# NPDES Compliance Sampling Inspection Report

Camden County Municipal Utilities Authority (CCMUA) – Delaware #1 Water Pollution Control Facility

1645 Ferry Ave.
Camden, New Jersey 08104

NPDES Permit #: NJ0026182

Inspection Dates: May 06-07, 2024

**Report Prepared by:**

THUAN TRAN Digitally signed by THUAN TRAN
Date: 2024.06.27 09:20:03 -04'00'

Thuan Tran, Physical Scientist

**Report Approved by:**

PHILIP COCUZZA Digitally signed by PHILIP COCUZZA
Date: 2024.06.27 09:39:46 -04'00'

Phil Cocuzza, Supervisor
Monitoring Operations Section

## 1.0 OBJECTIVE

On May 06-07, 2024, at the requested of the State of New Jersey Department of Environmental Protection (NJDEP), the United States Environmental Protection Agency (USEPA) conducted a National Pollutant Discharge Elimination System (NPDES)/New Jersey Pollutant Discharge Elimination System (NJPDES) Compliance Sampling Inspection (CSI) at Camden County Municipal Utilities Authority – Delaware #1 Water Pollution Control Facility (CCMUA-Delaware #1 WPCF). The objective of the NPDES/NJPDES CSI was to gather information necessary to determine if the facility is in compliance with the conditions, requirements and limitations set forth in their NPDES/NJPDES permit and other related federal regulations. CCMUA-Delaware #1 WPCF is operating under the expired permit.

## 2.0 KEY PARTICIPANTS

Listed below are key inspection participants and contact information, grouped by organization.

U.S. Environmental Protection Agency
Thuan Tran, Lead Inspector
732-321-4455, email: tran.thuan@epa.gov
Molly Hillenbrand, Environmental Scientist

CCMUA-Delaware #1 WPCF
Jason Fry, Assistant Director of Operation & Maintenance
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Caitlin Foussadier, Supervising Environmental Health Specialist/IPP Compliance Coordinator
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Leonard Gipson, Director of Operation & Maintenance – Plant
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Oleg Zonis, Director of Engineering & Process Systems
856-583-1222, email: ozonis@ccmua.org
Mathew Farmer, Senior Plant Operator

State of New Jersey Department of Environmental Protection (NJDEP)
Robert Siracusa, Environmental Specialist 2
856-614-3655, email: robert.siracusa@dep.nj.gov

## 3.0 FACILITY DESCRIPTION

### 3.1 General Information:

Camden County Municipal Utilities Authority – Delaware #1 Water Pollution Control Facility was constructed in 1953. Through the decades, various additions, modifications, and expansions have modernized the wastewater treatment facility to its present condition. CCMUA-Delaware #1 WPCF serves approximately thirty-two (32) of 37 municipalities in

Camden County. Each municipality is responsible to operate and maintain their sewer collection system. The 32 municipalities are part of the Delaware Drainage Basin. CCMUA-Delaware #1 WPCF receives and treats approximately 58 million gallons per day (MGD) of wastewater with a designed capacity of 80 MGD. Treated effluent discharges into the Delaware River.

CCMUA-Delaware #1 WPCF is located on 1645 Ferry Avenue, Camden, New Jersey (NJ) and employs approximately 130 personnel. The wastewater treatment plant operates around the clock with 3, 8-hour shifts (7AM-3:30PM, 3:30PM-11PM & 11PM-7AM). CCMUA-Delaware #1 WPCF is categorized under Standard Industrial Classification (SIC) 4952 – Sewerage Systems and the North American Industry Classification System (NAICS) 221320 – Sewage Treatment Facilities.

3.2 Process Information

Incoming wastewater is conveyed to the CCMUA-Delaware #1 WPCF via three (3) influent lines. The treatment plant also receives septage from septic haulers. As the wastewater flows into the plant, preliminary treatment is provided starting with three (3) mechanical bar screens that operate on time. Large matters and rags are removed to assist the flow of wastewater into the three (3) rectangular grit tanks to allow for the removal of heavy solids. The overflow from the grit tanks is split between the Northside and Southside Wastewater Treatment Trains. The split flow does not comingle until the Effluent Junction Box. The split flow is aerated in the inlet channel before distributing between the Primary Sedimentation Tanks. Retention time in the Primary Sedimentation Tanks allows for phase separation in which heavy solids settle to the bottom and scum floats to the surface for removal. The overflow from the Primary Sedimentation Tanks is directed into the Aeration Tanks that operates in a plug flow mode with the introduction of pure oxygen ($O_2$). The Activated Sludge Process generates a Mixed Liquor Suspended Solids (MLSS) that flows into the Final Sedimentation Tanks for further phase separation. Some of the sludge from the Final Sedimentation Tanks return to the aeration tanks as Return Activated Sludge (RAS) or pumped to the Sludge Blend Tank as Waste Activated Sludge (WAS). The overflow from the Final Sedimentation Tanks is disinfected with sodium hypochlorite (NaCIO) at the head of the contact channel. Retention time is provided in the Chlorine Contact Channel to remove pathogens and viruses. The effluent flow is monitored by an ultrasonic flow sensor with a rectangular weir before free-falling into the effluent receiving trench. The effluent from the Northside and Southside Wastewater Treatment Trains is conveyed to the Effluent Discharge Junction Box. From the junction box, the effluent discharges into the Delaware River via Outfall 001.

Large matters, rags and grits are collected from the preliminary treatment process. Scum from the Primary and Secondary Sedimentation Tanks is mixed with rags and grits in the Scum Concentration Building and is disposed of in the landfill.

Sludge from the Primary Sedimentation Tanks is pumped into the Sludge Holding Tank. From the holding tank, the sludge is pumped to the Sludge Blend Tank and mixed with the WAS from the Final Sedimentation Tanks. Once the sludge is well mixed, it is pumped to the Gravity Belt Thickener (GBT). On the way, a polymer is injected in-line and mixed with the sludge before reaching the GBT. The thickened sludge from the GBT is pumped into the Anaerobic Sludge Digesters. The anaerobic digestion temperature is maintained between 95-99° Fahrenheit and constant mixing for 20 days. After digestion, the cooked sludge is pumped to the Belt Filter Press (BFP). A polymer is injected in-line and mixed with the anaerobic digested sludge. From the BFP, the sludge cake is collected and trucked to the landfill as Class B Biosolids or treated at Synagro for beneficial reuse.

Filtrates from the BFP and GBT and supernatant from the Scum Concentration Building are directed to the head of the wastewater treatment plant before the mechanical bar screens.

### 3.3 Facility Self-Monitoring Information

CCMUA-Delaware #1 WPCF permit compliance samples are analyzed by the contract laboratory, ALS Environmental Laboratory in Middletown, PA. Samples are collected by the treatment plant employees and distributed into pre-preserved sample containers that are provided by the contract laboratory. Samples are collected from the Northside and Southside Chlorine Contact Channel for the same permitted parameters. Samples are collected for $cBOD_5$, TSS, Ammonia, Phosphorus, Metals (Cu & Zn), Total Cyanide, Fecal Coliforms, E. Coli, Oil & Grease, and Chlorine Produced Oxidants. CCMUA-Delaware #1 WPCF provides separate chain of custodies for samples collected from the Northside and Southside Wastewater Treatment Trains. The analytical results from both trains are averaged to determine permit compliance. On-site samples are collected and analyzed by CCMUA-Delaware #1 WPCF employees for pH and temperature.

## 4.0 EPA SAMPLING/INSPECTION ACTIVITIES

### 4.1 Sampling Activities

Two (2) ISCO automatic composite samplers were programmed to take ninety-six (96) sample aliquots during the twenty-four (24) hour sampling event at the designated monitoring locations upstream of the rectangular weirs from the Northside and Southside Chlorine Contact Channels. After 24 hours, the composite samples were proportioned based on the discharged flows. The 24-Hr flow-proportioned composite sample was collected and analyzed for 5-Day Carbonaceous Biochemical Oxygen Demand ($cBOD_5$), Total Suspended Solids (TSS), Ammonia, Phosphorus and Metals (Cu & Zn).

Grab-composite samples from the Northside and Southside Chlorine Contact Channels were collected at various time intervals and analyzed for Cyanide.

Grab samples from the Northside and Southside Chlorine Contact Channels were collected and analyzed for Fecal Coliform, Oil and Grease (O&G), NVOA (1,4-dioxane), and Polyfluorinated Alkyl Substances (PFAS).

Furthermore, on-site grab samples were collected and analyzed from the Northside and Southside Chlorine Contact Channels for pH, Temperature, and Total Residual Chlorine (TRC).

All sample containers, preservation techniques and holding times were in accordance with USEPA requirements specified in 40 CFR Part 136. Signed and dated custody seals were placed across the lids and along the sides of the sample containers. The custody sealed sample containers were placed inside plastic sample bags and sealed. All samples were transported on ice to the USEPA Laboratory in Edison, New Jersey for analysis.

Additional precautions were taken when collecting PFAS samples to minimize contamination. PFAS and PFAS Field Blank samples were collected in polypropylene (PP) sample bottles. The field blank water was obtained from the Edison laboratory in PP bottle. When the field blank and effluent samples were collected, a paper tag with sample information was attached to the neck of the PP sample bottle by a natural rubber band. The samples with the sample information tags were placed inside a PP bag, and place inside a larger PP bag before placing the samples into a dedicated PFAS sample cooler with ice. (**Note**- the PFAS blank water sample taken prior to collecting the PFAS sample is a FIELD BLANK sample. It was incorrectly labeled "TRIP BLANK" in the "LAB ID/FIELD ID" column of the USEPA REGION 2 LABORATORY CHAIN OF CUSTODY/FIELD DATA FORM).

The flow monitoring data for the 24-hr sampling event was provided by the facility's representative. The flow readings were not obtained from the flow meters located at the Northside and Southside Chlorine Contact Channels monitoring locations.

The facility representative declined the EPA offer for split samples.

4.2 Inspection Activities

An NPDES/NJPDES Compliance Sampling Inspection (CSI) at CCMUA-Delaware #1 WPCF was conducted between May 06-07, 2024. The inspectors met with Leonard Cipson; Director of Operation and Maintenance, Oleg Zonis; Director of Engineering and Process Systems, and Caitlin Foussadier; Supervisor Environmental Health Specialist/IPP Compliance Coordinator, as well as Robert Siracusa; NJDEP Environmental Specialist. Inspector's credential was presented, and business card was provided during the opening conference. The facility representatives were explained that the inspection purpose with supporting on-site activities was to determine if CCMUA-Delaware #1 WPCF is in compliance with the conditions, requirements, and limitations of their NPDES/NJPDES permit and other related federal and state regulations. The inspectors met with Jason Fry; Assistant Director of Operation & Maintenance, and Mathew Farmer; Senior Operator, during the inspection.

Supporting on-site activities consist of collecting samples of the effluent at the monitoring locations at the Northside and Southside Chlorine Contact Channels, observing and evaluating the monitoring locations, observation and evaluation of CCMUA-Delaware #1 WPCF sampling protocol, observing and evaluating the wastewater treatment plant operation, observing and evaluating the flow monitoring equipment, review and evaluation of the on-site sampling procedures, and interviewing the facility's representatives.

The facility's representatives were briefed on the inspection activities throughout the inspection and during the closing conference. On-site sample results and concerns discovered during the inspection were communicated to the facility's representatives.

## 5.0 ANALYTICAL RESULTS

**Table 1: Outfall 001A – Delaware River - 24-Hr Flow-Proportioned Composite Sample**
**Inspection Dates: May 06-07, 2024**

| PARAMETER | UNIT | EFFLUENT LIMITATION | | RESULT |
|---|---|---|---|---|
| Flow | MGD | Monitor | --- | 72.16 |
| $_{C}BOD_5$ | mg/l | 25 (Mo. Avg.) | 40 (Weekly Avg.) | 2.15 |
| $_{C}BOD_5$ – Loading | lbs/d | 8,118 (Mo. Avg.) | 12,112 (Weekly Avg.) | 1,294 |
| $_{C}BOD_5$ – % Removal | % | 86 (Mo. Avg. Min) | ---- | 99.5 |
| TSS | mg/l | 30 (Mo. Avg. | 45 (Weekly Avg.) | U |
| TSS – Loading | lbs/d | 9,084 (Mo. Avg.) | 13,626 (Weekly Avg.) | 6,018 |
| TSS -% Removal | % | 85 (Mo. Avg. Min) | --- | 98.3 |
| Ammonia ($NH_3$) | mg/l | 35 (Mo. Avg.) | Report (Daily Max.) | 30.8 |
| Phosphorus | mg/l | Monitor | Monitor | 2.81 |
| Zinc – Conc. | ug/l | Report (Mo. Avg.) | 226 (Daily Max.) | 52.6 |
| Zinc – Loading | gr/d | 68,450 (Daily Max.) | --- | 14,385 |
| Copper – Conc. | ug/l | Report (Mo. Avg.) | 100 (Daily Max.) | U J |
| Copper – Loading | gr/d | 30,300 (Daily Max.) | --- | 2,735 |

**Notes:** : Mass Loading (lbs/d) = Concentration (mg/l) X Flow (MGD) x Conversion Factor (8.34 lbs/gal.)
(kg/d) = Concentration (mg/l) X Flow (MGD) x Conversion Factor (3.79 kg/gal.)
:U - The analyte was not detected at or above the Reporting Limit.
:J - The identification of the analyte is acceptable; the reported value is an estimate.

**Table 2: Outfall 001A – Delaware River - Grab & Grab-Composite Samples**
**Inspection Dates: May 06-07, 2024**

| PARAMETER | UNIT | EFFLUENT LIMITATION | | RESULT | |
|---|---|---|---|---|---|
| | | | | Northside | Southside |
| Cyanide | ug/l | 20 (Mo. Avg.) | 32 (Daily Max.) | U | U |
| Cyanide – Loading | gr/d | 5,996 (Mo. Avg.) | 9,601 (Daily Max.) | 2,775 | 2,698 |
| pH | SU | 6.0 (Min) | 9.0 (Max.) | 6.54 | 6.58 |
| TRC | mg/l | Report (Mo. Avg.) | Report (Daily Max.) | 1.17 | 1.06 |
| Temperature | °C | Report (Mo. Avg.) | Report (Max.) | 19 | 19 |
| Fecal Coliform | #/100ML | 200 (Mo. Geo.) | 400 (Weekly Geo.) | <1.8 | 13 |
| O&G | mg/l | 10 (Mo. Avg.) | 15 (Daily Max.) | U L | U |
| PFAS: | ug/l | State Requested | ---- | ---- | ---- |
| PFBS | ug/l | " | ---- | 3.86 J | 4.63 J |
| PFHxA | ug/l | " | ---- | 16.6 | 15.0 |
| PFOA | ug/l | " | ---- | 9.63 | 11.0 |
| PFOS | ug/l | " | ---- | 6.70 | 7.52 |
| 1,4-dioxane (NVOA) | ug/l | State Requested | ---- | U | U |

**Notes:** : Mass Loading (kg/d) = Concentration (mg/l) X Flow (MGD) x Conversion Factor (3.79 kg/gal.)
: U- The analyte was not detected at or above the Reporting Limit (RL).
: J - The identification of the analyte is acceptable; the reported value is an estimate.
: L – The identification of the analyte is acceptable; the reported value may be biased low.

## 6.0 FINDINGS

### 6.1 Sampling Result Findings

The EPA analytical results obtained during this inspection are within the acceptable limits.

### 6.2 Inspection Findings

In addition to the analytical data, an inspection of the facility operations was conducted as discussed in Section 4.2 above. During the inspection, the following observations were noted which may contravene the requirements of the applicable permit, state and federal regulations:

6.2.1 Fine bubbles were observed raising to the surface in the Northside and Southside Chlorine Contact Channels. Raising bubbles were more pronounced toward the monitoring locations. According to 40 CFR Part 122.41(e) – Proper operation and maintenance, it states, "*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 conditions of this permit.*" In addition, Title 7 of the N.J.A.C Subchapter 6 Section 7:14A-6.12 (a) (1) Operation, Maintenance, & Emergency Conditions, it states, " *A permittee shall, at all times, maintain in good working order and operate the treatment works and facilities which are installed or used by the*

*permittee to achieve compliance with the terms and conditions of the discharge permit. Proper operation and maintenance, includes, at a minimum:*

1. *Effective performance based upon treatment levels for which the treatment works was designed;"*

6.2.2 According to the permit, cyanide is collected as a composite sample using an automatic composite sampler. Cyanide cannot be collected in this manner due to the presence of chlorine. Chlorine must be removed/neutralized immediately to prevent interference with the sample analysis. According to 40 CFR Part 136: Table II - Required Containers, Preservation Techniques, and Holding Times for Cyanide, the column for "Preservation" states, "*reducing agent if oxidizer present*" (ex. chlorine), as well as footnote 5 of the table. For Cyanide, Method 4500-CN- B, Preliminary Treatment of Samples, Section 2 – Sample Preservation, it states, "*Oxidizing agents, such as chlorine decompose most cyanides."……."Add 0.02 g/L (*small portions*) sodium thiosulfate solution and re-test; repeat until the oxidizers are neutralized."* Furthermore, EPA Method 335.4 – Determination of Total Cyanide by Semi-Automated Colorimetry, Section 8.2 for Sample Collection, Preservation and Storage states, " *If the sample contains chlorine or hydrogen sulfide, see Section 4.0 for treatment."* Section 4.4 for Interferences states, " *Oxidizing agents, such as chlorine, decompose most of the cyanides."* Furthermore, Title 7 of the N.J.A.C. Subchapter 6 Section 7:14A-6.5 (a)(2) Monitoring, it states, "*The permittee shall perform all analyses in accordance with the analytical test procedures specified in 40 CFR 136 or, in the case of residual use or disposal, in 40 CFR 503, or unless other test procedures have been specified in the permit."*

6.2.3 Pin Floc was observed overflowing the V-notch weirs in the Final Sedimentation Tanks leading into the chlorine contact channels. According to 40 CFR Part 122.41(e) – Proper operation and maintenance, it states, "*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 conditions of this permit.*" In addition, Title 7 of the N.J.A.C Subchapter 6 Section 7:14A-6.12 (a) (1) Operation, Maintenance, & Emergency Conditions, It states, " *A permittee shall, at all times, maintain in good working order and operate the treatment works and facilities which are installed or used by the permittee to achieve compliance with the terms and conditions of the discharge permit. Proper operation and maintenance, includes, at a minimum:*

1. *Effective performance based upon treatment levels for which the treatment works was designed;"*

6.2.4 Incoming flow is split between the Northside and Southside Wastewater Treatment Trains. The split waste streams do not comingle until the Effluent Discharge Junction Box. Compliance samples are only collected from the Northside Wastewater Treatment Train. Furthermore, internal process waste streams are

directed back into the treatment process ahead of the mechanical bar screens. As a result, the influent sample is not representative of the incoming flow. According to 40 CFR Part 122.41(j)(1) – *Monitoring and records* and Title 7 of N.J.A.C. Subchapter 6 Section 7:14A-6.5 (a) (1) – Monitoring requirements are as follows, the regulations state, *"Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity."*

6.2.5 No calibration information was observed on the flow meters at the Northside and Southside Chlorine Contact Channels. The facility representatives could not provide the information of the last time the flow meters were calibrated. According to Title 7 of the N.J.A.C. Subchapter 6 Section 7:14A 6.5(b)(1) All permittees shall, it states, "*Properly install, use, and maintain monitoring equipment and use proper monitoring methods (including biological monitoring methods when appropriate);"* Furthermore, Title 7 of the N.J.A.C. Subchapter 6 Section 7:14A 6.6(a) Recordkeeping, It states, "*A person shall retain records of all monitoring information including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by a NJPDES permit, records for all data used to complete the application for a NJPDES permit, and records of monitoring information required by the permit at least five years, or longer as required by N.J.A.C. 7:14A-20, from the date of the sample, measurement, report, application, or record*."

6.2.6 The temperature readings from the facility's portable refrigerated composite samplers were observed to be 0.7°C with an error on the Southside Chlorine Contact Channel and 2.2°C for the Northside Chlorine Contact Channel. The temperature sensors of the composite samplers should be calibrated, and a correction factor sticker/tag attached to the composite samplers to ensure proper sample preservation is maintained during composite sampling. According to footnote 2 in 40 CFR Part 136 – Table II – Required Containers, Preservation Techniques, and Holding Times, it states, *"Except where noted in this Table II and the method for the parameter, preserve each grab sample within 15 minutes of collection. For a composite sample collected with an automated sample (e.g. using a 24-hour composite sample; see 40 CFR 122.21(g)(7)(i) or 40 CFR part 403, appendix E), refrigerate the sample at </= 6°C during collection unless specified otherwise in this Table II or in the method(s)."*

## 7.0 ATTACHMENTS

**Attachment #1**. An overview site plan shows the perimeter of CCMUA - Delaware #1 WPCF.

**Attachment #2**. A list of industrial users discharging into CCMUA - Delaware #1 WPCF.

**Attachment #3**. USEPA Chain of Custody for Samples was submitted to the USEPA Lab.

**Attachment #4**. USEPA Analytical Data Package was received on 05/29/2024.

## 8.0 PHOTOGRAPHS

**Photo #1**. An ISCO automatic composite sampler was programmed to collect sample aliquots from the Northside Chlorine Contact Channel.

**Photo #2**. An ISCO automatic composite sampler was programmed to collect sample aliquots from the Southside Chlorine Contact Channel.

**Photo #3**. Foam was observed overflowing into the Delaware River.

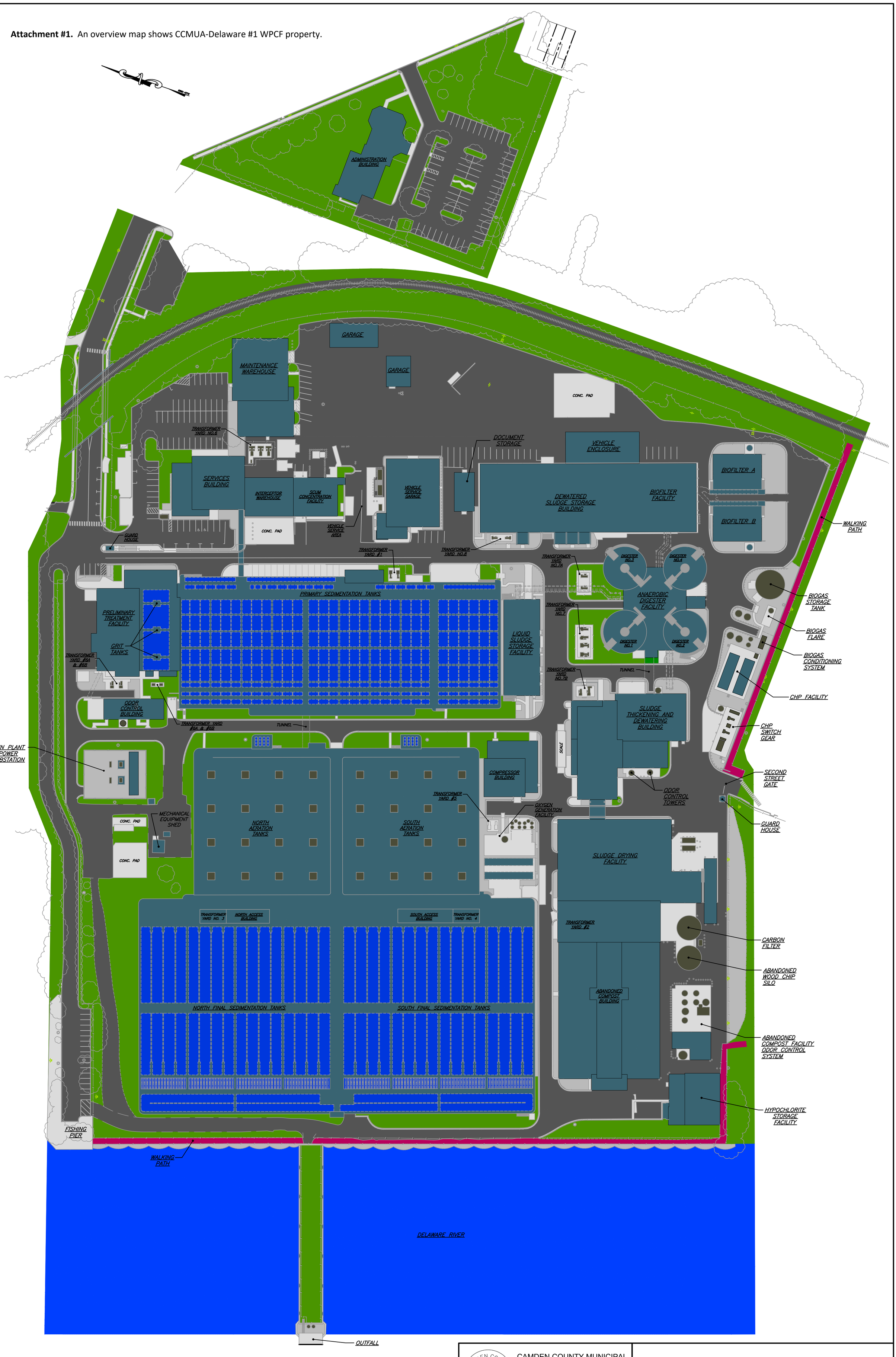
**Photo #4**. Pin floc was observed overflowing the V-notch weirs from the Northside and Southside Final Sedimentation Tanks.

**Photo #5.** No calibration tags/stickers were observed on the flow meters at the Northside and Southside Chlorine Contact Channels.

**Photo #6.** Bubbles were observed raising to the surface in the Chlorine Contact Channels.

# 7.0 Attachments

**Attachment #1.** An overview map shows CCMUA-Delaware #1 WPCF property.




CAMDEN COUNTY MUNICIPAL UTILITIES AUTHORITY
1645 FERRY AVENUE
CAMDEN NJ, 08104
(856) 541-3700

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

# GENERAL SITE PLAN
# DELAWARE NO. 1
# WATER POLLUTION CONTROL FACILITY

| SCALE: | DATE: | DRAWING NO. |
|---|---|---|
| N.T.S. | 2/8/23 | 1 OF 1 |

**Attachment #2.** CCMUA-Delaware #1 WPCF receives pretreated wastewater from permitted industrial users.

| CASE TYPE | FACILITY NAME |
|---|---|
| Categorical Indirect Users (CIUs) | ALMAG Aluminum |
| | Aptapharma |
| | Art Metalcraft Plating Company |
| | Camden Plant Holding |
| | Cetylite |
| | Datwyler |
| | Disc Makers, Incorporated |
| | Hikma |
| | Mycone Dental |
| | Pepco Manufacturing Co. |
| | RF Products |
| Non-Sign. Categorical Indirect Users (NSCIUs) | H & H Industries |
| Significant/Major Indirect User (SIUs) | Adventure Aquarium |
| | Ancora Psychiatric Hospital |
| | Aramark, Inc. |
| | BI Foods DBA Value Added Foods |
| | Camden County Correctional Facility |
| | Camden County Energy Rec. |
| | Campbell's Soup |
| | Catelli Brothers - Collingswood |
| | Consolidated Rail Corp-Pavonia Diesel Terminal |
| | Cooper Hospital |
| | Curaleaf- Blue Anchor |
| | Edge Linen |
| | Elmwood Hills |
| | HCSC Laundry |
| | J & J Snack Foods - Pennsauken |
| | Jefferson Hospital -- Cherry Hill |
| | Jefferson Hospital -- Stratford |
| | NJDEP - GEMS Landfill |
| | Our Lady of Lourdes Medical Center |
| | PCFA of Camden County (Pennsauken Landfill) |
| | Pennsauken Packing Company |
| | Pepsi Cola & National Brand Beverages |
| | Puratos -- Pennsauken |
| | Resintech, Inc. |
| | Resintech, Inc. Camden |
| | The Eggo Company |
| | Virtua Voorhees |
| Non-Significant Indirect Users (NSIUs) | Bylada Foods |
| | Caesar's Pasta |
| | Exceptional Foods |
| | International Paper - Barrington |
| | International Paper - Bellmawr |
| | J & J Snack Foods - Bellmawr |
| | Port Authority Transit Corporation (PATCO) |
| | Seviroli |
| | Single Source Plus Laundry Solutions |
| | Supply One |

**Attachment #3.** Samples were submitted to the EPA Region 2 Laboratory for analysis.

US EPA REGION 2 LABORATORY

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# CHAIN OF CUSTODY/ FIELD DATA FORM

SURVEY NAME & LOCALITY _____ CCMUA-Delaware #1 WPCF

PROJECT LEADER _____ Thuan Tran

**PROGRAM:** SF ☐ : SITE ID _____ OPERABLE UNIT _____ PROGRAM RESULTS CODE _____

| Decision | RCRA ☐ | RCRA ENF ☐ | NPDES ☐ X | SDWA ☐ | AM ☐ | CAA ☐ | TSCA ☐ | OD ☐ | FIFRA ☐ | CRIMINAL ENF ☐ |
|---|---|---|---|---|---|---|---|---|---|---|
| Unit Code Y206 | D210 | D307 | B304 | C215 | B224 | A305 | L306 | B253 | | |

| Permit #: ___NPDES NJ0026182___ LAB ID/ FIELD ID | # OF CONTERS | MATRIX | CHECK IF SPLIT SAMPLE | DESCRIPTION & INSTRUCTIONS INCLUDING LOCATION, ESTIMATED CONCENTRATIONS, SPECIAL REPORTING LIMITS, | Res CL Checked | Preservative (circle) | Collection Time (24hr clock) Begin | Collection Time (24hr clock) End | Collection Date mm/dd/yy |
|---|---|---|---|---|---|---|---|---|---|
| Effluent-24-Hr Flow-Prop. | 5 | B | ☐ | 2, 1-liter HDPE bottles: cBOD5: 24-Hr Flow-Prop Comp | ☐ | 2405011-01 0 | 1134 | 1119 | 5/6-7/24 |
| | | B | ☐ | 1, 500-ml HDPE bottle: TSS: 24-Hr Flow-Prop Comp | ☐ | 0 | 1134 | 1119 | 5/6-7/24 |
| | | B | ☐ | 1, 250-ml HDPE bottle: Ammonia/Phosphorus: 24-Hr Flow-Prop | ☐ | 01 | 1134 | 1119 | 5/6-7/24 |
| | | B | ☐ | 1, 250-ml HPDE bottle: Metals*: 24-Hr Flow-Prop Comp | ☐ | 02 | 1134 | 1119 | 5/6-7/24 |
| Effluent- North Side G-C | 1 | B | ☐ | 1, 125-mp plastic bottle: Cyanide: Grab-Comp (3X) | ☐ | -02 049 | 1346 | 1123 | 5/6-7/24 |
| Effluent-North Side-G | 8 | B | ☐ | 3, 1-liter clear WM glasses: O&G: Direct Grab | ☐ | -03 03 | | 1058 | 5/7/2024 |
| | | B | ☐ | 3, 1-liter amber WM glasses: NVOAs: Direct-Grab | ☐ | 04 | | 1058 | 5/7/2024 |
| | | B | ☐ | 1, 290 sterilized plastic bottle: Fecal Coliform: Direct-Grab | ☐ | 04 | | 1058 | 5/7/2024 |
| | | B | ☐ | 1, 250 polypropylene bottle: PFAS*: Direct-Grab | ☐ | -04 0 | | 1140 | 5/7/2024 |
| TRIP BLANK | 1 | A | ☐ | 1, 250-ml polypropylene bottle: PFAS*: Grab | ☐ | -05 0 | | 1136 | 5/7/2024 |

COMMENTS & SPECIAL REQUIREMENTS:

**Notes:** Metals*: Copper (Cu) & Zinc (Zn)

PFAS* TRIP BLANK & Sample: preserved with Trizma & Ice

TRC Reading: North Side: 1.17 mg/l South Side: 1.06 mg/l

5/7/24

**Preservative Added & Checked**

0=ice
1=H2SO4 pH<2
2=HNO3 pH<2
3=HCl pH<2
4=Na2S2O3
5=NaOH pH>9
6=Ascorbic Acid
7=FAS
8=ZnAc
9=NaOH pH>12
10=NH4Cl

**Matrix:**

A=aqueous
B=aqueous (chlorinated)
C=soil
D=sediment
E=sludge
F=multiphasic
G=solvent
H=biota
I=oil
J=other

| | | Time | Date |
|---|---|---|---|
| Relinquished By: | Person Assuming Responsibility for Sample(s): | 1600 | 5/7/24 |
| Relinquished By: | Received By: | 16:00 | 5/7/24 |
| Relinquished By: | Received By: | | |
| Relinquished By: | Received By: | | |

Survey Complete? Y ☒ N ☐

Direct from Sampling, chilled Quarantined 5/7/24

revised 10/25/2004

US EPA REGION 2 LABORATORY

# CHAIN OF CUSTODY/ FIELD DATA FORM



SURVEY NAME & LOCALITY CCMUA-Delaware #1 WPCF  PROJECT LEADER Thuan Tran

**PROGRAM**: SF ☐ :  SITE ID _____  OPERABLE UNIT _____  PROGRAM RESULTS CODE _____

| Decision | RCRA ☐ | RCRA ENF ☐ | NPDES ☐ X | SDWA ☐ | AM ☐ | CAA ☐ | TSCA ☐ | OD ☐ | FIFRA ☐ | CRIMINAL ENF ☐ |
|---|---|---|---|---|---|---|---|---|---|---|
| Unit Code Y206 | D210 | D307 | B304 | C215 | B224 | A305 | L306 | B253 | | |

Permit #: NPDES NJ0026182

| LAB ID/ FIELD ID | # OF CONTAINERS | MATRIX | CHECK IF SPLIT SAMPLE | DESCRIPTION & INSTRUCTIONS INCLUDING LOCATION, ESTIMATED CONCENTRATIONS, SPECIAL REPORTING LIMITS, | Res CL Checked | Preservative (circle) | Collection Time (24hr clock) Begin | Collection Time (24hr clock) End | Collection Date mm/dd/yy |
|---|---|---|---|---|---|---|---|---|---|
| Influent-Comp. | 2 | A | ☐ | 1, 1-liter HDPE bottle: cBOD5: 24-Hr Comp. | ☐ | 240-5011-06 0 | 1200 | 1145 | 5/6-7/24 |
| | | A | ☐ | 1, 250-ml HDPE bottle: TSS: 24-hr Comp. | ☐ | " 0 | 1200 | 1145 | 5/6-7/24 |
| Effluent- South Side G-C | 1 | B | ☐ | 1, 125-mp plastic bottle: Cyanide: Grab-Comp (3X) | ☐ | -07 0 4 9 | 1346 | 1123 | 5/6-7/24 |
| Effluent-South Side-G | 4 | B | ☐ | 1, 1-liter clear WM glass: O&G: Direct Grab | ☐ | -08 0 3 | | 1106 | 5/7/2024 |
| | | B | ☐ | 1, 1-liter amber WM glass: NVOAs: Direct-Grab | ☐ | 0 4 | | 1106 | 5/7/2024 |
| | | B | ☐ | 1, 290 sterilized plastic bottle: Fecal Coliform: Direct-Grab | ☐ | 0 4 | | 1106 | 5/7/2024 |
| | | B | ☐ | 1, 250 polypropylene bottle: PFAS*: Direct-Grab | ☐ | -09 0 | | 1140 | 5/7/2024 |
| | | | ☐ | | ☐ | 0 1 2 3 4 5 6 7 8 9 10 | | | |
| | | | ☐ | | ☐ | 0 1 2 3 4 5 6 7 8 9 10 | | | |
| | | | ☐ | | ☐ | 0 1 2 3 4 5 6 7 8 9 10 | | | |

#A 5/7/24

5/7/2024

COMMENTS & SPECIAL REQUIREMENTS:

**Note:** PFAS* Sample: preserved with Trizma & Ice

TRC Reading: North Side: 1.17 mg/l  South Side: 1.06 mg/l

**Preservative Added & Checked**

0=ice
1=H2SO4 pH<2
2=HNO3 pH<2
3=HCl pH<2
4=Na2S2O3
5=NaOH pH>9
6=Ascorbic Acid
7=FAS
8=ZnAc
9=NaOH pH>12
10=NH4Cl

| | Time | Date |
|---|---|---|
| Person Assuming Responsibility for Sample(s): | 1600 | 5/7/24 |
| Relinquished By: / Received By: | 1600 | 5/7/24 |
| Relinquished By: / Received By: | | |
| Relinquished By: / Received By: | | |

**Matrix:**

A=aqueous
B=aqueous (chlorinated)
C=soil
D=sediment
E=sludge
F=multiphasic
G=solvent
H=biota
I=oil
J=other

Survey Complete? Y ☒ N ☐

revised 10/25/2004

**Attachment #4**. USEPA Analytical Data Package was received on 5/29/2024.

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**
**Region 2 Laboratory**
**2890 Woodbridge Avenue**
**Edison , New Jersey 08837**
**732-906-6886 Phone**
**732-906-6165 Fax**

May 28, 2024

Thuan Tran
Monitoring & Assessment Branch
LSASD/MAB
Edison, NJ 08837

RE: CCMUA-Delaware #1 WWTF - 2405011

Enclosed are the results of analyses for samples received by the laboratory on 05/07/2024. The signature below reflects the laboratory's approval of the reported results. If you have any questions concerning this report, please refer to Project Number 2405011 and contact the laboratory.

Sincerely,

John R. Bourbon
Chief, LSASD/LB

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**
**Region 2 Laboratory**

**Final Report**

**Project: CCMUA-Delaware #1 WWTF - 2405011**

**Project Number: 2405011**

## Project Narrative:

The National Environmental Laboratory Accreditation Conference Institute (TNI) is a voluntary environmental laboratory accreditation association of State and Federal agencies. TNI established and promoted a National Environmental Laboratory Accreditation Program (NELAP) that provides a uniform set of standards for the generation of environmental data that are of known and defensible quality. The EPA Region 2 Laboratory is NELAP accredited. The Laboratory tests that are accredited have met all the requirements established under the TNI Standards.

Condition Comments

Biochemical Oxygen Demand (BOD) Analysis: Sample 2405011-06 exhibited toxicity toward the seed organisms used for BOD. This is demonstrated by increasing BOD values as sample dilution increases. Only the result for the largest sample dilution is being reported instead of the average of all acceptable dilutions; the average is used when the sample does not exhibit toxicity. Since an even higher sample dilution may have produced a higher BOD result, these sample was qualified with an “L” to indicate the result is biased low.

Comment(s):

The "Sample Analysis Date and Time" is included in the results section for any analyte with a prescribed holding time of 72 hours or less.

Data Qualifier(s):

U- The analyte was not detected at or above the Reporting Limit.
J- The identification of the analyte is acceptable; the reported value is an estimate.
K- The identification of the analyte is acceptable; the reported value may be biased high.
L- The identification of the analyte is acceptable; the reported value may be biased low.
NJ- There is presumptive evidence that the analyte is present; the analyte is reported as a tentative identification. The reported value is an estimate.

# Final Report

**Project: CCMUA-Delaware #1 WWTF - 2405011**

**Project Number: 2405011**

Reporting Limit(s):

The Laboratory was able to achieve the appropriate limit for each analyte requested.

**SUMMARY REPORT FOR SAMPLES**

| Field ID | Laboratory ID | Matrix | Date Sampled | Date Received |
|---|---|---|---|---|
| Effluent-24-Hr Flow-Prop. | 2405011-01 | Aqueous | 05/07/2024 11:19 | 05/07/2024 16:00 |
| Effluent - North Side G-C | 2405011-02 | Aqueous | 05/07/2024 11:23 | 05/07/2024 16:00 |
| Effluent - North Side G | 2405011-03 | Aqueous | 05/07/2024 10:58 | 05/07/2024 16:00 |
| Effluent - North Side G | 2405011-04 | Aqueous | 05/07/2024 10:40 | 05/07/2024 16:00 |
| TRIP BLANK | 2405011-05 | Aqueous | 05/07/2024 11:36 | 05/07/2024 16:00 |
| Influent-Comp. | 2405011-06 | Aqueous | 05/07/2024 11:45 | 05/07/2024 16:00 |
| Effluent - South Side G-C | 2405011-07 | Aqueous | 05/07/2024 11:23 | 05/07/2024 16:00 |
| Effluent - South Side G | 2405011-08 | Aqueous | 05/07/2024 11:06 | 05/07/2024 16:00 |
| Effluent - South Side G | 2405011-09 | Aqueous | 05/07/2024 10:40 | 05/07/2024 16:00 |

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**
**Region 2 Laboratory**

# Final Report

**Project: CCMUA-Delaware #1 WWTF - 2405011**

**Project Number: 2405011**

## SUMMARY REPORT FOR METHODS

| Analysis | Method | Certification | Matrix |
|---|---|---|---|
| 625.1 SVOA NPDES | EPA 625.1 SOP C-90 Rev 3.9 | NELAP | Aqueous |
| Ammonia [As N] | EPA 350.1 SOP C-80 Rev 2.8 | NELAP | Aqueous |
| Biochemical Oxygen Demand, Carb. | SM 5210B SOP C-21 Rev 2.8 | NELAP | Aqueous |
| Cyanide, Total | EPA 335.4 SOP C-28 Rev 2.8 | NELAP | Aqueous |
| Coliform, Fecal | SM9221B,E / SOP B-8 Rev 2.8 | NELAP | Aqueous |
| Metals ICP TAL NPDES/DW | EPA 200.7 SOP C-109 Rev 3.7 | NELAP | Aqueous |
| Oil & Grease | EPA 1664A SOP C-126 Rev 1.7 | NELAP | Aqueous |
| Perfluorinated alkyl acids (PFAAs) | EPA EPA 537.1 SOP C-135 Rev 1.4 | NELAP | Aqueous |
| Phosphorus | EPA 365.1 SOP C-68 Rev 2.8 | NELAP | Aqueous |
| Residue, Non-Filterable | SM 2540D SOP C-33 Rev 3.8 | NELAP | Aqueous |

# Final Report

**Project: CCMUA-Delaware #1 WWTF - 2405011**

**Project Number: 2405011**

| Analyte | Result | Qualifier | Reporting Limit | Units | Batch | Date and Time of Analysis* |
|---|---|---|---|---|---|---|
| **Field ID: Effluent-24-Hr Flow-Prop.** | | | **Sample ID: 2405011-01** | | | |
| **Metals ICP** | | | | | | |
| Copper | --- | U J | 10.0 | ug/L | B405027 | |
| Lead | --- | U | 8.00 | ug/L | B405027 | |
| Zinc | 52.6 | | 20.0 | ug/L | B405027 | |
| **Sanitary** | | | | | | |
| Ammonia [As N] | 30.8 | | 1.00 | mg/L | B405093 | |
| Biochemical Oxygen Demand, Carb. | 2.15 | | 2.00 | mg/L | B405034 | 05/14/2024 07:27 |
| Phosphorus | 2.81 | | 0.500 | mg/L | B405060 | |
| Total Suspended Solids | --- | U | 10.0 | mg/L | B405046 | |
| **Field ID: Effluent - North Side G-C** | | | **Sample ID: 2405011-02** | | | |
| **Sanitary** | | | | | | |
| Cyanide, Total | --- | U | 20.0 | ug/L | B405080 | |
| **Field ID: Effluent - North Side G** | | | **Sample ID: 2405011-03** | | | |
| **NVOA GCMS** | | | | | | |
| 1,4-Dioxane | --- | U | 2.06 | ug/L | B405052 | |
| **GC** | | | | | | |
| Oil & Grease | --- | U L | 5.75 | mg/L | B405099 | |
| **Microbiology, MPN** | | | | | | |
| Coliform, Fecal | <1.8 | | 1.8 | MPN/100 mL | B405023 | 05/08/2024 15:10 |
| **Field ID: Effluent - North Side G** | | | **Sample ID: 2405011-04** | | | |
| **PFAAS, LCMS-MS** | | | | | | |
| 11Cl-PF3OUdS | --- | U L | 3.64 | ng/L | B405067 | |
| 9Cl-PF3ONS | --- | U L | 3.64 | ng/L | B405067 | |
| HFPO-DA | --- | U | 3.64 | ng/L | B405067 | |
| ADONA | --- | U | 3.64 | ng/L | B405067 | |
| NEtFOSAA | --- | U | 3.64 | ng/L | B405067 | |
| NMeFOSAA | --- | U | 3.64 | ng/L | B405067 | |
| PFBS | 3.86 | J | 3.64 | ng/L | B405067 | |

# Final Report

**Project: CCMUA-Delaware #1 WWTF - 2405011**

**Project Number: 2405011**

| Analyte | Result | Qualifier | Reporting Limit | Units | Batch | Date and Time of Analysis* |
|---|---|---|---|---|---|---|
| **Field ID: Effluent - North Side G** | | | | **Sample ID: 2405011-04** | | |
| **PFAAS, LCMS-MS** | | | | | | |
| PFDA | --- | U | 3.64 | ng/L | B405067 | |
| PFDoA | --- | U | 3.64 | ng/L | B405067 | |
| PFHpA | --- | U | 3.64 | ng/L | B405067 | |
| PFHxA | 16.6 | | 3.64 | ng/L | B405067 | |
| PFHxS | --- | U L | 3.64 | ng/L | B405067 | |
| PFNA | --- | U | 3.64 | ng/L | B405067 | |
| PFOA | 9.63 | | 3.64 | ng/L | B405067 | |
| PFOS | 6.70 | L | 3.64 | ng/L | B405067 | |
| PFTeDA | --- | U | 3.64 | ng/L | B405067 | |
| PFTrDA | --- | U | 3.64 | ng/L | B405067 | |
| PFUdA | --- | U | 3.64 | ng/L | B405067 | |
| PFPeS | --- | U | 3.64 | ng/L | B405067 | |
| PFNS | --- | U | 3.64 | ng/L | B405067 | |
| PFHpS | --- | U | 3.64 | ng/L | B405067 | |
| PFDS | --- | U | 3.64 | ng/L | B405067 | |
| 4:2 FTS | --- | U J | 3.64 | ng/L | B405067 | |
| 6:2 FTS | --- | U J | 3.64 | ng/L | B405067 | |
| 8:2 FTS | --- | U J | 3.64 | ng/L | B405067 | |
| **Field ID: TRIP BLANK** | | | | **Sample ID: 2405011-05** | | |
| **PFAAS, LCMS-MS** | | | | | | |
| 11Cl-PF3OUdS | --- | U | 3.51 | ng/L | B405067 | |
| 9Cl-PF3ONS | --- | U | 3.51 | ng/L | B405067 | |
| HFPO-DA | --- | U | 3.51 | ng/L | B405067 | |
| ADONA | --- | U | 3.51 | ng/L | B405067 | |
| NEtFOSAA | --- | U | 3.51 | ng/L | B405067 | |
| NMeFOSAA | --- | U | 3.51 | ng/L | B405067 | |
| PFBS | --- | U J | 3.51 | ng/L | B405067 | |
| PFDA | --- | U | 3.51 | ng/L | B405067 | |
| PFDoA | --- | U | 3.51 | ng/L | B405067 | |

# Final Report

**Project: CCMUA-Delaware #1 WWTF - 2405011**

**Project Number: 2405011**

| Analyte | Result | Qualifier | Reporting Limit | Units | Batch | Date and Time of Analysis* |
|---|---|---|---|---|---|---|
| **Field ID: TRIP BLANK** | | | **Sample ID: 2405011-05** | | | |
| **PFAAS, LCMS-MS** | | | | | | |
| PFHpA | --- | U | 3.51 | ng/L | B405067 | |
| PFHxA | --- | U | 3.51 | ng/L | B405067 | |
| PFHxS | --- | U | 3.51 | ng/L | B405067 | |
| PFNA | --- | U | 3.51 | ng/L | B405067 | |
| PFOA | --- | U | 3.51 | ng/L | B405067 | |
| PFOS | --- | U | 3.51 | ng/L | B405067 | |
| PFTeDA | --- | U | 3.51 | ng/L | B405067 | |
| PFTrDA | --- | U | 3.51 | ng/L | B405067 | |
| PFUdA | --- | U | 3.51 | ng/L | B405067 | |
| PFPeS | --- | U L | 3.51 | ng/L | B405067 | |
| PFNS | --- | U L | 3.51 | ng/L | B405067 | |
| PFHpS | --- | U L | 3.51 | ng/L | B405067 | |
| PFDS | --- | U L | 3.51 | ng/L | B405067 | |
| 4:2 FTS | --- | U | 3.51 | ng/L | B405067 | |
| 6:2 FTS | --- | U | 3.51 | ng/L | B405067 | |
| 8:2 FTS | --- | U | 3.51 | ng/L | B405067 | |
| **Field ID: Influent-Comp.** | | | **Sample ID: 2405011-06** | | | |
| **Sanitary** | | | | | | |
| Biochemical Oxygen Demand, Carb. | 457 | L | 2.00 | mg/L | B405034 | 05/14/2024 07:27 |
| Total Suspended Solids | 590 | | 10.0 | mg/L | B405046 | |
| **Field ID: Effluent - South Side G-C** | | | **Sample ID: 2405011-07** | | | |
| **Sanitary** | | | | | | |
| Cyanide, Total | --- | U | 20.0 | ug/L | B405080 | |
| **Field ID: Effluent - South Side G** | | | **Sample ID: 2405011-08** | | | |
| **NVOA GCMS** | | | | | | |
| 1,4-Dioxane | --- | U | 2.35 | ug/L | B405052 | |
| **GC** | | | | | | |

# Final Report

## Project: CCMUA-Delaware #1 WWTF - 2405011

## Project Number: 2405011

| Analyte | Result | Qualifier | Reporting Limit | Units | Batch | Date and Time of Analysis* |
|---|---|---|---|---|---|---|
| **Field ID: Effluent - South Side G** | | | **Sample ID: 2405011-08** | | | |
| **GC** | | | | | | |
| Oil & Grease | --- | U | 5.62 | mg/L | B405099 | |
| **Microbiology, MPN** | | | | | | |
| Coliform, Fecal | 13 | | 1.8 | MPN/100 mL | B405023 | 05/08/2024 15:10 |
| **Field ID: Effluent - South Side G** | | | **Sample ID: 2405011-09** | | | |
| **PFAAS, LCMS-MS** | | | | | | |
| 11Cl-PF3OUdS | --- | U | 3.72 | ng/L | B405067 | |
| 9Cl-PF3ONS | --- | U | 3.72 | ng/L | B405067 | |
| HFPO-DA | --- | U | 3.72 | ng/L | B405067 | |
| ADONA | --- | U | 3.72 | ng/L | B405067 | |
| NEtFOSAA | --- | U | 3.72 | ng/L | B405067 | |
| NMeFOSAA | --- | U | 3.72 | ng/L | B405067 | |
| PFBS | 4.63 | J | 3.72 | ng/L | B405067 | |
| PFDA | --- | U | 3.72 | ng/L | B405067 | |
| PFDoA | --- | U | 3.72 | ng/L | B405067 | |
| PFHpA | --- | U | 3.72 | ng/L | B405067 | |
| PFHxA | 15.0 | | 3.72 | ng/L | B405067 | |
| PFHxS | --- | U | 3.72 | ng/L | B405067 | |
| PFNA | --- | U | 3.72 | ng/L | B405067 | |
| PFOA | 11.0 | | 3.72 | ng/L | B405067 | |
| PFOS | 7.52 | | 3.72 | ng/L | B405067 | |
| PFTeDA | --- | U | 3.72 | ng/L | B405067 | |
| PFTrDA | --- | U | 3.72 | ng/L | B405067 | |
| PFUdA | --- | U | 3.72 | ng/L | B405067 | |
| PFPeS | --- | U | 3.72 | ng/L | B405067 | |
| PFNS | --- | U | 3.72 | ng/L | B405067 | |
| PFHpS | --- | U | 3.72 | ng/L | B405067 | |
| PFDS | --- | U | 3.72 | ng/L | B405067 | |
| 4:2 FTS | --- | U J | 3.72 | ng/L | B405067 | |

# Final Report

**Project: CCMUA-Delaware #1 WWTF - 2405011**

**Project Number: 2405011**

| Analyte | Result | Qualifier | Reporting Limit | Units | Batch | Date and Time of Analysis* |
|---|---|---|---|---|---|---|
| **Field ID: Effluent - South Side G** | | | | **Sample ID: 2405011-09** | | |
| **PFAAS, LCMS-MS** | | | | | | |
| 6:2 FTS | --- | U J | 3.72 | ng/L | B405067 | |
| 8:2 FTS | --- | U J | 3.72 | ng/L | B405067 | |

# Final Report

## Project: CCMUA-Delaware #1 WWTF - 2405011

## Project Number: 2405011

## NVOA GCMS - Quality Control

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| **Batch B405052** | | | | | | | | | |
| **Blank (B405052-BLK1)** | | | | | | | | | |
| Acenaphthene | --- U | 5.00 | ug/L | | | | | | |
| Acenaphthylene | --- U | 5.00 | ug/L | | | | | | |
| Anthracene | --- U | 5.00 | ug/L | | | | | | |
| Benzo(A)Anthracene | --- U | 5.00 | ug/L | | | | | | |
| Benzo(A)Pyrene | --- U | 5.00 | ug/L | | | | | | |
| Benzo(B)Fluoranthene | --- U | 5.00 | ug/L | | | | | | |
| Benzo(G,H,I)Perylene | --- U | 5.00 | ug/L | | | | | | |
| Benzo(K)Fluoranthene | --- U | 5.00 | ug/L | | | | | | |
| Chrysene | --- U | 5.00 | ug/L | | | | | | |
| Dibenzo(A,H)Anthracene | --- U | 5.00 | ug/L | | | | | | |
| Fluoranthene | --- U | 5.00 | ug/L | | | | | | |
| Fluorene | --- U | 5.00 | ug/L | | | | | | |
| Indeno(1,2,3-Cd)Pyrene | --- U | 5.00 | ug/L | | | | | | |
| Naphthalene | --- U | 2.00 | ug/L | | | | | | |
| Phenanthrene | --- U | 5.00 | ug/L | | | | | | |
| 1,2,4-Trichlorobenzene | --- U | 5.00 | ug/L | | | | | | |
| 2,4,6-Trichlorophenol | --- U | 5.00 | ug/L | | | | | | |
| 2,4-Dichlorophenol | --- U | 5.00 | ug/L | | | | | | |
| 2,4-Dimethylphenol | --- U | 5.00 | ug/L | | | | | | |
| 2,4-Dinitrotoluene | --- U | 5.00 | ug/L | | | | | | |
| 2,6-Dinitrotoluene | --- U | 5.00 | ug/L | | | | | | |
| 2,4-Dinitrophenol | --- U | 5.00 | ug/L | | | | | | |
| 2-Chloronaphthalene | --- U | 5.00 | ug/L | | | | | | |
| 2-Chlorophenol | --- U | 5.00 | ug/L | | | | | | |
| 2-Nitrophenol | --- U | 5.00 | ug/L | | | | | | |
| 3,3'- Dichlorobenzidine | --- U | 5.00 | ug/L | | | | | | |
| 4,6-Dinitro-2-Methylphenol | --- U | 5.00 | ug/L | | | | | | |
| 4-Bromophenyl-Phenylether | --- U | 5.00 | ug/L | | | | | | |
| 4-Chloro-3-Methylphenol | --- U | 5.00 | ug/L | | | | | | |
| 4-Chlorophenyl-Phenylether | --- U | 5.00 | ug/L | | | | | | |
| 4-Nitrophenol | --- U | 5.00 | ug/L | | | | | | |
| Bis(-2-Chloroethoxy)Methane | --- U | 5.00 | ug/L | | | | | | |
| Bis(2-Chloroethyl)Ether | --- U | 5.00 | ug/L | | | | | | |
| Bis(2-Chloroisopropyl)Ether | --- U | 5.00 | ug/L | | | | | | |

# Final Report

## Project: CCMUA-Delaware #1 WWTF - 2405011

## Project Number: 2405011

## NVOA GCMS - Quality Control

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| **Batch B405052** | | | | | | | | | |
| **Blank (B405052-BLK1)** | | | | | | | | | |
| Bis(2-Ethylhexyl)Phthalate | --- U | 5.00 | ug/L | | | | | | |
| Butylbenzylphthalate | --- U | 5.00 | ug/L | | | | | | |
| Azobenzene | --- U | 5.00 | ug/L | | | | | | |
| Diethylphthalate | --- U | 5.00 | ug/L | | | | | | |
| Dimethyl Phthalate | --- U | 2.00 | ug/L | | | | | | |
| Di-N-Butyl Phthalate | --- U | 5.00 | ug/L | | | | | | |
| Di-N-Octyl Phthalate | --- U | 5.00 | ug/L | | | | | | |
| Hexachlorobenzene | --- U | 5.00 | ug/L | | | | | | |
| Hexachlorobutadiene | --- U | 2.00 | ug/L | | | | | | |
| Hexachlorocyclopentadiene | --- U | 5.00 | ug/L | | | | | | |
| Hexachloroethane | --- U | 2.00 | ug/L | | | | | | |
| Isophorone | --- U | 5.00 | ug/L | | | | | | |
| Nitrobenzene | --- U | 5.00 | ug/L | | | | | | |
| N-Nitrosodimethylamine | --- U | 5.00 | ug/L | | | | | | |
| N-Nitroso-Di-N-Propylamine | --- U | 5.00 | ug/L | | | | | | |
| N-Nitrosodiphenylamine | --- U | 5.00 | ug/L | | | | | | |
| Pentachlorophenol | --- U | 5.00 | ug/L | | | | | | |
| Phenol | --- U | 2.00 | ug/L | | | | | | |
| Pyrene | --- U | 5.00 | ug/L | | | | | | |
| 1,4-Dioxane | --- U | 2.00 | ug/L | | | | | | |
| *Surrogate: 2-Fluoroaniline* | *44.3* | | ug/L | *50.00* | | *88.7* | *60-140* | | |
| *Surrogate: Phenol-D6* | *ND* | | ug/L | *50.00* | | *38.6* | *60-140* | | |
| *Surrogate: Naphthalene-D8* | *44.2* | | ug/L | *50.00* | | *88.5* | *60-140* | | |
| *Surrogate: 1-Fluoronaphthalene* | *44.2* | | ug/L | *50.00* | | *88.3* | *60-140* | | |
| *Surrogate: 2,4-Dibromophenol* | *39.2* | | ug/L | *50.00* | | *78.5* | *60-140* | | |
| *Surrogate: Anthracene-D10* | *52.2* | | ug/L | *50.00* | | *104* | *60-140* | | |
| *Surrogate: Chrysene-D12* | *45.9* | | ug/L | *50.00* | | *91.8* | *60-140* | | |

# Final Report

## Project: CCMUA-Delaware #1 WWTF - 2405011

## Project Number: 2405011

## NVOA GCMS - Quality Control

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| **Batch B405052** | | | | | | | | | |
| **LCS (B405052-BS1)** | | | | | | | | | |
| Acenaphthene | 40.5 | 5.00 | ug/L | 50.00 | | 81.0 | 47-145 | | |
| Acenaphthylene | 38.8 | 5.00 | ug/L | 50.00 | | 77.7 | 33-145 | | |
| Anthracene | 43.4 | 5.00 | ug/L | 50.00 | | 86.9 | 27-133 | | |
| Benzo(A)Anthracene | 47.3 | 5.00 | ug/L | 50.00 | | 94.7 | 33-143 | | |
| Benzo(A)Pyrene | 49.9 | 5.00 | ug/L | 50.00 | | 99.8 | 17-163 | | |
| Benzo(B)Fluoranthene | 50.0 | 5.00 | ug/L | 50.00 | | 99.9 | 24-159 | | |
| Benzo(G,H,I)Perylene | 51.0 | 5.00 | ug/L | 50.00 | | 102 | 35-219 | | |
| Benzo(K)Fluoranthene | 49.1 | 5.00 | ug/L | 50.00 | | 98.3 | 11-162 | | |
| Chrysene | 47.0 | 5.00 | ug/L | 50.00 | | 94.0 | 17-168 | | |
| Dibenzo(A,H)Anthracene | 51.7 | 5.00 | ug/L | 50.00 | | 103 | 33-227 | | |
| Fluoranthene | 44.2 | 5.00 | ug/L | 50.00 | | 88.5 | 26-137 | | |
| Fluorene | 42.8 | 5.00 | ug/L | 50.00 | | 85.5 | 59-121 | | |
| Indeno(1,2,3-Cd)Pyrene | 52.5 | 5.00 | ug/L | 50.00 | | 105 | 39-171 | | |
| Naphthalene | 38.6 | 2.00 | ug/L | 50.00 | | 77.3 | 21-133 | | |
| Phenanthrene | 44.6 | 5.00 | ug/L | 50.00 | | 89.3 | 54-120 | | |
| 1,2,4-Trichlorobenzene | 36.2 | 5.00 | ug/L | 50.00 | | 72.5 | 44-142 | | |
| 2,4,6-Trichlorophenol | 41.6 | 5.00 | ug/L | 50.00 | | 83.2 | 37-144 | | |
| 2,4-Dichlorophenol | 40.7 | 5.00 | ug/L | 50.00 | | 81.3 | 39-135 | | |
| 2,4-Dimethylphenol | 26.6 | 5.00 | ug/L | 50.00 | | 53.3 | 32-120 | | |
| 2,4-Dinitrotoluene | 49.6 | 5.00 | ug/L | 50.00 | | 99.3 | 39-139 | | |
| 2,6-Dinitrotoluene | 45.5 | 5.00 | ug/L | 50.00 | | 91.0 | 50-158 | | |
| 2,4-Dinitrophenol | 22.7 | 5.00 | ug/L | 50.00 | | 45.3 | 21-191 | | |
| 2-Chloronaphthalene | 38.8 | 5.00 | ug/L | 50.00 | | 77.7 | 60-120 | | |
| 2-Chlorophenol | 38.3 | 5.00 | ug/L | 50.00 | | 76.6 | 23-134 | | |
| 2-Nitrophenol | 44.8 | 5.00 | ug/L | 50.00 | | 89.5 | 29-182 | | |
| 3,3'- Dichlorobenzidine | 47.0 | 5.00 | ug/L | 50.00 | | 94.1 | 38-262 | | |
| 4,6-Dinitro-2-Methylphenol | 46.1 | 5.00 | ug/L | 50.00 | | 92.1 | 17-181 | | |
| 4-Bromophenyl-Phenylether | 45.2 | 5.00 | ug/L | 50.00 | | 90.4 | 53-127 | | |
| 4-Chloro-3-Methylphenol | 39.8 | 5.00 | ug/L | 50.00 | | 79.6 | 22-147 | | |
| 4-Chlorophenyl-Phenylether | 43.3 | 5.00 | ug/L | 50.00 | | 86.6 | 25-158 | | |
| 4-Nitrophenol | 21.2 | 5.00 | ug/L | 50.00 | | 42.4 | 9-132 | | |
| Bis(-2-Chloroethoxy)Methane | 39.4 | 5.00 | ug/L | 50.00 | | 78.8 | 33-184 | | |
| Bis(2-Chloroethyl)Ether | 40.1 | 5.00 | ug/L | 50.00 | | 80.2 | 12-158 | | |
| Bis(2-Chloroisopropyl)Ether | 38.7 | 5.00 | ug/L | 50.00 | | 77.3 | 36-166 | | |
| Bis(2-Ethylhexyl)Phthalate | 54.2 | 5.00 | ug/L | 50.00 | | 108 | 8-158 | | |



NOTE: The results recorded in this report relate only to the samples as received on the date and at the time noted

# Final Report

## Project: CCMUA-Delaware #1 WWTF - 2405011

## Project Number: 2405011

## NVOA GCMS - Quality Control

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| **Batch B405052** | | | | | | | | | |
| **LCS (B405052-BS1)** | | | | | | | | | |
| Butylbenzylphthalate | 48.6 | 5.00 | ug/L | 50.00 | | 97.1 | 38-152 | | |
| Azobenzene | 43.0 | 5.00 | ug/L | 50.00 | | 85.9 | 60-115 | | |
| Diethylphthalate | 44.6 | 5.00 | ug/L | 50.00 | | 89.3 | 31-114 | | |
| Dimethyl Phthalate | 39.1 | 2.00 | ug/L | 50.00 | | 78.2 | 28-120 | | |
| Di-N-Butyl Phthalate | 47.1 | 5.00 | ug/L | 50.00 | | 94.2 | 1-120 | | |
| Di-N-Octyl Phthalate | 54.0 | 5.00 | ug/L | 50.00 | | 108 | 4-146 | | |
| Hexachlorobenzene | 44.7 | 5.00 | ug/L | 50.00 | | 89.5 | 35-152 | | |
| Hexachlorobutadiene | 36.5 | 2.00 | ug/L | 50.00 | | 72.9 | 24-120 | | |
| Hexachlorocyclopentadiene | 46.4 | 5.00 | ug/L | 50.00 | | 92.8 | 15-76 | | |
| Hexachloroethane | 36.2 | 2.00 | ug/L | 50.00 | | 72.4 | 40-120 | | |
| Isophorone | 44.1 | 5.00 | ug/L | 50.00 | | 88.2 | 21-196 | | |
| Nitrobenzene | 41.2 | 5.00 | ug/L | 50.00 | | 82.5 | 35-180 | | |
| N-Nitrosodimethylamine | 27.2 | 5.00 | ug/L | 50.00 | | 54.5 | 17-127 | | |
| N-Nitroso-Di-N-Propylamine | 39.8 | 5.00 | ug/L | 50.00 | | 79.5 | 43-230 | | |
| N-Nitrosodiphenylamine | 54.9 | 5.00 | ug/L | 50.00 | | 110 | 79-139 | | |
| Pentachlorophenol | 43.8 | 5.00 | ug/L | 50.00 | | 87.7 | 14-176 | | |
| Phenol | 17.8 | 2.00 | ug/L | 50.00 | | 35.5 | 5-120 | | |
| Pyrene | 45.5 | 5.00 | ug/L | 50.00 | | 91.1 | 52-120 | | |
| 1,4-Dioxane | 22.5 | 2.00 | ug/L | 50.00 | | 45.1 | 7-106 | | |
| *Surrogate: 2-Fluoroaniline* | *40.2* | | ug/L | *50.00* | | *80.4* | *60-140* | | |
| *Surrogate: Phenol-D6* | *16.8* | | ug/L | *50.00* | | *33.6* | *60-140* | | |
| *Surrogate: Naphthalene-D8* | *39.5* | | ug/L | *50.00* | | *79.0* | *60-140* | | |
| *Surrogate: 1-Fluoronaphthalene* | *39.3* | | ug/L | *50.00* | | *78.5* | *60-140* | | |
| *Surrogate: 2,4-Dibromophenol* | *39.4* | | ug/L | *50.00* | | *78.8* | *60-140* | | |
| *Surrogate: Anthracene-D10* | *46.3* | | ug/L | *50.00* | | *92.6* | *60-140* | | |
| *Surrogate: Chrysene-D12* | *44.2* | | ug/L | *50.00* | | *88.5* | *60-140* | | |
| **LCS Dup (B405052-BSD1)** | | | | | | | | | |
| Acenaphthene | 42.2 | 5.00 | ug/L | 50.00 | | 84.4 | 47-145 | 4.09 | 30 |
| Acenaphthylene | 40.3 | 5.00 | ug/L | 50.00 | | 80.7 | 33-145 | 3.79 | 30 |
| Anthracene | 42.6 | 5.00 | ug/L | 50.00 | | 85.2 | 27-133 | 1.95 | 30 |
| Benzo(A)Anthracene | 45.4 | 5.00 | ug/L | 50.00 | | 90.9 | 33-143 | 4.10 | 30 |
| Benzo(A)Pyrene | 48.8 | 5.00 | ug/L | 50.00 | | 97.6 | 17-163 | 2.21 | 30 |
| Benzo(B)Fluoranthene | 49.2 | 5.00 | ug/L | 50.00 | | 98.4 | 24-159 | 1.55 | 30 |
| Benzo(G,H,I)Perylene | 48.7 | 5.00 | ug/L | 50.00 | | 97.3 | 35-219 | 4.64 | 30 |

# Final Report

## Project: CCMUA-Delaware #1 WWTF - 2405011

## Project Number: 2405011

## NVOA GCMS - Quality Control

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| **Batch B405052** | | | | | | | | | |
| **LCS Dup (B405052-BSD1)** | | | | | | | | | |
| Benzo(K)Fluoranthene | 48.1 | 5.00 | ug/L | 50.00 | | 96.2 | 11-162 | 2.12 | 30 |
| Chrysene | 45.6 | 5.00 | ug/L | 50.00 | | 91.1 | 17-168 | 3.13 | 30 |
| Dibenzo(A,H)Anthracene | 50.1 | 5.00 | ug/L | 50.00 | | 100 | 33-227 | 3.14 | 30 |
| Fluoranthene | 44.3 | 5.00 | ug/L | 50.00 | | 88.5 | 26-137 | 0.0678 | 30 |
| Fluorene | 41.7 | 5.00 | ug/L | 50.00 | | 83.4 | 59-121 | 2.49 | 30 |
| Indeno(1,2,3-Cd)Pyrene | 52.3 | 5.00 | ug/L | 50.00 | | 105 | 39-171 | 0.401 | 30 |
| Naphthalene | 39.0 | 2.00 | ug/L | 50.00 | | 78.1 | 21-133 | 1.08 | 30 |
| Phenanthrene | 43.9 | 5.00 | ug/L | 50.00 | | 87.7 | 54-120 | 1.72 | 30 |
| 1,2,4-Trichlorobenzene | 36.2 | 5.00 | ug/L | 50.00 | | 72.4 | 44-142 | 0.0552 | 30 |
| 2,4,6-Trichlorophenol | 43.0 | 5.00 | ug/L | 50.00 | | 85.9 | 37-144 | 3.22 | 30 |
| 2,4-Dichlorophenol | 40.8 | 5.00 | ug/L | 50.00 | | 81.6 | 39-135 | 0.270 | 30 |
| 2,4-Dimethylphenol | 20.0 | 5.00 | ug/L | 50.00 | | 40.1 | 32-120 | 28.2 | 30 |
| 2,4-Dinitrotoluene | 48.8 | 5.00 | ug/L | 50.00 | | 97.6 | 39-139 | 1.75 | 30 |
| 2,6-Dinitrotoluene | 47.4 | 5.00 | ug/L | 50.00 | | 94.8 | 50-158 | 4.07 | 30 |
| 2,4-Dinitrophenol | 31.1 | 5.00 | ug/L | 50.00 | | 62.2 | 21-191 | 31.3 | 30 |
| 2-Chloronaphthalene | 39.8 | 5.00 | ug/L | 50.00 | | 79.5 | 60-120 | 2.39 | 30 |
| 2-Chlorophenol | 39.0 | 5.00 | ug/L | 50.00 | | 77.9 | 23-134 | 1.63 | 30 |
| 2-Nitrophenol | 45.6 | 5.00 | ug/L | 50.00 | | 91.3 | 29-182 | 1.95 | 30 |
| 3,3'- Dichlorobenzidine | 44.1 | 5.00 | ug/L | 50.00 | | 88.2 | 38-262 | 6.47 | 30 |
| 4,6-Dinitro-2-Methylphenol | 50.0 | 5.00 | ug/L | 50.00 | | 100 | 17-181 | 8.30 | 30 |
| 4-Bromophenyl-Phenylether | 43.8 | 5.00 | ug/L | 50.00 | | 87.6 | 53-127 | 3.19 | 30 |
| 4-Chloro-3-Methylphenol | 40.5 | 5.00 | ug/L | 50.00 | | 81.0 | 22-147 | 1.84 | 30 |
| 4-Chlorophenyl-Phenylether | 42.4 | 5.00 | ug/L | 50.00 | | 84.8 | 25-158 | 2.08 | 30 |
| 4-Nitrophenol | 23.0 | 5.00 | ug/L | 50.00 | | 46.0 | 9-132 | 8.23 | 30 |
| Bis(-2-Chloroethoxy)Methane | 40.3 | 5.00 | ug/L | 50.00 | | 80.6 | 33-184 | 2.23 | 30 |
| Bis(2-Chloroethyl)Ether | 40.9 | 5.00 | ug/L | 50.00 | | 81.8 | 12-158 | 1.95 | 30 |
| Bis(2-Chloroisopropyl)Ether | 39.4 | 5.00 | ug/L | 50.00 | | 78.9 | 36-166 | 1.97 | 30 |
| Bis(2-Ethylhexyl)Phthalate | 51.8 | 5.00 | ug/L | 50.00 | | 104 | 8-158 | 4.57 | 30 |
| Butylbenzylphthalate | 48.7 | 5.00 | ug/L | 50.00 | | 97.5 | 38-152 | 0.391 | 30 |
| Azobenzene | 42.2 | 5.00 | ug/L | 50.00 | | 84.4 | 60-115 | 1.76 | 30 |
| Diethylphthalate | 42.9 | 5.00 | ug/L | 50.00 | | 85.7 | 31-114 | 4.02 | 30 |
| Dimethyl Phthalate | 39.1 | 2.00 | ug/L | 50.00 | | 78.2 | 28-120 | 0.102 | 30 |
| Di-N-Butyl Phthalate | 45.8 | 5.00 | ug/L | 50.00 | | 91.5 | 1-120 | 2.93 | 30 |
| Di-N-Octyl Phthalate | 52.8 | 5.00 | ug/L | 50.00 | | 106 | 4-146 | 2.42 | 30 |
| Hexachlorobenzene | 43.7 | 5.00 | ug/L | 50.00 | | 87.3 | 35-152 | 2.42 | 30 |

# Final Report

## Project: CCMUA-Delaware #1 WWTF - 2405011

## Project Number: 2405011

## NVOA GCMS - Quality Control

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| **Batch B405052** | | | | | | | | | |
| **LCS Dup (B405052-BSD1)** | | | | | | | | | |
| Hexachlorobutadiene | 35.4 | 2.00 | ug/L | 50.00 | | 70.8 | 24-120 | 2.98 | 30 |
| Hexachlorocyclopentadiene | 44.9 | 5.00 | ug/L | 50.00 | | 89.8 | 15-76 | 3.22 | 30 |
| Hexachloroethane | 36.0 | 2.00 | ug/L | 50.00 | | 72.0 | 40-120 | 0.526 | 30 |
| Isophorone | 45.3 | 5.00 | ug/L | 50.00 | | 90.7 | 21-196 | 2.77 | 30 |
| Nitrobenzene | 42.4 | 5.00 | ug/L | 50.00 | | 84.8 | 35-180 | 2.77 | 30 |
| N-Nitrosodimethylamine | 28.2 | 5.00 | ug/L | 50.00 | | 56.3 | 17-127 | 3.32 | 30 |
| N-Nitroso-Di-N-Propylamine | 40.5 | 5.00 | ug/L | 50.00 | | 80.9 | 43-230 | 1.77 | 30 |
| N-Nitrosodiphenylamine | 53.0 | 5.00 | ug/L | 50.00 | | 106 | 79-139 | 3.47 | 30 |
| Pentachlorophenol | 46.0 | 5.00 | ug/L | 50.00 | | 92.0 | 14-176 | 4.76 | 30 |
| Phenol | 17.6 | 2.00 | ug/L | 50.00 | | 35.3 | 5-120 | 0.678 | 30 |
| Pyrene | 45.0 | 5.00 | ug/L | 50.00 | | 90.1 | 52-120 | 1.10 | 30 |
| 1,4-Dioxane | 23.5 | 2.00 | ug/L | 50.00 | | 47.0 | 7-106 | 4.17 | 30 |
| *Surrogate: 2-Fluoroaniline* | *39.9* | | ug/L | *50.00* | | *79.7* | *60-140* | | |
| *Surrogate: Phenol-D6* | *16.5* | | ug/L | *50.00* | | *33.1* | *60-140* | | |
| *Surrogate: Naphthalene-D8* | *39.8* | | ug/L | *50.00* | | *79.7* | *60-140* | | |
| *Surrogate: 1-Fluoronaphthalene* | *39.6* | | ug/L | *50.00* | | *79.2* | *60-140* | | |
| *Surrogate: 2,4-Dibromophenol* | *40.3* | | ug/L | *50.00* | | *80.6* | *60-140* | | |
| *Surrogate: Anthracene-D10* | *44.7* | | ug/L | *50.00* | | *89.3* | *60-140* | | |
| *Surrogate: Chrysene-D12* | *41.9* | | ug/L | *50.00* | | *83.8* | *60-140* | | |
| **Matrix Spike (B405052-MS1)** | **Source: 2405011-03** | | | | | | | | |
| Acenaphthene | 33.2 | 5.26 | ug/L | 52.63 | ND | 63.1 | 47-145 | | |
| Acenaphthylene | 33.5 | 5.26 | ug/L | 52.63 | ND | 63.7 | 33-145 | | |
| Anthracene | 36.5 | 5.26 | ug/L | 52.63 | ND | 69.3 | 27-133 | | |
| Benzo(A)Anthracene | 38.7 | 5.26 | ug/L | 52.63 | ND | 73.6 | 33-143 | | |
| Benzo(A)Pyrene | 41.1 | 5.26 | ug/L | 52.63 | ND | 78.1 | 17-163 | | |
| Benzo(B)Fluoranthene | 40.9 | 5.26 | ug/L | 52.63 | ND | 77.7 | 24-159 | | |
| Benzo(G,H,I)Perylene | 44.1 | 5.26 | ug/L | 52.63 | ND | 83.8 | 35-219 | | |
| Benzo(K)Fluoranthene | 39.4 | 5.26 | ug/L | 52.63 | ND | 74.8 | 11-162 | | |
| Chrysene | 39.4 | 5.26 | ug/L | 52.63 | ND | 74.8 | 17-168 | | |
| Dibenzo(A,H)Anthracene | 45.4 | 5.26 | ug/L | 52.63 | ND | 86.3 | 33-227 | | |
| Fluoranthene | 38.1 | 5.26 | ug/L | 52.63 | ND | 72.5 | 26-137 | | |
| Fluorene | 36.3 | 5.26 | ug/L | 52.63 | ND | 69.0 | 59-121 | | |
| Indeno(1,2,3-Cd)Pyrene | 44.3 | 5.26 | ug/L | 52.63 | ND | 84.1 | 39-171 | | |
| Naphthalene | 30.4 | 2.11 | ug/L | 52.63 | ND | 57.8 | 21-133 | | |

# Final Report

## Project: CCMUA-Delaware #1 WWTF - 2405011

## Project Number: 2405011

## NVOA GCMS - Quality Control

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| **Batch B405052** | | | | | | | | | |
| **Matrix Spike (B405052-MS1)** | | **Source: 2405011-03** | | | | | | | |
| Phenanthrene | 37.4 | 5.26 | ug/L | 52.63 | ND | 71.0 | 54-120 | | |
| 1,2,4-Trichlorobenzene | 29.9 | 5.26 | ug/L | 52.63 | ND | 56.7 | 44-142 | | |
| 2,4,6-Trichlorophenol | 31.4 | 5.26 | ug/L | 52.63 | ND | 59.6 | 37-144 | | |
| 2,4-Dichlorophenol | 30.0 | 5.26 | ug/L | 52.63 | ND | 57.1 | 39-135 | | |
| 2,4-Dimethylphenol | 31.6 | 5.26 | ug/L | 52.63 | ND | 60.0 | 32-120 | | |
| 2,4-Dinitrotoluene | 40.5 | 5.26 | ug/L | 52.63 | ND | 77.0 | 39-139 | | |
| 2,6-Dinitrotoluene | 37.0 | 5.26 | ug/L | 52.63 | ND | 70.2 | 50-158 | | |
| 2,4-Dinitrophenol | 28.6 | 5.26 | ug/L | 52.63 | ND | 54.4 | 21-191 | | |
| 2-Chloronaphthalene | 32.2 | 5.26 | ug/L | 52.63 | ND | 61.2 | 60-120 | | |
| 2-Chlorophenol | 25.9 | 5.26 | ug/L | 52.63 | ND | 49.2 | 23-134 | | |
| 2-Nitrophenol | 31.5 | 5.26 | ug/L | 52.63 | ND | 59.9 | 29-182 | | |
| 3,3'- Dichlorobenzidine | 21.9 | 5.26 | ug/L | 52.63 | ND | 41.6 | 38-262 | | |
| 4,6-Dinitro-2-Methylphenol | 37.6 | 5.26 | ug/L | 52.63 | ND | 71.4 | 17-181 | | |
| 4-Bromophenyl-Phenylether | 37.2 | 5.26 | ug/L | 52.63 | ND | 70.6 | 53-127 | | |
| 4-Chloro-3-Methylphenol | 31.3 | 5.26 | ug/L | 52.63 | ND | 59.4 | 22-147 | | |
| 4-Chlorophenyl-Phenylether | 36.5 | 5.26 | ug/L | 52.63 | ND | 69.3 | 25-158 | | |
| 4-Nitrophenol | 15.8 | 5.26 | ug/L | 52.63 | ND | 30.0 | 9-132 | | |
| Bis(-2-Chloroethoxy)Methane | 31.6 | 5.26 | ug/L | 52.63 | ND | 60.0 | 33-184 | | |
| Bis(2-Chloroethyl)Ether | 29.0 | 5.26 | ug/L | 52.63 | ND | 55.1 | 12-158 | | |
| Bis(2-Chloroisopropyl)Ether | 28.9 | 5.26 | ug/L | 52.63 | ND | 54.9 | 36-166 | | |
| Bis(2-Ethylhexyl)Phthalate | 47.9 | 5.26 | ug/L | 52.63 | ND | 91.0 | 8-158 | | |
| Butylbenzylphthalate | 42.5 | 5.26 | ug/L | 52.63 | ND | 80.8 | 38-152 | | |
| Azobenzene | 36.5 | 5.26 | ug/L | 52.63 | ND | 69.3 | 61-106 | | |
| Diethylphthalate | 37.9 | 5.26 | ug/L | 52.63 | ND | 72.0 | 31-114 | | |
| Dimethyl Phthalate | 34.6 | 2.11 | ug/L | 52.63 | ND | 65.7 | 28-120 | | |
| Di-N-Butyl Phthalate | 41.0 | 5.26 | ug/L | 52.63 | ND | 77.9 | 1-120 | | |
| Di-N-Octyl Phthalate | 46.1 | 5.26 | ug/L | 52.63 | ND | 87.6 | 4-146 | | |
| Hexachlorobenzene | 36.7 | 5.26 | ug/L | 52.63 | ND | 69.7 | 35-152 | | |
| Hexachlorobutadiene | 29.1 | 2.11 | ug/L | 52.63 | ND | 55.3 | 24-120 | | |
| Hexachlorocyclopentadiene | 35.0 | 5.26 | ug/L | 52.63 | ND | 66.5 | 15-76 | | |
| Hexachloroethane | 27.5 | 2.11 | ug/L | 52.63 | ND | 52.3 | 40-120 | | |
| Isophorone | 31.7 | 5.26 | ug/L | 52.63 | ND | 60.3 | 21-196 | | |
| Nitrobenzene | 31.3 | 5.26 | ug/L | 52.63 | ND | 59.5 | 35-180 | | |
| N-Nitrosodimethylamine | 17.6 | 5.26 | ug/L | 52.63 | ND | 33.4 | 17-127 | | |
| N-Nitroso-Di-N-Propylamine | 31.9 | 5.26 | ug/L | 52.63 | ND | 60.7 | 43-230 | | |

# Final Report

## Project: CCMUA-Delaware #1 WWTF - 2405011

## Project Number: 2405011

## NVOA GCMS - Quality Control

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| **Batch B405052** | | | | | | | | | |
| **Matrix Spike (B405052-MS1)** | **Source: 2405011-03** | | | | | | | | |
| N-Nitrosodiphenylamine | 36.9 | 5.26 | ug/L | 52.63 | ND | 70.1 | 79-139 | | |
| Pentachlorophenol | 40.3 | 5.26 | ug/L | 52.63 | ND | 76.6 | 14-176 | | |
| Phenol | 13.0 | 2.11 | ug/L | 52.63 | ND | 24.8 | 5-120 | | |
| Pyrene | 38.2 | 5.26 | ug/L | 52.63 | ND | 72.5 | 52-120 | | |
| 1,4-Dioxane | 13.9 | 2.11 | ug/L | 52.63 | ND | 26.4 | 7-106 | | |
| *Surrogate: 2-Fluoroaniline* | *29.9* | | ug/L | *52.63* | | *56.8* | *60-140* | | |
| *Surrogate: Phenol-D6* | *13.6* | | ug/L | *52.63* | | *25.9* | *60-140* | | |
| *Surrogate: Naphthalene-D8* | *34.6* | | ug/L | *52.63* | | *65.7* | *60-140* | | |
| *Surrogate: 1-Fluoronaphthalene* | *34.6* | | ug/L | *52.63* | | *65.8* | *60-140* | | |
| *Surrogate: 2,4-Dibromophenol* | *33.7* | | ug/L | *52.63* | | *64.0* | *60-140* | | |
| *Surrogate: Anthracene-D10* | *42.9* | | ug/L | *52.63* | | *81.5* | *60-140* | | |
| *Surrogate: Chrysene-D12* | *40.4* | | ug/L | *52.63* | | *76.8* | *60-140* | | |
| **Matrix Spike (B405052-MS2)** | **Source: 2405017-02** | | | | | | | | |
| Acenaphthene | 29.2 | 5.10 | ug/L | 51.02 | ND | 57.2 | 47-145 | | |
| Acenaphthylene | 28.5 | 5.10 | ug/L | 51.02 | ND | 55.9 | 33-145 | | |
| Anthracene | 39.1 | 5.10 | ug/L | 51.02 | ND | 76.7 | 27-133 | | |
| Benzo(A)Anthracene | 38.0 | 5.10 | ug/L | 51.02 | ND | 74.5 | 33-143 | | |
| Benzo(A)Pyrene | 42.9 | 5.10 | ug/L | 51.02 | ND | 84.0 | 17-163 | | |
| Benzo(B)Fluoranthene | 41.9 | 5.10 | ug/L | 51.02 | ND | 82.2 | 24-159 | | |
| Benzo(G,H,I)Perylene | 47.3 | 5.10 | ug/L | 51.02 | ND | 92.7 | 35-219 | | |
| Benzo(K)Fluoranthene | 39.9 | 5.10 | ug/L | 51.02 | ND | 78.1 | 11-162 | | |
| Chrysene | 38.5 | 5.10 | ug/L | 51.02 | ND | 75.5 | 17-168 | | |
| Dibenzo(A,H)Anthracene | 48.4 | 5.10 | ug/L | 51.02 | ND | 94.9 | 33-227 | | |
| Fluoranthene | 39.7 | 5.10 | ug/L | 51.02 | ND | 77.7 | 26-137 | | |
| Fluorene | 36.5 | 5.10 | ug/L | 51.02 | ND | 71.5 | 59-121 | | |
| Indeno(1,2,3-Cd)Pyrene | 51.3 | 5.10 | ug/L | 51.02 | ND | 101 | 39-171 | | |
| Naphthalene | 22.0 | 2.04 | ug/L | 51.02 | ND | 43.1 | 21-133 | | |
| Phenanthrene | 39.8 | 5.10 | ug/L | 51.02 | ND | 78.0 | 54-120 | | |
| 1,2,4-Trichlorobenzene | 20.8 | 5.10 | ug/L | 51.02 | ND | 40.8 | 44-142 | | |
| 2,4,6-Trichlorophenol | 29.3 | 5.10 | ug/L | 51.02 | ND | 57.5 | 37-144 | | |
| 2,4-Dichlorophenol | 25.0 | 5.10 | ug/L | 51.02 | ND | 49.0 | 39-135 | | |
| 2,4-Dimethylphenol | 25.0 | 5.10 | ug/L | 51.02 | ND | 48.9 | 32-120 | | |
| 2,4-Dinitrotoluene | 44.3 | 5.10 | ug/L | 51.02 | ND | 86.9 | 39-139 | | |
| 2,6-Dinitrotoluene | 35.2 | 5.10 | ug/L | 51.02 | ND | 68.9 | 50-158 | | |

# Final Report

## Project: CCMUA-Delaware #1 WWTF - 2405011

## Project Number: 2405011

## NVOA GCMS - Quality Control

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| **Batch B405052** | | | | | | | | | |
| **Matrix Spike (B405052-MS2)** | **Source: 2405017-02** | | | | | | | | |
| 2,4-Dinitrophenol | 23.4 | 5.10 | ug/L | 51.02 | ND | 45.8 | 21-191 | | |
| 2-Chloronaphthalene | 25.6 | 5.10 | ug/L | 51.02 | ND | 50.2 | 60-120 | | |
| 2-Chlorophenol | 19.1 | 5.10 | ug/L | 51.02 | ND | 37.3 | 23-134 | | |
| 2-Nitrophenol | 22.2 | 5.10 | ug/L | 51.02 | ND | 43.4 | 29-182 | | |
| 3,3'- Dichlorobenzidine | 25.7 | 5.10 | ug/L | 51.02 | ND | 50.3 | 38-262 | | |
| 4,6-Dinitro-2-Methylphenol | 39.9 | 5.10 | ug/L | 51.02 | ND | 78.3 | 17-181 | | |
| 4-Bromophenyl-Phenylether | 39.0 | 5.10 | ug/L | 51.02 | ND | 76.4 | 53-127 | | |
| 4-Chloro-3-Methylphenol | 30.5 | 5.10 | ug/L | 51.02 | ND | 59.7 | 22-147 | | |
| 4-Chlorophenyl-Phenylether | 36.7 | 5.10 | ug/L | 51.02 | ND | 71.9 | 25-158 | | |
| 4-Nitrophenol | 18.2 | 5.10 | ug/L | 51.02 | ND | 35.7 | 9-132 | | |
| Bis(-2-Chloroethoxy)Methane | 21.8 | 5.10 | ug/L | 51.02 | ND | 42.8 | 33-184 | | |
| Bis(2-Chloroethyl)Ether | 21.9 | 5.10 | ug/L | 51.02 | ND | 43.0 | 12-158 | | |
| Bis(2-Chloroisopropyl)Ether | 20.8 | 5.10 | ug/L | 51.02 | ND | 40.8 | 36-166 | | |
| Bis(2-Ethylhexyl)Phthalate | 46.4 | 5.10 | ug/L | 51.02 | ND | 90.9 | 8-158 | | |
| Butylbenzylphthalate | 42.6 | 5.10 | ug/L | 51.02 | ND | 83.5 | 38-152 | | |
| Azobenzene | 37.3 | 5.10 | ug/L | 51.02 | ND | 73.1 | 61-106 | | |
| Diethylphthalate | 40.7 | 5.10 | ug/L | 51.02 | ND | 79.8 | 31-114 | | |
| Dimethyl Phthalate | 33.0 | 2.04 | ug/L | 51.02 | ND | 64.7 | 28-120 | | |
| Di-N-Butyl Phthalate | 43.1 | 5.10 | ug/L | 51.02 | ND | 84.5 | 1-120 | | |
| Di-N-Octyl Phthalate | 45.3 | 5.10 | ug/L | 51.02 | ND | 88.8 | 4-146 | | |
| Hexachlorobenzene | 38.6 | 5.10 | ug/L | 51.02 | ND | 75.6 | 35-152 | | |
| Hexachlorobutadiene | 20.8 | 2.04 | ug/L | 51.02 | ND | 40.7 | 24-120 | | |
| Hexachlorocyclopentadiene | 22.7 | 5.10 | ug/L | 51.02 | ND | 44.6 | 15-76 | | |
| Hexachloroethane | 20.8 | 2.04 | ug/L | 51.02 | ND | 40.8 | 40-120 | | |
| Isophorone | 24.8 | 5.10 | ug/L | 51.02 | ND | 48.7 | 21-196 | | |
| Nitrobenzene | 22.0 | 5.10 | ug/L | 51.02 | ND | 43.1 | 35-180 | | |
| N-Nitrosodimethylamine | 13.6 | 5.10 | ug/L | 51.02 | ND | 26.6 | 17-127 | | |
| N-Nitroso-Di-N-Propylamine | 21.9 | 5.10 | ug/L | 51.02 | ND | 43.0 | 43-230 | | |
| N-Nitrosodiphenylamine | 49.5 | 5.10 | ug/L | 51.02 | ND | 97.1 | 79-139 | | |
| Pentachlorophenol | 37.2 | 5.10 | ug/L | 51.02 | ND | 72.9 | 14-176 | | |
| Phenol | 10.8 | 2.04 | ug/L | 51.02 | ND | 21.2 | 5-120 | | |
| Pyrene | 40.2 | 5.10 | ug/L | 51.02 | ND | 78.8 | 52-120 | | |
| 1,4-Dioxane | 33.6 | 2.04 | ug/L | 51.02 | 36.0 | NR | 7-106 | | |
| *Surrogate: 2-Fluoroaniline* | *20.7* | | ug/L | *51.02* | | *40.6* | *60-140* | | |

# Final Report

## Project: CCMUA-Delaware #1 WWTF - 2405011

## Project Number: 2405011

## NVOA GCMS - Quality Control

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| **Batch B405052** | | | | | | | | | |
| **Matrix Spike (B405052-MS2)** | | **Source: 2405017-02** | | | | | | | |
| *Surrogate: Phenol-D6* | *10.4* | | ug/L | *51.02* | | *20.4* | *60-140* | | |
| *Surrogate: Naphthalene-D8* | *22.9* | | ug/L | *51.02* | | *44.8* | *60-140* | | |
| *Surrogate: 1-Fluoronaphthalene* | *23.2* | | ug/L | *51.02* | | *45.4* | *60-140* | | |
| *Surrogate: 2,4-Dibromophenol* | *30.5* | | ug/L | *51.02* | | *59.7* | *60-140* | | |
| *Surrogate: Anthracene-D10* | *46.7* | | ug/L | *51.02* | | *91.4* | *60-140* | | |
| *Surrogate: Chrysene-D12* | *41.5* | | ug/L | *51.02* | | *81.4* | *60-140* | | |
| **Matrix Spike Dup (B405052-MSD1)** | | **Source: 2405011-03** | | | | | | | |
| Acenaphthene | 37.0 | 5.00 | ug/L | 50.00 | ND | 73.9 | 47-145 | 10.6 | 24 |
| Acenaphthylene | 37.8 | 5.00 | ug/L | 50.00 | ND | 75.5 | 33-145 | 11.9 | 24 |
| Anthracene | 39.9 | 5.00 | ug/L | 50.00 | ND | 79.8 | 27-133 | 9.00 | 24 |
| Benzo(A)Anthracene | 42.9 | 5.00 | ug/L | 50.00 | ND | 85.8 | 33-143 | 10.2 | 24 |
| Benzo(A)Pyrene | 46.6 | 5.00 | ug/L | 50.00 | ND | 93.2 | 17-163 | 12.5 | 24 |
| Benzo(B)Fluoranthene | 45.8 | 5.00 | ug/L | 50.00 | ND | 91.6 | 24-159 | 11.3 | 24 |
| Benzo(G,H,I)Perylene | 49.6 | 5.00 | ug/L | 50.00 | ND | 99.2 | 35-219 | 11.7 | 24 |
| Benzo(K)Fluoranthene | 45.4 | 5.00 | ug/L | 50.00 | ND | 90.8 | 11-162 | 14.1 | 24 |
| Chrysene | 44.0 | 5.00 | ug/L | 50.00 | ND | 88.0 | 17-168 | 11.1 | 24 |
| Dibenzo(A,H)Anthracene | 51.2 | 5.00 | ug/L | 50.00 | ND | 102 | 33-227 | 12.0 | 24 |
| Fluoranthene | 42.3 | 5.00 | ug/L | 50.00 | ND | 84.5 | 26-137 | 10.3 | 24 |
| Fluorene | 40.1 | 5.00 | ug/L | 50.00 | ND | 80.2 | 59-121 | 9.90 | 24 |
| Indeno(1,2,3-Cd)Pyrene | 53.1 | 5.00 | ug/L | 50.00 | ND | 106 | 39-171 | 18.1 | 24 |
| Naphthalene | 31.0 | 2.00 | ug/L | 50.00 | ND | 62.1 | 21-133 | 1.98 | 24 |
| Phenanthrene | 41.5 | 5.00 | ug/L | 50.00 | ND | 83.0 | 54-120 | 10.5 | 24 |
| 1,2,4-Trichlorobenzene | 30.2 | 5.00 | ug/L | 50.00 | ND | 60.5 | 44-142 | 1.29 | 24 |
| 2,4,6-Trichlorophenol | 38.8 | 5.00 | ug/L | 50.00 | ND | 77.7 | 37-144 | 21.3 | 24 |
| 2,4-Dichlorophenol | 37.3 | 5.00 | ug/L | 50.00 | ND | 74.6 | 39-135 | 21.6 | 24 |
| 2,4-Dimethylphenol | 35.1 | 5.00 | ug/L | 50.00 | ND | 70.2 | 32-120 | 10.6 | 24 |
| 2,4-Dinitrotoluene | 46.3 | 5.00 | ug/L | 50.00 | ND | 92.6 | 39-139 | 13.3 | 24 |
| 2,6-Dinitrotoluene | 41.7 | 5.00 | ug/L | 50.00 | ND | 83.5 | 50-158 | 12.1 | 24 |
| 2,4-Dinitrophenol | 21.3 | 5.00 | ug/L | 50.00 | ND | 42.6 | 21-191 | 29.5 | 24 |
| 2-Chloronaphthalene | 35.5 | 5.00 | ug/L | 50.00 | ND | 71.1 | 60-120 | 9.86 | 24 |
| 2-Chlorophenol | 29.6 | 5.00 | ug/L | 50.00 | ND | 59.3 | 23-134 | 13.5 | 24 |
| 2-Nitrophenol | 35.2 | 5.00 | ug/L | 50.00 | ND | 70.4 | 29-182 | 10.9 | 24 |
| 3,3'- Dichlorobenzidine | 29.2 | 5.00 | ug/L | 50.00 | ND | 58.5 | 38-262 | 28.8 | 24 |
| 4,6-Dinitro-2-Methylphenol | 40.4 | 5.00 | ug/L | 50.00 | ND | 80.8 | 17-181 | 7.23 | 24 |

# Final Report

## Project: CCMUA-Delaware #1 WWTF - 2405011

## Project Number: 2405011

## NVOA GCMS - Quality Control

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| **Batch B405052** | | | | | | | | | |
| **Matrix Spike Dup (B405052-MSD1)** | **Source: 2405011-03** | | | | | | | | |
| 4-Bromophenyl-Phenylether | 41.5 | 5.00 | ug/L | 50.00 | ND | 83.0 | 53-127 | 11.1 | 24 |
| 4-Chloro-3-Methylphenol | 38.3 | 5.00 | ug/L | 50.00 | ND | 76.6 | 22-147 | 20.1 | 24 |
| 4-Chlorophenyl-Phenylether | 40.7 | 5.00 | ug/L | 50.00 | ND | 81.4 | 25-158 | 10.9 | 24 |
| 4-Nitrophenol | 19.1 | 5.00 | ug/L | 50.00 | ND | 38.3 | 9-132 | 19.2 | 24 |
| Bis(-2-Chloroethoxy)Methane | 33.0 | 5.00 | ug/L | 50.00 | ND | 65.9 | 33-184 | 4.35 | 24 |
| Bis(2-Chloroethyl)Ether | 28.9 | 5.00 | ug/L | 50.00 | ND | 57.8 | 12-158 | 0.313 | 24 |
| Bis(2-Chloroisopropyl)Ether | 28.6 | 5.00 | ug/L | 50.00 | ND | 57.2 | 36-166 | 0.987 | 24 |
| Bis(2-Ethylhexyl)Phthalate | 53.2 | 5.00 | ug/L | 50.00 | ND | 106 | 8-158 | 10.5 | 24 |
| Butylbenzylphthalate | 47.9 | 5.00 | ug/L | 50.00 | ND | 95.8 | 38-152 | 12.0 | 24 |
| Azobenzene | 40.6 | 5.00 | ug/L | 50.00 | ND | 81.2 | 61-106 | 10.8 | 24 |
| Diethylphthalate | 42.1 | 5.00 | ug/L | 50.00 | ND | 84.2 | 31-114 | 10.5 | 24 |
| Dimethyl Phthalate | 38.2 | 2.00 | ug/L | 50.00 | ND | 76.3 | 28-120 | 9.81 | 24 |
| Di-N-Butyl Phthalate | 45.4 | 5.00 | ug/L | 50.00 | ND | 90.8 | 1-120 | 10.1 | 24 |
| Di-N-Octyl Phthalate | 53.3 | 5.00 | ug/L | 50.00 | ND | 107 | 4-146 | 14.5 | 24 |
| Hexachlorobenzene | 41.7 | 5.00 | ug/L | 50.00 | ND | 83.4 | 35-152 | 12.8 | 24 |
| Hexachlorobutadiene | 28.7 | 2.00 | ug/L | 50.00 | ND | 57.5 | 24-120 | 1.30 | 24 |
| Hexachlorocyclopentadiene | 36.6 | 5.00 | ug/L | 50.00 | ND | 73.2 | 15-76 | 4.35 | 24 |
| Hexachloroethane | 28.5 | 2.00 | ug/L | 50.00 | ND | 57.1 | 40-120 | 3.62 | 24 |
| Isophorone | 34.2 | 5.00 | ug/L | 50.00 | ND | 68.4 | 21-196 | 7.47 | 24 |
| Nitrobenzene | 31.6 | 5.00 | ug/L | 50.00 | ND | 63.2 | 35-180 | 1.03 | 24 |
| N-Nitrosodimethylamine | 18.6 | 5.00 | ug/L | 50.00 | ND | 37.2 | 17-127 | 5.58 | 24 |
| N-Nitroso-Di-N-Propylamine | 32.9 | 5.00 | ug/L | 50.00 | ND | 65.8 | 43-230 | 2.94 | 24 |
| N-Nitrosodiphenylamine | 41.4 | 5.00 | ug/L | 50.00 | ND | 82.9 | 79-139 | 11.5 | 24 |
| Pentachlorophenol | 41.8 | 5.00 | ug/L | 50.00 | ND | 83.6 | 14-176 | 3.71 | 24 |
| Phenol | 15.8 | 2.00 | ug/L | 50.00 | ND | 31.6 | 5-120 | 19.3 | 24 |
| Pyrene | 42.5 | 5.00 | ug/L | 50.00 | ND | 85.1 | 52-120 | 10.8 | 24 |
| 1,4-Dioxane | 14.9 | 2.00 | ug/L | 50.00 | ND | 29.7 | 7-106 | 6.64 | 24 |
| *Surrogate: 2-Fluoroaniline* | *29.3* | | ug/L | *50.00* | | *58.6* | *60-140* | | |
| *Surrogate: Phenol-D6* | *15.8* | | ug/L | *50.00* | | *31.6* | *60-140* | | |
| *Surrogate: Naphthalene-D8* | *33.3* | | ug/L | *50.00* | | *66.7* | *60-140* | | |
| *Surrogate: 1-Fluoronaphthalene* | *33.5* | | ug/L | *50.00* | | *66.9* | *60-140* | | |
| *Surrogate: 2,4-Dibromophenol* | *39.6* | | ug/L | *50.00* | | *79.3* | *60-140* | | |
| *Surrogate: Anthracene-D10* | *45.1* | | ug/L | *50.00* | | *90.2* | *60-140* | | |
| *Surrogate: Chrysene-D12* | *42.5* | | ug/L | *50.00* | | *84.9* | *60-140* | | |

# Final Report

## Project: CCMUA-Delaware #1 WWTF - 2405011

## Project Number: 2405011

## NVOA GCMS - Quality Control

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| **Batch B405052** | | | | | | | | | |
| **Matrix Spike Dup (B405052-MSD2)** | **Source: 2405017-02** | | | | | | | | |
| Acenaphthene | 39.7 | 5.15 | ug/L | 51.55 | ND | 77.0 | 47-145 | 30.6 | 24 |
| Acenaphthylene | 39.2 | 5.15 | ug/L | 51.55 | ND | 76.1 | 33-145 | 31.6 | 24 |
| Anthracene | 44.9 | 5.15 | ug/L | 51.55 | ND | 87.1 | 27-133 | 13.8 | 24 |
| Benzo(A)Anthracene | 42.4 | 5.15 | ug/L | 51.55 | ND | 82.2 | 33-143 | 10.8 | 24 |
| Benzo(A)Pyrene | 49.6 | 5.15 | ug/L | 51.55 | ND | 96.3 | 17-163 | 14.7 | 24 |
| Benzo(B)Fluoranthene | 47.7 | 5.15 | ug/L | 51.55 | ND | 92.5 | 24-159 | 12.8 | 24 |
| Benzo(G,H,I)Perylene | 55.0 | 5.15 | ug/L | 51.55 | ND | 107 | 35-219 | 15.1 | 24 |
| Benzo(K)Fluoranthene | 45.6 | 5.15 | ug/L | 51.55 | ND | 88.5 | 11-162 | 13.5 | 24 |
| Chrysene | 42.8 | 5.15 | ug/L | 51.55 | ND | 83.1 | 17-168 | 10.7 | 24 |
| Dibenzo(A,H)Anthracene | 56.6 | 5.15 | ug/L | 51.55 | ND | 110 | 33-227 | 15.6 | 24 |
| Fluoranthene | 44.6 | 5.15 | ug/L | 51.55 | ND | 86.5 | 26-137 | 11.7 | 24 |
| Fluorene | 45.3 | 5.15 | ug/L | 51.55 | ND | 87.9 | 59-121 | 21.7 | 24 |
| Indeno(1,2,3-Cd)Pyrene | 60.5 | 5.15 | ug/L | 51.55 | ND | 117 | 39-171 | 16.4 | 24 |
| Naphthalene | 34.6 | 2.06 | ug/L | 51.55 | ND | 67.2 | 21-133 | 44.7 | 24 |
| Phenanthrene | 46.0 | 5.15 | ug/L | 51.55 | ND | 89.3 | 54-120 | 14.6 | 24 |
| 1,2,4-Trichlorobenzene | 32.8 | 5.15 | ug/L | 51.55 | ND | 63.7 | 44-142 | 44.7 | 24 |
| 2,4,6-Trichlorophenol | 39.6 | 5.15 | ug/L | 51.55 | ND | 76.9 | 37-144 | 29.9 | 24 |
| 2,4-Dichlorophenol | 38.7 | 5.15 | ug/L | 51.55 | ND | 75.1 | 39-135 | 43.0 | 24 |
| 2,4-Dimethylphenol | 37.9 | 5.15 | ug/L | 51.55 | ND | 73.6 | 32-120 | 41.2 | 24 |
| 2,4-Dinitrotoluene | 51.7 | 5.15 | ug/L | 51.55 | ND | 100 | 39-139 | 15.4 | 24 |
| 2,6-Dinitrotoluene | 43.6 | 5.15 | ug/L | 51.55 | ND | 84.5 | 50-158 | 21.4 | 24 |
| 2,4-Dinitrophenol | 18.8 | 5.15 | ug/L | 51.55 | ND | 36.4 | 21-191 | 21.8 | 24 |
| 2-Chloronaphthalene | 38.0 | 5.15 | ug/L | 51.55 | ND | 73.8 | 60-120 | 39.0 | 24 |
| 2-Chlorophenol | 31.8 | 5.15 | ug/L | 51.55 | ND | 61.8 | 23-134 | 50.2 | 24 |
| 2-Nitrophenol | 39.0 | 5.15 | ug/L | 51.55 | ND | 75.7 | 29-182 | 55.1 | 24 |
| 3,3'- Dichlorobenzidine | 32.0 | 5.15 | ug/L | 51.55 | ND | 62.1 | 38-262 | 22.0 | 24 |
| 4,6-Dinitro-2-Methylphenol | 45.2 | 5.15 | ug/L | 51.55 | ND | 87.6 | 17-181 | 12.3 | 24 |
| 4-Bromophenyl-Phenylether | 47.1 | 5.15 | ug/L | 51.55 | ND | 91.3 | 53-127 | 18.8 | 24 |
| 4-Chloro-3-Methylphenol | 39.5 | 5.15 | ug/L | 51.55 | ND | 76.6 | 22-147 | 25.8 | 24 |
| 4-Chlorophenyl-Phenylether | 45.9 | 5.15 | ug/L | 51.55 | ND | 89.1 | 25-158 | 22.4 | 24 |
| 4-Nitrophenol | 17.7 | 5.15 | ug/L | 51.55 | ND | 34.3 | 9-132 | 2.75 | 24 |
| Bis(-2-Chloroethoxy)Methane | 36.3 | 5.15 | ug/L | 51.55 | ND | 70.4 | 33-184 | 49.8 | 24 |
| Bis(2-Chloroethyl)Ether | 32.8 | 5.15 | ug/L | 51.55 | ND | 63.6 | 12-158 | 39.8 | 24 |
| Bis(2-Chloroisopropyl)Ether | 31.3 | 5.15 | ug/L | 51.55 | ND | 60.8 | 36-166 | 40.4 | 24 |
| Bis(2-Ethylhexyl)Phthalate | 50.4 | 5.15 | ug/L | 51.55 | ND | 97.8 | 8-158 | 8.32 | 24 |



NOTE: The results recorded in this report relate only to the samples as received on the date and at the time noted

# Final Report

## Project: CCMUA-Delaware #1 WWTF - 2405011

## Project Number: 2405011

## NVOA GCMS - Quality Control

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| **Batch B405052** | | | | | | | | | |
| **Matrix Spike Dup (B405052-MSD2)** | **Source: 2405017-02** | | | | | | | | |
| Butylbenzylphthalate | 47.8 | 5.15 | ug/L | 51.55 | ND | 92.7 | 38-152 | 11.5 | 24 |
| Azobenzene | 45.6 | 5.15 | ug/L | 51.55 | ND | 88.4 | 61-106 | 20.0 | 24 |
| Diethylphthalate | 46.9 | 5.15 | ug/L | 51.55 | ND | 91.1 | 31-114 | 14.3 | 24 |
| Dimethyl Phthalate | 39.5 | 2.06 | ug/L | 51.55 | ND | 76.6 | 28-120 | 17.9 | 24 |
| Di-N-Butyl Phthalate | 48.1 | 5.15 | ug/L | 51.55 | ND | 93.3 | 1-120 | 11.0 | 24 |
| Di-N-Octyl Phthalate | 50.0 | 5.15 | ug/L | 51.55 | ND | 97.1 | 4-146 | 9.96 | 24 |
| Hexachlorobenzene | 46.0 | 5.15 | ug/L | 51.55 | ND | 89.2 | 35-152 | 17.5 | 24 |
| Hexachlorobutadiene | 31.8 | 2.06 | ug/L | 51.55 | ND | 61.7 | 24-120 | 42.0 | 24 |
| Hexachlorocyclopentadiene | 38.5 | 5.15 | ug/L | 51.55 | ND | 74.6 | 15-76 | 51.4 | 24 |
| Hexachloroethane | 29.1 | 2.06 | ug/L | 51.55 | ND | 56.4 | 40-120 | 33.0 | 24 |
| Isophorone | 39.7 | 5.15 | ug/L | 51.55 | ND | 77.1 | 21-196 | 46.1 | 24 |
| Nitrobenzene | 35.4 | 5.15 | ug/L | 51.55 | ND | 68.6 | 35-180 | 46.7 | 24 |
| N-Nitrosodimethylamine | 19.8 | 5.15 | ug/L | 51.55 | ND | 38.4 | 17-127 | 37.2 | 24 |
| N-Nitroso-Di-N-Propylamine | 36.6 | 5.15 | ug/L | 51.55 | ND | 71.0 | 43-230 | 50.1 | 24 |
| N-Nitrosodiphenylamine | 57.0 | 5.15 | ug/L | 51.55 | ND | 111 | 79-139 | 14.1 | 24 |
| Pentachlorophenol | 41.6 | 5.15 | ug/L | 51.55 | ND | 80.6 | 14-176 | 11.1 | 24 |
| Phenol | 16.6 | 2.06 | ug/L | 51.55 | ND | 32.3 | 5-120 | 42.4 | 24 |
| Pyrene | 45.3 | 5.15 | ug/L | 51.55 | ND | 87.9 | 52-120 | 12.0 | 24 |
| 1,4-Dioxane | 49.2 | 2.06 | ug/L | 51.55 | 36.0 | 25.6 | 7-106 | 37.7 | 24 |
| *Surrogate: 2-Fluoroaniline* | *32.4* | | ug/L | *51.55* | | *62.9* | *60-140* | | |
| *Surrogate: Phenol-D6* | *15.6* | | ug/L | *51.55* | | *30.2* | *60-140* | | |
| *Surrogate: Naphthalene-D8* | *35.1* | | ug/L | *51.55* | | *68.1* | *60-140* | | |
| *Surrogate: 1-Fluoronaphthalene* | *35.0* | | ug/L | *51.55* | | *67.9* | *60-140* | | |
| *Surrogate: 2,4-Dibromophenol* | *39.1* | | ug/L | *51.55* | | *75.8* | *60-140* | | |
| *Surrogate: Anthracene-D10* | *49.9* | | ug/L | *51.55* | | *96.8* | *60-140* | | |
| *Surrogate: Chrysene-D12* | *40.6* | | ug/L | *51.55* | | *78.8* | *60-140* | | |

# Final Report

## Project: CCMUA-Delaware #1 WWTF - 2405011

## Project Number: 2405011

## GC - Quality Control

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| **Batch B405099** | | | | | | | | | |
| **Blank (B405099-BLK1)** | | | | | | | | | |
| Oil & Grease | --- U | 5.00 | mg/L | | | | | | |
| **LCS (B405099-BS1)** | | | | | | | | | |
| Oil & Grease | 37.4 | 5.00 | mg/L | 40.00 | | 93.5 | 78-114 | | |
| **LCS (B405099-BS2)** | | | | | | | | | |
| Oil & Grease | 36.2 | 5.00 | mg/L | 40.00 | | 90.5 | 78-114 | | |
| **LCS (B405099-BS3)** | | | | | | | | | |
| Oil & Grease | 37.4 | 5.00 | mg/L | 40.00 | | 93.5 | 78-114 | | |
| **LCS (B405099-BS4)** | | | | | | | | | |
| Oil & Grease | 37.9 | 5.00 | mg/L | 40.00 | | 94.8 | 78-114 | | |
| **Matrix Spike (B405099-MS1)** | | **Source: 2405011-03** | | | | | | | |
| Oil & Grease | 32.5 | 6.17 | mg/L | 49.38 | ND | 65.8 | 78-114 | | |
| **Matrix Spike (B405099-MS2)** | | **Source: 2405017-03** | | | | | | | |
| Oil & Grease | 42.4 | 5.62 | mg/L | 44.94 | ND | 94.3 | 78-114 | | |

# Final Report

## Project: CCMUA-Delaware #1 WWTF - 2405011

## Project Number: 2405011

## Metals ICP - Quality Control

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| **Batch B405027** | | | | | | | | | |
| **Blank (B405027-BLK1)** | | | | | | | | | |
| Copper | --- U | 10.0 | ug/L | | | | | | |
| Lead | --- U | 8.00 | ug/L | | | | | | |
| Zinc | --- U | 20.0 | ug/L | | | | | | |
| **LCS (B405027-BS1)** | | | | | | | | | |
| Copper | 204 | 10.0 | ug/L | 200.0 | | 102 | 85-115 | | |
| Lead | 210 | 8.00 | ug/L | 200.0 | | 105 | 85-115 | | |
| Zinc | 206 | 20.0 | ug/L | 200.0 | | 103 | 85-115 | | |
| **LCS Dup (B405027-BSD1)** | | | | | | | | | |
| Copper | 191 | 10.0 | ug/L | 200.0 | | 95.4 | 85-115 | 6.81 | 20 |
| Lead | 198 | 8.00 | ug/L | 200.0 | | 99.1 | 85-115 | 5.69 | 20 |
| Zinc | 197 | 20.0 | ug/L | 200.0 | | 98.6 | 85-115 | 4.40 | 20 |
| **Matrix Spike (B405027-MS1)** | **Source: 2405011-01** | | | | | | | | |
| Copper | 228 | 10.0 | ug/L | 200.0 | 6.46 | 111 | 80-120 | | |
| Lead | 207 | 8.00 | ug/L | 200.0 | ND | 104 | 80-120 | | |
| Zinc | 264 | 20.0 | ug/L | 200.0 | 52.6 | 106 | 80-120 | | |
| **Matrix Spike Dup (B405027-MSD1)** | **Source: 2405011-01** | | | | | | | | |
| Copper | 196 | 50.0 | ug/L | 200.0 | ND | 98.2 | 80-120 | 15.0 | 10 |
| Lead | 194 | 40.0 | ug/L | 200.0 | ND | 97.2 | 80-120 | 6.50 | 10 |
| Zinc | 242 | 100 | ug/L | 200.0 | 52.6 | 94.8 | 80-120 | 8.71 | 10 |

# Final Report

## Project: CCMUA-Delaware #1 WWTF - 2405011

## Project Number: 2405011

## Sanitary - Quality Control

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| **Batch B405034** | | | | | | | | | |
| **Blank (B405034-BLK1)** | | | | | | | | | |
| Biochemical Oxygen Demand, Carb. | --- U | 2.00 | mg/L | | | | | | |
| **LCS (B405034-BS1)** | | | | | | | | | |
| Biochemical Oxygen Demand, Carb. | 199 | | mg/L | 198.0 | | 101 | 84.6-115.4 | | |
| **LCS (B405034-BS2)** | | | | | | | | | |
| Biochemical Oxygen Demand, Carb. | 184 | | mg/L | 198.0 | | 93.0 | 84.6-115.4 | | |
| **LCS (B405034-BS3)** | | | | | | | | | |
| Biochemical Oxygen Demand, Carb. | 189 | | mg/L | 198.0 | | 95.5 | 84.6-115.4 | | |
| **Duplicate (B405034-DUP1)** | **Source: 2405011-06** | | | | | | | | |
| Biochemical Oxygen Demand, Carb. | 326 | 2.00 | mg/L | | 457 | | | 33.3 | 25 |
| **Matrix Spike (B405034-MS1)** | **Source: 2405011-06** | | | | | | | | |
| Biochemical Oxygen Demand, Carb. | 1100 | 2.00 | mg/L | 792.0 | 457 | 81.8 | 75-125 | | |
| **Matrix Spike Dup (B405034-MSD1)** | **Source: 2405011-06** | | | | | | | | |
| Biochemical Oxygen Demand, Carb. | 910 | 2.00 | mg/L | 594.0 | 457 | 76.3 | 75-125 | 19.3 | 200 |
| **Batch B405046** | | | | | | | | | |
| **Blank (B405046-BLK1)** | | | | | | | | | |
| Residue, Non-Filterable | --- U | 10.0 | mg/L | | | | | | |
| **LCS (B405046-BS1)** | | | | | | | | | |
| Residue, Non-Filterable | 43.0 | 10.0 | mg/L | 46.40 | | 92.7 | 85-115 | | |

# Final Report

## Project: CCMUA-Delaware #1 WWTF - 2405011

## Project Number: 2405011

## Sanitary - Quality Control

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| **Batch B405046** | | | | | | | | | |
| **LCS Dup (B405046-BSD1)** | | | | | | | | | |
| Residue, Non-Filterable | 46.0 | 10.0 | mg/L | 46.40 | | 99.1 | 85-115 | 6.74 | 20 |
| **Duplicate (B405046-DUP1)** | | **Source: 2405017-01** | | | | | | | |
| Residue, Non-Filterable | 8.00 | 10.0 | mg/L | | 8.00 | | | 0.00 | 20 |
| **Batch B405060** | | | | | | | | | |
| **Blank (B405060-BLK1)** | | | | | | | | | |
| Phosphorus | --- U | 0.0500 | mg/L | | | | | | |
| **Blank (B405060-BLK2)** | | | | | | | | | |
| Phosphorus | --- U | 0.0500 | mg/L | | | | | | |
| **LCS (B405060-BS1)** | | | | | | | | | |
| Phosphorus | 8.96 | 0.250 | mg/L | 8.450 | | 106 | 90-110 | | |
| **LCS Dup (B405060-BSD1)** | | | | | | | | | |
| Phosphorus | 8.98 | 0.250 | mg/L | 8.450 | | 106 | 90-110 | 0.2 | 20 |
| **Matrix Spike (B405060-MS1)** | | **Source: 2405011-01** | | | | | | | |
| Phosphorus | 3.54 | 0.500 | mg/L | 1.000 | 2.81 | 74 | 90-110 | | |
| **Matrix Spike (B405060-MS2)** | | **Source: 2405017-01** | | | | | | | |
| Phosphorus | 4.00 | 0.500 | mg/L | 1.000 | 3.37 | 63 | 90-110 | | |
| **Batch B405080** | | | | | | | | | |
| **Blank (B405080-BLK1)** | | | | | | | | | |
| Cyanide, Total | --- U | 20.0 | ug/L | | | | | | |

# Final Report

## Project: CCMUA-Delaware #1 WWTF - 2405011

## Project Number: 2405011

## Sanitary - Quality Control

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| **Batch B405080** | | | | | | | | | |
| **LCS (B405080-BS1)** | | | | | | | | | |
| Cyanide, Total | 730 | 100 | ug/L | 726.0 | | 101 | 90-110 | | |
| **LCS Dup (B405080-BSD1)** | | | | | | | | | |
| Cyanide, Total | 721 | 100 | ug/L | 726.0 | | 99 | 90-110 | 1 | 20 |
| **Matrix Spike (B405080-MS1)** | **Source: 2405011-02** | | | | | | | | |
| Cyanide, Total | 467 | 200 | ug/L | 500.0 | ND | 93 | 90-110 | | |
| **Matrix Spike (B405080-MS2)** | **Source: 2405004-01** | | | | | | | | |
| Cyanide, Total | 209 | 20.0 | ug/L | 200.0 | ND | 105 | 90-110 | | |
| **Batch B405093** | | | | | | | | | |
| **Blank (B405093-BLK1)** | | | | | | | | | |
| Ammonia [As N] | --- U | 0.100 | mg/L | | | | | | |
| **LCS (B405093-BS1)** | | | | | | | | | |
| Ammonia [As N] | 2.12 | 0.100 | mg/L | 2.060 | | 103 | 90-110 | | |
| **LCS Dup (B405093-BSD1)** | | | | | | | | | |
| Ammonia [As N] | 2.04 | 0.100 | mg/L | 2.060 | | 99 | 90-110 | 4 | 20 |
| **Matrix Spike (B405093-MS1)** | **Source: 2405011-01** | | | | | | | | |
| Ammonia [As N] | 33.8 | 1.00 | mg/L | 5.000 | 30.8 | 60 | 90-110 | | |
| **Matrix Spike (B405093-MS2)** | **Source: 2405017-01** | | | | | | | | |
| Ammonia [As N] | 44.4 | 1.00 | mg/L | 5.000 | 40.9 | 70 | 90-110 | | |

# Final Report

## Project: CCMUA-Delaware #1 WWTF - 2405011

## Project Number: 2405011

## PFAAS, LCMS-MS - Quality Control

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| **Batch B405067** | | | | | | | | | |
| **Blank (B405067-BLK1)** | | | | | | | | | |
| 11Cl-PF3OUdS | --- U | 3.95 | ng/L | | | | | | |
| 9Cl-PF3ONS | --- U | 3.95 | ng/L | | | | | | |
| HFPO-DA | --- U | 3.95 | ng/L | | | | | | |
| ADONA | --- U | 3.95 | ng/L | | | | | | |
| NEtFOSAA | --- U | 3.95 | ng/L | | | | | | |
| NMeFOSAA | --- U | 3.95 | ng/L | | | | | | |
| PFBS | --- U | 3.95 | ng/L | | | | | | |
| PFDA | --- U | 3.95 | ng/L | | | | | | |
| PFDoA | --- U | 3.95 | ng/L | | | | | | |
| PFHpA | --- U | 3.95 | ng/L | | | | | | |
| PFHxA | --- U | 3.95 | ng/L | | | | | | |
| PFHxS | --- U | 3.95 | ng/L | | | | | | |
| PFNA | --- U | 3.95 | ng/L | | | | | | |
| PFOA | --- U | 3.95 | ng/L | | | | | | |
| PFOS | --- U | 3.95 | ng/L | | | | | | |
| PFTeDA | --- U | 3.95 | ng/L | | | | | | |
| PFTrDA | --- U | 3.95 | ng/L | | | | | | |
| PFUdA | --- U | 3.95 | ng/L | | | | | | |
| PFPeS | --- U | 3.95 | ng/L | | | | | | |
| PFNS | --- U | 3.95 | ng/L | | | | | | |
| PFHpS | --- U | 3.95 | ng/L | | | | | | |
| PFDS | --- U | 3.95 | ng/L | | | | | | |
| 4:2 FTS | --- U | 3.95 | ng/L | | | | | | |
| 6:2 FTS | --- U | 3.95 | ng/L | | | | | | |
| 8:2 FTS | --- U | 3.95 | ng/L | | | | | | |
| *Surrogate: 13C2-PFDA(SURR)* | *44.6* | | ng/L | *40.00* | | *111* | *70-130* | | |
| *Surrogate: 13C2-PFHxA(SURR)* | *39.4* | | ng/L | *40.00* | | *98* | *70-130* | | |
| *Surrogate: 13C3-HFPO-DA (SURR)* | *37.3* | | ng/L | *40.00* | | *93* | *70-130* | | |
| *Surrogate: d5-NEtFOSAA-M (SURR)* | *176* | | ng/L | *160.0* | | *110* | *70-130* | | |
| *Surrogate: 13C8-PFOS (SURR)* | *36.1* | | ng/L | *40.04* | | *90* | *70-130* | | |
| *Surrogate: 13C2-6:2 FTS (SURR)* | *32.6* | | ng/L | *39.98* | | *82* | *70-130* | | |

# Final Report

## Project: CCMUA-Delaware #1 WWTF - 2405011

## Project Number: 2405011

## PFAAS, LCMS-MS - Quality Control

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| **Batch B405067** | | | | | | | | | |
| **LCS (B405067-BS1)** | | | | | | | | | |
| 11Cl-PF3OUdS | 328 | 3.98 | ng/L | 301.2 | | 109 | 50-150 | | |
| 9Cl-PF3ONS | 335 | 3.98 | ng/L | 298.0 | | 112 | 50-150 | | |
| HFPO-DA | 271 | 3.98 | ng/L | 318.7 | | 85 | 50-150 | | |
| ADONA | 335 | 3.98 | ng/L | 301.2 | | 111 | 50-150 | | |
| NEtFOSAA | 323 | 3.98 | ng/L | 318.7 | | 101 | 50-150 | | |
| NMeFOSAA | 376 | 3.98 | ng/L | 318.7 | | 118 | 50-150 | | |
| PFBS | 174 | 3.98 | ng/L | 282.1 | | 62 | 50-150 | | |
| PFDA | 333 | 3.98 | ng/L | 318.7 | | 104 | 50-150 | | |
| PFDoA | 321 | 3.98 | ng/L | 318.7 | | 101 | 50-150 | | |
| PFHpA | 342 | 3.98 | ng/L | 318.7 | | 107 | 50-150 | | |
| PFHxA | 267 | 3.98 | ng/L | 318.7 | | 84 | 50-150 | | |
| PFHxS | 331 | 3.98 | ng/L | 290.8 | | 114 | 50-150 | | |
| PFNA | 334 | 3.98 | ng/L | 318.7 | | 105 | 50-150 | | |
| PFOA | 339 | 3.98 | ng/L | 318.7 | | 106 | 50-150 | | |
| PFOS | 342 | 3.98 | ng/L | 295.1 | | 116 | 50-150 | | |
| PFTeDA | 312 | 3.98 | ng/L | 318.7 | | 98 | 50-150 | | |
| PFTrDA | 326 | 3.98 | ng/L | 318.7 | | 102 | 50-150 | | |
| PFUdA | 327 | 3.98 | ng/L | 318.7 | | 102 | 50-150 | | |
| PFPeS | 264 | 3.98 | ng/L | 318.4 | | 83 | 50-150 | | |
| PFNS | 261 | 3.98 | ng/L | 318.9 | | 82 | 50-150 | | |
| PFHpS | 284 | 3.98 | ng/L | 318.6 | | 89 | 50-150 | | |
| PFDS | 278 | 3.98 | ng/L | 318.7 | | 87 | 50-150 | | |
| 4:2 FTS | 276 | 3.98 | ng/L | 319.2 | | 87 | 50-150 | | |
| 6:2 FTS | 282 | 3.98 | ng/L | 318.6 | | 89 | 50-150 | | |
| 8:2 FTS | 263 | 3.98 | ng/L | 319.0 | | 82 | 50-150 | | |
| *Surrogate: 13C2-PFDA(SURR)* | *47.2* | | ng/L | *40.00* | | *118* | *70-130* | | |
| *Surrogate: 13C2-PFHxA(SURR)* | *36.9* | | ng/L | *40.00* | | *92* | *70-130* | | |
| *Surrogate: 13C3-HFPO-DA (SURR)* | *36.5* | | ng/L | *40.00* | | *91* | *70-130* | | |
| *Surrogate: d5-NEtFOSAA-M (SURR)* | *177* | | ng/L | *160.0* | | *110* | *70-130* | | |
| *Surrogate: 13C8-PFOS (SURR)* | *36.1* | | ng/L | *40.04* | | *90* | *70-130* | | |
| *Surrogate: 13C2-6:2 FTS (SURR)* | *35.6* | | ng/L | *39.98* | | *89* | *70-130* | | |

# Final Report

## Project: CCMUA-Delaware #1 WWTF - 2405011

## Project Number: 2405011

## PFAAS, LCMS-MS - Quality Control

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| **Batch B405067** | | | | | | | | | |
| **LCS Dup (B405067-BSD1)** | | | | | | | | | |
| 11Cl-PF3OUdS | 351 | 3.97 | ng/L | 300.0 | | 117 | 50-150 | 7 | 30 |
| 9Cl-PF3ONS | 359 | 3.97 | ng/L | 296.8 | | 121 | 50-150 | 7 | 30 |
| HFPO-DA | 309 | 3.97 | ng/L | 317.5 | | 97 | 50-150 | 13 | 30 |
| ADONA | 346 | 3.97 | ng/L | 300.0 | | 115 | 50-150 | 3 | 30 |
| NEtFOSAA | 341 | 3.97 | ng/L | 317.5 | | 108 | 50-150 | 5 | 30 |
| NMeFOSAA | 409 | 3.97 | ng/L | 317.5 | | 129 | 50-150 | 8 | 30 |
| PFBS | 253 | 3.97 | ng/L | 281.0 | | 90 | 50-150 | 37 | 30 |
| PFDA | 350 | 3.97 | ng/L | 317.5 | | 110 | 50-150 | 5 | 30 |
| PFDoA | 337 | 3.97 | ng/L | 317.5 | | 106 | 50-150 | 5 | 30 |
| PFHpA | 362 | 3.97 | ng/L | 317.5 | | 114 | 50-150 | 6 | 30 |
| PFHxA | 318 | 3.97 | ng/L | 317.5 | | 100 | 50-150 | 18 | 30 |
| PFHxS | 357 | 3.97 | ng/L | 289.7 | | 123 | 50-150 | 8 | 30 |
| PFNA | 345 | 3.97 | ng/L | 317.5 | | 109 | 50-150 | 3 | 30 |
| PFOA | 354 | 3.97 | ng/L | 317.5 | | 111 | 50-150 | 4 | 30 |
| PFOS | 360 | 3.97 | ng/L | 294.0 | | 123 | 50-150 | 5 | 30 |
| PFTeDA | 323 | 3.97 | ng/L | 317.5 | | 102 | 50-150 | 4 | 30 |
| PFTrDA | 339 | 3.97 | ng/L | 317.5 | | 107 | 50-150 | 4 | 30 |
| PFUdA | 350 | 3.97 | ng/L | 317.5 | | 110 | 50-150 | 7 | 30 |
| PFPeS | 298 | 3.97 | ng/L | 317.1 | | 94 | 50-150 | 12 | 30 |
| PFNS | 273 | 3.97 | ng/L | 317.6 | | 86 | 50-150 | 4 | 30 |
| PFHpS | 301 | 3.97 | ng/L | 317.3 | | 95 | 50-150 | 6 | 30 |
| PFDS | 304 | 3.97 | ng/L | 317.5 | | 96 | 50-150 | 9 | 30 |
| 4:2 FTS | 286 | 3.97 | ng/L | 317.9 | | 90 | 50-150 | 3 | 30 |
| 6:2 FTS | 271 | 3.97 | ng/L | 317.3 | | 85 | 50-150 | 4 | 30 |
| 8:2 FTS | 245 | 3.97 | ng/L | 317.8 | | 77 | 50-150 | 7 | 30 |
| *Surrogate: 13C2-PFDA(SURR)* | *48.2* | | ng/L | *40.00* | | *121* | *70-130* | | |
| *Surrogate: 13C2-PFHxA(SURR)* | *40.9* | | ng/L | *40.00* | | *102* | *70-130* | | |
| *Surrogate: 13C3-HFPO-DA (SURR)* | *41.5* | | ng/L | *40.00* | | *104* | *70-130* | | |
| *Surrogate: d5-NEtFOSAA-M (SURR)* | *181* | | ng/L | *160.0* | | *113* | *70-130* | | |
| *Surrogate: 13C8-PFOS (SURR)* | *39.6* | | ng/L | *40.04* | | *99* | *70-130* | | |
| *Surrogate: 13C2-6:2 FTS (SURR)* | *34.4* | | ng/L | *39.98* | | *86* | *70-130* | | |

# 8.0 Photographs

**Photo #1.** An ISCO composite sampler was set-up in the Northside Chlorine Contact Channel.

**Photo #2.** An ISCO composite sampler was set-up in the Southside Chlorine Contact Channel.

**Photo #3.** Foam was observed overflowing into the Delaware River.

**Photo #4**. Pin floc was observed overflowing the weirs from the Final Sedimentation Tanks.

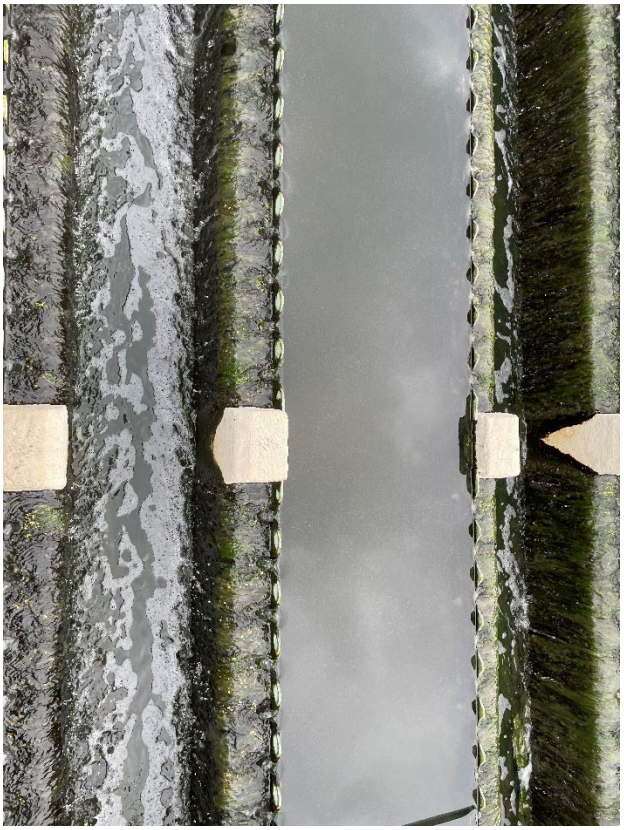

**Photo #5.** No calibration information was observed for the flow meters from the Northside and Southside Chlorine Contact Channels.


**Photo #6**. Fine bubbles were observed raising to the surface in the chlorine contact channel.