March 31, 2015

Timothy K. Wagner, Environmental Group Manager
PA DEP Clean Water Program
Bureau of Point and Non-Point Source Management
Southcentral Regional Office
909 Elmerton Avenue
Harrisburg, PA 17110-8200

Fairview Township North WWTP
Fairview Township, York County
2014 Annual Wasteload Management Report

Dear Mr. Wagner:

Enclosed please find two (2) copies of the Fairview Township North WWTP Municipal Wasteload Management Report for calendar year 2014.

Please do not hesitate to contact the Township or GHD if you have any questions or require additional information.

Sincerely,
GHD

Judy F. Musselman, BCES QEP
Senior Environmental Scientist

Enclosures

c: Stephen F. Smith, Township Manager

GHD
1240 North Mountain Road Harrisburg PA 17112 USA
T 1 717 541 0622 F 1 717 541 8004 E harrisburg@ghd.com W www.ghd.com

Fairview Township

North Wastewater Treatment Plant

NPDES Permit No. PA0081868

York County, Pennsylvania

2014 Annual Wasteload Management Report

March 2015

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pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

CHAPTER 94 MUNICIPAL WASTELOAD MANAGEMENT ANNUAL REPORT

For Calendar Year: 2014

☒ 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:	**Fairview Township North WWTP**	Permit No.:	**PA0081868 A-2**
Mailing Address:	**599 Lewisberry Road**	Effective Date:	**September 1, 2012**
City, State, Zip:	**New Cumberland, PA 17070**	Expiration Date:	**June 30, 2013**
Contact Person:	**Stephen Smith**	Renewal Due Date:	**December 31, 2012**
Title:	**Manager**	Municipality:	**Fairview Township**
Phone:	**717-901-5200**	County:	**York**
Email:	**steve@twp.fairview.pa.us**	Consultant Name:	**Judy Musselman, GHD**

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 (**Figures 1 & 3**)
   ☐ 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 (**Figures 2 & 4**)
   ☐ 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 based on developer and Township agreements for future growth.

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 2**)

   ☐ List summarizing each extension or project attached (**Attachment**)

   ☐ Schedules describing how each project will be completed over time and effects attached (**Attachment**)

   Comments:

   See report narrative.

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))

   See report narrative.

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:

   See report narrative.

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 – **4**) **See report narrative.**
   ☐ Discussion of condition of each pump station attached (**Attachment**)

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)) **Not Applicable**

   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 (**Attachment**)
   ☐ Industrial pretreatment report as required in an NPDES permit attached (**Attachment**)

9. Existing or Projected Overload. **Not Applicable**

   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 (**Exhibit D**)

11. For facilities with CSOs and where required by the NPDES permit, attach an Annual CSO Report (including satellite combined sewer systems). **Not Applicable**

☐ 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 (**Attachment 1**)

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).

Stephen F. Smith	
Name of Responsible Official	Signature
717-901-5200	3/31/2015
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).

Judy F. Musselman	
Name of Preparer	Signature
717-585-6359	3/31/15
Telephone No.	Date

Municipal Wasteload Management Report

1.0 Introduction

Fairview Township owns and operates the wastewater treatment and conveyance system that serves the northern drainage area of Fairview Township, York County, Pennsylvania. The North wastewater treatment plant (WWTP) was constructed in 1965 and upgraded in 1992, and again in 2013. Improvements to the wastewater treatment plant constructed in 2013 consisted of new headworks building, screening and replacement of chlorine disinfection with UV disinfection.

Treatment unit processes consist of preliminary screening, extended aeration activated sludge, final clarification and ultraviolet disinfection. The treated and disinfected wastewater is discharged to the Susquehanna River in State Watershed 7-E.

Liquid sludge is transported to the Fairview Township South WWTP and blended in an aerobic digester/storage tank, then dewatered for ultimate disposal at the Modern Landfill in Lower Windsor and Windsor Townships, York County under DEP Permit No. 100113. During 2014, approximately 367,000 gallons of liquid sludge at an average % Total Solids content of 3.65% from the Fairview Township North WWTP was transported to the Fairview Township South WWTP for dewatering and offsite disposal.

The North wastewater treatment plant, which operates under DEP National Pollutant Discharge Elimination System (NPDES) Permit No. PA0081868, has the permitted and designed average wastewater flow and average organic loading capacities of 0.726 MGD (monthly average flow), 1.206 MGD (maximum monthly flow), and 1,740 pounds BOD_5 per day, respectively. ***Exhibits A*** and ***B*** provide flow and BOD data based on treatment plant operating records. The Fairview Township North WWTP maintains an agreement with Red Barn Trading Company for the purchase of 20,000 Lbs Total Nitrogen (TN) credits per year for 15 years (2010-2024) to comply with the Chesapeake Bay requirements contained in the NPDES permit. Please refer to Section 11.0 for further discussion of the nutrient credits.

The collection and conveyance system includes interceptor and sewer mains ranging from 8 to 12 inches in diameter and four (4) pump stations. A more detailed description of the pump stations is found in section 8.0 of this report.

2.0 Hydraulic Loadings

The average daily hydraulic loadings to the Fairview Township North WWTP for each month during 2010 through 2014 are plotted and shown in ***Figure 1***. The flow data indicate that the permitted maximum monthly flow of 1.206 MGD was not exceeded at any time during the past five (5) years.

The five-year average daily flow calculated for 2010 through 2014 is 0.3631 MGD. The five-year average ratio between the three-month maximum average and the annual average flow for 2010 through 2014 is 1.19 as shown on ***Exhibit A***.

Figure 3 shows the annual average flows and the three-month maximum flows from 2010 through 2014 and projected through the next five years to the year 2019. The hydraulic projections for the Fairview Township North WWTP are based on 81, 302, 6, 6 and 4 new connections for calendar years 2015 through 2019, respectively, multiplied by an average flow of 228 GPD per EDU for a total of 0.0910 MGD. The 2014 estimated new connection flow is added to the five-year average flow from 2010-2014 to project the flow for calendar year 2015, and then to the average flow for the preceding year for each successive

year. As noted on ***Figure 3***, it appears that the Fairview Township North WWTP will not exceed the 3-month maximum hydraulic loading of 1.206 MGD during the next five (5) years.

The 5-year flow projections are found in ***Table 1***. A volume of 228 GPD per EDU is used to calculate the projected flows, which is calculated as 90 GPCD multiplied by 2.53 persons per EDU, which is based on 2010 US Census data for Fairview Township, York County. The 5-year average flow of 0.3631 MGD is used as the base flow for projections for calendar year 2015.

Table 1. 5-Year Flow Projections

Year	2015	2016	2017	2019	2019	Total Projections	
						EDUs	MGD
Weatherstone	6	6	6	6	4	28	0.006384
Act 537	75	296	0	0	0	371	0.084588
Totals	81	302	6	6	4	399	0.090972

3.0 Organic Loadings

The average daily organic loadings to the Fairview Township North WWTP for each month during 2010 through 2014 are shown on ***Figure 2***. The five-year average concentration and loading for BOD_5 are 84.4 mg/L and 251 Lbs/Day, respectively, as shown on ***Exhibit B***. The five-year average ratio of the one-month maximum to the average daily organic loading for 2010 through 2014 is 1.42. The pounds of BOD_5 per EDU are estimated to be 0.43. This loading is based on 0.17 pounds BOD_5 per day per capita multiplied by 2.53 persons per EDU, which is based on 2010 US Census data for Fairview Township, York County.

The organic loading projections are based on 81, 302, 6, 6 and 4 new connections for calendar years 2015, 2016, 2017, 2018 and 2019, respectively, multiplied by 0.43 pounds of BOD_5 per EDU for a total of 172 Lbs/Day. The 2015 estimated new connection organic loading is added to the five-year average loading from 2010-2014 to project the loading for calendar year 2015, and then to the average loading for the preceding year for each successive year. ***Figure 4*** shows the annual average daily organic loadings and the projections for the annual average daily and one-month maximum loadings from the data in ***Exhibit B***. As noted on ***Figure 4***, it appears that the projected one-month maximum organic loading for the Fairview Township North WWTP will not exceed the treatment plant's design organic capacity of 1,740 Lbs/Day during the next five years.

4.0 Discussion of Hydraulic and Organic Overload Conditions

As shown in ***Figure 3***, the Fairview Township North WWTP is not expected to exhibit any hydraulic overloads during the next five years. ***Figure 4*** shows the projected organic loadings during the next five years, which are based on the projected one-month maximum organic loading.

5.0 Collection System Construction, Connections and Extensions

No new sewer extensions were constructed during 2014 by a developer in Fairview Township that is tributary to the North WWTP. New connections to the Fairview Township North WWTP sewer system during 2014 are shown on ***Table 2***. Please refer to Section 10.0 of this report regarding the sewer extension required by the approved Act 537 Plan. The sewer extension drawing is included as

Attachment 2 to this report.

Table 2. 2014 New Connections

Development	2014 Connections
Weatherstone	10
Act 537	23
PA Turnpike Maintenance Building	4
Gaumer Road Garage	1
Flow Increase, MGD	0.008664

There were 33 new residential connections and 5 new commercial connections made in 2014. The total number of sewer connections contributing to the Fairview Township North WWTP as of December 31, 2014 is 1,227 connections. ***Table 3*** provides a breakdown of these connections.

Table 3. Breakdown of Sewer System Connections

Type User	Fairview Township North
Residential	1,146
Commercial	75
Industrial	0
Institutional	6
Totals	1,227

6.0 Sewer System Monitoring, Maintenance, Repair and Rehabilitation

Analysis of the Fairview Township North WWTP influent, effluent and sludge was conducted in 2014 by ALS Environmental, DEP ID 22-00293, with the exception of DO, Total Chlorine Residual and pH, which are analyzed in-house by plant staff.

A summary of the plant performance data is provided in ***Exhibit C***. Fairview Township North WWTP reported no exceedances of their NPDES permit on their Discharge Monitoring Reports in 2014.

As required by the Fairview Township North WWTP NPDES Permit, a Sewage Sludge Management Inventory is presented in ***Exhibit D***. In addition, sludge production is estimated and compared to actual sludge production, using EPA's Composite Correction Approach worksheet, which is also included in ***Exhibit D***.

The annual calibration certificate for the flow metering equipment is attached to this report as ***Attachment 1***.

Repairs to the Sewer System are conducted on an as-needed basis. There are 5 full-time operators, all of which are certified, who service the North and South sewer systems. An upgrade project was completed in 2013 which consisted of a new headworks building, new raw wastewater screen, new UV system and associated site work.

Other major repairs and/or maintenance at the North WWTP during 2014 include the following:

- Repair air line in aeration tank C; PSI assisted plant staff with repairs.

- Repair flights in clarifier C due to cold weather; PSI assisted plant staff with repairs.
- Service Parkson screen unit.
- Service all blowers.
- Install heat tracing on return activated sludge lines.
- Install new refrigerator for storing laboratory samples.
- Install new fuse holder in polyblend system.
- Pump down and clean chlorine tanks.
- Change oil and service emergency generator.
- Install high water float for UV disinfection system.
- Replace UV light bulbs.
- Install new baffles in clarifiers A and B.
- Install new strainers for process water pumps.
- Install new pump for new side odophos feed.
- Replace ballast in UV disinfection system.
- Connect emergency generator to run alarm to SCADA system.
- Unclog underground pump station air release valve.

The collection system maintenance program consists of systematic checks on manholes throughout the collection system. Manhole inserts are placed in those manholes that appear to be affected by inflow. Televising activities are also conducted to inspect potential problem areas of the collection system as warranted. Five-year sewer televising contracts were completed in 2004 and 2009. A five-year contract was awarded to Mr. Rehab in August 2012 to flush and televise sewer mains. Approximately 20% of the mains will be televised each year. Specific collection system rehabilitation/repair activities that occurred during 2014 include the following:

- Ongoing maintenance at Meadowbrook P.S. due to pump clogging.
- Remove trees from rights-of-way.
- Experience blockage on Charles Avenue; Lower Allen Township provided assistance.
- Pump station wet wells cleaned by Kline's.
- Replace wiring at Ann P.S.
- Change oil at pump station emergency generators and pumps.
- Rehabilitate Meadowbrook P.S; work conducted by PSI. Work includes replacement of pumps and flow meter.

7.0 Condition of North WWTP Collection System

Fairview Township maintains an Infiltration/Inflow (I/I) program in the North WWTP collection system. Investigation and rehabilitation is implemented as needed. Previously, a contractor was retained to perform smoke testing in the North WWTP collection system, but Fairview Township has since purchased smoke testing equipment and staff performs this function to locate and repair defects contributing to I/I.

There are no known major problems within the North WWTP collection system. The overall condition of the North WWTP collection system reflects its age and materials of construction as the oldest sewer lines

contributing flow to the North WWTP were constructed in 1965. There are no combined sewers in the North WWTP collection system.

8.0 Pump Stations

Fairview Township owns and operates four (4) pump stations in the North WWTP sewer service area. Each pump station is equipped with a device that records pump operating (run) time. Each station has two (2) pumps. Data for each of the pump stations is provided in ***Table 4***. The rated capacities shown on ***Table 4*** are determined by assuming one pump is in standby mode, in conformance with DEP guidelines. The maximum capacity of each pump station is generally expected to be less than the combined individual capacity of the two (2) pumps. A long-term recommendation is to conduct wet well drawdown tests at each pump station, which typically yields more accurate information on individual and simultaneous operation of the pumps.

The daily average and maximum month flows on ***Table 4*** are estimated based on pump runtimes and rated capacities. Maximum month flows through 2015 are projected to increase by 5% since only minimal growth is anticipated in the collection system tributary to these pump stations. As the data indicates on ***Table 4***, the pump stations are not currently hydraulically overloaded nor are they anticipated to be overloaded within the next 2 years.

Table 4. Pump Station Data

Pump Station	Rated Capacity	2014 Average Daily Flow, GPD	2014 Maximum Month Flow, GPD	2016 Projected Maximum Month Flow, GPD[(1)]
1. Ann Drive P.S.	120 GPM 172,800 GPD	8,570	15,370	16,140
2. Meadowbrook Ave P.S.	200 GPM 288,000 GPD	113,980	160,560	168,590
3. New Market P.S.	1,100 GPM 1,584,000 GPD	199,470	320,980	337,030
4. Springers Lane P.S.	120 GPM 172,800 GPD	19,870	33,860	35,560

(1) Based on 5% increase.

9.0 Industrial Waste Report

There are no industrial dischargers in the North sewer service area that are known to discharge any industrial process wastewater to the North wastewater treatment plant. However, on December 30, 2014 a slug entered the wastewater treatment plant that had a strong petroleum odor. The odor was also detected in the collection system on Evergreen Road in the Township. Upon investigation, the origin of the alleged spill to the sewer system was not located. While foaming appeared temporarily in the treatment tanks, no apparent interference occurred within the treatment processes nor did any permit exceedances occur. DEP was contacted immediately after the odor was detected.

10.0 Act 537 Plan

On July 27, 2011, the Pennsylvania Department of Environmental Protection (DEP) approved the Township's Act 537 Sewage Facilities Plan Update. The plan requires the Township, among other items, to provide public sanitary sewer service to the Timber Ridge Area by the spring of 2016. Construction of

Phase 1 of the two phase implementation plan began on March 18, 2014. Phase 1 can be generally described as the area that includes the Timber Ridge development from 392 Lewisberry Road to 474 Lewisberry Road. Phase 1 consists of 2 pump stations, 91 homes, and approximately 3 miles of sewer main, force main and lateral pipe. Phase 1 is substantially completed and final completion is expected to be at the end of June 2015.

The design for Phase 2 is almost completed. Phase 2 can be generally described as the area that includes south of 487 Lewisberry Road, north of Rudytown Road, west of Scenic Drive and east of Shauffnertown Road. Roads included in this area consist of Diller Road, a portion of Spangler Mill Road, Sunset View Road, Bradley Circle, Null Road, and a portion of Old Forge Road, Bunker Hill Road, Carriage Road, Northview Road and the Township Building. Phase 2 consists of 4 pump stations, 222 homes (not including the Meadowbrook Mobile Home Park, the Township building or Roof Park), and approximately 7 miles of sewer main, force main and lateral pipe. A connection point to a new manhole will be available for the Meadowbrook Mobile Home Park to connect to the new sewer system.

Due to the anticipated permitting review period that was experienced during Phase 1, the Township does not believe that construction of Phase 2 will be completed by the spring of 2016 as written in the Act 537 Plan. The Township and DEP will be meeting on April 15, 2015 to discuss this matter and other matters associated with the sewer system.

11.0 Chesapeake Bay Tributary Strategy Nutrient Requirements

Fairview Township is required to meet cumulative annual pollutant loading requirements (cap loads) for total nitrogen (TN) and total phosphorus (TP) for compliance with the Chesapeake Bay Tributary Strategy nutrient requirements. The permit conditions for TN and TP are based on the Chesapeake Bay Agreement which, among other environmentally beneficial goals, seeks to reduce the nutrient loading to the Bay, thereby enhancing its water quality.

The Township must meet the Chesapeake Bay related NPDES permit requirements at both the North and South WWTP effluent discharges. DEPhas informed the Township of these requirements through two letters. The initial cap loads for the North WWTP were received from DEP in correspondence dated December 20, 2006, which went into effect October 2010. The cap loads for the South WWTP were received in a letter from DEP dated February 27, 2009 and went into effect October 2012.

Beginning in October 2012, the nutrient cap load limits for the South WWTP are 9,132 pounds of TN per year and 1,218 pounds of TP per year. Beginning in October 2010, the cap load limits for the North WWTP are 13,333 pounds of TN per year and 1,778 pounds of TP per year.

Fairview Township currently has a contract with Red Barn Trading Company to purchase up to 20,000 pounds of nitrogen credits per year, beginning in 2010 through 2024. These credits were initially purchased for the North WWTP to meet its TN effluent requirements in 2010, but the nitrogen credits are now used on a township wide basis to meet both WWTP's cap load requirements. Exhibit E summarizes the TN credits required from Red Barn Trading Company.

12.0 Municipal Official Acknowledgment and Approval

Fairview Township is committed to providing adequate wastewater treatment services to the community.

The objectives of this report identify and address sewer system needs now and in the future.

This report has been reviewed and is hereby approved for submission to the Pennsylvania Department of Environmental Protection (DEP) by:

Stephen F. Smith
Township Manager

Judy F. Musselman, BCES QEP
GHD

Exhibits

Exhibit A – Average Monthly Hydraulic Loadings

Exhibit B – Average Monthly Organic Loadings

Exhibit C – 2014 WWTP Performance Summary

Exhibit D – Sewage Sludge Management Inventory

Exhibit E – Nutrient Credit Purchases

EXHIBIT A
FAIRVIEW TOWNSHIP NORTH WWTP
MONTHLY AVERAGE HYDRAULIC LOADINGS

	Monthly Average Daily Flows, MGD					
Month	2010	2011	2012	2013	2014	
January	***0.3940***	0.2710	***0.3976***	***0.3582***	0.3803	
February	***0.3690***	0.3300	***0.3444***	***0.3592***	0.3915	
March	***0.4260***	0.5550	***0.3221***	***0.3489***	***0.4035***	
April	0.3180	0.6600	0.2952	0.2980	***0.4783***	
May	0.3650	0.5360	0.3326	0.2851	***0.4649***	
June	0.3330	0.3850	0.3421	0.2952	0.3932	
July	0.3080	0.3240	0.2915	0.2780	0.2895	
August	0.3100	0.3900	0.3382	0.2730	0.2703	
September	0.2910	***0.8130***	0.3031	0.2428	0.2419	
October	0.3360	***0.5450***	0.3513	0.4559	0.2541	
November	0.2970	***0.4810***	0.3384	0.3009	0.2633	
December	0.3250	0.4320	0.3483	0.3500	0.3118	5-Year Avg
Annual Average	0.3393	0.4768	0.3337	0.3204	0.3452	0.3631
Max. 3-Month Average*	0.3963	0.6130	0.3547	0.3554	0.4489	0.4337
3-Month Max/Avg Ratio	1.17	1.29	1.06	1.11	1.30	1.19

**** Months Used To Calculate Maximum 3-Month Average Are Bold and Italicized***

Projected Hydraulic Loadings					
Year	Average	3-Mo Max	Design		
2010	0.3393	0.3963	1.2060		
2011	0.4768	0.6130	1.2060		
2012	0.3337	0.3547	1.2060		
2013	0.3204	0.3554	1.2060		
2014	0.3452	0.4489	1.2060	No. EDUs	Incr. Flow
2015	0.3816	0.4522	1.2060	81	0.0185
2016	0.4504	0.5338	1.2060	302	0.0689
2017	0.4518	0.5355	1.2060	6	0.0014
2018	0.4532	0.5371	1.2060	6	0.0014
2019	0.4541	0.5382	1.2060	4	0.0009

EXHIBIT B
FAIRVIEW TOWNSHIP NORTH WWTP
MONTHLY AVERAGE ORGANIC LOADINGS

	Monthly Average Organic Loadings, Lbs/Day					
Month	2010	2011	2012	2013	2014	
January	378	371	242	304	265	
February	376	262	305	156	385	
March	269	185	248	182	344	
April	207	270	307	179	384	
May	318	332	275	151	229	
June	338	327	174	251	209	
July	281	292	110	177	125	
August	383	288	265	176	152	
September	248	270	147	178	152	
October	205	217	143	221	164	
November	390	341	183	153	260	
December	289	341	257	195	231	5-Year Avg
Annual Average	307	291	221	194	242	251
Max. Monthly Average	390	371	307	304	385	351
1-Month Max/Avg Ratio	1.27	1.27	1.39	1.57	1.59	1.42
BOD, mg/L	108	73.3	82.3	76.7	81.1	84.4

Projected Organic Loadings					
Year	Average	1-Mo Max	Design		
2010	307	390	1,740		
2011	291	371	1,740		
2012	221	307	1,740		
2013	194	304	1,740		
2014	242	385	1,740	No. EDUs	Incr. Load
2015	286	406	1,740	81	34.8
2016	416	590	1,740	302	130
2017	418	594	1,740	6	2.6
2018	421	597	1,740	6	2.6
2019	423	600	1,740	4	1.7

EXHIBIT C
FAIRVIEW TOWNSHIP NORTH WWTP
2014 WWTP PERFORMANCE SUMMARY

Parameter	Permit Limit	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Average	Min	Max
Flow																
Monthly Average, MGD	0.726	0.3803	0.3915	0.4035	0.4783	0.4649	0.3932	0.2895	0.2703	0.2419	0.2541	0.2633	0.3118	0.3452	0.2419	0.4783
Daily Max, MGD	NA	0.6184	0.5731	1.1915	0.9235	0.8441	0.7581	0.4366	0.4769	0.3261	0.3740	0.3291	0.4543	0.6088	0.3261	1.1915
Biochemical Oxygen Demand (BOD																
Influent, mg/L	NA	90.3	110	114	70.9	60.2	61.6	51.7	62.7	78.6	70.6	112	90.0	81.1	51.7	114
Influent, Lbs/Day	NA	265	385	344	384	229	209	125	152	152	164	260	231	242	125	385
Carbonaceous Biochemical Oxygen Demand (CBOD)																
Effluent, mg/L (Weekly Max)	40.0	2.40	2.50	2.00	2.20	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.09	2.00	2.50
Effluent, Lbs/Day (Weekly Max)	242	7.47	8.48	7.11	15.40	8.46	8.32	5.38	5.69	4.31	6.24	5.49	5.45	7.32	4.31	15.4
Effluent, mg/L (Monthly Avg)	25.0	2.10	2.13	2.00	2.04	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.02	2.00	2.13
Effluent, Lbs/Day (Monthly Avg)	151	6.45	7.21	5.86	9.96	7.07	6.70	4.76	4.60	3.95	4.64	4.57	5.08	5.90	3.95	9.96
% Removal	85.0	97.6	98.1	98.3	97.4	96.9	96.8	96.2	97.0	97.4	97.2	98.2	97.8	97.4	96.2	98.3
Total Residual Chlorine (TRC)																
Effluent Average, mg/L	0.50								UV							
Effluent Maximum, mg/L	Report								UV							
Fecal Coliform (May 1 - Sep 30)/(Oct 1 - Apr 30)																
Effluent, #/100 mL	200/2,000	6	2	2	3	5	2	3	3	1	5	2	1	3	1	6
Dissolved Oxygen (DO)																
Effluent Mininum, mg/L	5.00	10.4	10.4	9.32	9.44	8.87	8.19	7.38	7.33	7.31	7.84	8.02	9.29		7.31	
Ammonia Nitrogen (May 1 - Oct 31)/(Nov 1 - Apr 30)																
Effluent, mg/L (Monthly Avg)	Report	0.11	0.14	0.14	0.12	0.11	0.10	0.17	0.24	0.12	0.11	0.16	0.14	0.14	0.10	0.24
Effluent, Lbs/Day (Total Monthly)	Report	10.5	13.0	12.2	16.9	11.8	10.1	12.4	16.5	7.31	7.9	10.9	10.9	11.7	7.31	16.9
pH																
Effluent-Min, Standard Unit	6.0	7.25	7.23	7.26	7.28	7.31	7.38	7.41	7.29	7.30	7.20	6.97	7.03		6.97	
Effluent-Max, Standard Unit	9.0	7.72	7.51	7.54	7.63	7.67	7.61	7.75	7.59	7.74	7.63	7.56	7.56			7.75
Total Phosphorus (P)																
Effluent, mg/L	2.00	0.40	0.32	0.31	0.34	0.45	0.46	0.71	0.73	0.68	0.65	0.45	0.52	0.50	0.31	0.73
Effluent, Lbs/Day	12.0	1.22	1.08	0.90	1.72	1.60	1.55	1.67	1.68	1.34	1.51	1.02	1.32	1.38	0.90	1.72
Total Suspended Solids (TSS)																
Influent, mg/L	NA	90.3	148	67.0	37.8	59.5	72.5	98.8	67.3	36.0	53.0	64.5	54.2	70.8	36.0	148
Influent, Lbs/Day	NA	267	510	210	184	223	249	232	167	70.5	118	154	137	210	70.5	510
Effluent, mg/L (Weekly Max)	45.0	5.00	5.00	9.00	6.00	7.00	5.00	5.00	5.00	5.00	5.00	5.00	7.00	5.75	5.00	9.00
Effluent, Lbs/Day (Weekly Max)	272	17.6	21.2	26.2	38.5	29.6	20.8	13.4	14.2	10.8	15.6	13.7	19.0	20.1	10.8	38.5
Effluent, mg/L (Monthly Avg)	30.0	5.00	5.00	6.25	5.20	5.75	5.00	5.00	5.00	5.00	5.00	5.00	5.40	5.22	5.00	6.25
Effluent, Lbs/Day (Monthly Avg)	182	15.3	17.1	18.5	25.3	20.6	16.8	11.9	11.5	9.89	11.6	11.4	13.8	15.3	9.89	25.3
% Removal	85.0	94.2	96.6	91.2	86.3	90.7	93.3	94.9	93.1	86.0	90.2	92.6	89.9	91.6	86.0	96.6

EXHIBIT D FAIRVIEW TOWNSHIP NORTH WWTP SEWAGE SLUDGE MANAGEMENT INVENTORY							
Month	Average Flow (MGD)	Average Influent BOD_5 (mg/L)	Average Effluent $CBOD_5$ (mg/L)	Volume of Sludge Wasted (Gallons)	Average Solids RAS (mg/L)	Biosolids Generated (Dry Tons)	Average Total Solids (%)
January	0.3803	90.3	2.10	578,987	No Data Available	0.00	0.00
February	0.3915	110	2.13	577,164		9.54	5.03
March	0.4035	114	2.00	626,262		6.30	4.65
April	0.4783	70.9	2.04	680,640		11.24	3.46
May	0.4649	60.2	2.00	715,418		2.22	2.73
June	0.3932	61.6	2.00	675,030		3.19	2.94
July	0.2895	51.7	2.00	739,815		4.04	4.97
August	0.2703	62.7	2.00	691,052		6.08	3.74
September	0.2419	78.6	2.00	699,420		0.00	0.00
October	0.2541	70.6	2.00	667,430		3.29	2.43
November	0.2633	112	2.00	616,350		4.38	3.23
December	0.3118	90.0	2.00	694,524		5.76	3.29
Total				7,962,092		56.05	
Average	0.3452	81.1	2.02				3.04
Min	0.2419	51.7	2.00				0.00
Max	0.4783	114	2.13				5.03

SLUDGE GENERATION CALCULATION

Facility Name: Fairview Township North WWTP
Permit Number: PA0081868
Date of Calculation: 3/31/2015

Required Information For Calculation

Average Daily Flow (mgd):	0.3452	Digester Capacity (gal):	79206
Influent BOD (mg/l):	81.1	%Solids of Outgoing Sludge:	3.65
Effluent BOD (mg/l):	2.02	Monitoring Period (days):	365

Wastewater Treatment Processes

Place an "X" in the box beside the corresponding treatment process. Select a maximum of Primary Clarification and one other treatment process.

Primary Clarification		Contact Stabilization		RBC	
Conventional Activated Sludge		SBR		ABF	
Extended Aeration	X	Trickling Filter		Small Plant with low SOR (<500 gpd/sq ft)	

Operational Information

BOD Removed (lbs/day):	228	TSS Removed (lbs/day):	148

Digester Information

Type of Digester

Place an "X" in the box beside the corresponding treatment process.

Aerobic Digestion	X	Anaerobic Digestion		None	X

Sludge Feed Rate to Digesters (gpd):	2365.8627
Digester Hydraulic Detention Time (days):	33
Estimated Total Solids Reduction (%):	0.35

Sludge Generation

dry lbs/day	96	wet lbs/day	2635
dry tons/monitoring period	18	wet tons/monitoring period	481
gal/day	316	gal/monitoring period	115336

Amount of Sludge Reported as Being Generated by the Facility

wet tons/monitoring period: 0

OR

dry tons/monitoring period: 56.05

Enter only one of the above values. The remaining value should be "0".

Is the amount reported by the generator within 15% of the calculated value? NO

NO explanation: GREATER THAN 15% RANGE

What type of information was used to calculate the above information: DMRs

Dates used: 1/1/2014 TO 12/31/2014

Name of person performing the calculation: Judy Musselman, GHD

Exhibit E
Total Nitrogen Credit Purchases

Year Ending (1, 2)	North WWTP			South WWTP			Total Estimated Township TN Credits Required
	TN Cap Loading Limit (lbs/yr)	Actual / Est. TN Loading (lbs/yr)	Credits Required (lbs/yr)	TN Cap Loading Limit (lbs/yr)	Actual / Est. TN Loading (lbs/yr)	Credits Required (lbs/yr)	
2010 (Actual)	13,333	20,345	-7,012	9,132	7,732	0	-7,012
2011 (Actual)	13,333	23,671	-10,338	9,132	6,715	0	-10,338
2012 (Actual)	13,333	21,588	-8,255	9,132	Unknown	0	-8,255
2013 (Actual)	13,333	18,108	-4,775	9,132	7,807	0	-4,775
2014 (Actual)	13,333	19,348	-6,015	9,132	10,115	-983	-6998
2015	13,333	19,528	-6,195	9,132	10,205	-1,073	-7268
2016	13,333	19,708	-6,375	9,132	10,295	-1,163	-7538
2017	13,333	19,888	-6,555	9,132	10,385	-1,253	-7808
2018	13,333	20,068	-6,735	9,132	10,475	-1,343	-8078
2019	13,333	20,248	-6,915	9,132	10,565	-1,433	-8348
2020	13,333	20,428	-7,095	9,132	10,655	-1,523	-8618
2021	13,333	20,608	-7,275	9,132	10,745	-1,613	-8888
2022	13,333	20,788	-7,455	9,132	10,835	-1,703	-9158
2023	13,333	20,968	-7,635	9,132	10,925	-1,793	-9428
2024	13,333	21,148	-7,815	9,132	11,015	-1,883	-9698

Notes:
(1) Year Ending is the water year from October to September.
(2) Years Ending 2010, 2011, 2012 only require credit purchases to meet effluent TN requirements at North WWTP. Year ending 2013 and forwards require nutrient credit purchases to meet effluent TN requirements for both North and South WWTPs.

Total Phosphorus Credit Purchases

Year Ending (1)	North WWTP			South WWTP			Total Estimated Township TP Credits Required
	TP Cap Loading Limit (lbs/yr)	Actual / Est. TP Loading (lbs/yr)	Credits Required (lbs/yr)	TP Cap Loading Limit (lbs/yr)	Actual / Est. TP Loading (lbs/yr)	Credits Required (lbs/yr)	
2010 (Actual)	1,778	600	0	1,218	244	0	0
2011 (Actual)	1,778	571	0	1,218	166	0	0
2012 (Actual)	1,778	526	0	1,218	Unknown	0	0
2013 (Actual)	1,778	455	0	1,218	215	0	0
2014 (Actual)	1,778	514	0	1,218	335	0	0
2015	1,778	524	0	1,218	340	0	0
2016	1,778	534	0	1,218	345	0	0
2017	1,778	539	0	1,218	350	0	0
2018	1,778	544	0	1,218	355	0	0
2019	1,778	549	0	1,218	360	0	0
2020	1,778	554	0	1,218	365	0	0
2021	1,778	559	0	1,218	370	0	0
2022	1,778	564	0	1,218	375	0	0
2023	1,778	569	0	1,218	380	0	0
2024	1,778	574	0	1,218	385	0	0

Notes:
(1) Year Ending is the water year from October to September.

Figures

FIGURE 1
Fairview Township North WWTP
5-Year Monthly Hydraulic Loadings, MGD

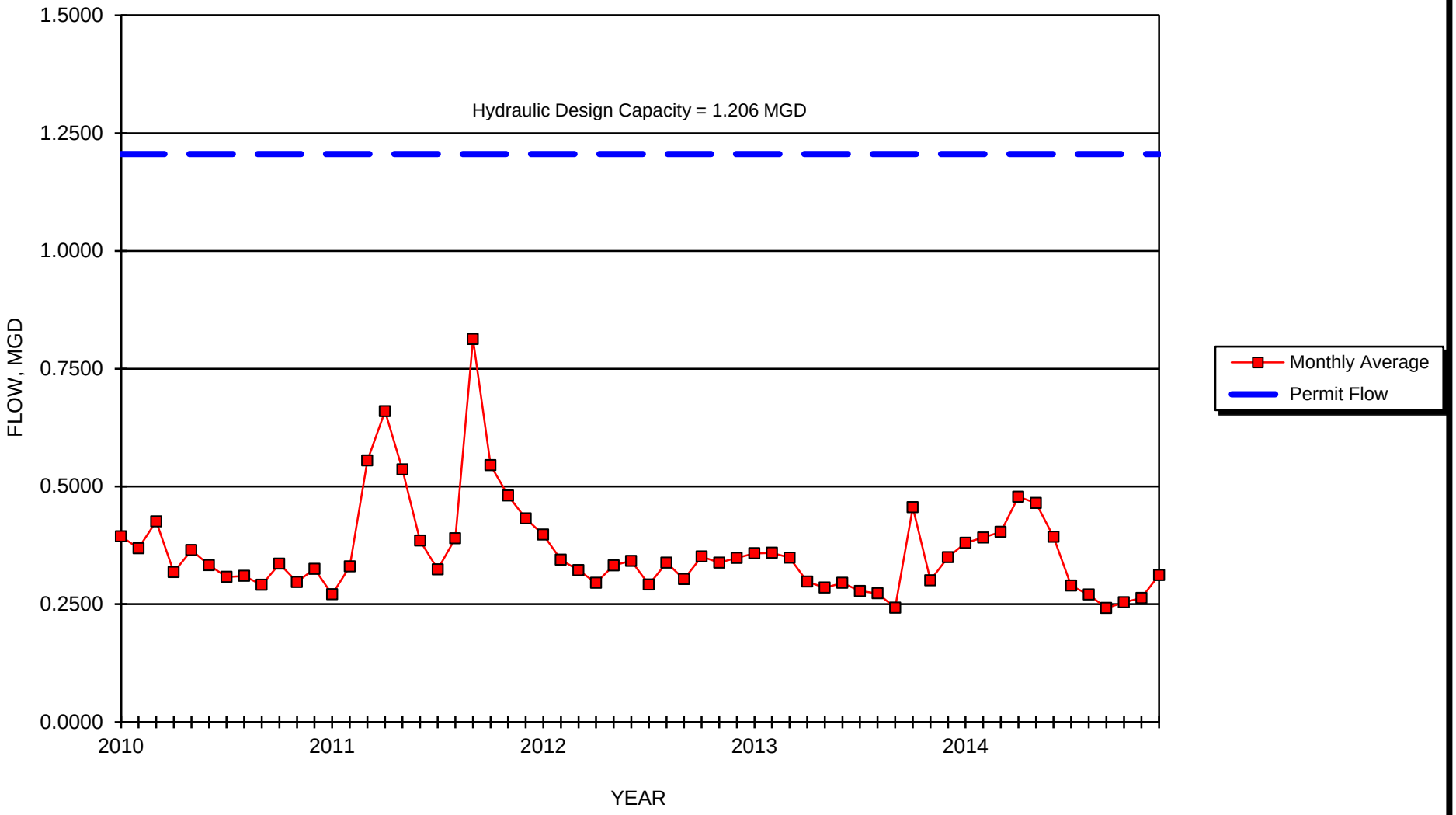


FIGURE 2
Fairview Township North WWTP
5-Year Monthly Organic Loadings, Lbs/Day

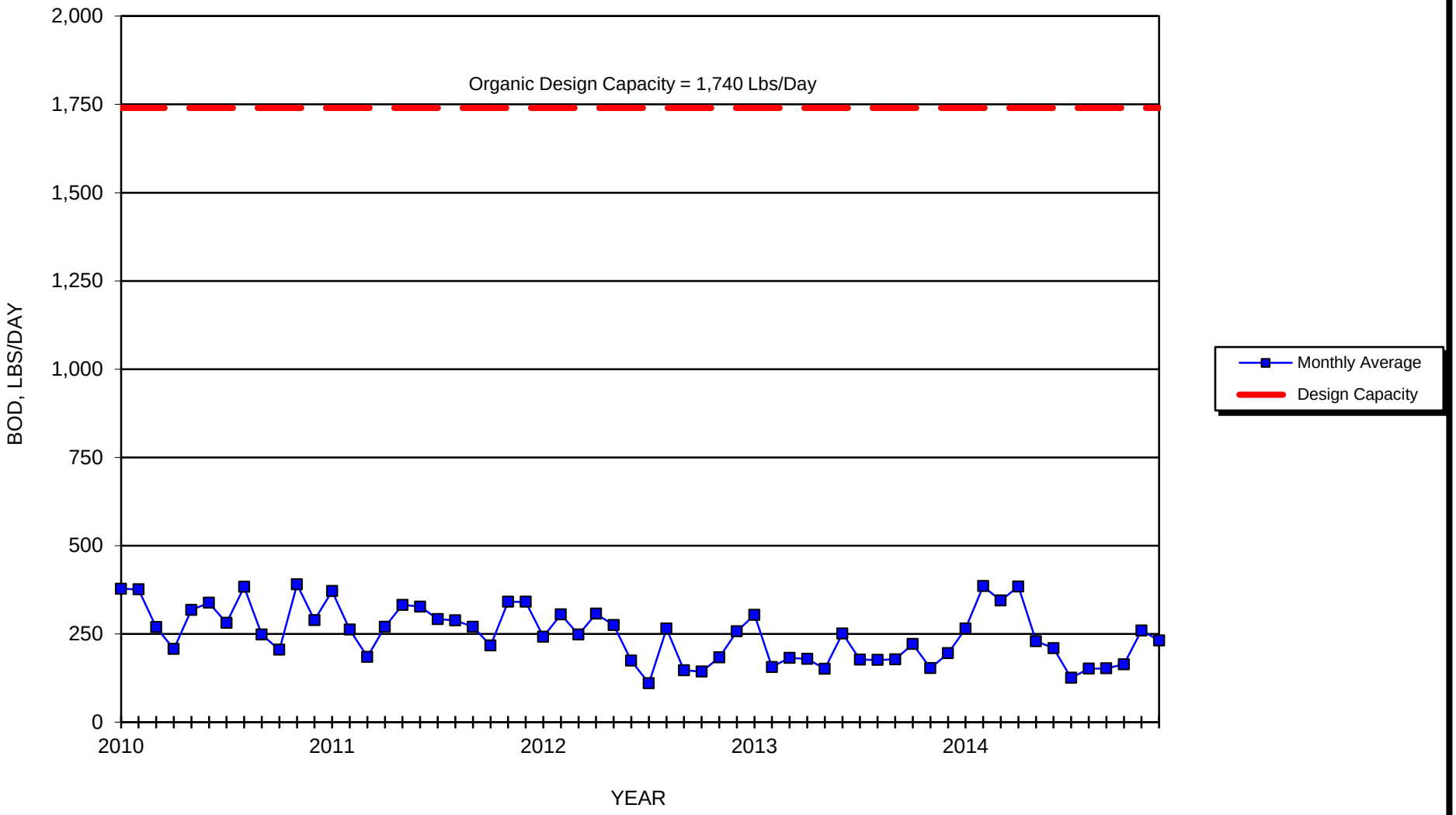


FIGURE 3
Fairview Township North WWTP
Annual Hydraulic Loadings, MGD

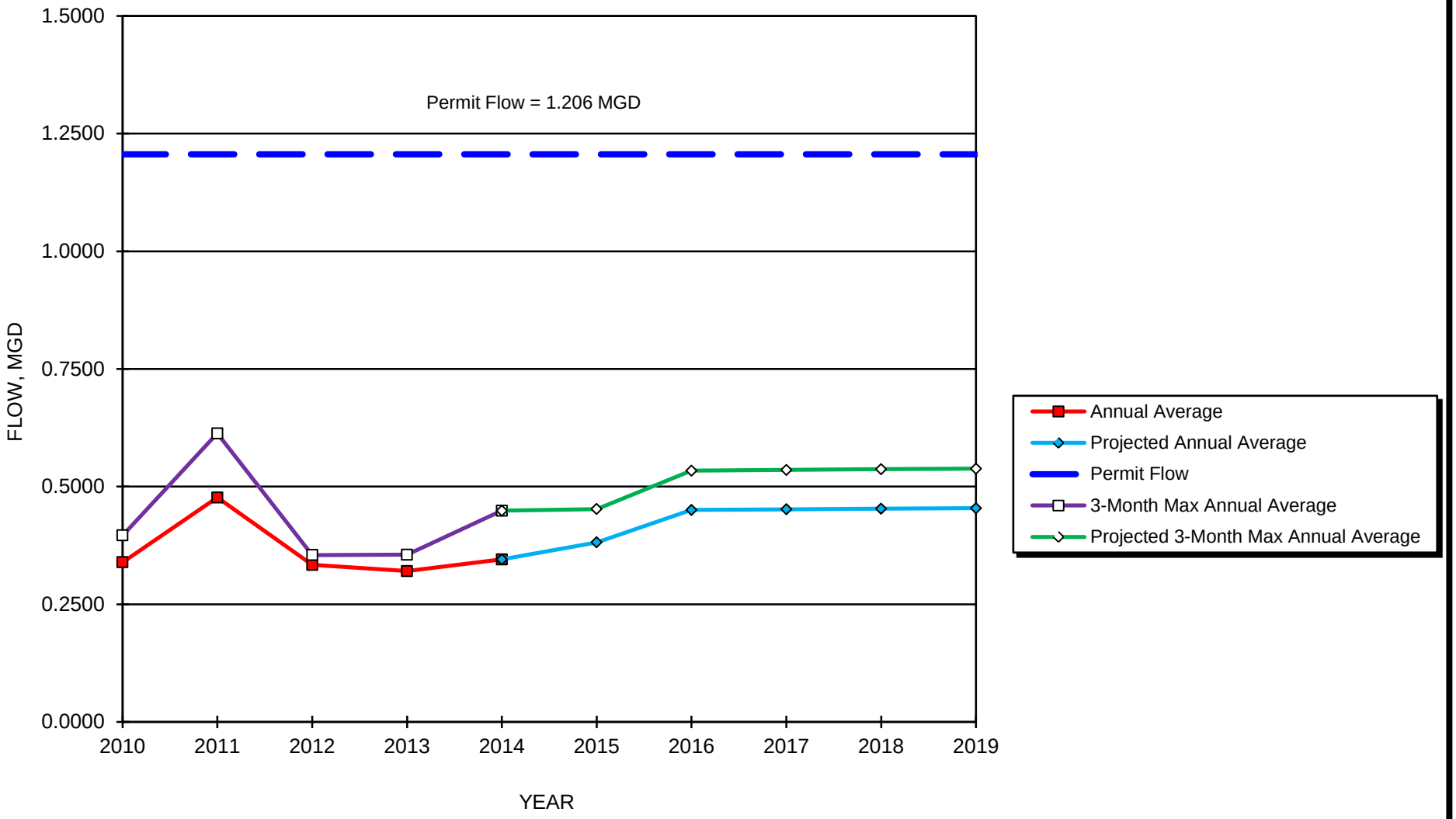
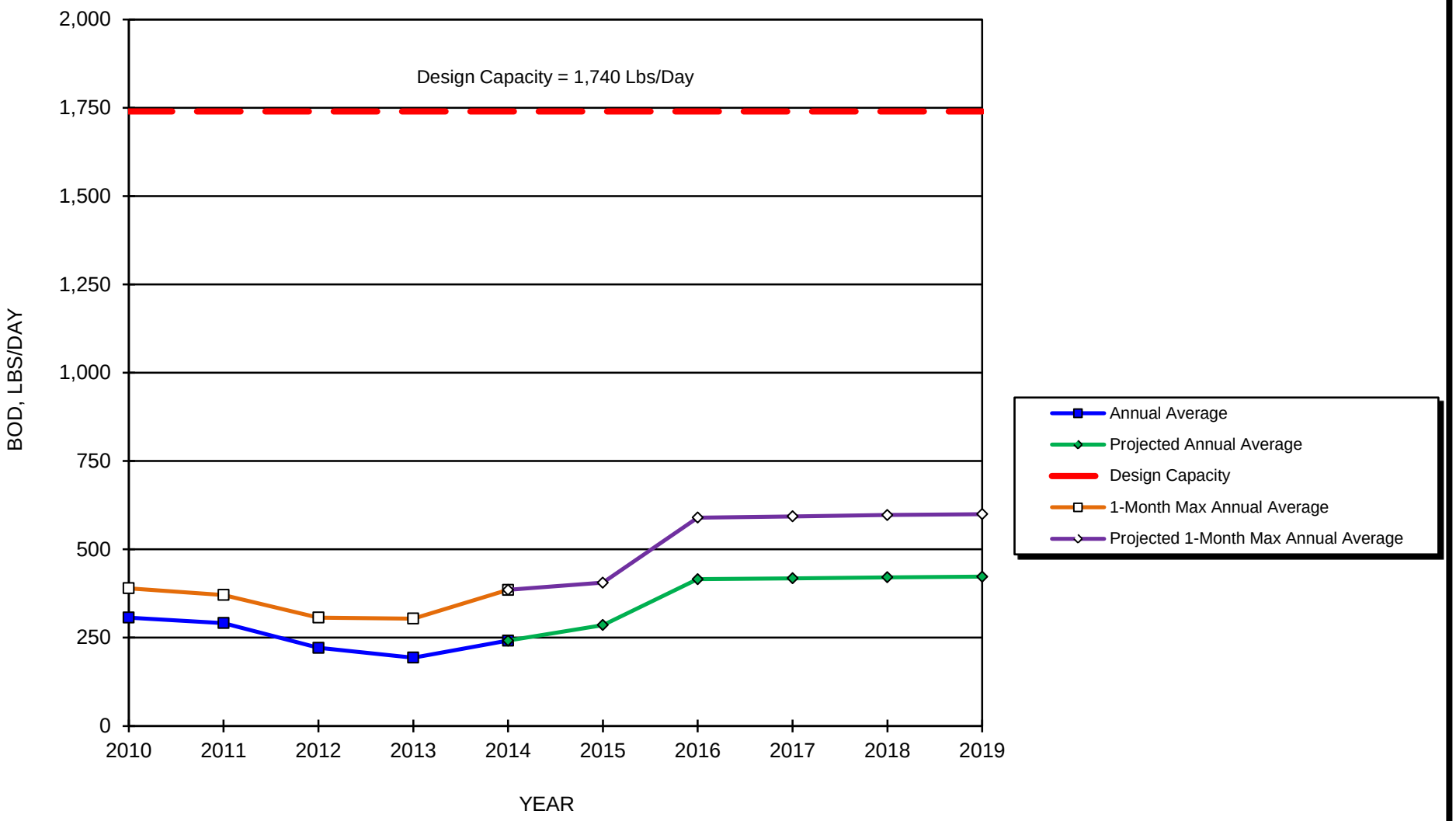


FIGURE 4
Fairview Township North WWTP
Annual Organic Loadings, Lbs/Day



Attachments

Attachment 1 – Flow Meter Calibration Certificate

TRI-STAR INC.

CERTIFICATE OF CALIBRATION

TO Fairview Township
599 Lewisberry Road
New Cumberland, PA 17070

Reference to TRI-STAR Job number SERVICE REPORT DATED 07/09/13, FAIRVIEW PO# 14-073NS AND TSI INVOICE #S34850 FOR THE NORTH PLANT INSTRUMENTS

TRI-STAR's calibration instrument M/N TRANSMATION 1045 S/N 7804910
THERMO ELECTRIC M/N 311800001 S/N 60110A-3-1

is traceable to the National Institute Standards Technology

Certified by YIS Report No. 162230, 162233 Date 03/18/2014

Code Ref: NONE

Next Certificate of Calibration due: JULY 31, 2015

Approved for TRI-STAR Inc.

by Steve Summy

title SERVICE TECH

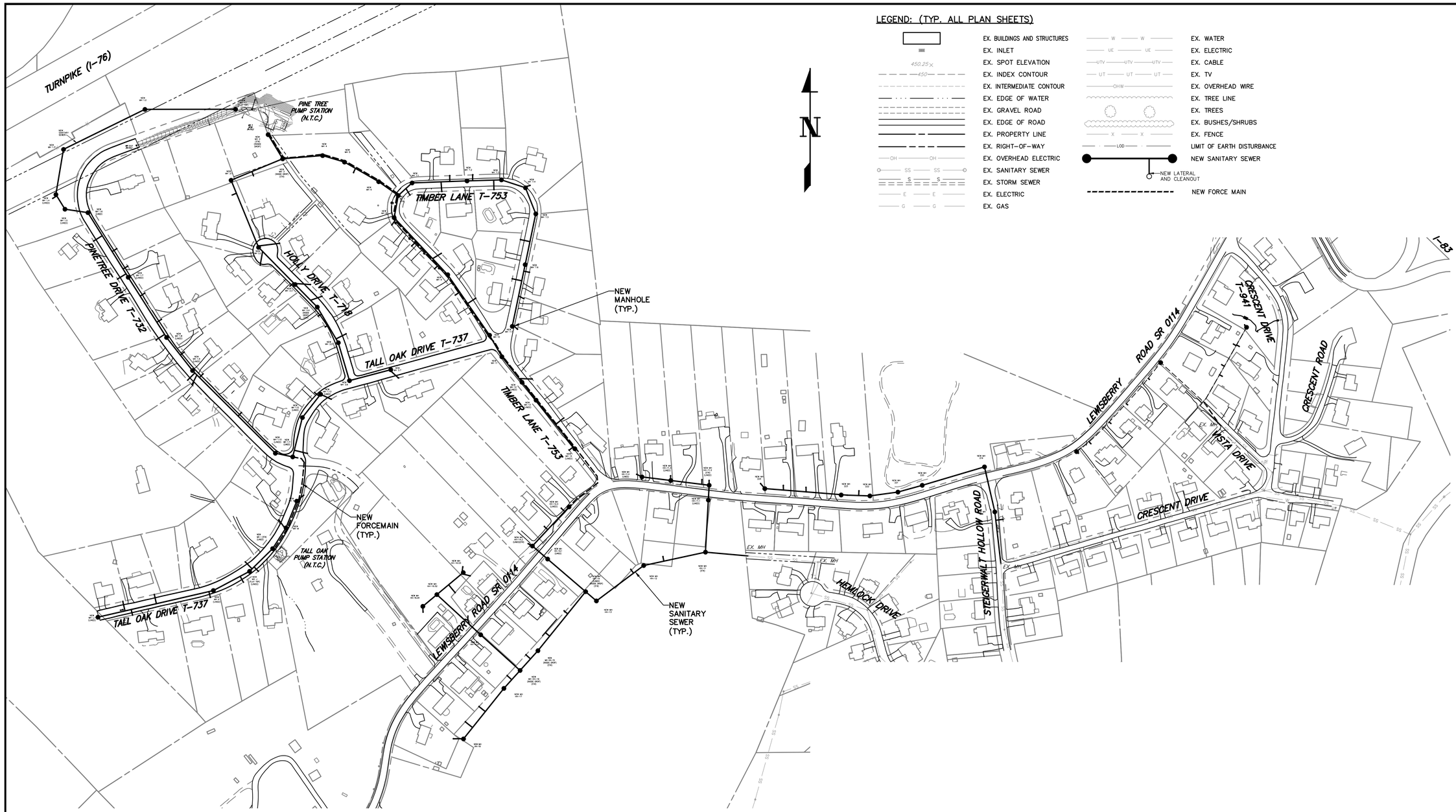
date July 10, 2014

Steve Summy 1108

Authorized Signature

CERT

Attachment 2 – Sewer Extension Drawing



DATE	NO.	REVISIONS / SUBMISSIONS

DESIGNED BY	TWP
DRAWN BY	BAA
CHECKED BY	KMF
APPROVED BY	KMF
SCALE	AS NOTED

TIMBER RIDGE
NORTHERN COLLECTION AND CONVEYANCE SYSTEM
FAIRVIEW TOWNSHIP

FAIRVIEW TOWNSHIP, YORK COUNTY
PENNSYLVANIA

SEWERS CONSTRUCTED PER ACT 537 PLAN IN 2014
PHASE 1 OF 2

GHD
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Harrisburg PA 17112 USA
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CLIENTS | PEOPLE | PERFORMANCE

DATE	MAR. 2015
JOB NO.	0611.0001
FILE	C-KP-1
DRAWING NO.	KP-1
SHEET	1 OF 1

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