if necessary, and data used to support the projections should be included in an appendix to this report. (25 Pa. Code § 94.12(a)(3))

Projections are based on metered data over previous 5 years plus growth based on the average number of EDUs submitted for planning module approval over the last three years. See Attached Report, Appendix B for projections.

4. Attach a map showing all sewer extensions constructed within the past calendar year, sewer extensions approved or exempted in the past year in accordance with Act 537 and Chapter 71, but not yet constructed, and all known proposed projects which require public sewers but are in the preliminary planning stages. The map must be accompanied by a list summarizing each extension or project and the population to be served by the extension or project. If a sewer extension approval or proposed project includes schedules describing how the project will be completed over time, the listing should include that information and the effect this build-out-rate will have on populations served. (25 Pa. Code § 94.12(a)(4))

Check the appropriate boxes:

- ☐ Map showing sewer extensions constructed, approved/exempted but not yet constructed, and proposed projects attached (**Attachment**)
- ☒ List summarizing each extension or project attached (**N/A, no planned extensions**)
- ☐ Schedules describing how each project will be completed over time and effects attached (**Attachment**)

Comments:

A table of approved Sewer Planning Modules for 2018 is provided in Attached Report, Appendix C.

5. Discuss the permittee's program for sewer system monitoring, maintenance, repair and rehabilitation, including routine and special activities, personnel and equipment used, sampling frequency, quality assurance, data analyses, infiltration/inflow monitoring, and, where applicable, maintenance and control of combined sewer regulators during the past year. Attach a separate sheet if necessary. (25 Pa. Code § 94.12(a)(5))

DELCORA meters flow using 113 flow meters throughout 22 Eastern Delaware County municipalities. Summary data at each pump station is included in Attached Report, Appendix B5. DELCORA performs I&I education and abatement programs described in the Attached Report, Section IV Program for Sanitary Sewer Monitoring. DELCORA has its own electrical, mechanical, and sewer maintenance crews, as well as a sewer contractor on retainer to perform emergency sewer repairs where the scope of repairs is too large for DELCORA's work force. Upgrades to the bar screens were completed in 2018. Routine maintenance was performed on the pump stations and force main.

6. Discuss the condition of the sewer system including portions of the system where conveyance capacity is being exceeded or will be exceeded in the next 5 years and portions where rehabilitation or cleaning is needed or is underway to maintain the integrity of the system and prevent or eliminate bypassing, CSOs, SSOs, excessive infiltration and other system problems. Attach a separate sheet if necessary. (25 Pa. Code § 94.12(a)(6))

Check the appropriate boxes:

- ☒ System experienced capacity-related bypassing, SSOs or surcharging during the report year. On a separate sheet, list the date, location, and reason for each bypass, SSO or surcharge event.
- ☐ System did not experience capacity-related bypassing, SSOs or surcharging during the report year.

Comments:

The Sanitary Sewer Overflow Report for 2018 is included in Attached Report, Appendix B4. There were eight occurrences of sanitary sewer overflows. Three (3) SSOs occurred in 2018 at the CDPS due to heavy rain (1/12, 4/16, 11/24) and two (2) overflows were caused by equipment failure. Two (2) SSOs occurred in 2018 at the MPS due to heavy rain (11/25, 12/28) and a power failure at MPS caused the PLC which operates the station resulted in an SSO on 3/2.

7. Attach a discussion on the condition of sewage pumping (pump) stations. Include a comparison of the maximum pumping rate with present maximum flows and the projected 2-year maximum flows for each station. (25 Pa. Code § 94.12(a)(7))

Check the appropriate boxes:

- ☐ The collection system does not contain pump stations
☒ The collection system does contain pump stations (Number – **3 owned by DELCORA, 1 contract operated**)
☒ Discussion of condition of each pump station attached (**Attached Report, Section V and Appendix B5**)

8. If the sewage collection system receives industrial wastes (i.e., non-sanitary wastes), attach a report with the information listed below. (25 Pa. Code § 94.12(a)(8))

- a. A copy of any ordinance or regulation governing industrial waste discharges to the sewer system or a copy of amendments adopted since the initial submission of the ordinance or regulation under Chapter 94, if it has not previously been submitted.
- b. A discussion of the permittee's or municipality's program for surveillance and monitoring of industrial waste discharges into the sewer system during the past year.
- c. A discussion of specific problems in the sewer system or at the plant, known or suspected to be caused by industrial waste discharges and a summary of the steps being taken to alleviate or eliminate the problems. The discussion shall include a list of industries known to be discharging wastes which create problems in the plant or in the sewer system and action taken to eliminate the problem or prevent its recurrence. The report may describe pollution prevention techniques in the summary of steps taken to alleviate current problems caused by industrial waste dischargers and in actions taken to eliminate or prevent potential or recurring problems caused by industrial waste dischargers.

Check the appropriate boxes:

- ☒ Industrial waste report as described in 8 a., b. and c. attached (**Attached Report, Appendix D**)
☒ Industrial pretreatment report as required in an NPDES permit attached (**Attached Report, Appendix D**)

9. Existing or Projected Overload.

Check the appropriate boxes:

- ☐ This report demonstrates an existing hydraulic overload condition.
☐ This report demonstrates a projected hydraulic overload condition.
☐ This report demonstrates an existing organic overload condition.
☐ This report demonstrates a projected organic overload condition.

If one or more boxes above have been checked, attach a Corrective Action Plan (CAP) to reduce or eliminate present or projected overloaded conditions under §§ 94.21 and/or 94.22 (relating to existing overload and projected overload). (25 Pa. Code § 94.12(a)(9))

- ☐ Corrective Action Plan attached (**Attachment**)

10. Where required by the NPDES permit, attach a Sewage Sludge Management inventory that demonstrates a mass balance of solids coming in and leaving the facility over the previous calendar year.

- ☐ Sewage Sludge Management Inventory attached (**Attachment**)

11. For facilities with CSOs and where required by the NPDES permit, attach an Annual CSO Report (including satellite combined sewer systems).

☐ Annual CSO Report attached (**Attachment**)

12. For POTWs, attach a calibration report documenting that flow measuring, indicating and recording equipment has been calibrated annually. (25 Pa. Code § 94.13(b))

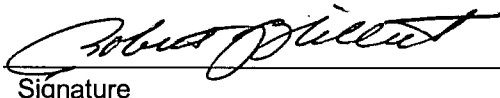
☒ Flow calibration report attached (**Attached Report Appendix B2 (on disc)**)

RESPONSIBLE OFFICIAL CERTIFICATION

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 gathered and evaluated 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 knowledge of violations. See 18 Pa. C.S. § 4904 (relating to unsworn falsification).

Robert J. Willert

Name of Responsible Official


Signature

610-876-5523 x110

Telephone No.

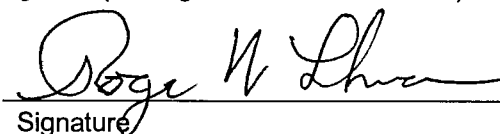
Date

PREPARER CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared by me or otherwise under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. 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 knowledge of violations. See 18 Pa. C.S. § 4904 (relating to unsworn falsification).

Roger W. Lehman, P.E.

Name of Preparer


Signature

610-701-3708

Telephone No.

12 March 2019

Date

**CHAPTER 94
MUNICIPAL WASTELOAD MANAGEMENT
2018 ANNUAL REPORT**

**Delaware County Regional Water Quality Control Authority
Tributary Report for the Eastern Service Area
Delaware County**

Prepared by:

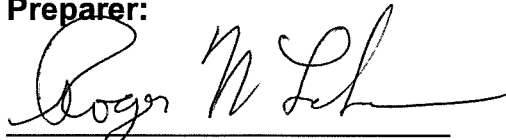
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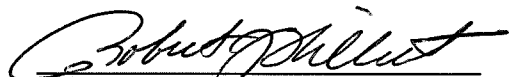
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Preparer:



Roger W. Lehman, P.E.
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Permittee:



Robert J. Willert
Executive Director
DELCORA

TABLE OF CONTENTS

I. INTRODUCTION/BACKGROUND.....	3
A. Eastern Service Area.....	3
II. HYDRAULIC AND ORGANIC LOADINGS	5
A. Hydraulic Performance and Projections	5
III. SEWER SYSTEM EXTENSIONS	5
IV. PROGRAM FOR SANITARY SEWER MONITORING.....	5
A. Monitoring	5
B. Sewer Maintenance and Repairs	7
C. Improvements	8
V. CONDITION OF THE SEWER SYSTEM AND SEWAGE PUMPING STATIONS	8
VI. PRETREATMENT PROGRAM / INDUSTRIAL WASTES	8
VII. CORRECTIVE ACTION PLAN	8
VIII. CALIBRATION REPORTS	9
IX. TRIBUTARY MUNICIPALITY REPORTS	9

APPENDICES

APPENDIX A - Conveyance System & Maps

APPENDIX B - 1) Flow Data & Projections
 2) Flow Meter Calibrations
 Pump Stations
 CSL Flow Meters
 3) City Billing Data
 4) Sanitary Sewer Overflow Report
 5) Pump Station Analyses

APPENDIX C - Sewer Planning Modules

APPENDIX D - 1) Industrial Pretreatment Program Report
 2) Resolution No. 2011-04

APPENDIX E - Eastern Service Area Chapter 94 Reports of the Tributary Authorities and Municipalities

LIST OF TABLES

Table 1 Eastern Service Area Pump Stations	3
Table 2 Recorded Average Loadings for 2018	7

LIST OF FIGURES

Figure 1 Delaware County Sewage Facilities Served by DELCORA.....	4
Figure 2 DELCORA's Conveyance System.....	6

**DELCORA
2018 ANNUAL REPORT FOR THE
EASTERN SERVICE AREA**

I. INTRODUCTION/BACKGROUND

The Delaware County Regional Water Quality Control Authority (DELCORA) is responsible for the safe collection, transmission, treatment and disposal of approximately 65 million gallons per day (MGD) of wastewater generated in southeastern Pennsylvania. Figure 1 shows the sewerage facilities in Delaware County served by DELCORA and the split between the Eastern and Western Service Areas. DELCORA's facilities serve over 100,000 residential, commercial, institutional, and industrial customers in Delaware and Chester County. DELCORA owns and operates an extensive system of pump stations, force mains, interceptors, and gravity sewers that provide the core infrastructure for the transmission of wastewater to treatment facilities in Delaware County and the City of Philadelphia. To support this service area, DELCORA owns and operates over 155 miles of gravity sewers and over 17 miles of large-diameter (>24-inch) force mains. Historically, DELCORA has characterized its service areas as "Eastern" and "Western." The Western Service Area discharges to the Western Regional Treatment Plant (WRTP). The Eastern Service Area discharges to the Philadelphia Southwest Water Pollution Control Plant (SWWPCP) and the WRTP. Separate wasteload management reports were prepared by DELCORA for the Western Service Area and the Rose Valley Service Area.

A. Eastern Service Area

In the Eastern Service Area, DELCORA owns and operates three (3) major pumping stations that transport wastewater to the City of Philadelphia SWWPCP and the WRTP. The pump stations include those listed in Table 1.

**Table 1
Eastern Service Area Pump Stations**

Pump Station	Design Capacity (MGD)
Central Delaware Pump Station (CDPS)	40
Muckinipates Pump Station (MPS)	24
Darby Creek Pump Station (DCPS)	60

Local townships and boroughs transport wastewater to three conveyance authorities, namely, the Central Delaware County Authority, the Muckinipates Authority, and the Darby Creek Joint Authority. (Appendix E contains the tributary reports of the Authorities that discharge to the DELCORA pump stations.) These conveyance authorities own and operate the interceptors that convey wastewater to DELCORA's pump stations. Appendix A contains a graphical representation of the eastern conveyance systems.

The DELCORA owned force main system pumps to SWWPCP and the W RTP for treatment. Figure 2 shows a schematic of the DELCORA conveyance system and the connection to the treatment facilities. The flow from the Central Delaware Pump Station (CDPS) is being diverted to DELCORA's Western Regional Treatment Plant in Chester. Flow is diverted back to SWWPCP a minimum one day per week for 90 minutes to flush the force main. Storm flows in excess of 20 MGD are diverted to SWWPCP.

II. HYDRAULIC AND ORGANIC LOADINGS

A. Hydraulic Performance and Projections

Appendix B provides the monthly five year flow history of the eastern pump stations and 2019 – 2023 projections. The five year (2014 – 2018 DELCORA data) average transported to Philadelphia for treatment is 23.0 MGD. However, peak flows have exceeded these levels, due to the effects of inflow and infiltration (I/I). Efforts are underway to address I/I through implementation of the recommendations of the Eastern Delaware County Act 537 Plan. The plan was adopted by the affected municipalities. The adoption process was completed in FY 2002. As part of the plan's recommendations, DELCORA organized the purchase of manhole inserts. Twenty-three municipalities and authorities participated in purchasing 3,700 inserts.

The Delaware County Planning Department (DCPD) and DELCORA, with its consultant, Weston Solutions, Inc., worked with the eastern municipalities and conveyance authorities to update the Act 537 Plan, considering the requirements of the City of Philadelphia Long Term Control Plan. The PADEP approval of the Act 537 Plan is still pending contingent upon adoption of I&I abatement or control measures such as Time of Sale inspection and upgrade and roof drain/sump pump disconnect ordinances. Seven contributing municipalities have adopted measures to address lateral I&I including Upland, Brookhaven, and Rose Valley Boroughs and Chester, Concord, Darby, and Nether Providence Townships.

III. SEWER SYSTEM EXTENSIONS

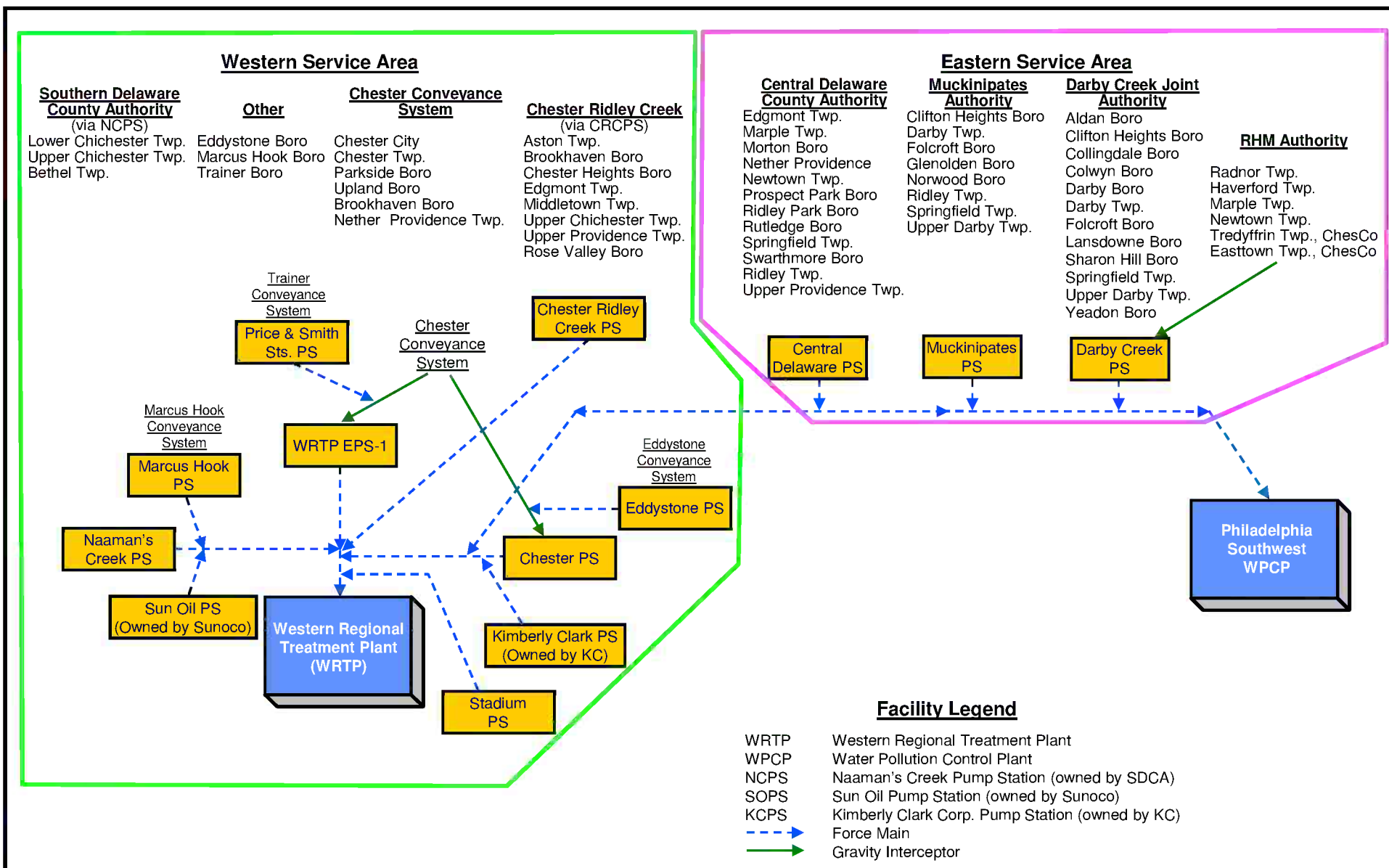
There were no extensions to the DELCORA force main system. Appendix C provides a listing of the planning modules approved by DELCORA in fiscal year 2018. Development is primarily in-fill in the older suburbs.

There are no areas that need extension of the DELCORA force main system.

IV. PROGRAM FOR SANITARY SEWER MONITORING

A. Monitoring

In August of 2006, DELCORA initiated its Eastern Delaware County Metering Program. The program installed 113 flow meters throughout 22 Eastern Delaware County Municipalities. The system is continuing to be maintained and flow information is available to all Municipalities.



The goals of the metering program are:

- To develop a system for accurate wastewater billing based on actual flow data so that municipalities will pay for what they actually discharge.
- To conform with existing and potential future regulations to eliminate sanitary sewer overflows (SSOs).
- To assess inordinately high wet weather flows due to I & I.
- To improve the effective use of scarce financial resources by providing better targeting of I & I elimination expenditures.

Flow based billing was phased to replace EDU count based apportionment with billing being entirely based on metered flow beginning in 2012. Upper Darby Township has “piggy-backed” on to the program and has started metering the flows entering the Cobbs Creek Interceptor.

In 2014, DELCORA finalized the Act 537 Plan and submitted it to PADEP for review/comment/approval. The plan reviewed treatment alternatives and focused on the reduction of inflow and infiltration in the eastern service area, with the recommendation that the municipalities adopt a time of sale lateral inspection ordinance. On 30 May 2018, DELCORA formally requested to withdraw the plan since DELCORA is working on updating the Long Term Control Plan for the Chester CSO system which will likely change how sanitary wastewater is treated in the Eastern Service Area.

The City of Philadelphia monitors loadings from DELCORA (see the City Billing Data in Appendix B3). The average loadings recorded in 2018 are presented in Table 2.

Table 2
Recorded Average Loadings for 2018

	Average BOD (mg/L)	Average TSS (mg/L)	Quarterly Flow (MG)
January 1 to March 31	164.12	188.66	2,239.0
April 1 to June 30	154.94	189.87	2,254.9
July 1 to September 30	138.47	176.80	2,088.8
October 1 to December 31	119.22	140.66	2,815.1

B. Sewer Maintenance and Repairs

DELCORA maintains facilities in its Eastern and Western Service Areas. The primary focus in the Eastern Service Area is maintenance of the pump stations, force mains, and force main air release valves. DELCORA has its own electrical, mechanical, and sewer maintenance crews. DELCORA also retains a sewer contractor, A.J. Jurich, Inc. to perform emergency sewer repairs where the scope of repairs would be too large for DELCORA’s work force.

C. Improvements

Upgrades to the bar screens were completed in 2018 at the three Eastern Service Area pump stations owned by DELCORA.

V. CONDITION OF THE SEWER SYSTEM AND SEWAGE PUMPING STATIONS

DELCORA does not maintain the gravity collection system in the Eastern Service Area. DELCORA owns and operates the three major pumping stations, CDPS, MPS, and DCPS, and its associated PCCP force mains. The force main system was constructed in the early 1970's along with the stations. The force main section at ARV #13, between the MPS and CDPS, was deteriorating and several repairs have been made. In 2012, an approximately 300 ft. section of PCCP force main was replaced, at the high point of the line, on now the property of the Tinicum Wildlife Refuge, adjacent to the Henderson Group's Industrial Commercial Complex in Folcroft. Construction was complicated by the USEPA declaring the Folcroft Landfill as a Superfund site. The force main, in this area, is located in the Superfund site, as the boundaries of the landfill were extended over the years. Excavations (during repair activities) have uncovered drum nests, roof shingles, medical waste, and trash. In January 2014, DELCORA conducted nondestructive testing of the 66-inch PCCP force main near ARV #16 (84th Street and Lindbergh Boulevard). This site was selected since it is the high point of the 66-inch force main. The testing showed little or no deterioration of the force main.

Appendix B provides a list of sanitary sewer overflows (SSOs) and provides information on causes. Three (3) SSOs occurred in 2018 at the CDPS due to heavy rain (1/12, 4/16, 11/24) and two (2) overflows were caused by equipment failure. Two (2) SSOs occurred in 2018 at the MPS due to heavy rain (11/25, 12/28) and a power failure at MPS caused the PLC which operates the station resulted in an SSO on 3/2.

Flow data and projections for the pumping stations are contained in Appendix B. The stations have been upgraded since construction in the 1970's. Electrical and mechanical maintenance is performed by DELCORA staff.

Pump Station flow meter analysis is also contained in Appendix B.

VI. PRETREATMENT PROGRAM / INDUSTRIAL WASTES

Appendix D contains the Annual Pretreatment Report for the Eastern Service Area. DELCORA's current Rules and Regulations (Resolution No. 2011-04 as amended) are also in Appendix D. DELCORA performs monitoring of the industrial users as noted in Part A, Section II of the report. "Validation monitoring" is the monitoring performed by DELCORA staff at the industrial user's facility. Eaton Aerospace LLC, First Time US Generics, Hydrol Chemical Company, and Precious Metals Plating Company had no sewer discharges. There are no users causing specific problems at the Philadelphia SWWPCP or in the DELCORA force main system.

VII. CORRECTIVE ACTION PLAN

DELCORA is not subject to a corrective action plan. There are no hydraulic or organic loading issues in the force main system.

VIII. CALIBRATION REPORTS

The flow meter calibration reports for the DELCORA pump stations are contained on the disk in Appendix B.

IX. TRIBUTARY MUNICIPALITY REPORTS

Appendix E contains the Chapter 94 reports received from other municipalities/authorities in the Eastern Service Area. The reports are organized by conveyance authority.