

State of Wisconsin
DEPARTMENT OF NATURAL RESOURCES
Oshkosh Service Center
625 E. County Road Y, Suite 700
Oshkosh, WI 54901

Scott Walker, Governor
Daniel L. Meyer, Secretary
Telephone 920-424-4013
FAX 920-424-4404



January 31, 2018

File Ref: **FID# 445 004 560**
Outagamie County
WWW/WQ

Mr. Robert Kennedy, Operations Manager
Appleton Wastewater Treatment Facility
2006 E. Newberry St.
Appleton, WI 54915

Subject: Compliance Evaluation Inspection
WPDES Permit No. WI-0023221

Dear Mr. Kennedy:

On December 14, 2017, I conducted a Compliance Evaluation Inspection (CEI) at the Appleton Wastewater Treatment Facility (AWWTF) located at 2006 East Newberry Street in Appleton. The purpose of the inspection was to verify existing conditions and wastewater characteristics as they relate to monitoring and reporting requirements set forth in the AWWTF's Wisconsin Pollutant Discharge Elimination System (WPDES) permit.

The inspection revealed that AWWTF was found to be in substantial compliance with the effluent limits and all terms and conditions of the permit.

Attached is a Compliance Inspection Report form. Please review the comments' section of the form for any recommendations made. Please contact me at 920-424-4013 or the address above if you have any questions.

Thank you for your cooperation.

Sincerely,

Barti Oumarou
Wastewater Engineer

Pc: eCopy to SWAMP
Chris Stempa, AWWTF
Chris Shaw, AWWTF

Wastewater Treatment Plant Compliance/Inspection Checklist

Appleton Wastewater Treatment Facility
 2006 East Newberry Street Appleton, WI 54915-2758
 OIC Name ROBERT J KENNEDY
 On-Site Representative Robert Kennedy
 Responsible Official Chris Shaw 2006 East Newberry Street Appleton, WI 54914
 WPDES Permit # 0023221-08-0
 Design Flow (Avg) 0.000
 Inspection Date 12/14/2017
 Evaluated By Barti Oumarou
 Effective Date 04/01/2017
 Expiration Date 03/31/2022

| Part A: ON-SITE INSPECTION | |
|----------------------------|----------|
| Compliance Questions | Comments |

| Facility Site Review | |
|----------------------|--|
| Yes | 1. Is a schematic diagram available of the treatment plant? If yes, attach. |
| Yes | 2. Are all liquid treatment train unit operations and processes operating satisfactorily? |
| | <p>The City of Appleton's wastewater treatment facility is designed for a hydraulic, annual average flow of 15.5 million gallons per day (MGD). Actual flows have been approximately 12 to 13 MGD. Its treatment processes consist of fine screening, grit removal, primary clarification, activated sludge-contact stabilization, and final clarification. Seasonal disinfection is achieved with liquid Sodium Hypochlorite addition in 2 chlorine contact chambers. Dechlorination is accomplished by the addition of liquid Sodium Bisulfite. Phosphorus is precipitated chemically with the addition of ferric chloride and/or ferrous sulfate.</p> <p>During typical operating conditions, effluent is discharged by gravity through outfall 001 (60" diffuser) to the Fox River. However, during periods when high river flows prevent gravity discharge, three effluent screw pumps at pump station #1, convey effluent to the outfall chamber. This then flows by gravity to the 60" diffuser. If flows continue to be excessive, the outfall chamber surcharges into the outfall relief structure. That effluent volume discharges by gravity to the River, through a separate 48" outfall main, adjacent to the diffuser.</p> <p>Polymer is added to the waste activated sludge (WAS), which is then conditioned by one of two dissolved air flotation thickeners (DAF). Primary sludge and WAS are then mixed and sent to one of two egg-shaped primary anaerobic digesters (mesophilic @ 95 degrees F), for pathogen and volatile solids destruction. Digested solids are then pumped to one of three gravity belt filter presses for final conditioning, with the resultant cake stored in the on-site structure</p> |

| Subclass A1: Biological Treatment - Suspended Growth Process | |
|--|---|
| Yes | A1-1. Does the appearance of the aeration basin look good? |
| Yes | A1-2. Does the aeration pattern show that all diffusers are working? |
| Yes | A1-3. Is the dissolved oxygen level adequate? |
| Yes | A1-4. Is the MLSS level optimum, resulting in a good F/M ratio? |
| Yes | A1-5. Is the 30 minute settling test and resultant SVI good? |
| Yes | A1-6. Do the bugs look good? |
| Yes | A1-7. Is sludge wasted regularly to maintain an optimum and consistent sludge age? |
| Yes | A1-8. Are all blowers or mechanical aerators operational and on a regular maintenance schedule? |

| | | | |
|-----|---|--|--|
| Yes | A1-9. Has the aeration basin been emptied, inspected and cleaned within the last five years, including diffusers? | Replaced every diffusers in 2012. Fine bubble diffusion. | |
| No | A1-10. Are there safety flotation devices on the railings? | | |

Subclass B: Solids Separation

| | | | |
|-----|--|---|--|
| Yes | B-1. Are clarifier surfaces free of floating sludge, grease and gas bubbles? | | |
| Yes | B-2. Does the operator measure and record clarifier sludge blankets on a regular basis? | Maintaining sludge blanket < 0.5 ft Acoustic monitoring 3 times/day. | |
| Yes | B-3. Is the effluent flow over the entire length of the weirs? | | |
| N/A | B-4. If the clarifier is rectangular, are the flights and chains in sound shape and working correctly? | | |
| Yes | B-5. If the clarifier is circular, do the surface skimmer and subsurface sludge scraper mechanism appear to be working well? | | |
| Yes | B-6. Are the clarifier(s) drained, cleaned, and inspected on a regular basis? | Annually. | |

Subclass D: Disinfection

| | | | |
|-----|---|-----------------------------|--|
| Yes | D-1. Is the chlorine contact tank cleaned regularly and absent of surface gas bubbles or floating clumps of sludge? | | |
| Yes | D-2. Is chlorine (gas or liquid) adequately and completely mixed into the contact basin? | liquid chlorine | |
| N/A | D-3. If using chlorine gas, does the storage room meet all safety requirements? | | |
| N/A | D-4. Are uv lamps submerged in the effluent channel? | | |
| N/A | D-5. Do uv sleeves need to be cleaned regularly to maintain disinfection efficiency? | | |
| Yes | D-6. Are residual chlorine samples tested within 15 minutes of collecting the sample? | Tested on-site immediately. | |

Subclass P: Biological Nutrient Removal (Phosphorus)

| | | | |
|-----|---|---------------------------------|--|
| No | P-1. Does the plant utilize in-line monitoring (ORP? dissolved oxygen) for monitoring anoxic, anaerobic and aerobic conditions? | | |
| Yes | P-2. Does the plant monitor ortho-P across treatment units? | Plant has phosphorus analyzers. | |
| Yes | P-3. Are side streams monitored for phosphorus? | | |
| N/A | P-4. Are detention times in anoxic and anaerobic selector tanks short enough to achieve good phosphorus removal? | | |
| N/A | P-5. Are process conditions optimized for BPR? | | |
| No | 3. Are there any unique treatment units, processes or operations in the liquid treatment train? If yes, comment. | | |
| Yes | 4. Is effluent being discharged clear, free of floating solids or visible foam other than in trace amounts? | | |

Flow Measurement

| | | | |
|-----|---|---|--|
| Yes | 5. Is wastewater flow, influent and/or effluent, being accurately measured? | Influent: Parshall Flume | |
| Yes | 6. Are flow monitoring devices calibrated annually? | | |
| Yes | 7. Are there significant industrial/commercial contributors of wastewater to the plant? If yes, list in comments. | Luvata (Copper), Miller Electric, Mauthe, Remediation Site (chromium), Appleton Papers, Aramark, Neenah Paper, Leachate from Outagamie County Landfill, Appvion Paper, etc... | |

Sampling and Testing

| | | | |
|-----|--|--|--|
| Yes | 8. Are wastewater influent, effluent biosolids and groundwater samples, as applicable, being collected and tested as required by the WPDES permit? | | |
| Yes | 9. Are wastewater composite samplers being maintained at or less than 6C? | | |
| Yes | 10. Are sampling logs being used to record sample days, times, temperatures and collector? | | |
| No | 11. Were samples collected as part of this inspection? If yes, include state lab results. | | |

Operations and Maintenance

| | | | |
|-----|--|---|--|
| Yes | 12. Is the Operator-in-Charge certified at the proper grade(s)? | | |
| Yes | 13. Is the treatment works and disposal system being properly operated and maintained, when in operation? | | |
| Yes | 14. Are process control tests being performed and recorded to properly operate and maintain the plant? | Microscope, SCADA System (facility is transitioning to a new software). | |
| Yes | 15. Does the plant have a documented and implemented preventative maintenance program for major equipment? | | |
| Yes | 16. Is the permittee following the requirements contained in any approved management plan? | | |

Biosolids Treatment, Handling and Storage

| | | | |
|-----|---|--|--|
| Yes | 17. Are all unit operations and processes for biosolids/sludge treatment and storage operating satisfactorily? | | |
| Yes | 18. Are there any unique treatment units, processes or operations in the solids treatment train? If yes, comment. | enhanced sludge digestion (ESD). | |
| Yes | 19. Are biosolids/solids meeting all applicable sludge quality standards and processes standards before disposal or distribution? | | |
| Yes | 20. Are biosolids/solids being landspread meeting all NR 204 or NR 214 landspreading requirements? | Producing Class A biosolids (~ 20%), 80% Class B. Also biosolids composting. | |
| Yes | 21. Are all biosolids/solids and land application reports completed and submitted on time? | | |

Part B: PERMIT AND REPORTING REQUIREMENTS

| | | | |
|---------------|--|--|--|
| Permit | | | |
| Yes | 22. Is a copy of the current WPDES permit kept at the treatment plant? | | |
| Yes | 23. Was the WPDES permit reviewed with the operator-in-charge? | | |

Records/Reports

| | | | |
|-----|---|--|--|
| Yes | 24. Are all Discharge Monitoring Reports completed correctly and submitted on time? | | |
| Yes | 25. Are all other WPDES permit required reports completed correctly and submitted on time? | | |
| No | 26. Were there any CMAR compliance recommendations made or actions required because of low CMAR grades (C, D or F)? | | |
| No | 27. Were there any CMAR follow-up actions regardless of grades? | | |

Compliance Schedules

| | | | |
|-----|---|--|--|
| Yes | 28. Is the permittee up to date on required actions as specified in the Schedule of Compliance? | | |
|-----|---|--|--|

| Sanitary Sewer Overflows | |
|--------------------------|--|
| Yes | 29. Have any sanitary sewer overflows occurred since the last inspections? |
| Yes | 30. Have SSOs been reported as required? |
| Yes | 31. Does the facility have a documented collection system O&M or CMOM program? |

Part C: EFFLUENT / RECEIVING WATERS

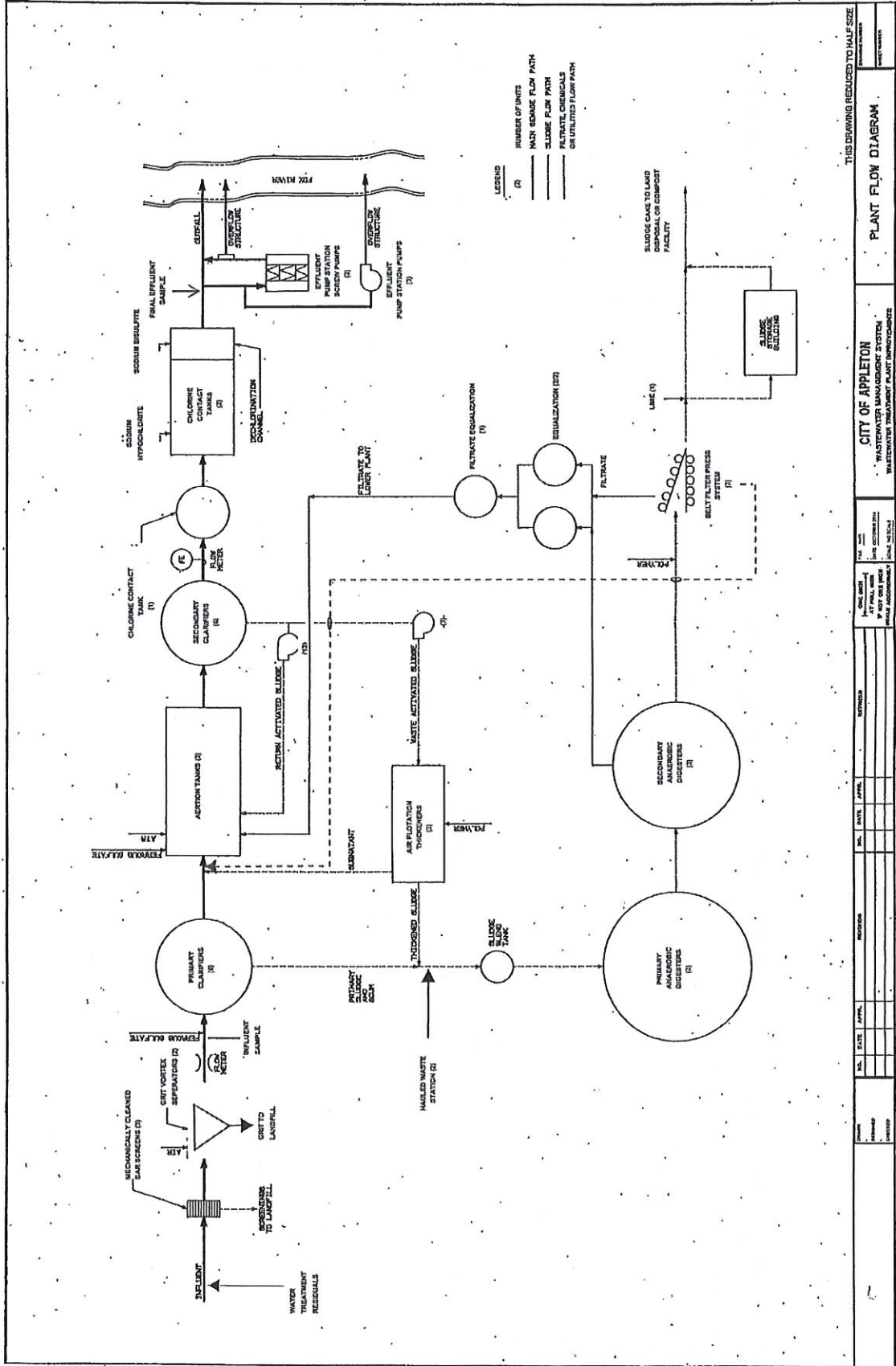
| Effluent Limits | |
|-----------------|--|
| Yes | 32. Is the permittee in compliance with all effluent limits based on a review of discharge monitoring reports? |
| N/A | 33. Is the permittee in compliance with all groundwater standards based on a review of groundwater monitoring forms? |

| Outfalls | |
|----------|---|
| No | 34. Have you physically observed the effluent outfall? |
| N/E | 35. If observable, does the outfall structure appear structurally sound and located as originally designed/constructed? |

| Receiving Waters | |
|------------------|--|
| Yes | 36. Does the receiving water below the outfall appear acceptable compared to upstream water quality? |

| General Comments | |
|------------------|---|
| No | 37. Are there any general comments about this treatment facility? |

| SUBSTANTIAL COMPLIANCE DETERMINATION | |
|--------------------------------------|---|
| Yes | 38. Are all conditions of the permit, including standard conditions, being met? |
| Yes | 39. IS THE PERMITTEE IN SUBSTANTIAL COMPLIANCE WITH THE PERMIT? If not, please comment. |



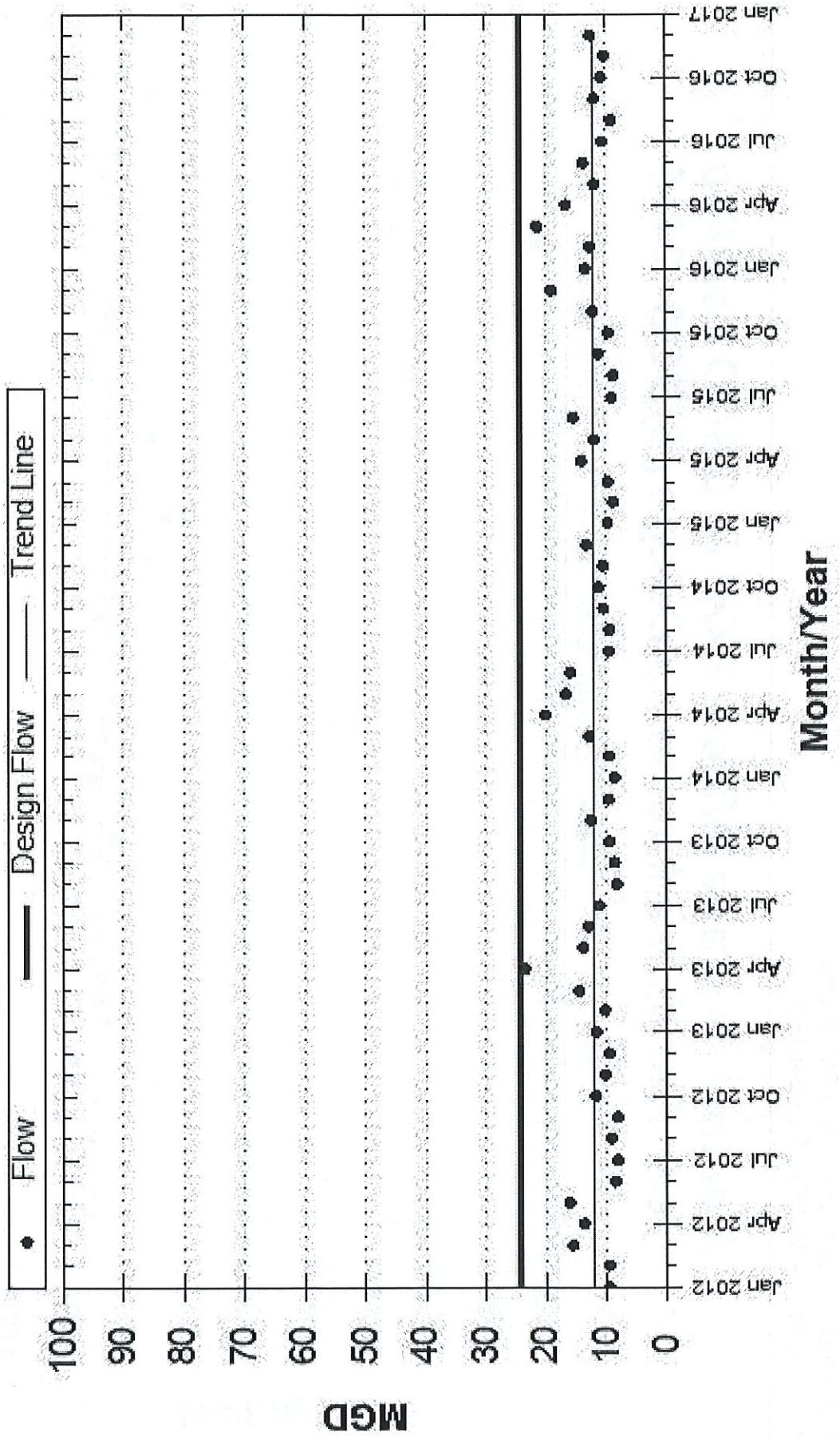
| PROJECT INFORMATION | | DATE | | BY | | CHECKED | | APPROVED | |
|---------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| PROJECT NO. | DATE | DATE | DATE | DATE | DATE | DATE | DATE | DATE | DATE |
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CITY OF APPLETON
WASTEWATER MANAGEMENT SYSTEM
WASTEWATER TREATMENT PLANT IMPROVEMENTS

PLANT FLOW DIAGRAM

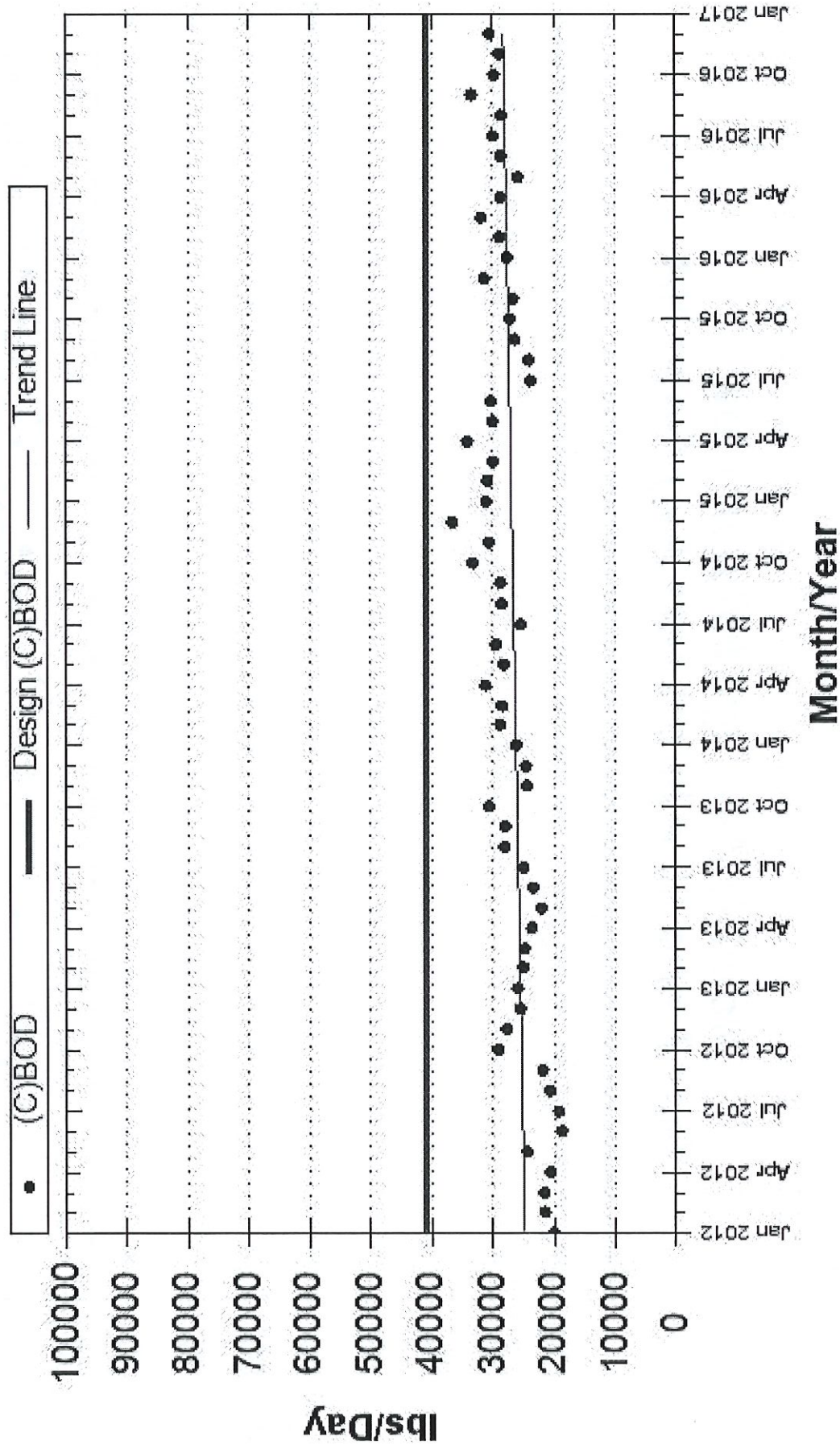
Appleton Wastewater Treatment Facility
Linear equation uses 2004 - 2016 CMAR data
for Trend Line: $y = -0.0022009x + 12.04$

Monthly Average Influent Flow Year Trend Line Intersects Avg Flow: NA

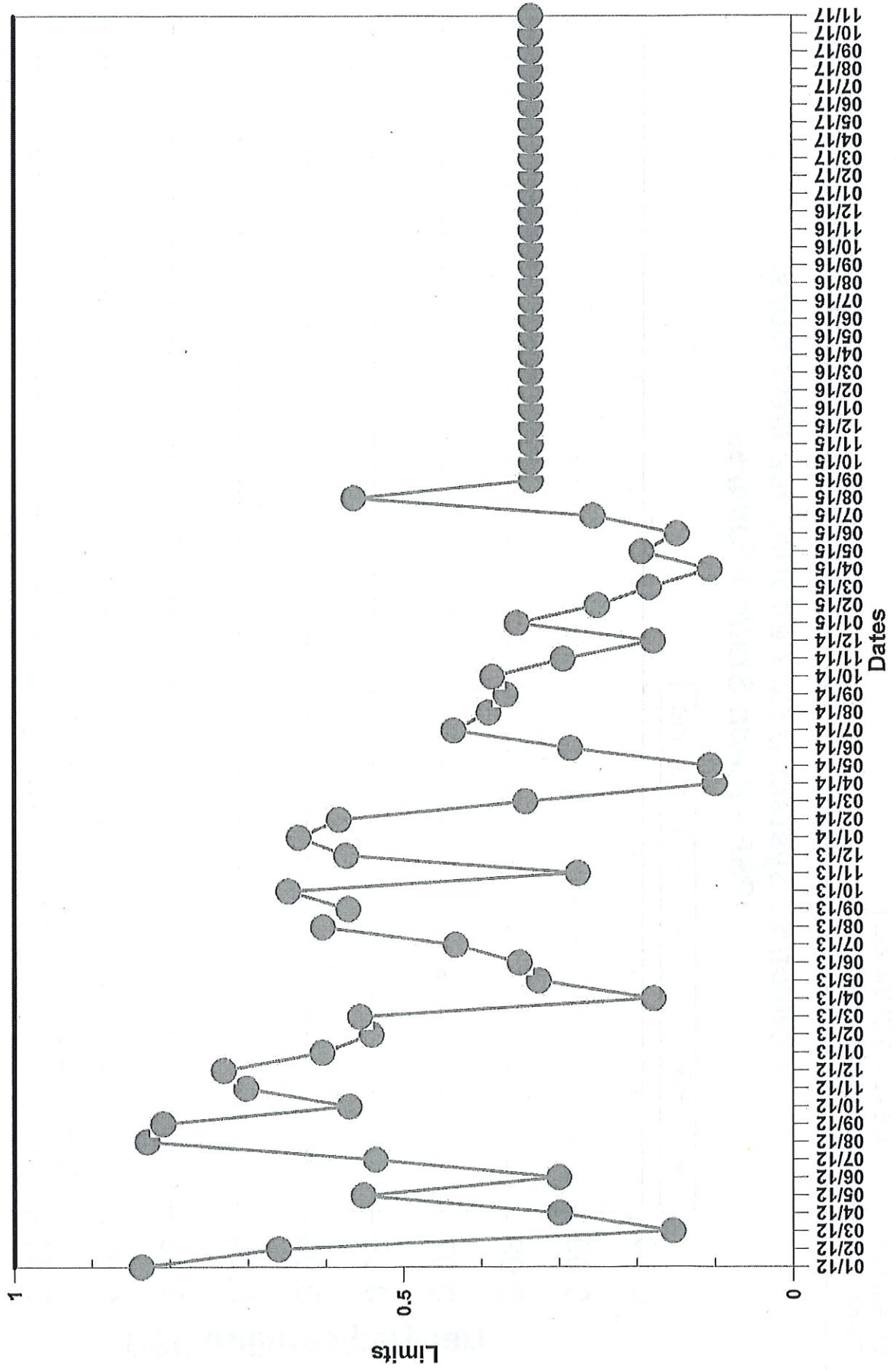


Appleton Wastewater Treatment Facility
 Linear equation uses 2004 - 2016 CMAR data
 for Trend Line: $y = 57.336455x + 24812.91$

Monthly Average Influent BOD or CBOD Loading Year Trend Line Intersects Design (C)BOD: 2035

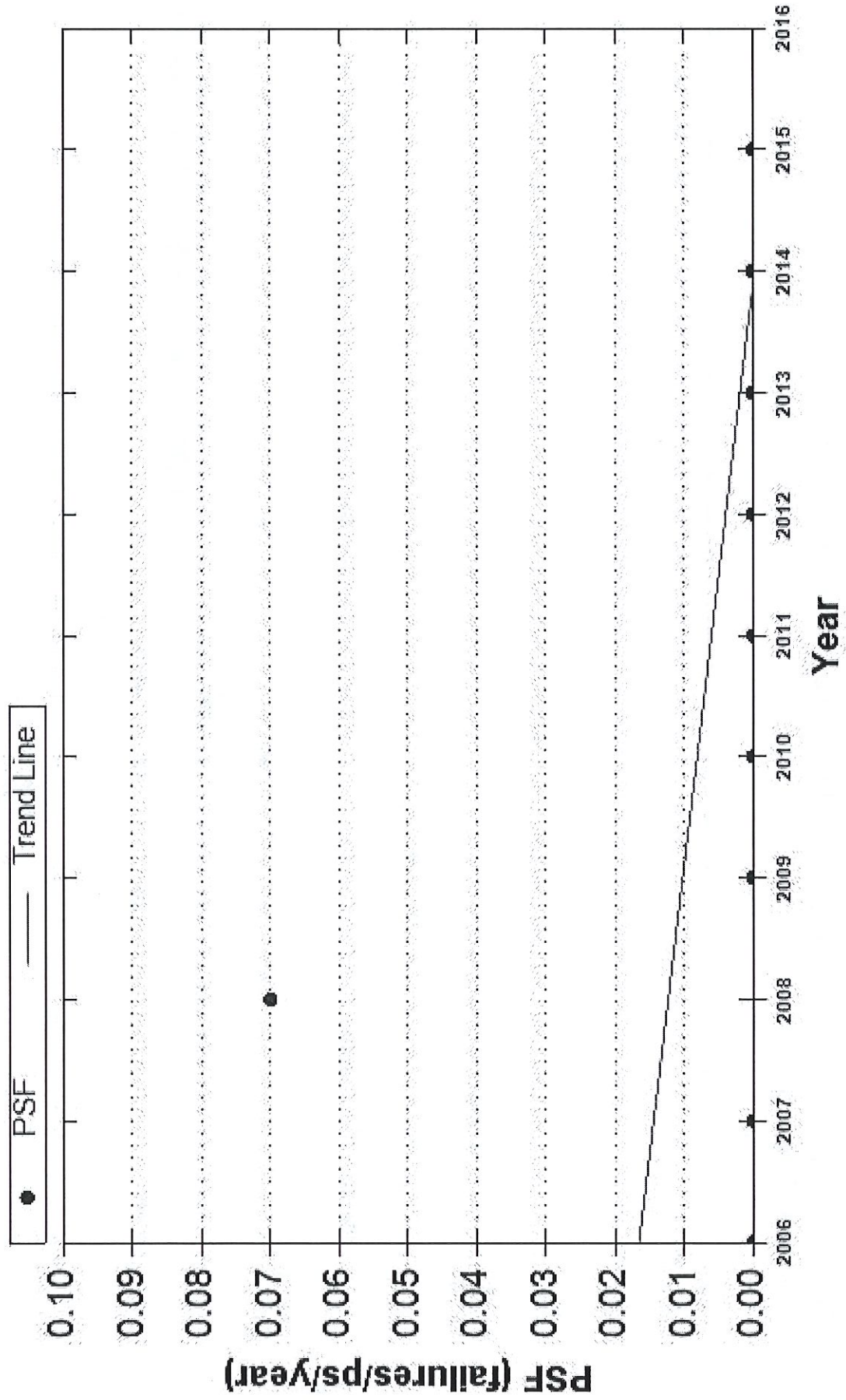


APPLETON WASTEWATER TREATMENT FACILITY - 0023221-08-0
001 - Phosphorus, Total (mg/L) - Jan/2012 - Nov/2017
Monthly Average



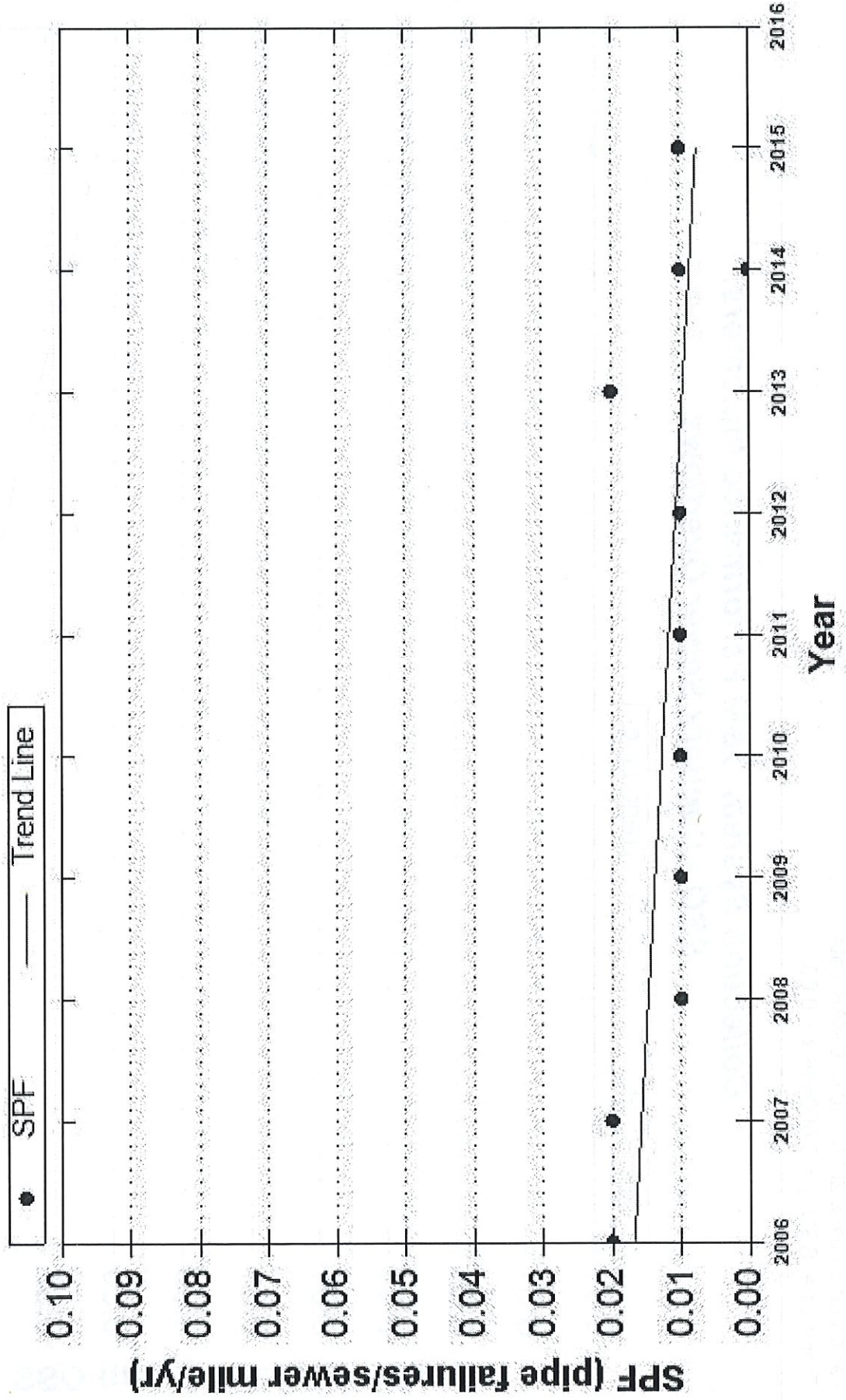
Appleton Wastewater Treatment Facility
Linear equation uses 2006 - 2016 CMAR data
for Trend Line: PSF: $y = -0.002107x + 0.02$

Collection System O&M Performance Indicators: PSF - Pump Station Failures



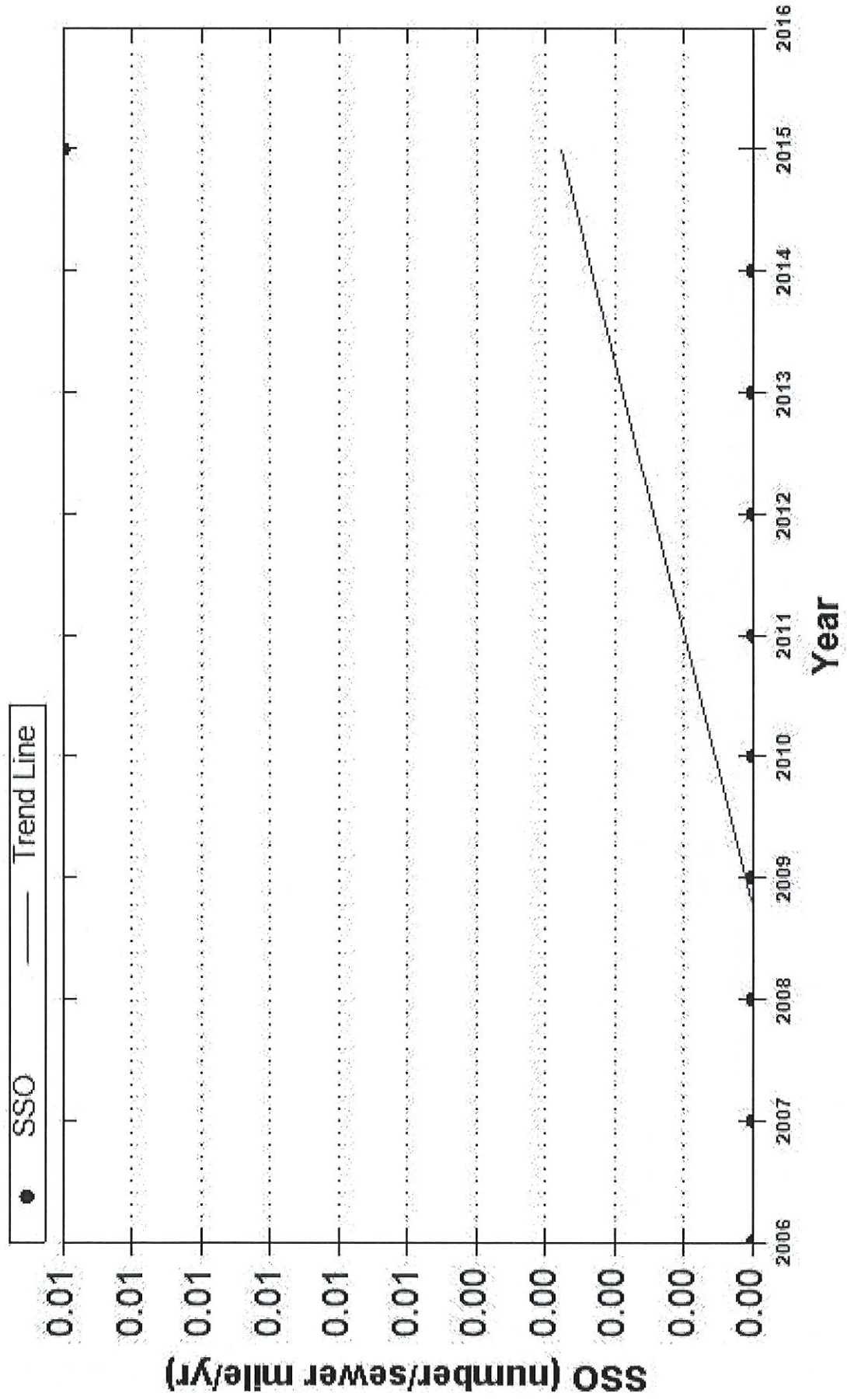
Appleton Wastewater Treatment Facility
Linear equation uses 2006 - 2016 CMAR data
for Trend Line: SPF: $y = -0.001029x + 0.02$

Collection System O&M Performance Indicators: SPF - Sewer Pipe Failures



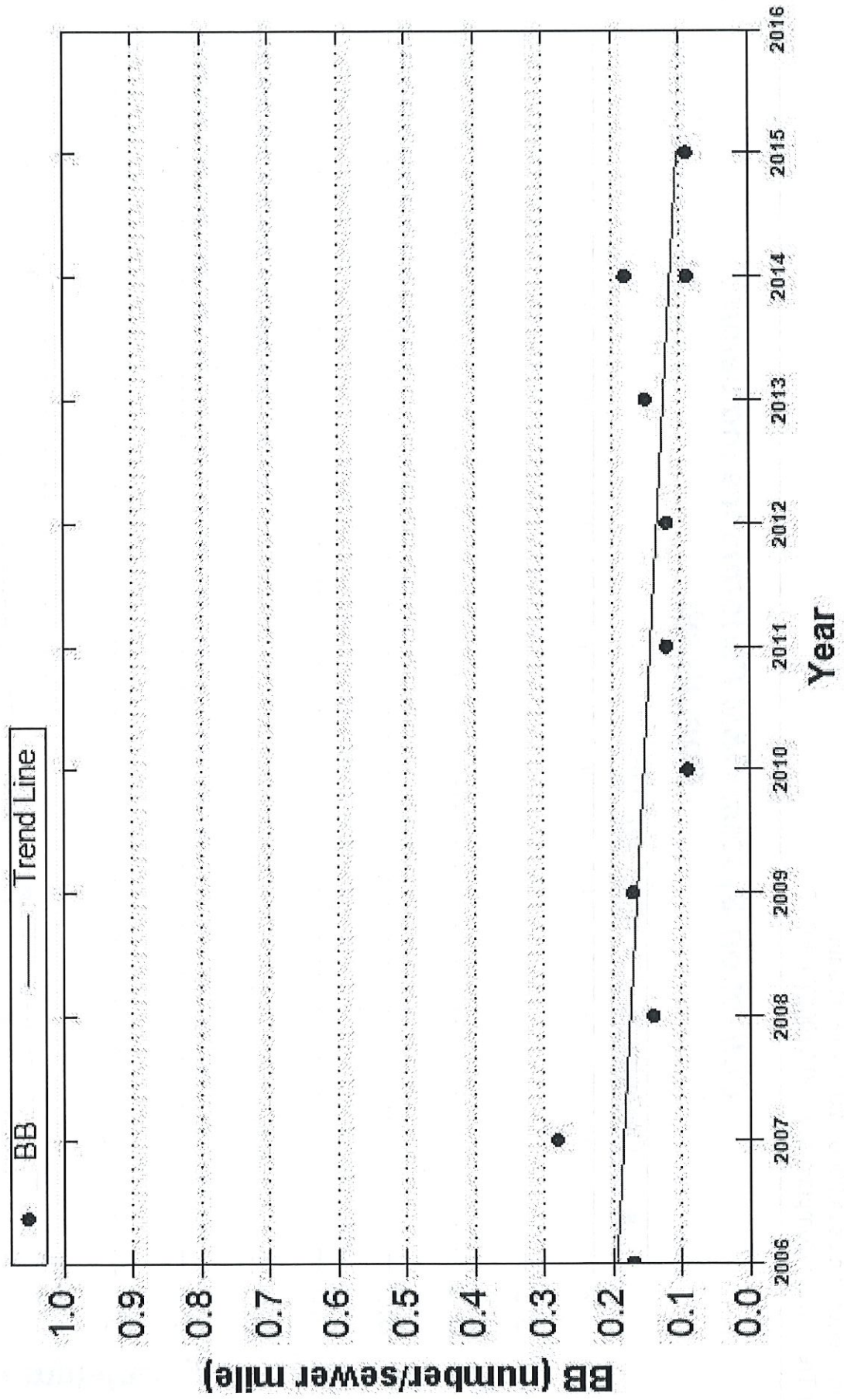
Appleton Wastewater Treatment Facility
Linear equation uses 2006 - 2016 CMAR data
for Trend Line: SSO: $y = 0.000446x + 0.00$

Collection System O&M Performance Indicators: SSO - Sanitary Sewer Overflows



Appleton Wastewater Treatment Facility
Linear equation uses 2006 - 2016 CMAR data
for Trend Line: BB: $y = -0.010027x + 0.19$

Collection System O&M Performance Indicators: BB - Basement Backups

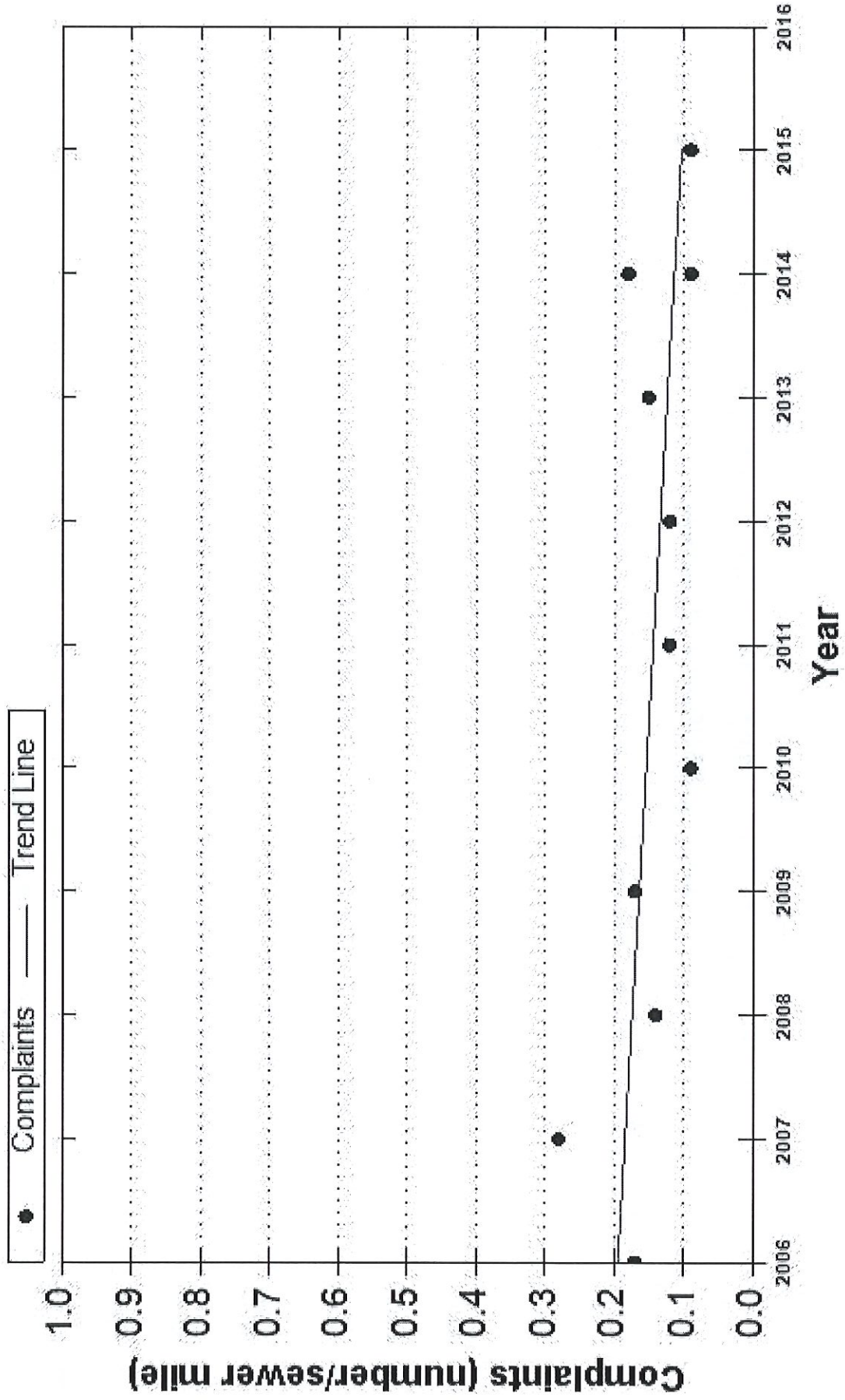


Appleton Wastewater Treatment Facility

Linear equation uses 2006 - 2016 CMAR data

for Trend Line: Complaints: $y = -0.010027x + 0.19$

**Collection System O&M Performance Indicators:
Complaints**

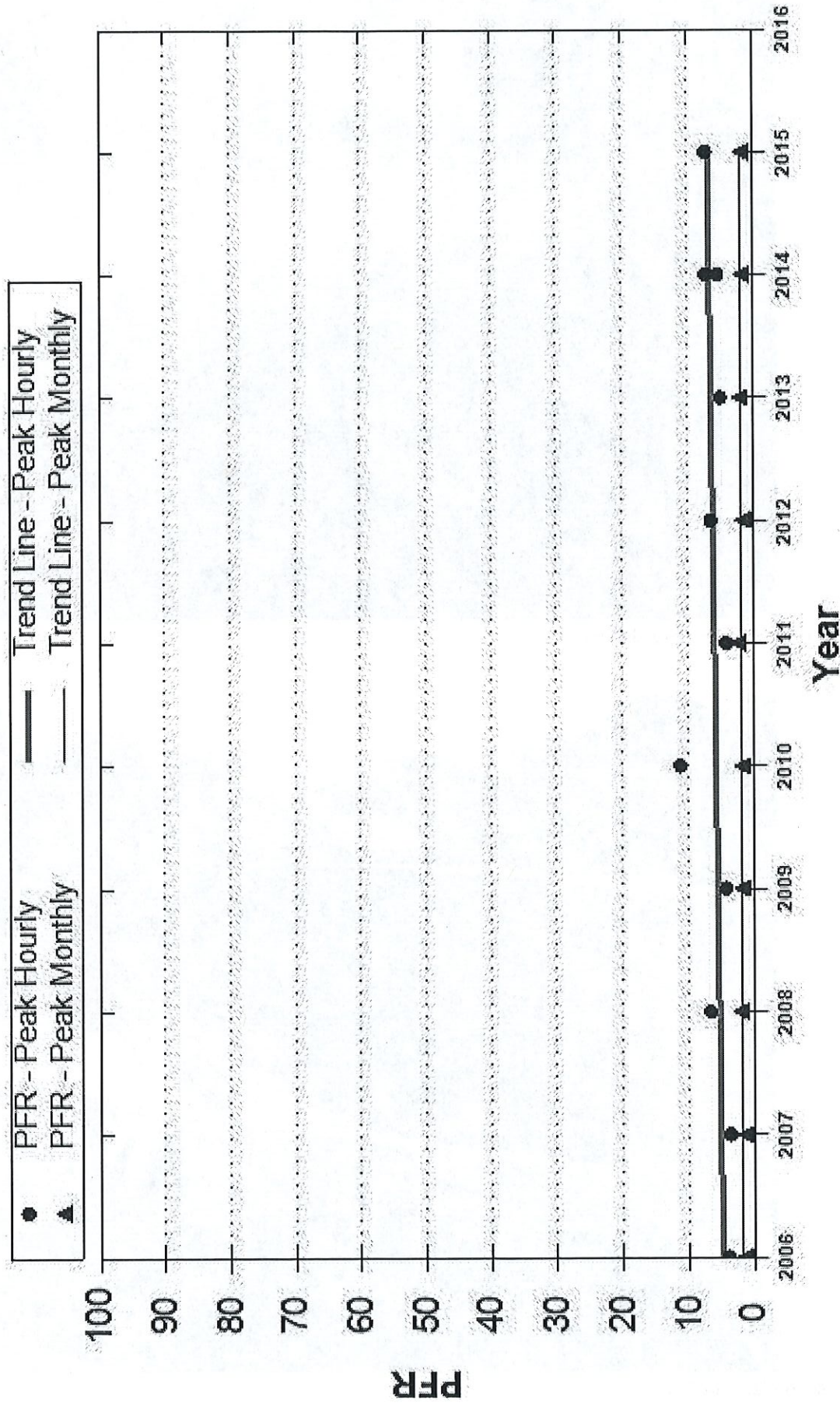


Appleton Wastewater Treatment Facility

Linear equations use 2006 - 2016 CMAR data

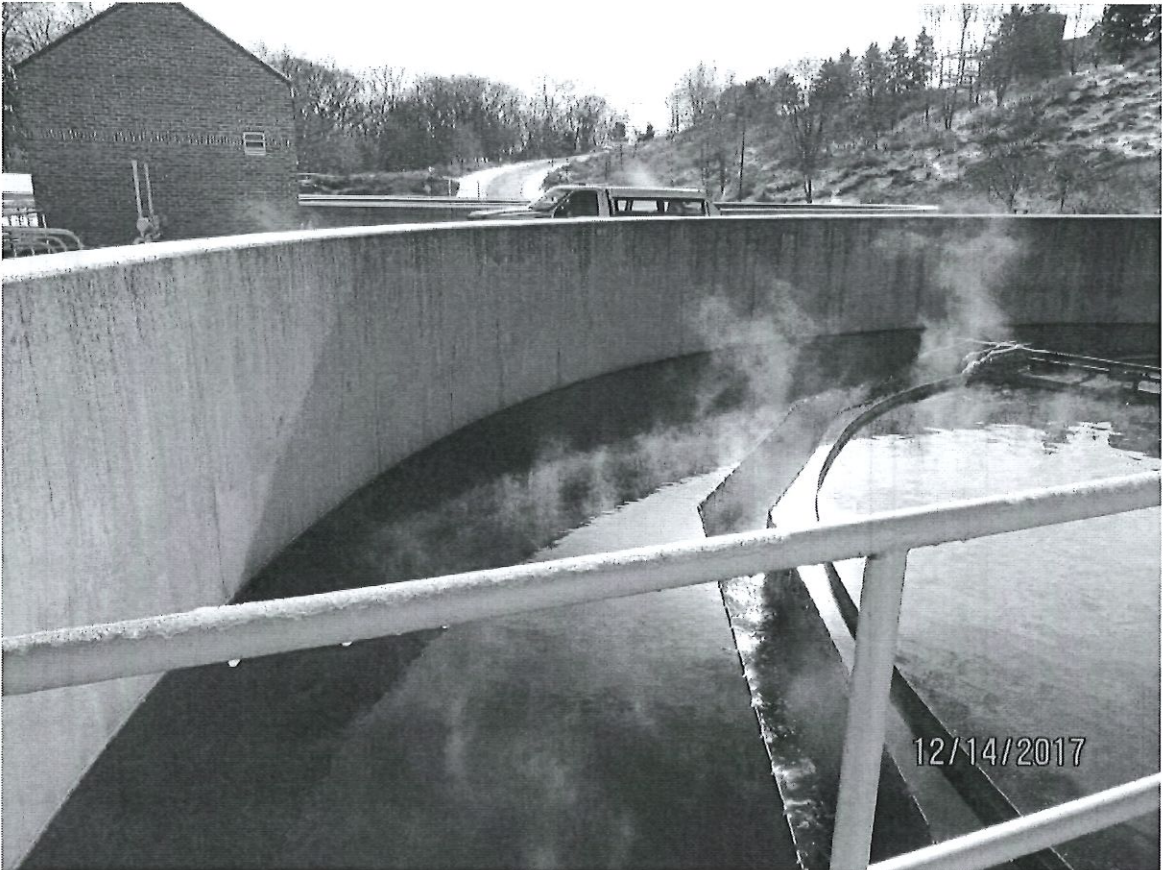
for Trend Lines: PFR - Peak Hourly: $y = 0.218582x + 4.78$ PFR - Peak Monthly: $y = 0.017570x + 1.59$

**Collection System O&M Performance Indicators:
PFR - Peaking Factor Ratio (Hourly and Monthly)**

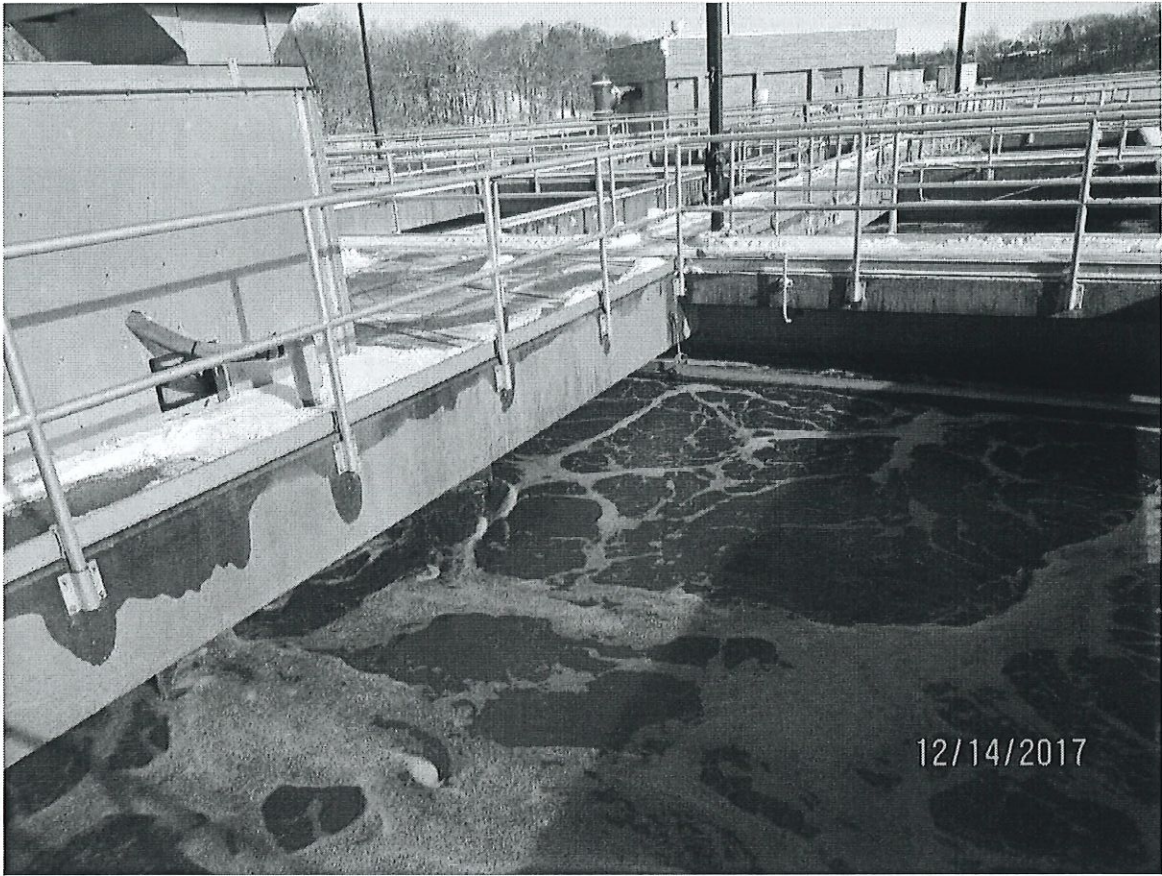




Close-up view of secondary clarifier



View of secondary clarifier



View of reeration tank



McMAHON ENGINEERS ARCHITECTS
 1445 W. MICHIGAN AVE. #1000
 ANN ARBOR, MI 48106
 TEL: 734.769.1000 FAX: 734.769.1001
 WWW.MCMAGP.COM

CRESTMIEW DRIVE

CITY OF APPLETON - DEPT. OF UTILITIES
 DIGESTER IMPROVEMENTS PROJECT
 OVERALL SITE PLAN

| NO. | DATE | REVISION |
|-----|------|----------|
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